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HEATHROW EMPLOYMENT IMPACT STUDY

Parsons Brinckerhoff and Berkeley Hanover Consulting

Heathrow Employment Impact Study

Parsons Brinckerhoff and Berkeley Hanover Consulting

Final Report

Prepared for
London Borough of Hounslow, London Borough of Ealing & Slough Borough Council

Prepared by
Parsons Brinckerhoff and Berkeley Hanover Consulting

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FOREWORD TO JOINT SUBMISSION TO THE AIRPORTS COMMISSION

From:

- Councillor Colin Ellar, London Borough of Hounslow
- Councillor Julian Bell, London Borough of Ealing
- Councillor Sohail Munawar, Slough Borough Council

The debate around the future capacity of airports in the southeast of England is in full flow. By the 19 July 2013, no fewer than 52 responses setting out proposed long-term options to address this issue were received. Many of these made mention of their impact on local economies, but the underpinning evidence was not provided. This is particularly the case in terms of the impacts on employment. Furthermore it is unlikely there would be sufficient consistency in the methodologies taken in formulating the different options to allow a comparative analysis of local impact.

As local authorities with economies that feature high levels of employment dependent on Heathrow, it is imperative that we understand the implications of the different options being proposed. As community leaders, we will be at the forefront of dealing with the economic, social and environmental consequences of whichever option is taken forward.

It is for this reason we have commissioned a robust and independent study to inform our own policy responses, both in terms of responding to the options being considered, and in planning to mitigate against anticipated local impacts resulting from the decisions taken.

As this report demonstrates, the relationship between Heathrow and each of the three boroughs is nuanced, the impacts will differ and our responses may therefore be different. For this reason, this report has been commissioned without any pre-determined agenda. It makes no comment on the proposed options, or the evidence underpinning them. This report simply models the impact of the scenarios most likely to be considered by the Airports Commission on local employment. We collectively endorse this evidence to you as sound, thorough and objective. It is evidence on which all of us will be pleased to place reliance in our own decision making irrespective of our individual views.

Alongside this main report, each authority has received an in-depth borough-specific report on the impact of the scenarios. Each of us will be considering whether to submit a response setting out our position with regards to these scenarios that takes account of their economic, social and environmental impact.

In the meantime, we submit this report to the Commission so that, within your deliberations, due consideration is given to the impact of the various options being considered upon local employment, and the costs of mitigating any negative effects.. To date the debate has focused on national and regional impacts, but as this report shows the local impacts are potentially substantial and must not be discounted.

We feel it is vital that any decision to create a new hub airport, to downgrade Heathrow, or to increase the capacity at Heathrow, is informed by a detailed understanding of the effect this will have on employment and thus the broader economy of West London and particularly its impact on our most economically vulnerable residents and the catalytic impact on our wider economies.

EXECUTIVE SUMMARY

Parsons Brinckerhoff and Berkeley Hanover Consulting (BHC) have been commissioned by the London Borough of Hounslow, the London Borough of Ealing and Slough Borough Council to undertake an analysis of the impact on the economies in the three boroughs of the most likely longer-term options for future airport capacity in London and the South East (SE) in the period to 2030.

The large numbers of employees working directly and indirectly at or near Heathrow - that are resident within each borough - make any significant changes to the hub status of Heathrow fundamental to the future scale of local economic prosperity in each borough. In addition, Heathrow's hub status and attendant connectivity remain critical to the location decisions of many major corporate global headquarters and internationally-oriented UK companies. The 'catalytic' impacts this creates in the three boroughs (and further afield) are thus central to the debate about the future of Heathrow.

Each borough therefore has an understandable interest in the ramifications of possible future airport development scenarios and the extent to which these will impact on the hubbing status of Heathrow – both in terms of expansion, contraction and even closure - and hence their respective implications to each of the borough economies.

Employment associated with Heathrow can be divided into four categories:

- Direct (both on-site and off-site) – employment that is wholly or largely related to the operation of the airport (estimated at just over 84,000 – 90% on-airport);

- Indirect – employment generated in the chain of suppliers of goods and services to the direct activities (estimated at 11,100 in the local area);

- Induced – employment generated by the spending of incomes earned in direct and indirect activities (estimated at 18,600 in the local area); and

- Catalytic impacts - employment generated by the attraction, retention or expansion of economic activity primarily attributable to the international connectivity facilitated by Heathrow (this is very difficult to estimate but is probably in excess of 250,000 for an area wider than the focus of this study).

The importance of these different categories of employment varies between the boroughs with catalytic employment being relatively more important in Slough. Hounslow has a large number of residents dependent upon on- and off-airport direct employment whilst also containing high levels of catalytic employment. The situation in Ealing is more mixed with significant differences within the borough (see below).

It should also be noted that each of the three boroughs has varying characteristics in terms of the socio-economic profile within different parts of each borough. In Ealing, for example, there is an 'east-west' split in terms of comparatively highly skilled workers tending to reside in the eastern wards of the borough and many working in central London, whilst the lower skilled workers (including many who work at Heathrow) reside in the wards towards the west of the borough. Similarly, there is a 'north-west arc' of Heathrow employees resident in Hounslow, whilst amongst Slough residents on-airport workers are concentrated in wards towards the south-east of the borough.

The data in the tables below shows the overall 'Heathrow Effect' and the extent of local workforce dependency within each borough. This combines the 2010 estimates of direct, indirect and induced employment with the catalytic impacts. The ranges shown in the second table below cover a 'Low' impact through to a 'High' impact scenario for each borough.

Employment by Borough, 2010

	Ealing	Hounslow	Slough
Direct/Indirect/Induced	8,572	16,014	6,087
Catalytic Low	4,097	13,395	9,092
Catalytic Mid	8,195	20,093	10,911
Catalytic High	12,292	26,790	12,729
TOTAL Mid (rounded)	16,800	36,100	17,000

'Heathrow Effect' in terms of Local Workforce Dependency

	Percentage of LA Workforce (midpoint)
Ealing	10%
Hounslow	28%
Slough	29%

On a ward level basis, there are a number of wards in Ealing and Hounslow that have dependencies that far exceed these borough-wide averages.

In effect, these estimates provide an indication of jobs 'at risk' in the event of Heathrow's closure. For Hounslow and Slough, in the region of one quarter plus of local residents are dependent upon the continuing presence of Heathrow as an international hub. For Hounslow, this is primarily a function of the actual operations at the airport whilst for Slough, this is much more a function of the airport's international connectivity/hubbing status that facilitates catalytic employment. The Ealing situation is less pronounced overall, however - as stated above, there is clear evidence of significant job dependency amongst some deprived wards in the west that are highly reliant upon on-airport work.

A forecasting model has been developed to estimate the impact of different future scenarios at Heathrow up to 2030, based on forecast passenger numbers and assumptions relating to factors such as productivity growth. The forecasts prepared for each borough are discussed in greater detail within the individual borough reports.

A summary of each scenario and the consequential employment impacts for each of these is as follows:

- **S1 (no change):** two runways at Heathrow (as now) and maximisation of the best use of existing infrastructure - job losses are notable but not that damaging at a borough level over the period to 2030. The longer term implications could be severe once Heathrow's competitive position as a hub becomes severely compromised in the long term;

- **S2 (LHR3) & S3 (LHR4):** three and four runways at Heathrow respectively - substantial impacts would take place before a third runway is open as existing catalytic companies would bring forward expansion and the pace of foreign direct investment into the area would increase on the back of prospective increases in international connectivity to BRICS and other sources of inward investment;

- **S4A (LHR2+LGW2) & S4B (LHR2+STN2):** additional runways at Gatwick or Stansted respectively - a second runway at Gatwick will provide short-term enhancements to the hub capability and international connectivity of Heathrow. This will lead to small increases in employment in the short term and an overall neutral position in the longer term. The impact of a second runway at Stansted is marginally worse in terms of local employment within the vicinity of Heathrow but of no real economic consequence in the period to 2030;

- **S5 (LHR1+NAD):** one runway at Heathrow + new airport development - the opening of a new hub in 2029 and the theoretical retention of only one runway at Heathrow would result in significant decreases in all categories of employment in the local area by 2030; and

- **S6 (LHR0+NAD):** Heathrow closed completely + new hub airport development elsewhere in the SE - the closure of Heathrow in 2029 to coincide with the opening of a new hub will effectively eliminate all forms of local employment directly facilitated by the airport and would result in a significant decline in catalytic employment impacts.

Clearly, S6 would have a severe – if not catastrophic – economic impact on the local area surrounding Heathrow. A new hub airport would initially generate similar levels of direct, indirect and induced employment. However, our research has indicated that the loss of catalytic companies from the vicinity of Heathrow is not necessarily compensated on a UK plc basis by these companies relocating near to the new hub. Indeed, it is apparent that there is the potential for some companies to relocate outside the UK. This situation is particularly sensitive with regards to several business clusters located in proximity to Heathrow. Certainly, the IT/telecommunications cluster that resides within Slough, Hounslow and in neighbouring local authorities would need to relocate and whether this cluster would move near to the new hub is highly debatable. There must remain a possibility that this cluster would relocate outside of the UK.

Overall, it is unambiguous that a considerable proportion of employment in the local economy is dependent on Heathrow and that the future impacts on employment would vary substantially between the different airport scenarios under consideration. Current research on the local employment impact of existing airport expansion is well documented and provides clear indicators for the economic consequences of increased capacity at Heathrow. Very scant research is available on the local and sub-regional economic consequences of the closure of an international hub airport. It is critical to not only address the more straightforward analysis encompassing direct/indirect/induced impacts but also to acquire an understanding with respect to the numerically more important catalytic impacts.

In total, we estimate that some 70,000 jobs are at risk in the three boroughs in the event of Heathrow's closure. This compares with a recent study (discussed in the report) that estimates a totality of some 270,000/330,000 jobs at risk on a wider regional basis. Job losses at this scale are clearly of immense consequence at a borough level.

1 INTRODUCTION

1.1 Context

1.1.1 Parsons Brinckerhoff and Berkeley Hanover Consulting (BHC) have been commissioned by the London Borough of Hounslow, the London Borough of Ealing and Slough Borough Council ("the three boroughs") to undertake an economic analysis of the impact on the economies of the three boroughs of proposals for future airport capacity in London and the South East up to 2030.

1.1.2 The economic impact assessment covers airport development scenarios that the three boroughs believe will be evaluated by the Airports Commission (AC). The purpose of the report is to provide the three boroughs with an understanding of the impacts of the most likely scenarios to be considered by the AC so that each borough can form their own policy position in response.

1.1.3 It is important to emphasise that the work that has been undertaken is a factual exercise that has not been influenced by any current position taken by any of the three boroughs.

1.1.4 This report is the result of considerable desk research augmented by the findings of interviews, surveys and data collection exercises undertaken between early September and end November 2013. A number of studies have been published during this period and their findings have been reviewed. This report is being made available to the AC who will be free to publish it if they wish to do so.

1.1.5 More detailed reports have been produced for each borough taking a more geographically detailed account of the economic modelling in their respective areas. Submissions may subsequently be made by the individual boroughs based on this information which highlights how potential options for the development of London's airport capacity could impact on the respective economies of the boroughs.

1.1.6 Longer-term, it is also important that the boroughs develop strategic responses to whichever options emerge from the AC's findings. As local authorities are taking on a greater leadership role in terms of local growth, it is important that the boroughs are fully aware of the implications of these scenarios and that strategic responses are prepared in a robust manner.

1.2 Impact of the Airport Commission's Findings

1.2.1 The AC's findings will have a significant bearing on the future of Heathrow, which in turn will have a significant impact on the economies of the three boroughs. The AC will be taking submissions from stakeholders that will be used to inform their assessments and recommendations. These are due to be published in an interim report by the end of 2013.

1.2.2 As part of its deliberations, the AC will therefore need to consider the economic impact of the different options for increasing capacity. Whilst the impacts on the national and regional economies will be considered, the extent to which the different scenarios will impact on the economies of the boroughs has not been and appears unlikely to be scrutinised unless specifically commissioned. To date, there has been little coverage of these more localised economic impacts. Recent work commissioned by four LEPs in west / south-west London and West London Business does cover this issue[1]. The findings of the Regeneris study are in the public domain and the key findings are as follows:

- If Heathrow was closed by 2030, over 100,000 direct jobs would be lost; and
- In addition, at least a further 170,000 jobs dependent on close proximity to Heathrow (located within the "western wedge" area) would be put at risk if the airport closed.

1.2.3 This study is therefore required to enable the three boroughs to identify the economic impacts of the various airport development scenarios in their respective areas.

1.3 Coverage and Objectives of the Research

1.3.1 It is important to emphasise that this report is intended to set out the findings with respect to the potential economic impacts in each of the three boroughs. The forecasts presented within this report are very much order of magnitude impacts that demonstrate the scale of the potential effects on the three boroughs.

1.3.2 As with any economic impact analysis of this type, there are uncertainties surrounding some of the assumptions. This is especially the case with catalytic employment whereby quantification of these impacts across a number of different airport development scenarios is recognised as being problematic. To a lesser extent, the same applies to indirect employment impacts whereby there is uncertainty as to exactly how many 'supply chain' jobs are supported by Heathrow Airport. Despite these caveats, the forecasts of employment impacts presented in this report provide a clear indication as to the overall scale of these impacts across the different airport scenarios (and across the three different boroughs). The method adopted is therefore robust with conservative modelling assumptions utilised where necessary. Examples of the latter include the use of multipliers that are in the lower ranges.

1.3.3 It is also important to point out that tools such as Land Use Transportation Interaction (LUTI) models (allowing the full interaction between infrastructure developments and labour market impacts to be quantified) have not been used as these models are necessarily complex and time-consuming to develop.

1.3.4 We have also undertaken 'catalytic impact interviews' with selected major employers in the boroughs (i.e. those major businesses whose presence in the area is largely attributable to the 'hub' status of Heathrow) as well as having conducted business surveys across the three boroughs.

1.3.5 Additional data collection and collation has also been undertaken and key meetings have been undertaken with organisations such as Heathrow Airport Limited (HAL) and TfL. The findings of the various interviews, surveys and meetings / data collection exercises is fully incorporated into the individual reports that have been prepared for each borough.

1.3.6 The detailed documents produced by TfL in support of the Mayor of London's proposals for new airport capacity in the SE have been considered as part of this report.

[1] London Heathrow Economic Impact Study, Regeneris Consulting (for Buckingham & Thames Valley LEP, Enterprise M3 LEP, Oxfordshire LEP, Thames Valley Berkshire LEP and West London Business), September 2013

1.3.7 The objectives of the research are therefore as follows:

- To establish the nature of airport-related employment;
- To summarise current airport-related employment;
- To describe the agreed airport / runway scenarios; and
- To assess and quantify the impacts of the different scenarios.

1.3.8 The structure of this report is as follows:

- Chapter Two provides a summary of the Airports Debate as well as a review of various reports and analyses that address the potential employment impact of closing Heathrow;
- Chapter Three provides a description and summary of airport-related employment (covering the four key types of employment: 1) direct on-airport, 2) direct off-airport, 3) indirect / induced and 4) catalytic);
- Chapter Four contains summaries of the online business survey and catalytic interviews that were undertaken (more in-depth descriptions of these surveys / interviews and their outcomes are contained in the individual borough reports);
- Chapter Five provides quantification of current airport-related employment in terms of 1) total Heathrow-related employment, 2) employment in the three boroughs and 3) relevance of Gatwick to the employment analysis;
- Chapter Six contains a description of the various airport and runway scenarios (including the submissions to the AC, the likely relevant long-term options and the likely timelines for each scenario);
- Chapter Seven contains the assessment of the economic impact of the different scenarios. This covers 1) total impacts, 2) impacts within each of the three boroughs and 3) the significance of the scenarios and their impacts at the borough level; and
- Chapter Eight contains a summary and conclusions.

1.4 Acknowledgements

1.4.1 Parsons Brinckerhoff and BHC have received considerable assistance when undertaking this study and the team wishes to acknowledge the following:

- London Borough of Hounslow;
- London Borough of Ealing;
- Slough Borough Council;
- Hounslow Chamber of Commerce;

- Ealing Chamber of Commerce;
- Slough Chamber of Commerce;
- Transport for London (TfL);
- Heathrow Airport Limited (HAL);
- Optimal Economics;
- Relevant LEPs; and
- Numerous local companies and businesses.

1.4.2 It should be noted that the findings and conclusions in this report are the views of the consultants and do not necessarily reflect the views individually or collectively of the three boroughs.

2 THE AIRPORTS DEBATE

2.1 Background

2.1.1 The aviation debate is complex and opinions differ about the economic benefits of different airport and runway scenarios in the SE. Many of the high profile stakeholder organisations have their own agendas and thus the supporting research they have undertaken has a tendency to coincide with their interests.

2.1.2 It is generally agreed by all promoters that in order for a Thames Gateway Hub or a Stansted Hub airport to succeed, Heathrow Airport would have to close or become very severely diminished. The Independent Transport Commission recently stated, for example: "In the event of a decision to develop a major hub airport at either of those two locations, we do not see how the current Heathrow could continue to operate."[2]

2.1.3 In addition, the House of Commons Transport Committee's Aviation Strategy May 2013 stated: "The closure of Heathrow would, in our view, be unacceptable due to the impact on the local economy and the huge disruption caused by the potential relocation of businesses and individuals in the vicinity of Heathrow".

2.1.4 The Institute of Directors (IoD) stated in written evidence to the Transport Committee that: "The closure of Heathrow would be the only way to ensure that the airport was sufficiently used, and indeed the only way to finance it. Closing Heathrow would devastate the local economy, and hit the numerous businesses that are located nearby".

2.1.5 Other recent commentary[3] has indicated that a new airport in the Thames Estuary area would result in large-scale migration of workers and businesses across London. Although this assumes that companies would relocate from west to east across London, recent research undertaken by BHC[4] in key counties in the SE has shown that such relocations could well be to outside the UK.

2.1.6 For this assignment, it is therefore essential to consider how important Heathrow is to the sub-regional economy around and within a westerly arc of the airport. There are also the catalytic impacts of the so-called 'Heathrow Effect' that arguably exceed the direct and indirect employment impacts by a considerable amount. The attraction of the largest international hub airport in the world providing connectivity throughout Europe and the rest of the world has been shown to be a key facilitator of foreign direct investment.

2.1.7 Although other studies of the economic impacts of airports have contained discussions about catalytic impacts, these have not been quantified and thus the overall employment impact of airports has been potentially underestimated.

[2] Independent Transport Commission: Flying into the future - Key issues for assessing Britain's Aviation infrastructure needs, May 2013 (p44)
[3] The Economist, March 2013
[4] Work undertaken for Surrey County Council / Surrey Connects and work undertaken for West Sussex County Council / Gatwick Diamond

2.2 Why Should an Individual Borough be Concerned?

2.2.1 Given that the findings of the AC will have a significant bearing on the future of Heathrow, this in turn will have a significant impact on the economies of Hounslow, Ealing and Slough. The large numbers of employees working directly and indirectly at Heathrow (and who are resident within the three boroughs) makes any significant changes in Heathrow's status particularly relevant and important. This is why each borough has a pressing interest in future airport development scenarios and the extent to which these will impact on Heathrow and their respective economies in the context of the AC's deliberations.

2.2.2 From the perspective of each borough, Heathrow is also critical to the location decisions of several major corporate global headquarters and the economic multipliers or 'catalytic' impacts this creates.

2.2.3 It is also important to emphasise that the potential impacts are not just associated with any potential downgrading of Heathrow's status and its potential closure.

2.2.4 HAL's proposals, for example, to develop Heathrow and to construct additional runway capacity will have a major (positive) impact on the economies of the three boroughs as significant new employment opportunities will be generated. In turn, this could result in consequences for the local labour markets and associated development and support infrastructure.

2.2.5 Given these significant potential impacts, each borough is minded to make a formal submission to the AC once the final reports have been received. These will set out how potential options for the development of London's airport capacity could impact on the three local economies.

2.3 Employment Generation and the Changing Future Status of Heathrow

Introduction

2.3.1 Following the establishment of the AC, there was considerable debate over whether Heathrow could continue as an international hub in the event that a new hub airport opened elsewhere in the SE. For some time, with one notable exception, many key parties to the Airport Debate issued public statements stating that in order for a Thames Gateway Hub airport to succeed, Heathrow Airport would have to close or become severely diminished in status. The Independent Transport Committee stated: *"In the event of a decision to develop a major hub airport at either of those two locations, we do not see how the current Heathrow could continue to operate."* The Institute of Directors (IoD) stated in written evidence to the Transport Committee that: *"The closure of Heathrow would be the only way to ensure that the airport was sufficiently used, and indeed the only way to finance it. Closing Heathrow would devastate the local economy, and hit the numerous businesses that are located nearby."*

2.3.2 In August 2013, the AC issued all 51 responses to their request for long-term options. In these documents, it is very apparent that there is now a consensus that Heathrow would need to close in order for a new hub airport to succeed. Indeed, the concept of two international hubs in and around London has failed to gather any support. A number of extracts of views are provided below:

"The complete closure of Heathrow has been assumed though in practice a small airport could remain".[5]

"No city has succeeded in starting up a second hub with the first in operation. This requires closure, with compensation of Heathrow."[6]

"The UK can only support one hub airport and the development of the Thames Hub airport would require the closure of Heathrow."[7]

"However, a prerequisite for taking forward any proposals for a new hub would be the closure of Heathrow. A four-runway hub Stansted would, however, require the closure of Heathrow to be viable."[8]

2.3.3 Furthermore, the three submissions to the AC in July 2013 by the Mayor of London on new hub airports state the following:[9]

'There will be economic impacts from relocating Heathrow's activities to a larger hub airport in 2029 and implementing a carefully planned redevelopment scheme for the airport site immediately on closure.[10] *With its location, the dynamism of the surrounding economy, the high growth forecast for London and the current transport provision Heathrow offers a unique development site in terms of location and scale. The complete closure of Heathrow has been assumed, though in practice a small airport could remain.'*

'Whilst some of the Heathrow workers will find alternative employment in the local area, others will be attracted to regional opportunities using the excellent public transport connections. Those currently employed in skilled airport operational jobs would be able to transfer to the new hub airport.'

'The switch from employment use to the creation of a new London Borough is estimated to result in a net loss of 33,500 jobs locally which is fewer than the jobs that London is forecast to create each year in the future (35,000). Furthermore, between 1998 and 2008 London and the South East created more than 94,000 jobs each year. These impacts are summarised in Table 3.3.'

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[5] The Mayor of London's submissions to the Airport Commission for (i) Outer Thames Estuary (ii) Isle of Grain and (iii) Stansted
[6] London Britannia submission, Testrad
[7] Thames Hub Airport, Foster+Partners
[8] Capacity for Growth, MAG (owners of Stansted)
[9] Op cit [5] Extracts from Chapter 3 of A New Hub Airport for London and the UK, Isle of Grain, Mayor of London - similar in submissions for Outer Thames Estuary and Stansted
[10] Oxford Economics, TN7a Impacts of Closure and Redevelopment of Heathrow Airport (TfL Aviation Unit, June 2013, Draft Report)

KEY STUDIES THAT HAVE ADDRESSED EMPLOYMENT IMPACT OF HEATHROW SINCE THE AVIATION WHITE PAPER, 2003:

2.4 Recent Studies from HAL

2.4.1 Heathrow Airport Limited (HAL) has commissioned three relevant studies in the last three years. In 2011, HAL published a comprehensive assessment of on airport employment that was based upon surveys undertaken in 2008/09. Previously, BAA (the previous owners of Heathrow) has published similar assessments of on airport employment approximately every 5 years. This survey showed that on airport employment had grown from 68,427 in 2004 to 76,642 for 2008/9.

2.4.2 In 2011, Optimal Economics used the above estimate as the base to calculate 'Heathrow related employment'. They estimated that on airport employment remained at 76,600 in 2010. They also estimated that Heathrow facilitated direct off airport, indirect and induced employment totalling 129,300 spread throughout the UK. Thus a total of 205,900 jobs were 'supported' by Heathrow. Whilst they produced an assessment for the 'local' impact[11] – 114,000 jobs – this was not disaggregated into the individual boroughs. Furthermore, the assessment did not include catalytic impacts.

2.4.3 In support of their submission to the AC, HAL published 'Heathrow best placed for Britain' in June 2013. This report states that *'114,000 jobs are supported in the local area by Heathrow – representing one in five (22%) jobs in the local area'* – a view clearly based on the Optimal assessment. However, the report does provide additional analysis and states that *'the potential loss of employment due to the closure of Heathrow could amount to up to 33,500 residents' jobs and 29,700 other jobs in the area'*. The former number refers to on airport jobs, whilst the latter to off airport jobs. This data is disaggregated down to borough level. Clearly a number of the *'29,700 other jobs'* are taken by local residents in each of the boroughs, though the report does not attempt to estimate these percentages. The report provides considerable detail on the linkage between top companies in the UK and their need for international connectivity and consequently the proximity of their locations to Heathrow. The concentration of various clusters around Heathrow is described and a number of companies are quoted on the essential condition for proximity to Heathrow. Despite these claims, the report has not made any attempt to quantify this impact. We have held lengthy discussions with HAL and their advisers about catalytic impacts and other relevant issues and HAL has stated.

"The Best Placed for Britain document included the impact of direct and indirect job losses due to the closure of Heathrow. Estimating the catalytic effects was not included in the remit of the project as these would have required significantly more work to develop to the right level of accuracy. However, HAL recognises that catalytic job losses would be very likely to be larger than the combined direct and indirect jobs affected."

[11] Ealing, Hillingdon, Hounslow, Slough and Spelthorne

2.5 Studies from the Mayor of London

2.5.1 Since the submissions, the Mayor of London/TfL has published a number of relevant reports in early October including the final version of the Oxford Economics and Ramboll report referred to above. These reports were published early October and we note with interest a number of key conclusions from the final version of the OE study.[12] Firstly, the Executive Summary assumes that Heathrow will close in 2029. On this basis, the report concludes in the Executive Summary that:

"Such a closure could have a variety of effects on local employment, as Heathrow workers and those in the associated supply chain may:

- *Leave the area and move to the new hub, or*
- *Commute to the new hub, or*
- *Find other new employment inside or outside the local area; or*
- *Become unemployed; or*
- *Leave the labour force*

Our modelling indicates that, while local area employment would fall by 77,000 by 2050 under this scenario, relative to the baseline, the local unemployment rate would only be modestly higher by this year. Specifically, the local unemployment rate would be 3.5% in 2050 in the event of closure as opposed to 3.0% under the baseline."

2.5.2 Whilst the Executive Summary states that the assessments relate to direct, indirect and induced impacts of Heathrow closure, the lay reader may not appreciate until reading the full report that catalytic impacts (and other impacts) have not been included in this assessment. It is also challenging for the lay reader to identify in the Executive Summary that 71,000 of the 77,000 job decline referred to in the above quote would take place in or before 2029. Furthermore, the assessments are net impacts and make a number of assumptions that lower the forecasts from 95,000 in 2029 and 103,000 in 2050. It should be noted that the local area is identical to that used by HAL/Optimal.

2.5.3 The Executive Summary of the impact of Heathrow's closure concludes in its final sentence that:

"In summary the effects on overall population and employment change in the local area to 2050 are positive . . ."[13]

2.5.4 The second paragraph in Chapter 1 (page 7) does provide an early intimation that certain impacts have not been included:

"Due to time and resource constraints it was not possible to include all possible impacts within the modelling. Some of these missing impacts are discussed in Section 4."

[12] Impacts of Closing Heathrow Airport and Initial Analysis of Redevelopment Impacts, Ramboll/Oxford/Economics, undated – assumed October 2013
[13] Bold text as per report

2.5.5 Chapter 2 notes that:

"Within the time available, and the defined scope of the project, it has not been possible to incorporate three groups of impacts within the modelling".

2.5.6 In addition to (i) *"off airport spending by passengers"* and (ii) *"off airport activity within firms whose work is directly reliant on Heathrow . ."*, it adds a third category:

"The potential impacts of economic activity attracted to the local area due its proximity to the airport, but which is not directly related to the airport or its supply chain. Typical examples of such 'catalytic' impacts might include science parks or headquarters functions for international business services firms."

2.5.7 This section concludes:

"For these reasons, the modelling results outlined in this paper should be regarded as conservative. The 'missing' impacts identified above are discussed in more detail in a separate technical note."

2.5.8 It is unclear the meaning of conservative in this context as clearly these are impacts that would result in job losses in the local area. The *"separate technical note"* is not identified but we assume that this refers to other reports undertaken by the same authors – relating to the principal findings of the modelling work[14] and the impact of a new hub.[15] We discuss these reports later in this section.

2.5.9 Chapter 4 also notes that a number of impacts have not been"*captured in the modelling"*. The first two mentioned in the text are clearly much lower order impacts than catalytic impacts and their exclusion from the modelling is of lesser consequence. The final paragraph of Chapter 4 (page 23) states:

"*Separately, it has also not been possible to model the impact of the Heathrow local area's attractiveness to investors in sectors unrelated to the airport, but which would benefit from proximity to an airport. Typical examples of such 'catalytic' impacts might include science parks or headquarters functions for international business services firms. Such impacts are explored in the context of a new hub airport in a separate technical note."*

2.5.10 Thus the 'closure' study basically captures the impact of direct on airport employment and fails to assess the other aspects of Heathrow related employment generation. This is confirmed in the former of the two studies referred to above that states that it has not been possible to model catalytic impacts (and other impacts) for Heathrow. However, in the latter of the two studies referred to above assessing the impact of a new hub airport at either Stansted, Isle of Grain or Inner Estuary, the Executive Summary clearly provides estimates of the forecast scale of catalytic impacts at each of these proposed hub airports. The report states that:

"The reported total employment including catalytic development generated by an airport (the sum of direct, indirect and induced jobs), relative to direct employment, varies widely across studies, although it is most commonly between 2 and 3 times the number of direct jobs. This range is considered as realistic, but conservative."

[14] Impacts upon the Local and National Economy, Ramboll/Oxford/Economics, undated – assumed October 2013
[15] Impact of New Hub Options on Business Locations, FDI and Alignment Strategies, Ramboll/Oxford/Economics, undated – assumed October 2013

2.5.11 The report provides forecasts of the catalytic impact of these three hubs of between 46,000 and 138,000 jobs by 2050. After describing Schiphol and cluster developments around other major hub airports, the report provides an extensive list of the"*many other examples from around the world which demonstrate the strong catalytic effects of a hub airport in the local area around a development corridor*". In addition this report quotes a number of studies covering the importance of hub airports to business location and FDI including Heathrow-related research.

2.5.12 The estimation for catalytic employment does not appear to be part of the modelling work as described elsewhere in the other studies. We provide the estimate below for the Inner Estuary hub airport at 2050 as shown in Table 2.1.

Table 2.1: Employment Estimates for Estuary Hub Airport

	Direct Jobs	Indirect Jobs	Induced Jobs	Catalytic Jobs (Lower range)	Total Jobs (Lower range)	Catalytic Jobs (Higher range)	Total Jobs (Higher range)
Inner Estuary	*91,000*	*6,000*	*38,000*	*47,000*	*182,000*	*138,000*	*273,000*

2.5.13 The estimate of catalytic appears a residual calculation and not a modelling exercise. Nevertheless, such an approach drawn from the research and examples contained in the report provides a scale of catalytic impact that could be deemed reasonable and in fact the authors claim is 'conservative'.

2.5.14 Clearly the application of such an approach to catalytic impact assessment as part of the modelling exercise is not particularly time consuming after having completed the background desk research. In these circumstances, we are perplexed that such an indicative approach was not utilised for the 'closure' report and assume it was the scope rather than the time constraints that resulted in the failure to apply this indicative approach that was deemed appropriate for the calculation of the catalytic impacts of a new hub airport.

2.5.15 The claims in several Ramboll/Oxford Economics reports (including the above mentioned) that their research "*modelled the economic impacts of the closure of Heathrow in the event of a new hub airport being developed"* has the potential to mislead the layman reader - particularly when placed in juxtaposition with assessments of new hub impacts that do include a more extensive range of employment impacts. Furthermore to provide headline forecasts to 2050 manifestly avoids crucial issues relating to the periods in the run-up to and during the period around the closure of Heathrow.

2.6 The Heathrow Phenomenon[16]

2.6.1 This 2007 study for SEEDA, LDA, TVEP and West London Business concluded that:

"The successful economy of the area is built on highly skilled workforce, access to Heathrow (a global gateway) and proximity to London. Although there are a number of factors driving the competiveness of this economic cluster, Heathrow seem to be central to this success as it makes the area an attractive proposition for multinationals and global SMEs."

[16] The Heathrow Phenomenon, Deloitte, 2007

2.6.2 Of particular relevance to the current study for Ealing, Hounslow and Slough is the conclusion that:

"The Thames Valley and parts of Surrey seem to be benefitting more in the form of attracting high value added and globally mobile businesses whilst the impact in West London seem to be, primarily, direct employment and Heathrow related supply chain related activities."

2.6.3 In terms of quantification, the study concluded that:

"Foreign Direct Investment (FDI) accounts for 220,000 jobs in the study area (West London, the Thames Valley and parts of Surrey). It is crucial to economic success of the area and global connectivity through Heathrow seems to play a key role in this."

2.7 London Heathrow Economic Impact Study[17]

2.7.1 This study was commissioned by 4 LEPs and West London Business covering an impact area that extends over West London, the Thames Valley corridor and the M3 corridor. We held discussions with Regeneris and Thames Valley LEP to establish the extent that the research was addressing catalytic impacts as well as the jobs directly dependent upon Heathrow. In order to estimate the direct impacts of Heathrow closure, Regeneris based their estimates on the work undertaken by Optimal Economics and concluded that:

"If a new hub airport were built to the east of London and Heathrow Airport were closed by 2030, this would lead to a loss of over 100,000 jobs directly dependent on activity at the airport."

2.7.2 Their research addressed catalytic impacts and they stated:

" . .it likely that businesses would react by re-considering their current location: either to be closer to the new London hub or other hub airports in European competitor locations. Rather than face extra costs and reduced convenience, many existing businesses would choose to relocate, to hold off on expansion plans, or to downsize their operations compared to other locations."

2.7.3 Their fieldwork was heavily on line survey based and from this approach and other discussion, they stated:

"Anecdotal evidence is that larger firms who are heavy users of international air travel are watching the debate on the future of Heathrow with interest and that they might make their decision to invest (or more likely not to invest) well in advance of any actual expansion or closure of the airport."

2.7.4 As a result, their report concluded that:

"The closure of Heathrow would also put at risk up to at least a further 170,000 jobs within the western wedge area that are dependent on good proximity to a hub airport, and could put at risk up to £11 billion worth of current economic activity."

2.7.5 Overall, Regeneris claim that the closure of Heathrow airport has two key employment impacts:

[17] London Heathrow Economic Impact Study, Regeneris, September 2013

(i) "By 2030 the loss of around 105,000 full-time equivalent jobs linked to the activities at Heathrow, their supply chain and multiplier effects," and

(ii) "Potentially some of the 170,000 to 230,000 jobs in foreign owned firms clustering around Heathrow at risk."

2.7.6 Unsurprisingly, Regeneris was unable to disaggregate the above estimates down to a borough level. However, it is evident from their research that the catalytic impact of Heathrow is of a greater magnitude than the directly dependent impacts and that the total jobs at risk would be in the region of 300,000.

2.8 Other Reports

2.8.1 There are many reports that emphasise the significant scale of employment generation by airports in their hinterlands as well as their regional and national impacts. Naturally many have been sponsored by the aviation sector. The above mentioned reports represent the most recent that relate to the current impact of Heathrow and the scale of potential employment loss on a sub-regional basis in the event of Heathrow closure. In addition to the submissions by the Mayor of London/TfL, other parties have proposed hub airports at Stansted and at a variety of sites eastwards of London. Most of them explicitly or implicitly imply that the development of their proposals would necessitate the closure of Heathrow. However, unlike the Mayor of London/TfL, we are not aware that any have addressed the local employment impacts of Heathrow's closure.

2.9 Conclusions

2.9.1 Clearly, the submissions by the Mayor of London/TfL forecast a net small job loss resulting from Heathrow's closure (in we assume 2029) as at 2053 in the local impact area. Other estimates of the closure of Heathrow have been made within the context of the scale of jobs at risk for varying impact areas. The purpose of this section has been to examine the outputs of these studies in order to provide context to the results of this study. Indeed, we are aware that most of these studies have not addressed the catalytic jobs at risk and have not examined the overall impact at borough level – particularly relevant where some boroughs are particularly exposed to high levels of dependency on lower skill jobs being sourced from wards/boroughs with high levels of deprivation.

2.9.2 In many ways it would seem churlish to criticise the Heathrow closure report by Ramboll/Oxford Economics on behalf of the Mayor of London/TfL as at least this party has attempted to quantify the impacts unlike other parties that have submitted hub proposals to the AC. However, the immediate headline employment impacts shown in the Executive Summary are misrepresentative of the impacts as well as potentially misleading to the lay reader. The report fails to address the key element of the closure of Heathrow – namely the catalytic impacts (as well as other two other lesser impacts). Furthermore, by emphasising impacts in 2050, it clearly avoids the potentially damaging impacts that would be experienced in the shorter to medium term post policy making decision by government.

2.9.3 Research undertaken by Regeneris and consultants for HAL unmistakably highlight the scale of impacts over and above the direct impacts of Heathrow – the element that Ramboll/Oxford Economics concentrate upon to the exclusion of these other impacts. Even using the broad approach utilised by Ramboll/Oxford Economics for estimating catalytic impacts for the hub airports proposed by the Mayor of London/TfL would indicate that Heathrow currently facilitates a total of 150,000/225,000 jobs in the immediate local impact area as well as the wider impact area west of London. However, given that Ramboll/Oxford Economics claim that their approach to be *"conservative"*, this implies that the implied (though omitted) Ramboll/Oxford Economics forecasts of closure are of a similar magnitude to the forecasts by Regeneris.

2.9.4 It is evident that there is a consensus that the catalytic impacts of an international hub airport such as Heathrow (or a new hub airport to the east of London) currently exceed (or will exceed) the direct employment impact of the airports by a substantial extent. There appear at least three key questions that need to be resolved by the AC and needs to be contained within evaluation framework in 2014:[18]

(i) What is the current scale of direct, indirect, induced and catalytic impact of Heathrow on the local impact area?

(ii) In the event of closure at Heathrow, what approximate proportion of (i) would be at risk over a timetable that would encompass pre closure, closure period and post enclosure? and

(iii) Would catalytic companies move to new hub airport impact area from Heathrow impact area and what proportion would be at risk of locating outside the UK?

[18] The Airports Commission has stated that they intend *"to publish alongside the interim report a draft Phase 2 appraisal framework"* in late 2013 with the latter open to consultation

3 THE NATURE OF AIRPORT-RELATED EMPLOYMENT

3.1 Introduction

3.1.1 Before addressing the future impact of SE runway/airport scenarios upon the economy around Heathrow Airport – and in particular the economies of Hounslow, Ealing and Slough – it is necessary to estimate the current employment impact of the airport. This chapter addresses the nature of the local impacts whilst Chapter 4 provides estimates in employment terms.

3.1.2 There are different ways of measuring economic impact including GVA, but for the purposes of this study the three boroughs are keen to examine the scale of impact in terms of the local labour market and local residents. Furthermore, economic benefits – including employment – will be generated over a much larger area than just neighbouring and near-neighbouring local authorities. Once again, this research is confined to the three local authorities represented by the boroughs.

3.2 The Different Categories of Employment Impact

3.2.1 An airport is usually a substantial local and regional facilitator of employment and the number and type of jobs it generates can be of significance to the local economy. Total airport employment for the impact area around an airport can usually be disaggregated into four main components:

1) Direct on-site and off-site;

2) Indirect;

3) Induced; and

4) Catalytic employment (additional jobs created if companies are investing in the area because of the proximity to the airport).

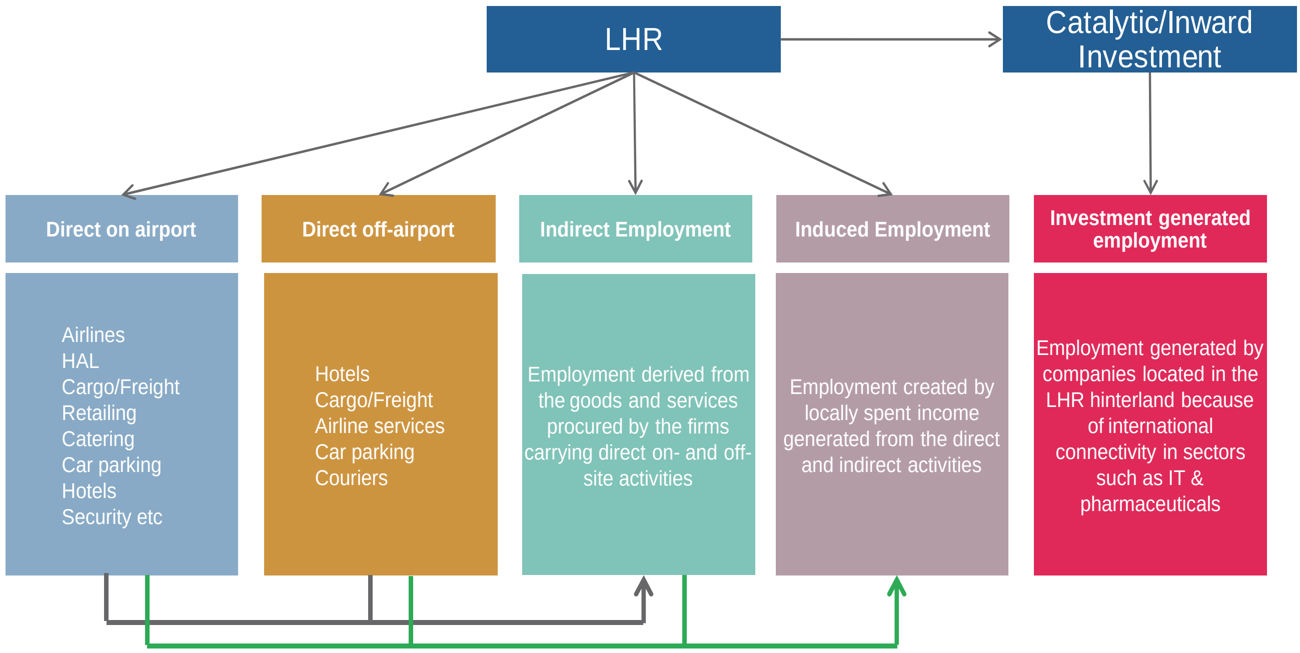
3.2.2 The table and diagram below provide descriptions of the types of jobs created by an airport such as Heathrow. The interactions between these are also indicated.

Table 3.1: Airport-Related Employment

Impact Category	Definition
Direct On and Off Airport	Employment and income wholly or largely related to the operation of airports and generated within the airport operational area and just off the airport perimeter
Indirect	Employment and income generated in the chain of suppliers of goods and services to the direct activities
Induced	Employment and income generated by the spending of incomes earned in the direct and indirect activities
Catalytic	Employment and income generated by the attraction, retention or expansion of economic activity as a result of the connectivity facilitated by airports

3.2.3 The scale of employment impact is a function of a number of factors, including the extent of traffic (both passenger and cargo), the 'connectivity' of an airport and the facilitation of the local planning authorities towards off-airport activities. The diagram below provides a very broad representation of the overall local impact of Heathrow in its acknowledged role as a leading (some would state the foremost) international hub airport.

Figure 3.1: How Heathrow Airport Influences the Local Economy (comprising Ealing, Hillingdon, Hounslow, Spelthorne and Slough)



3.3 Direct On-Airport Employment

3.3.1 HAL (and their predecessor BAA) have commissioned on-airport employment[19] surveys on a regular basis for the last two decades. There has, for example, been one survey approximately every 5 years. These are robust surveys and it is most unlikely that they are subject to any significant error and/or bias. The most recent survey[20] was undertaken in 2008/9 and represents an accurate estimate of on-airport employment in 2009 and – in the view of HAL and their advisers – 2010. HAL is currently undertaking an update that will not be completed until early 2014.

3.3.2 The 2008/9 survey indicated that some 76,600 people worked on-airport and this compares with some 68,400 in 2004[21]. It should be noted that Terminal 5 opened in 2008. The major category of company on-airport is 'airlines/airline handling agents'. In 2009, this sector accounted for 62.1% of total on-airport employment - a very similar percentage to 2004 (62.7%).

[19] Includes Waterside
[20] Heathrow Airport Employment Survey 2008-2009, HAL April 2010
[21] Heathrow Airport Employment Survey March – June 2004, BAA March 2005

3.3.3 Unsurprisingly, this category is dominated by British Airways (BA) in employment terms. Other main on-airport sectors in 2009 included various public passenger services, BAA/HAL operations and catering and retail. Even with the presence of BA's World Cargo division, the cargo sector represents a relatively small percentage of employment on-airport (0.9%). Other cargo companies, however, tend to operate just off-airport as will be subsequently seen.

3.3.4 Work undertaken by the consultants at Gatwick Airport has shown evidence of the 'de-skilling' of on-airport workers over the last 10 to 15 years. Although there are some small signs of a similar development, this evidence is not currently being replicated at Heathrow.

3.4 Direct Off-Airport Employment

3.4.1 The most recent estimate of direct off-airport employment was undertaken for HAL in 2010[22]. The estimates were based on a survey of companies located just off-airport and hence restricted to Ealing, Hillingdon, Hounslow, Spelthorne and Slough. The categories surveyed were:

- Freight;
- Hotels;
- Airline and Airline Support services (including catering); and
- Car parks.

3.4.2 Some of the companies within these categories were originally located on-airport but rental and space pressures have resulted in their relocation. They do, however, need to be located in very close proximity to the airport due to the nature of the services they provide. It must be noted that the estimate of direct off-airport employment made in this study relates to only employees in those businesses which are directly and solely related to Heathrow. Many of these businesses will also be serving other airport and non-airport customers.

3.4.3 It could be argued that in reality, the off-airport employment impact of Heathrow is even larger than this. For instance, a freight forwarder that has 80% of their staff broadly confined to Heathrow-related activities would unlikely to be located at their current location if the airport closed. Similarly, to what extent would a hotel with an occupancy rate of 60% accounted by airline flight crew and Heathrow passengers continue to operate?

3.4.4 Clearly, the 20% of the freight forwarder's staff and 40% of the hotel's staff are an indirect consequence of the existence of Heathrow. Given that this is clearly a very complex area, it has been decided to use the data compiled by Optimal Economics as this is the best and most robust data currently available.

3.4.5 It is important to note that these indicative proportions probably represent the minimum in terms of employment affected by any degradation of Heathrow. This means that the 80% of freight forwarding staff discussed in Section 3.4.3 above represents the minimum potential loss of employment at this business if Heathrow were to close. This is defined as a minimum as in reality, a higher percentage (possibly 100%) of jobs would be lost if the airport closed.

[22] Heathrow Related Employment, Optimal Economics, 2011 (survey conducted in 2010)

3.4.6 We have therefore taken the study's assessment (across the five boroughs) of **7,700 direct off-airport staff** in 2010.

3.5 Indirect Employment

3.5.1 The Optimal Economics study also estimated the indirect employment impact for the five local authorities noted above. The assessment follows a standard approach that had been undertaken and agreed by all parties at the Terminal 5 Public Inquiry. Given the significant amount of time and resources necessary to undertake this type of analysis to the necessary level of detail, we again believe the approach adopted by Optimal Economics is robust in terms of scale impacts and have taken the estimate of **11,100 indirect local jobs** as indicative of this employment impact.

3.6 Induced Employment

3.6.1 Optimal Economics adopted the following induced employment multipliers:

- 1.2: "local";
- 1.3: "regional (London)"; and
- 1.6: "UK".

3.6.2 As we are only concerned with 'local' induced multipliers, we would note that compared to the UK value of 1.6, the lower value of 1.2 above implies a significant leakage of expenditure by local direct/indirect employees to the rest of London and beyond. It is also our view that this 'local' multiplier is on the low side and previous estimates from 1.24 upwards have been suggested both at the T5 Public Inquiry and in other studies.

3.6.3 However, the overall impact of applying a 1.24 multiplier as opposed to a slightly lower value of 1.2 is insignificant in the totality of local impacts and hence for the sake of consistency with existing research we will apply a 1.2 local induced multiplier for our analysis of impacts in Hounslow, Ealing and Slough given that each local authority is by definition less contained than the overall local area of the five local authorities.

3.7 Total Airport-Related Impact 2010 (excluding catalytic employment)

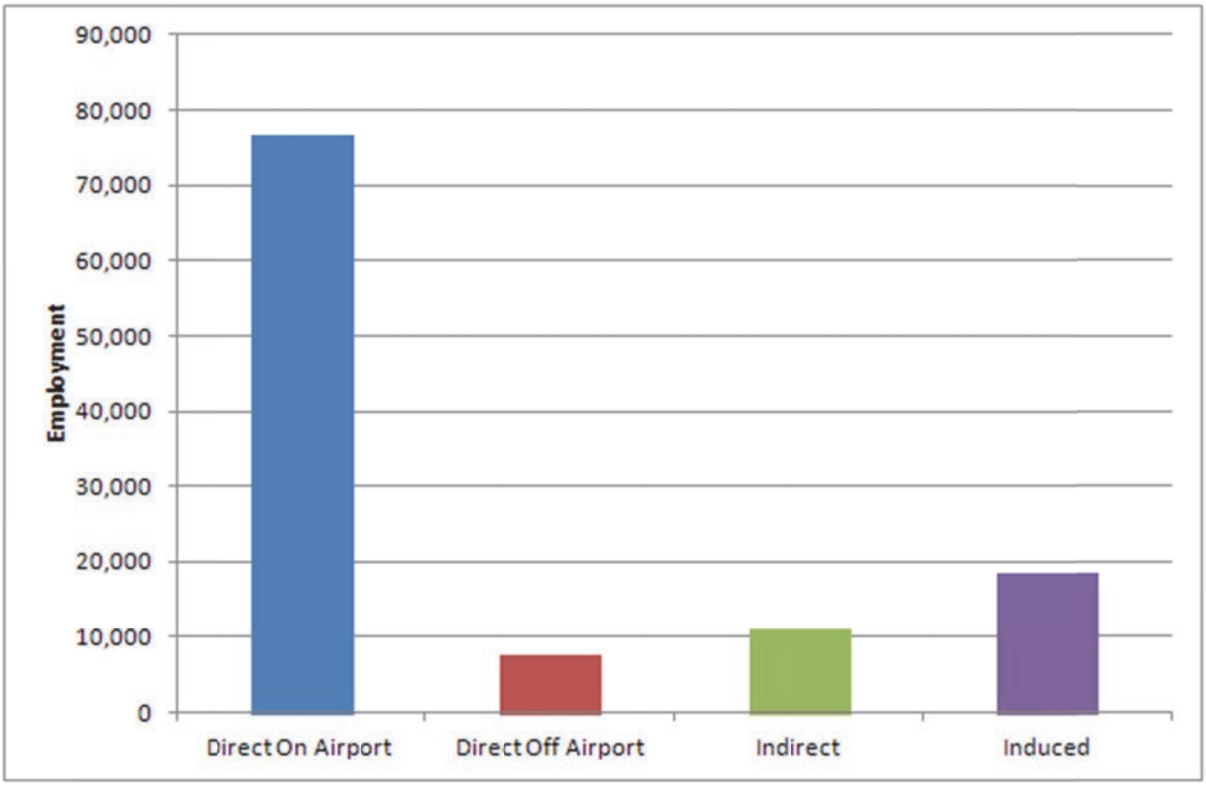
3.7.1 A combination of the on-airport and off-airport studies indicates that the overall local impact of Heathrow in 2010 is as shown in the table below. The data in the table is based on the survey and analysis undertaken by Optimal Economics as referenced in Section 3.4.1 above. The 'induced' multiplier of 1.2 is applied to the sum of direct on-airport, direct off-airport and indirect employment to produce the total of 114,000 reported in the table below. The induced total of 18,600 shown in the table therefore represents the additional 20% (or 0.2) of induced jobs that are generated.

3.7.2 As previously reported, this covers the five boroughs of Ealing, Hillingdon, Hounslow, Spelthorne and Slough. This information is also summarised in Figure 3.2.

Table 3.2: Total Numbers of Jobs by Employment Category

Employment	Jobs
Direct On Airport	76,600
Direct Off Airport	7,700
Indirect	11,100
Induced	18,600
TOTAL	**114,000**

Figure 3.2: Local Heathrow employment by type, 2010



3.7.3 Optimal Economics estimate that a further 22,000 jobs were facilitated in the rest of London and another 59,300 elsewhere in the UK. For the reasons discussed above, we would suggest that the local impact assessment of 114,000 jobs may be slightly underestimated. However, in order that the AC is not provided with estimates that differ – albeit not significantly – based on the above local estimates, we will address the impacts on the three individual boroughs in the next chapter.

3.7.4 **It should be noted that there were an estimated 620,000 jobs across the five boroughs in 2010. In effect, 18.4% of those jobs were Heathrow-related before taking account of the catalytic impacts that arise from international connectivity**.

3.8 Catalytic Employment

What Do We Mean by Catalytic Impacts and Are They Important?

3.8.1 Numerous studies have shown that international airports such as Heathrow (LHR), Charles de Gaulle (CDG), Amsterdam Schiphol (AMS) and Frankfurt (FRA) not only facilitate economic growth at local and regional levels but also encourage the local development of a wider range of economic activities. The measurement of direct, indirect and induced employment as shown above is a relatively straightforward exercise involving surveys of the relevant companies (on- and off-airport) and assumptions about the induced impacts based upon empirical research. Catalytic businesses are not trading with the airport nor with any part of the supply chain but are using the airport's connectivity to extend their business trading activity over a wider area and into distant markets. This employment impact is distinct from and additional to the direct, indirect and induced employment discussed above.

3.8.2 Whilst defining the nature of catalytic impacts is straightforward, it is universally acknowledged that quantifying the impact in terms of measurable employment (ideally expressed in terms of Full Time Equivalents, FTEs) is subject to a degree of uncertainty as already partially discussed in Section 2.3. The reason for this is that many businesses will be dealing with local and intermediate contacts accessed by other modes such as road and rail. Although there will be some subjectivity associated with the estimation of catalytic employment, there are nevertheless studies that clearly demonstrate that an international hub airport such as Heathrow has a substantial impact upon inward investment, including foreign direct investment (FDI) that actually exceeds the combined impact of the direct, indirect and induced impacts.

Is International Connectivity Important?

3.8.3 Cushman and Wakefield, a well respected firm of international property surveyors has, for the past 22 years, produced its European Cities Monitor[23], a survey based on the responses of 500 European businesses to questions about the attractiveness of each of 36 major European business centres as a business location. The latest survey was undertaken in 2011 and confirmed London as the highest ranked European city for business (score of 0.84), followed by Paris (0.55), Frankfurt (0.32) and the other 33 cities ranging 0.26 down to 0.03. London scored similarly in the 2010 survey. At present, London is clearly comfortably ahead of other European cities as a location for business.

3.8.4 Transport links with other cities and international connectivity is ranked number 4 out of 12 in businesses' list of factors considered "absolutely essential" when deciding where to locate (with easy access to markets, customers or clients; availability of qualified staff; and the quality of telecommunications being 1st, 2nd and 3rd respectively). London is the top ranked city for transport links with other cities and internationally (as it was in the 2010 survey).

[23] See http://www.cushmanwakefield.co.uk/en-gb/research-and-insight/2013/european-cities-monitor-2011/ for the survey report

3.8.5 Other independent evidence relating to airport availability as a determinant in business location is provided by two INSEAD business school researchers in a widely cited paper published in 2005 "Why and where do headquarters move?[24]. Based on US data the authors found that airport availability was a key determinant in attracting relocating headquarters which they found unsurprising given that "headquarters rely intensively on airport connections in their relation with plants and customers".

3.8.6 A more recent study of European headquarters location by two researchers at the University of Barcelona[25] confirms the US experience but extended the analysis to consider the type of air services offered by the airport considered. These authors found that "the availability of direct non-stop flights has a large influence on headquarters' location". The authors even managed to quantify the impact by saying that "a 10% increase in the supply of intercontinental flights involves around a 4% increase in the number of headquarters of large firms located in the corresponding urban area".

3.8.7 A recently published report by HAL states[26]:

"202 of the top 300 companies in the UK are clustered within a 25 mile radius of Heathrow. This compares to only seven around Stansted and two around the Thames Estuary. In total, there are 60% more international companies in the area around Heathrow than in the rest of the UK."

3.8.8 As we discuss in the next chapter, a number of these companies and many other companies dependent on international connectivity at Heathrow are based in Ealing, Hounslow and Slough. It is evident from our research that there are many international companies based in the motorway corridors around Heathrow that are keeping a 'watching brief' on the future of the airport. The basic minimum for their continued presence in the area is for Heathrow to continue operating as an international hub. However, future congestion at the airport will act as a deterrent to future expansion and so the degradation of air services is likely to result in a number of key companies reviewing their long-term commitment to their current locations.

3.8.9 Closure of Heathrow would certainly result in a massive relocation of many of these companies - whether individually in part or 'in toto'. Although this study does not address where these companies may move to, it is unmistakable that they are not necessarily committed to the UK in the long term.

3.8.10 It is also claimed that with expansion at Heathrow, the airport will be able to maintain its top rank in terms of international hub connectivity in Europe and worldwide. In turn, this would facilitate the retention and expansion of existing companies located near Heathrow as well as encouraging further inward investment.

3.8.11 There is clear evidence of the importance of hub airports in general, particularly when these airports offer a wide range of direct non-stop flights which in turn influence business location decisions. The offer of these comprehensive air services also assist business retention in the proximity of a major hub airport.

[24] Why and where do headquarters move, Vanessa Strauss-Kahn and Xavier Vives, INSEAD April 2005 see http://www.insead.edu/facultyresearch/research/details_papers.cfm?id=15159
[25] Getting there fast: globalization, intercontinental flights and location of headquarters Germa Bel and Xavier Fageda University of Barcelona 2008 see http://www.ub.edu/graap/gettingJEG.pdf
[26] Heathrow best placed for Britain, HAL, June 2013

Measurement of Catalytic Impacts

3.8.12 Some previous estimates[27] of the impact of international hub airports indicate that for every direct, indirect and induced job, there could be at least 1 to 2 catalytic jobs located in the proximity of the hub airport. It must be stressed that this is a suggested correlation of employment impact and has no necessary causality. In the case of Heathrow, we strongly believe that this level could be very conservative in certain localities because of Heathrow's top international connectivity status and the evolution of a number of local sectoral clusters. For instance, based on research of the extent of 'catalytic' companies in Slough and their employment levels, we estimate that this ratio could be at least 2/2.5 catalytic jobs per direct, indirect and induced job. A full discussion of the catalytic multipliers used in the economic impact analysis is reported in Section 5.6.20 in the next chapter (and summarised in Table 5.6).

3.8.13 Catalytic employment in various companies will also support indirect and induced employment in the companies' supply chains as well as through the expenditure of the employees who work partially in these 'catalytic' companies. As reported in Chapter 5, these effects have been incorporated within the proposed catalytic employment multipliers.

3.8.14 Using a 'bottom up' methodological approach, this study is clearly focussed upon the individual catalytic employment impacts within Hounslow, Ealing and Slough. Although the overall combined catalytic impact of Heathrow across all three boroughs is not addressed as part of this report (this would necessitate a different 'top down' approach), the data we have collated for each borough does reflect the above evidence of the high concentration of 'top companies' within close proximity to the airport.

3.8.15 We also note the very high number of foreign-owned companies near to Heathrow. We have been in dialogue with several parties to attempt an estimation of the catalytic impact of Heathrow, both locally and regionally. We note that submissions to the AC promoting hubs at Stansted and the east of London provide estimates of between 40,000 to 150,000 catalytic jobs. It is our view that Heathrow has been fundamental in attracting in the range of between 100,000 to 200,000 catalytic jobs to west London and along the motorway corridors and beyond.

3.9 Conclusions

3.9.1 We have concluded that there is robust evidence that some 114,000 local jobs depended upon Heathrow in 2010 in terms of direct, indirect and induced causality. In addition, we have concluded that on an indicative basis, a similar level of 'catalytic' jobs have been facilitated in a slightly wider area in and around Heathrow's catchment area. Although these are indicative estimates, we are confident about the broad scale of the impact.

3.9.2 As reported in Chapter 5, we have selected catalytic employment multipliers that can be regarded as conservative given the uncertainty that typically surrounds the quantification of these impacts. However, we are confident that the catalytic impacts are at least as high as or even greater than the non-catalytic employment impacts.

[27] The Economic Catalytic Effects of Air Transport in Europe, OEF (for Eurocontrol), 2005, Economic Contribution of the Aviation Industry to the UK, Oxford Economics, 2007 + detailed discussions with another major promoter have indicated that according to their research, 1 to 7 catalytic jobs could be generated

4 SURVEYS AND INTERVIEWS

4.1 Introduction

4.1.1 The objective of this chapter is to describe the online business surveys and the 'catalytic' interviews that were undertaken as part of this assignment. The surveys and interviews were conducted across all three boroughs. The findings from both the online surveys and catalytic interviews have been used to authenticate and support the economic impact modelling described in Chapter 7 for each airport scenario.

4.1.2 The surveys and interviews have also provided useful anecdotal information that enhances the understanding of the apparent economic impacts of different airport scenarios.

4.2 Off-Airport Direct and Indirect Employment

4.2.1 As well as obtaining data on the nature and size of each responding business across all three boroughs, the online business survey was undertaken to establish the following:

- Extent of 'dependency' of each company (or business) on activities and operations at Heathrow Airport;
- In the event that Heathrow were to be expanded by 50%, how would this affect each business? and
- In the event that Heathrow were to close and London's hub airport located elsewhere, how would each business respond?

4.2.2 It is important to emphasise that information gathered from the surveys is used to inform the potential impacts for off-airport direct and indirect employment. It is also important to note that the online survey (and catalytic interviews described later) provides insight, context and depth to the modelling work used to estimate the impacts of different airport scenarios.

4.3 Business Survey

4.3.1 The business survey questionnaire was developed in August 2013 using industry-standard SurveyMonkey software. This software allows a survey questionnaire to be developed electronically. This can then be uploaded to various publically-available online portals so that businesses and companies can complete the survey. All results are then imported into a central database.

4.3.2 It is also important to emphasise that what is presented in this main report is a synopsis of the overall findings of the survey across all three boroughs. A more in-depth level of analysis is contained within each of the individual borough reports.

4.3.3 Various methods were used to distribute and circulate the survey across the three boroughs. These included, for example, liaison with the respective chambers of commerce within each borough as well as liaison with other business organisations. Parsons Brinckerhoff and BHC would like to acknowledge the assistance provided by these various organisations as well as that from each of the boroughs (who were instrumental in facilitating contacts with business organisations and key companies in their respective areas).

4.3.4 In total, 113 responses were received across all three boroughs. The numbers of responses differed between boroughs with Hounslow having the highest rate of response (48) followed by Ealing (24) and Slough (17). In addition to these, 24 responses were received from businesses located outside the area of analysis and were thus not used further in the analysis.

4.3.5 The larger number of businesses responding from within Hounslow is very much as expected given the higher degree of 'business linkage' between the borough and Heathrow Airport. Conversely, a lower level of response is to be expected from within Slough given the geographic distance between the borough and Heathrow.

4.3.6 Discussions with the Hounslow Chamber of Commerce also indicated that the rate of response from businesses within Hounslow - at just over 2% of all businesses contacted - is a standard level of response for surveys of this type.

4.3.7 The survey results across all three boroughs show some key findings and these are reported below:

- Of the 6 businesses that had the highest numbers of staff (in both the 251 - 500 and 500+ ranges), there was a high level of 'dependency' on Heathrow Airport. To demonstrate this, 1 business employing between 251 and 500 staff put their dependency on Heathrow as high as 76 to 100%. In addition, 3 other business employing between 251 and 500 staff put their level of dependency at 51 to 75%. These findings indicate that the larger firms across the three boroughs rely on the airport for a significant proportion of their business. It is also notable that there is diversity in terms of what these businesses do as the 'Hotels, Conference Centre and Spa', 'Sales and Marketing', 'Fleet Management', 'Self Storage' and 'Corporate Events' sectors are represented;

- 38 of the 89 businesses responding from within all three boroughs (43% of the total) are relatively small businesses in that they employ between 1 and 50 staff. Although the level of 'dependency' is lower than that of larger firms (e.g. the level of dependency is typically in the 1% - 25% range), there is an acknowledgement that the airport does play some role in the activities of these businesses. This supports the observation that smaller firms in Hounslow, Ealing and Slough (representing several different sectors) are also dependent, to some extent at the very least, on activities at the airport;

- In terms of overall dependency on Heathrow, it is notable that almost 60% of all firms responding from within the three boroughs are, to varying extents, dependent on the airport. This is an important finding as it clearly indicates the current reliance of the local economy on the airport as well as the potential vulnerability of the local economy to any future downgrading (or closure) of the airport;

- Across all three boroughs, there is no set pattern in terms of the number of employees living within the boroughs. This indicates several factors, including the diversity of businesses in the boroughs and the extent to which some businesses will employ staff from local labour pools whilst others rely on in-commuting from outside their respective boroughs. There are companies, for example, in both the 'airfreight' and 'hotels' sectors that have both a high number of staff who live within each borough as well as a high dependency on the airport;

- When asked how they would react were Heathrow to expand by 50%, 43% of responding businesses from within the three boroughs indicated that they would adjust their activities “Slightly”, “Significantly” or “Very Significantly”. Also notable is that many of these firms are some of the largest - in terms of number of employees - in the survey. For example, of the 38 businesses giving these responses, 5 have between 251 and 500 employees, 1 business employs between 101 and 250 staff and 5 businesses employ between 51 and 100 staff. As these businesses represent almost 80% of *all* businesses who employ these higher numbers of staff, the potential impact of Heathrow expansion is apparent; and

- In the event that a new hub airport opened and Heathrow closed, 21 businesses responded that they would either relocate or downsize their activities (out of 49 businesses that responded to this particular survey question). Again notable is the finding that several of these firms employ large numbers of staff *and* have a high level of dependency on Heathrow. Clearly, if a new hub airport is built and Heathrow closes, the potential impact throughout the three boroughs would be substantial.

4.3.8 Of the anecdotal responses provided, several indicate strong opinions about the potential impact of downsizing / closing Heathrow. A selection of these is provided below:

“Heathrow influences and benefits its locality in ways that cannot easily be replicated - we need more airport volume to stay ahead of global competition. Moving a hub airport and creating a new infrastructure will take years AFTER the new airport is built and will fail to achieve the main target of keeping ahead of our global airport competitors.”

“The economy of West London would be seriously damaged.”

“Over 200,000 jobs will be lost in West London if Heathrow is scaled down.”

“The business would close.”

“It would be a disaster.”

“This survey does not seem to take into account the wider general economic impact of a closure of Hounslow. The amount of unemployment and potential business relocation out of the area would be devastating for the local economy. As such, the impact on our business would be very significant also.”

“This would be an economic disaster for West London. We should campaign for the third and fourth runway.”

“Closure will have a very bad effect on all sorts of businesses. 100% of the hotel and transport sector will be devastated whilst 50-60% of local shops will close.”

“Consideration should be given to the number of highly trained staff that support Heathrow from landside operations - the figure is far greater than what has been estimated.”

“We are part of the extensive supply chain within the area that serves Heathrow on a lower tier. The impact of Heathrow relocating or substantially downsizing would be huge and the repercussions feed through to our own supply chain.”

"Our business would be devastated."

"Heathrow will not close. If it did, however, the impact for residents would be a disaster."

"It would be a massive financial disaster for all the local workforce and a real blow for the hotels and support services along the M4 corridor. Depending on what would replace it, the result would be the death-knell of the West London tourism income stream, mass unemployment through Southall and Hayes (where the majority of support workers are based) and a significantly adverse environmental impact."

4.3.9 In the interest of providing balance, the following anecdotal responses were also received:

"No direct effect on my business (it would most likely be a ripple effect due to loss of prosperity to the area)."

"I would be delighted if Heathrow were to close. It is in the wrong place and the noise and pollution have a damaging impact on work and health, children's education and many other drawbacks. It should be closed as soon as possible."

"Heathrow airport management must understand / learn that being a good neighbour is crucial to our peace, plus environment. Therefore, a third runway, or any expansion would prove to be significant health and safety risk."

4.3.10 Although these latter responses indicate negative sentiments with respect to possible Heathrow expansion (and a downplaying of the negative impacts of closure), it must be noted that these statements largely cover environmental and safety impacts rather than the employment impacts that this study specifically addresses. In overall terms, therefore, the online business survey indicates that there is a genuine risk to the three boroughs if Heathrow is either downsized or closed altogether.

4.4 Catalytic Impact Interviews

4.4.1 Section 2.3 above has demonstrated the importance of Heathrow as '*a necessary but not sufficient factor'* in catalytic type companies being located in close proximity to an international hub airport such as Heathrow. This expression denotes that although the connectivity offered by Heathrow is a necessary factor when local international companies are considering where to be located, it is not the only factor that ultimately informs their decision-making process.

4.4.2 Indeed, the scale of employment facilitated by Heathrow far exceeds employment generated by direct operations at the airport. This analysis has been a key input into our modelling of the catalytic impacts described in section 3.8. As part of this assignment, it was felt valuable to collect anecdotal information based upon limited fieldwork. During October 2013, we undertook a total of 29 interviews with catalytic type companies in the three boroughs. These 29 companies currently employ a combined workforce of some 22,000. The table below provides a breakdown by size.

Table 4.1: Catalytic Companies by Employment Size

Employment Size	Ealing	Hounslow	Slough	TOTAL
<100	3	-	6	9
>100<500	4	5	2	11
>500	2	5	2	9
Total	9	10	10	29
Total Employment	**3,500**	**16,000**	**2,500**	**22,000**

4.4.3 The interviews are reported in detail within the borough reports.

4.4.4 This section addresses the relevance of catalytic companies to the boroughs in general, whilst certainly not claiming that the interviewees represent an unbiased sample of catalytic companies. In fact, lists for each borough of known catalytic type companies were assembled with the help of a number of local bodies. In total, well over 100 companies were approached to co-operate with the study on a non-attributable basis. The target was to interview 8/10 companies in each borough. It soon became apparent that the majority of companies did not want to discuss the issue of airport capacity in the South East. Interestingly, one of the largest companies agreed to be interviewed at a senior level but withdrew at the last moment after its PR department intervened. Certainly, a common response from those who declined with a reason was that the views of local companies are represented by LEPs, chambers of commerce, London First, CBI et al.

4.4.5 Nevertheless, the companies interviewed represent a sizeable proportion of local job generation in the 3 boroughs – some 6% of all jobs. In general, virtually all the companies are well aware of the airports debate and that the options being considered vary from runway expansion at Heathrow through to possible closure as a result of a new hub elsewhere in the South East. Indeed, some companies are already reviewing breakpoints in their leasehold agreements in the context of the AC timetable and subsequent Government policy announcements circa 2016. For instance, one ‘household name’ company with their European HQ in the area had recently undertaken a relocation exercise to broadly establish the scale of relocation costs, the proportion of its existing workforce that it wished to retain in a move and an exercise evaluating the potential site options in proximity to an international hub, including a new South East hub and existing hubs in Europe and the Gulf. Conversely, another large company firmly stated that despite the importance of proximity to Heathrow it would be impossible for them to move as their dependency on highly skilled scientific staff (both largely UK nationals and living in the shire counties) effectively tied them to their current location.

4.4.6 Overall, the larger companies appear more mobile and many are characterised by a clear need to be located in proximity of an international hub with high levels of connectivity for a combination of reasons including the scale of their worldwide international travel, the high frequency of international customer visits and (European and further afield) HQ functions including training for branch offices.

4.4.7 We provide three vignettes below of the future as seen by catalytic companies that have dependencies upon Heathrow.

Company A is a 'leader' in the IT/Telecommunications cluster located within a 20 minute drive time of Heathrow. It currently employs around 1,000 staff of which some 50% live within the local borough and 50% much further afield in the shire counties. Many of its skilled staff are non UK citizens and are totally mobile regarding future domicile. The majority of the borough resident staff tends to be in the lesser skilled categories.

The company is foreign owned and has global responsibilities ex the Americas. The company is concerned that Heathrow is already operating at full capacity and delays to very senior staff – particularly visiting from HQ in the Americas – already provides a degree of discomfort. Not only does the company directly and indirectly (through visitors) have a constant flow of passengers through Heathrow, it also has significant cargo usage. Should Heathrow expand, the company has no doubt its local operations would also expand over time.

In the event that Heathrow closed, the company categorically states it would have to relocate. The company must be in close proximity of an international hub and hence the most likely new location could be either a new hub in SE, Frankfurt, Amsterdam or Madrid. There is also a possibility that some responsibilities would relocate further afield to a location such as Singapore.

Furthermore, they believe that a decision by just a few cluster 'leaders' to relocate would result in the whole cluster relocating overtime including a plethora of small local technical suppliers.

Company B is a UK branch of a foreign owned manufacturing company employing some 70 personnel some 20 minutes drive time from Heathrow. The local operation services the UK market as well as 2 other north east European countries. Whilst proximity to Heathrow is of importance for travel to/from their European based HO, the company envisages a possible split of functions in the event of Heathrow closure. It is essential that part of their operations is in close proximity to an international hub for inward (urgent) cargo. They could not envisage that their skilled staff would commute across London to a new hub airport location. As a result, the company would be forced to continue some operations close to the motorway network covering the M3/M4/M25/M1.This would be inefficient but preferable to losing key workers. The expansion of Heathrow would not have any significant effect of the future of Company B in the UK.

Company C is a wholly UK owned professional, scientific and technical company employing well over 500 personnel. The company operates globally and has regional units to serve its international markets. Its current location was chosen because of proximity of Heathrow. Around 15% of the staff are regular international travellers (delivering the company's services to worldwide clients) and Heathrow is the preferred airport (most staff have now located/relocated over time to west London/west of London for ease of commute to the company site). There are typically 30/50 international visitors/month for which Heathrow is the most convenient airport. The expansion of Heathrow would be beneficial as it will increase connectivity into new markets and improve services into existing markets. Expanding Gatwick or Stansted would be less attractive as these airports are less convenient for both staff and international visitors. A new hub to the east of London would be very inconvenient for staff and visitors and the company may decide to relocate its current operation closer to the new hub at the expiry of its current lease. Company C would remain in the SE.

4.4.8 We have analysed the interviews in terms of the broad responses to questions of likely levels of future employment at current locations in response to different scenarios at Heathrow and this data is presented in the tables below and overleaf.

Table 4.2 Impact of Heathrow Expansion

Impact	Size of Company (jobs)			Total
	<100	>100<500	500+	
Major +ve	3	-	2	5
Minor +ve	6	7	5	18
Neutral	-	2	2	4
No comment	-	2	-	2

Table 4.3 Impact of Heathrow Status Quo

Impact	Size of Company (jobs)			Total
	<100	>100<500	500+	
Neutral	4	5	4	13
Minor –ve	5	4	3	12
Major –ve	-	-	2	2
No comment	-	2	-	2

+ve: – positive
-ve: - negative

Table 4.4 Impact of Heathrow Closure

Impact	Size of Company (jobs)			Total
	<100	>100<500	500+	
Relocation	1	1	3	5
Major –ve	3	1	1	5
Minor –ve	4	5	4	13
Neutral	1	1	-	2
Not sure – probable move	-	1	-	1
No comment	-	2	1	3

4.4.9 Two companies agreed to discuss their current operations and their 'linkages' with Heathrow but refused to provide any comments on their likely response to future changes at Heathrow. Of the remaining 27 companies, 23 viewed an expansion (a third runway) as beneficial to their operations and that employment levels would increase as a result of reduced congestion at Heathrow and increased connectivity. There was a concern amongst half the sample that maintaining Heathrow at its current capacity would lead to increasing flight delays and lack of improved connectivity to BRICS[28]. This would manifest itself in reduced activity over time and lost business opportunities. Two large companies (both foreign owned) were particularly concerned and viewed such an eventuality with great concern. However, half the sample did not believe that the 'status quo' would have any detrimental impacts on their businesses.

4.4.10 When asked about the impacts of closure of Heathrow and the development of a new hub east of London or Stansted, only 2 companies viewed this outcome without any concern. Over one third of the sample stated that Heathrow closure would result in either their complete relocation or a partial relocation of the majority of their local operations. Most of these companies were foreign owned and could be classified as potentially mobile and influenced by global pressures. About half the companies, whilst viewing a Heathrow closure with some concern, believed that the impacts upon them would be minor. These companies tended to be UK owned with a longstanding history of operations in the area that often predated Heathrow as a major international airport.

[28] Originally Brazil, Russia, India and China, but now includes South Africa

5 THE NUMBER OF CURRENT AIRPORT-RELATED JOBS

5.1 Introduction

5.1.1 In order to forecast the impact of different airport scenarios over the period to 2030, it is essential to provide a robust estimate of recent employment levels in each borough. In Chapter 3, we have stated that the direct, indirect and induced employment level in the five local authorities that comprise the local impact area totalled some 114,000 in 2010.

5.1.2 Approximately 76,000 of these jobs are located on-airport. By definition, local off-airport direct, indirect and induced employment are distributed throughout the five authorities. In the analysis described below, we assess where these jobs are located as well as analysing the location of residency for the workers who take up these jobs. Clearly these estimates are not the same as there are differences across the three boroughs in terms of commuter inflows and outflows.

5.1.3 The following sections contain summaries of Heathrow-related employment by each category.

5.2 Direct On-Airport Employment

5.2.1 The Heathrow on-airport employment survey requires each employee to provide their place of residence. Based on analysis of this survey data, the table below indicates the respective splits in employment across the three boroughs.

Table 5.1: On-Airport Employment, 2010

Local Authority	On Airport Employment 2010	Percentage of LHR Workforce	Percentage of LA Workforce
Ealing	5,760	7.8%	3.6%
Hounslow	10,760	14.6%	7.2%
Slough	4,090	5.6%	6.8%

5.2.2 The importance of Heathrow's on-airport operations as a generator of employment across the three boroughs can be clearly seen in the table. On-airport employment has been maintained at these levels as can be observed when comparing the most recent survey results with those collated as part of the 2004 survey.

5.3 Direct Off-Airport Employment

5.3.1 As stated in Section 3.4 in Chapter 3, direct off-airport employment in 2010 totalled 7,700 across the five boroughs. We have discussed the disaggregation of this information with Optimal Economics and we have utilised their approach within this part of our analysis.

5.3.2 As previously noted, it is certain that the majority of these jobs are in the cargo sector and based on past research and our current ongoing survey, the majority of these jobs are based in Hounslow. Given that information on the place of residence of these workers is not available, we have adopted a prudent approach whereby the residential distribution of workers from the on-airport survey has been used. This approach is adopted as the direct off-airport workers (particularly those in the cargo sector) will be concentrated in certain residential areas. The workers are all, for example, located within the five local authorities in the vicinity of Heathrow and are not spread further afield.

5.3.3 On this basis and since approximately 60% of on-airport workers live in the five local authority areas (as identified in the on-airport survey referenced in Section 3.4.1), some 4,800 of the 7,700 jobs were taken by residents in these areas. This is highly likely to be an underestimate given that the majority of these jobs will be low skilled and are likely to be characterised by short journey-to-work movement patterns.

5.3.4 The table below provides the approximate number of off-airport workers by place of residence. These may be updated based on the availability of additional information from Optimal Economics.

Table 5.2: Off-Airport Employment by Borough, 2010

Local Authority	Off Airport Employment 2010
Ealing	579
Hounslow	1,082
Slough	411

5.4 Induced and Indirect Employment

5.4.1 The method for estimating indirect and induced employment was also reported in Chapter 3. Based on Optimal Economics' estimates of induced and indirect employment in the five boroughs, we have taken the on/off-airport distribution as a proxy for the indirect/induced distribution. On this basis, these jobs are distributed as shown in the table below.

Table 5.3: Indirect/Induced Employment, 2010

Local Authority	Indirect Employment 2010	Induced Employment 2010
Ealing	835	1,399
Hounslow	1,559	2,613
Slough	593	993

5.5 Total Direct, Indirect and Induced Impacts

5.5.1 Although the calculations of off-airport direct, indirect and induced impacts are subject to a degree of subjectivity given the nature of these types of employment, we are confident that these estimates provide a broadly accurate scale of impact. Overall, we estimate that Heathrow-related work (excluding catalytic impacts) provides jobs for workers in each borough as shown in the table below.

Table 5.4 Total Impact (excluding Catalytic) by Borough, 2010

Local Authority	Total Impact 2010	Percentage of LA Workforce
Ealing	8,572	5.4%
Hounslow	16,014	10.7%
Slough	6,087	10.1%

5.5.2 One of the key observations from this data is that approximately over 1 in 10 of the respective workforces in Hounslow and Slough are 'dependent' on Heathrow.

5.5.3 Although the situation in Ealing indicates a lower level of 'dependency', an analysis of wards in the west of the borough (such as Norwood Green, Southall Broadway and Southall Green – based on the on-airport survey) indicates very high rates of 'dependency'[29].

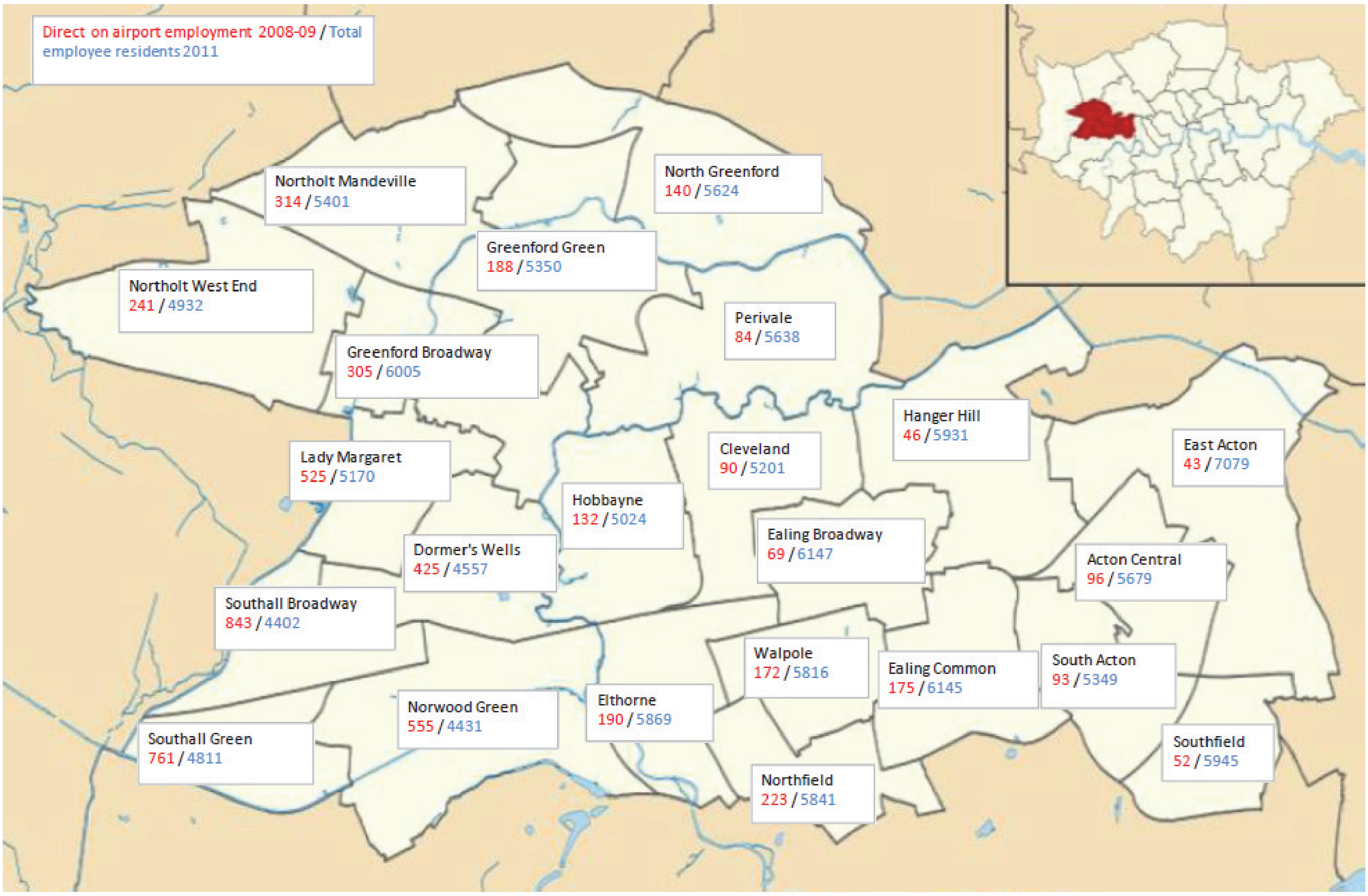
5.5.4 It is also important to emphasise that within boroughs such as Ealing, there will be differences in the profile of employment across different parts of the borough. In Ealing, for example, there is a clear 'east-west' differential between the relatively highly skilled residents who tend to live in the wards towards the east of the borough and the comparatively lower skilled workers who tend to live in the western wards.

5.5.5 The relatively highly skilled workers will have a propensity to commute into central London whilst the comparatively low-skilled workers in the west of the borough will account for a large proportion of the Heathrow-related workforce.

5.5.6 This is demonstrated in the figure overleaf, which shows the number of residents in each ward within Ealing working on-airport at Heathrow, compared with the total number of residents employed in full or part time jobs (excluding self-employed). It shows that the proportion of on-airport workers is much higher amongst wards to the west of the borough.

[29] Between 10% and 16%

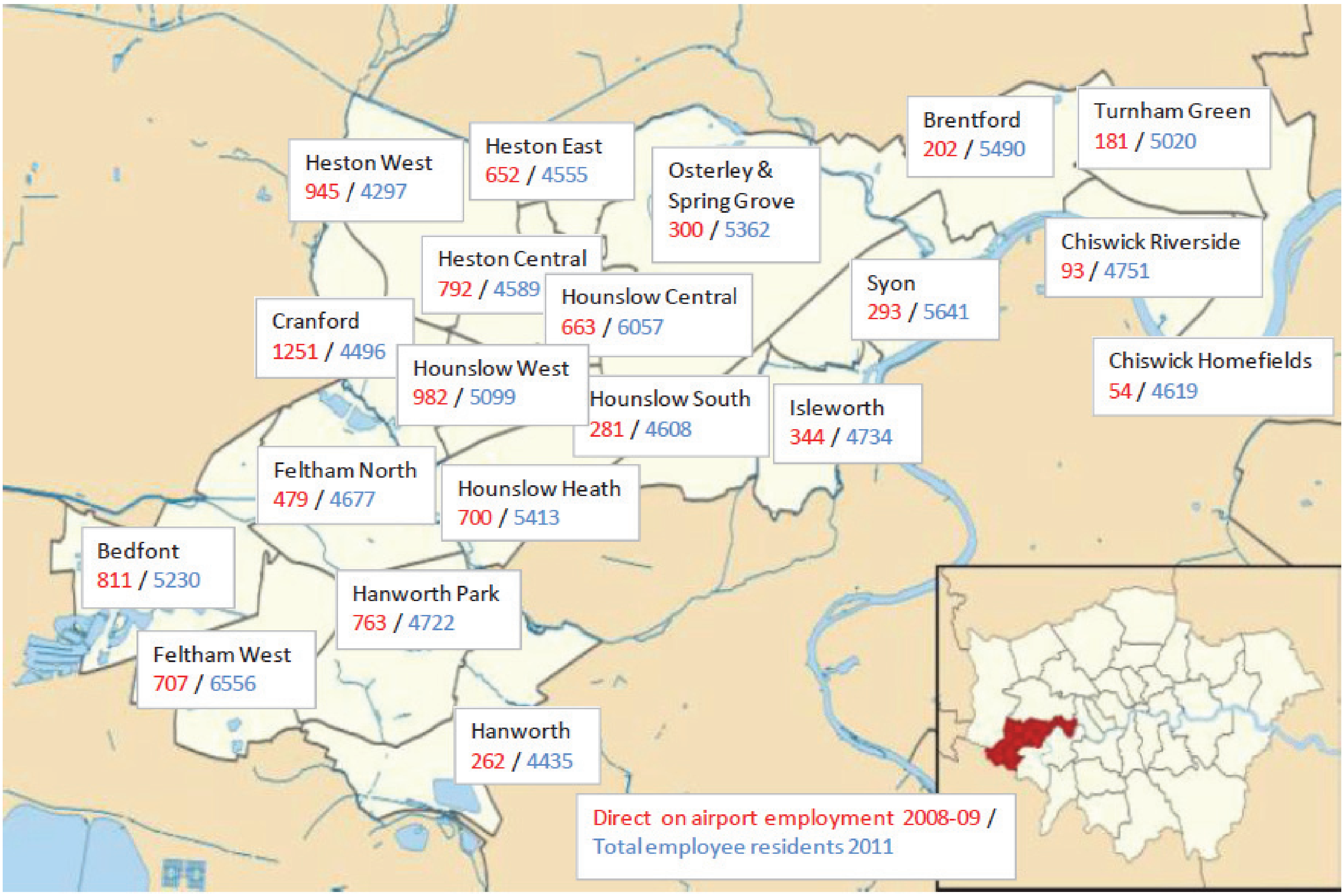
Figure 5.1: Employment by ward in Ealing (on-airport and total)



5.5.7 Figure 5.2 shows the same characteristics for Hounslow with concentrations of on-airport employees within certain wards. Again, for example, there are dramatic differences within the borough, with Cranford, Heston West, Heston Central and Hounslow West exhibiting a particularly high percentage of Heathrow on-airport workers relative to total employed residents.

5.5.8 This is unsurprising given that Hounslow lies immediately to the east and south-east of the airport. This places the borough in close proximity to major on-airport employment sites such as BA World Cargo, the major airline maintenance bases at the east end of the airport (including British Airways' main maintenance base) and the major transportation hubs located around Hatton Cross.

Figure 5.2: Employment by ward in Hounslow (on-airport and total)

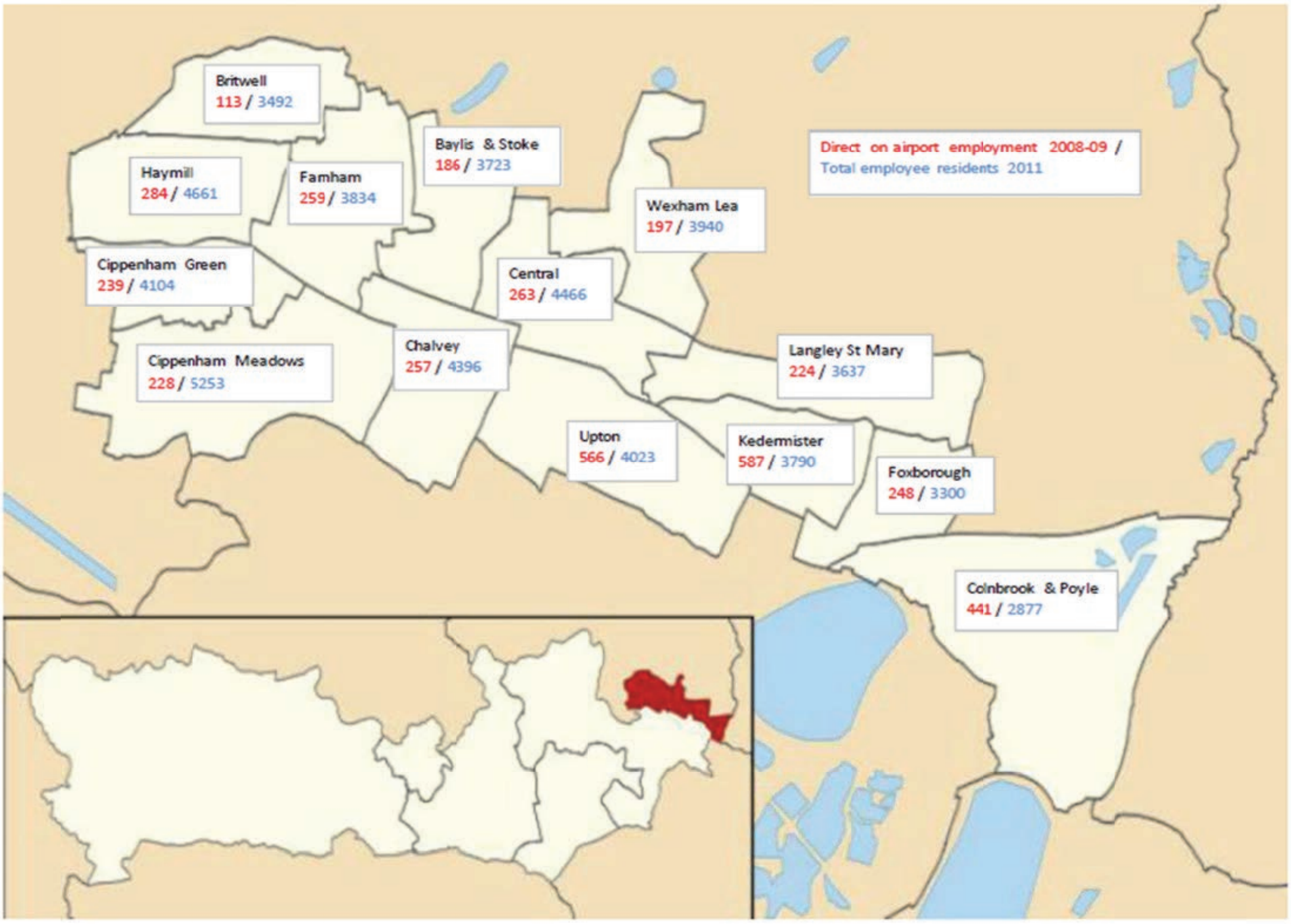


5.5.9 Finally, Figure 5.3 replicates the same information for Slough, where certain wards such as Kedermister have a lower proportion of on-airport workers amongst their residents. This is again unsurprising as the borough's geographical location is further away from Heathrow compared to Hounslow and thus we would expect less direct on-airport workers to live in Slough, especially in those wards to the centre and west of the borough.

5.5.10 Nevertheless, the ward of Colnbrook and Poyle has a relatively high proportion of direct on-airport workers (being closest to the airport) whilst the borough is the location of many catalytic-type companies and is thus a significant generator of additional employment opportunities.

5.5.11 Across all three boroughs, this more granular (ward level) data shows that the dependence on Heathrow (such as Cranford in Hounslow) can be as high as 1 in 4 jobs. The impact of these levels of dependence will be even greater in those wards that already have high levels of deprivation.

Figure 5.3: Employment by ward in Slough (on-airport and total)



5.6 Catalytic Employment Impacts

5.6.1 The importance of catalytic impacts has been discussed in Sections 2.3 and 3.8. The critical need to provide a broad quantification of these impacts for the different airport and runway scenarios in the SE was identified in SEAAF[30], the economic template for SERAS[31].

5.6.2 Key considerations when assessing catalytic employment include the incidence of high-value jobs ('catalytic' companies are usually associated with high-value employment) and the importance to local economies. As has been noted previously, it is also important to include catalytic impacts as these have not been incorporated in some previous studies of airport impacts.

[30] South East Airports Aviation Framework, DfT 2000
[31] South East Region Aviation Study, DfT 2001

5.6.3 It is for these reasons that detailed research is required on catalytic impacts. We have therefore taken the broad impacts identified in Section 3.8 and reviewed these in the context of the labour markets in Hounslow, Ealing and Slough respectively. As described in Chapter 4, we also undertook a series of interviews with 'catalytic'-type companies within the three boroughs and we had meetings to discuss these impacts with other experts and airport promoters.

5.6.4 An economic appraisal was undertaken for the 2003 AWP[32] that appeared to be partially based on work conducted by OEF in 1999 and 2002[33]. The employment impacts of each scenario assessed in the AWP did not appear to address the issue of catalytic impacts. In addition to this, the issue of a new hub airport was not addressed as part of the SERAS work as there were no credible proponents for this option at the time. As a result of this, the future hub status of Heathrow was not a relevant issue and the potential closure of the airport was not addressed. In such circumstances, it is understandable that neither SERAS nor the AWP felt a need to address the importance of catalytic impacts and therefore to quantify these impacts.

5.6.5 The situation in 2013 is different with serious consideration now being given to new hub proposals that would lead to the closure of Heathrow. Furthermore, it is not only closure that is an issue here. The absorptive capacity of the local economy around the airport may not necessarily be an inhibitor on operations at an expanded Heathrow but could curb the optimisation of catalytic benefits in future. Based on work previously conducted by the consultants as well as recent discussions with local LEPs, economic development officers and the sample of local international companies, the empirical evidence collated from these recognised businesses (and their representatives) makes it clear that the catalytic effects of international connectivity at Heathrow have been a 'necessary but not sufficient' factor in the location of a large number of local companies. This term means that although the connectivity offered by Heathrow is a necessary factor when local international companies are considering where to be located, it is not the only factor that ultimately informs their decision-making process.

5.6.6 Put very simply and in answer to the broad question *'why is company A, B, C located in Ealing/Hounslow/Slough?'*, the broad answer is *'because the company needs to be in close proximity to the airport, not only because many of the staff need to travel to international clients but also so that clients are able to visit our premises'*.

5.6.7 In response to questions on the expansion of services at Heathrow, the general reaction is that this would ensure retention and/or lead to expansion of catalytic companies over time. In response to questions relating to a new hub and the possible closure of Heathrow being signalled by Government policy in 2016, the general reaction is an off the record *'evolution not revolution'* that would result in the relocation of either part or the whole of current operations at the airport.

5.6.8 Although the eventual destination of a new hub airport is a 'known unknown' at this stage, this clearly needs to be considered by the AC. Interestingly, a 'do nothing' scenario is of concern as companies are wary of Heathrow's position as a leading hub being eroded in comparison with other hubs not only in Europe but also Dubai and Singapore. The long term consequences of declining competitive advantage in

[32] Aviation White Paper Second Edition, DfT, 2003
[33] The Contribution of the Aviation Industry to the UK Economy, Oxford Economic Forecasting, 1999 and 2002

international connectivity would impact upon some retention and expansion over time[34].

5.6.9 In addition to understanding the implications of direct, indirect and induced employment impacts generated by Heathrow, the three boroughs require further guidance regarding the consequences of different Heathrow development scenarios upon current and future catalytic impacts.

5.6.10 As well as the fieldwork, we have reviewed foreign ownership patterns in the three boroughs as evidence of foreign ownership provides some indication of the presence of catalytic companies in an area. Obviously, some UK-owned companies also need to be in proximity to an airport and some foreign-owned companies in the vicinity of Heathrow may have very little need for international travel and their location maybe purely historic.

5.6.11 Given, however, that several large multinational businesses are choosing to remain in the area (despite the relatively high cost pressures of being located in this area), we would contend that foreign ownership patterns provide a useful yardstick by which to assess the minimum scale of catalytic companies requiring a location close to Heathrow. Information on foreign ownership is collected and analysed by the Office of National Statistics (ONS) and published according to 1) 'enterprises' (covering the business entity as a whole) and 2) 'local units' (see table source for details). Our results cover 'local units' as these are the relevant unit for this study. Table 5.5 provides a summary analysis of the ONS data, with Figure 5.4 also showing the proportion of local units and employment accounted for by foreign ownership.

5.6.12 The following clarifies the meaning of some of the line items in Table 5.5:

- FO: foreign-owned;
- Local units: businesses in each respective area;
- FO local units as proportion of all (%): refers to the percentage of foreign-owned businesses in relation to all businesses in the area;
- Average local unit employment - all units: refers to the average number of employees across all local businesses;
- Average local unit employment - FO units: average number of employees per foreign-owned business; and
- FO units' employment as multiple of all units: this is the ratio of the average number of employees per foreign-owned business over the average number across all businesses.

5.6.13 With reference to the final three rows in Table 5.5, the first shows the average number of employees across all businesses in the respective areas. The next row down shows the average number of employees per foreign-owned business and the final row shows the ratio between these two sets of averages.

5.6.14 This ratio clearly demonstrates that there are a much higher number of employees per foreign-owned company relative to all companies in the area.

[34] The findings of the interview survey are shown in greater detail within the individual borough reports

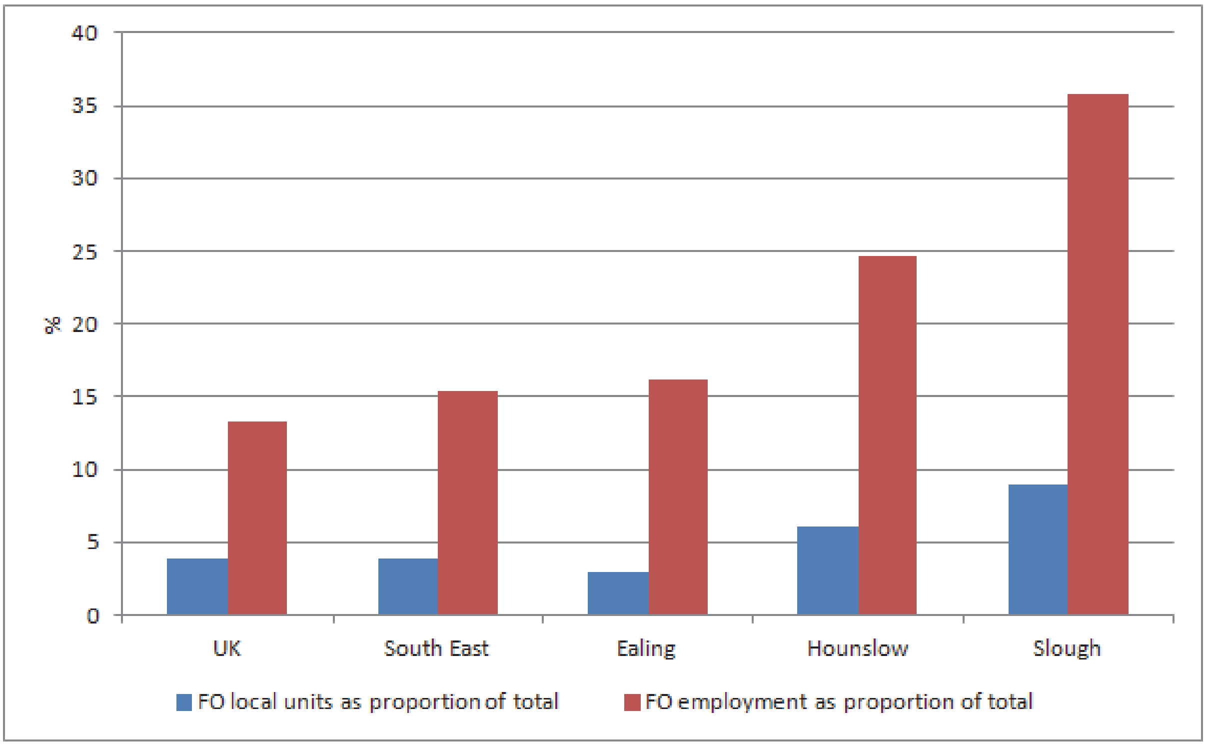
Table 5.5: Foreign Ownership of Local Employment Units in Ealing, Hounslow and Slough[35]

	UK	South East	Ealing	Hounslow	Slough
Total local units	2,548,947	391,282	13,448	10,164	4,667
Foreign Owned (FO) local units	96,860	15,260	390	620	420
FO local units as proportion of all (%)	3.8	3.9	2.9	6.1	9.0
FO employment	3,706,038	583,502	18,150	29,110	28,065
FO employment as proportion of all employment (%)	13.3	15.4	16.2	24.6	35.8
Average local unit employment all units	10.8	9.6	8.2	11.6	16.8
Average local unit employment FO units	38.3	38.2	46.5	47.0	66.8
FO units' employment as multiple of all units	3.5	4.0	5.7	4.1	4.0

Source: ONS

[35] Count and Employment of VAT and/or PAYE based Foreign Owned Local Units by Districts, Counties and Unitary Authorities within Government Office Region and Country for 2010, Table 2

Figure 5.4: Foreign Owned Local Units and Employment as a Proportion of Total



5.6.15 As can be seen from the table above, Slough (in particular) and Hounslow (to a lesser extent) have higher incidences of foreign ownership of their local businesses, with Slough having nearly 2.5 times the UK average and Hounslow some 60% more than the UK average. Ealing has a lower proportion of foreign-owned businesses than the UK as a whole. Foreign ownership in the SE region is very similar to the UK as a whole.

5.6.16 These higher levels of foreign ownership are reflected in the employment levels with Slough having some 36% of its employment dependent on foreign-owned businesses and Hounslow some 25%. The UK average is 13.3% whilst the SE average is slightly higher at 15.4%. Ealing is just above the SE average at 16.2%, despite its lower than average proportion of foreign-owned businesses.

5.6.17 Foreign-owned businesses offer more employment than the average with the multiples being 3.5 to 4 nationally, in the SE and in both Hounslow and Slough. Interestingly, foreign-owned businesses in Ealing offer some 5.5 times the amount of employment as the overall average business in Ealing.

5.6.18 The proportion of foreign ownership is remarkably uniform across all the UK regions ranging from 2.7% in Northern Ireland to 4.9% in London. This suggests that the UK average figure of 3.8% reflects the general level of foreign ownership of UK Plc. This suggests that the far higher levels of foreign ownership of businesses in Slough (9.0%) and Hounslow (6.1%) – both higher than that observed in London – are determined by largely local factors of which one is certainly the proximity to Heathrow and the international connectivity it offers (for both passengers and freight).

5.6.19 The employment implications of the above analysis are that some 17,650[36] jobs in Slough and some 13,350[37] jobs in Hounslow are in foreign-owned businesses which may be very dependent on the international connectivity offered by Heathrow. A similar calculation for Ealing indicates a level of 3,250 jobs[38]. It is important to note that these estimates are for foreign-owned businesses only. There will be similar dependency among internationally-oriented UK-owned businesses in each of the three boroughs.

5.6.20 As reported in paragraph 3.8.3, certain correlations between catalytic and direct, indirect and induced employment have been noted. These are based on previous research and recent survey work[39]. Based on (1) foreign ownership patterns, (2) feedback from LEPs, Chambers of Commerce, economic development officers and (3) past and current fieldwork, the following multipliers are suggested (it should be noted that 'catalytic' companies generate indirect and induced impacts of their own but these effects have been subsumed in the proposed multipliers).

Table 5.6: Indicative Catalytic Multipliers

Multiplier	Ealing	Hounslow	Slough
Low	0.5	1.0	2.5
Medium	1.0	1.5	3.0
High	1.5	2.0	3.5

5.6.21 These catalytic multipliers can be viewed as conservative when compared with some of the apparent catalytic impacts shown in Table 5.5. This conservatism is necessary, however, as it improves the overall robustness of the employment impact analysis and provides confidence that we are not overestimating what is traditionally seen as an impact that does not readily facilitate precise estimation.

5.6.22 The multipliers shown in the table above exclude additional induced employment impacts that need to be incorporated within the overall impacts. We have included this effect in our analysis and this impact is based on the induced multiplier of 1.2 as discussed in Section 3.6.3 in the previous chapter. No allowance has been made for any local indirect impacts.

5.6.23 It is also important to emphasise that the multipliers shown above relate to jobs that could be facilitated in a borough and not the number of jobs that would necessarily be taken by the economically active residents within that borough.

5.6.24 This means that for those 'local' employees working in a catalytic company, it is necessary to scale down these impacts based on the net inward and outward flows of commuters to / from each borough. An authority such as Slough is much more dependent upon inward flows of commuters than Ealing and Hounslow. Furthermore, the higher skilled nature of such companies also implies wider journey-to-work

[36] Calculation: (FO employment as proportion of all employment in Slough – FO employment as proportion of all employment UK)/FO employment as proportion of all employment in Slough x FO employment in Slough (number)
[37] Calculation as in footnote above but with Hounslow data
[38] Ibid
[39] Based, for example, on recent survey work for Surrey County Council as well as research by HAL as part of their "Best Placed for Britain" paper, 2013 (p14/p15)

patterns. We have therefore scaled down[40] employment creation to take account of such factors in order to establish the local workforce element of the current catalytic impact.

5.6.25 The adjusted (or scaled down) series of multipliers are shown in the table below.

Table 5.7: Adjusted Catalytic Multipliers (taking account of commuter inflows / outflows)

Multiplier	Ealing	Hounslow	Slough
Low	0.4	0.7	1.3
Medium	0.8	1.1	1.5
High	1.2	1.4	1.8

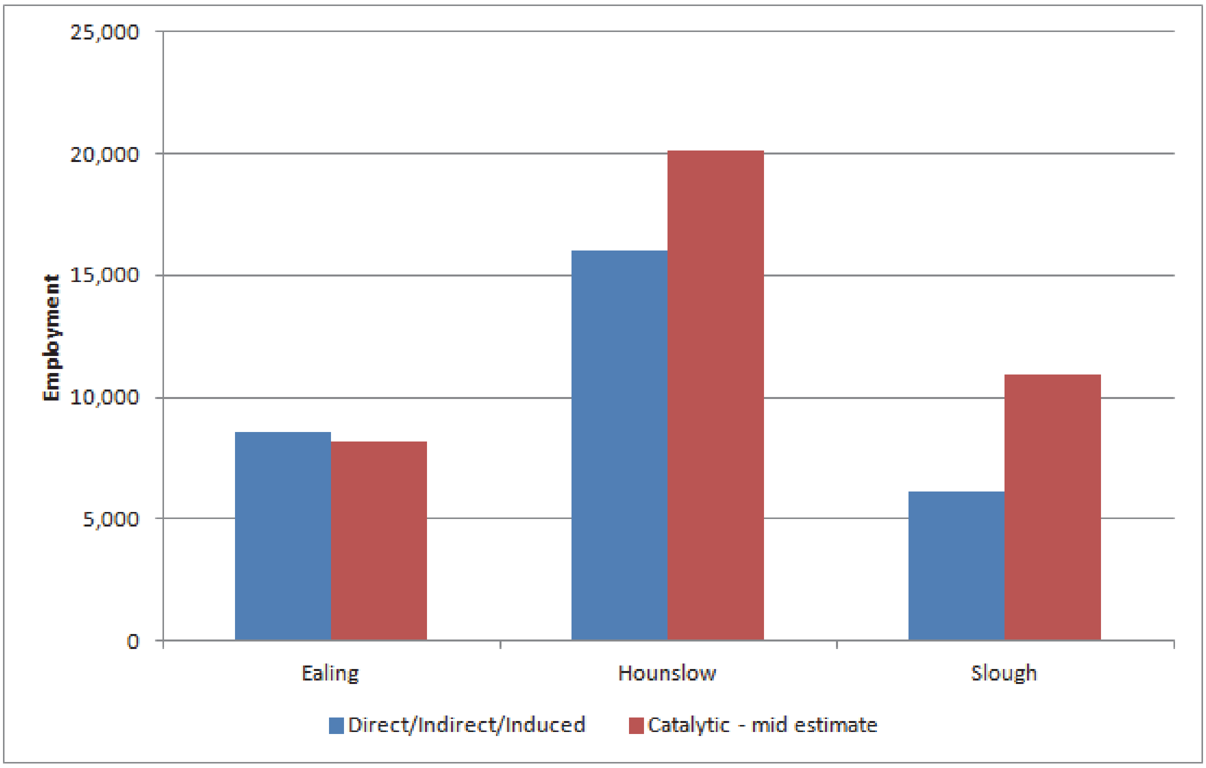
5.6.26 The impact of these multipliers is shown in the table below. As stated in Section 5.6.22, this total includes the additional induced impact applied as a result of catalytic employment. Figure 5.5 shows a comparison between catalytic and non-catalytic employment, using the 'mid' estimate for catalytic.

Table 5.8: Total Heathrow-Related Direct, Indirect, Induced and Catalytic Employment in each Borough

	Ealing	Hounslow	Slough
Direct/Indirect/Induced	8,572	16,014	6,087
Catalytic Low	4,097	13,395	9,092
Catalytic Medium	8,195	20,093	10,911
Catalytic High	12,292	26,790	12,729

[40] Based on JTW patterns we have applied the following conservative deflators – Ealing (0.8), Hounslow (0.7) and Slough (0.5)

Figure 5.5: Catalytic and Non-Catalytic Heathrow-Related Employment by Borough, 2010



5.6.27 Overall, there is evidence of high levels of catalytic employment in Ealing, Hounslow and Slough (based on both anecdotal evidence and causality). The precise scale of these current impacts is debatable but they account for the provision of thousands of jobs for local residents.

5.7 Conclusions on Overall Heathrow Effect by Borough

5.7.1 Based on the 2010 estimates of direct, indirect and induced employment and combined with the indicative catalytic impacts, the estimates shown in the table below are provided as a broad scale of impact.

Table 5.9: 'Heathrow Effect' and Local Workforce Dependency

	Low	Medium	High	Percentage of LA Workforce (midpoint)
Ealing	12,700	16,700	20,900	10%
Hounslow	29,400	36,100	42,800	28%
Slough	15,200	17,000	18,800	29%

5.7.2 Although indicative, we are confident that these estimates provide a robust basis for indicating the scale and order of magnitude of the employment dependency on Heathrow.

5.7.3 In addition, the estimates are sufficiently robust for the basis of projecting the impact of different long-term scenarios upon the local workforces. Heathrow has been and continues to be one of the key (if not the key) generators of large-scale employment within the three boroughs.

6 AIRPORT / RUNWAY SCENARIOS

6.1 Submissions to the Airports Commission

6.1.1 In 2012, the Government announced that an independent commission would identify and recommend options for maintaining the country's status as an international hub for aviation and would report to Government by summer 2015. This is what is referred to as the AC.

6.1.2 The deadline for submitting details of proposed long-term options to address airport capacity issues in the SE was set by the AC on 19th July 2013. In total, 51 responses were received by the deadline. A number of responses covered 'surface access options' and the effective capping of capacity.

6.1.3 The 51 responses include long-term options for airport development and were prepared by a wide variety of private individuals and organisations. Of the 51 responses received, 15 were from private individuals with the remainder being proposals from several major organisations and airport authorities. A selection of some of the major proposals is shown below:

- Birmingham Airport – development of additional runway;
- Foster and Partners – Isle of Grain (Thames Hub) Airport;
- Gatwick Airport Limited (GAL) – additional runway development;
- Greengauge 21 – development of high-speed rail access between major airports;
- Grimshaw Architects – London Hub City development;
- Heathrow Hub Ltd / Runway Innovations Ltd – Heathrow Hub concept;
- Heathrow Airport Limited (HAL) – Long Term Hub Capacity Options;
- Infratil Airports Europe – Manston Airport development;
- Manchester Airport Group (MAG) – development of Stansted Airport;
- Transport for London (TfL) – Isle of Grain, Outer Thames Estuary and Stansted Airport proposals; and
- TESTRAD - London Britannia Airport (new Thames Estuary hub airport).

6.1.4 Several of these proposals have already been extensively publicised and are 'framing' the debate in terms of what are the key issues to be resolved in the future. The 'debate' between expanded capacity at Heathrow and the development of a new hub airport to the east of London is, for example, one that is already in the public consciousness and by clear implication, will have a major bearing on the economies of the three boroughs.

6.1.5 Based on the opinion of the Parsons Brinckerhoff / BHC team, a large number of responses propose 'solutions' that do not attempt to accommodate growing demand and/or have no clear financial backing. Whilst a number of innovative measures have been put forward, many patently are unlikely to be placed on a shortlist of 'credible long term options' that will be published by the AC in December 2013.

6.1.6 As an example of the potential impacts of HAL's proposals to the Commission, the addition of a third runway at Heathrow would generate significant employment opportunities in the surrounding area. By contrast, should Heathrow lose its international hub status, handle decreasing numbers of passengers and eventually close – a probable outcome in the event of the new airport development to the east of London – a large number of airport-related local jobs would be lost to the local area.

6.1.7 In addition, the catalytic impact that has resulted in tens of thousands of national and international jobs locating in close proximity to Heathrow would gradually erode before closure. Some of the affected companies may move to be close to the new airport whilst others may even consider relocating outside the UK.

6.2 Likely Relevant Long Term Scenarios

6.2.1 There are likely to be a number of core scenarios being considered by the AC in London and the SE during the next 20 to 30 years. These are summarised below:

- Maximise the best use of existing infrastructure at Heathrow, Gatwick, Stansted and Luton airports – these are <u>short term</u> options (although these may be considered by some groups and organisations as long-term options);
- Support a new runway at Heathrow and/or Gatwick and/or Stansted – these are <u>medium</u> and <u>long term</u> options;
- Support a new four-runway airport to the west of Heathrow – this is a <u>long term</u> option;
- Support a new four-runway hub airport at Stansted – this is a <u>long term</u> option; and
- Support a new airport development (NAD) in or on the edge of the Thames estuary – this is a <u>long term</u> option.

6.2.2 Based on discussions between Parsons Brinckerhoff / BHC and the client team, the following six scenarios have been indentified for evaluation over the period to 2030:

- **Scenario 1**: two runways at Heathrow (as now) and maximisation of the best use of existing infrastructure by means of several possible operational approaches (this is the "Base Case");
- **Scenario 2**: three runways at Heathrow and no new runways elsewhere;
- **Scenario 3**: four runways at Heathrow and no new runways elsewhere;
- **Scenario 4**: comprising "4A", two runways at Heathrow (as now) with an additional runway at Gatwick and "4B", two runways at Heathrow and an additional runway at Stansted;
- **Scenario 5**: one runway at Heathrow with the 'new airport development' (NAD); and

- **Scenario 6**: closing Heathrow, 'new airport development' (NAD) given the go ahead.

6.2.3 Although a multi-hub solution remaining a possibility for the SE was considered, this concept is not being put forward by any of the main proponents of the various airport development plans. As an example, the Manchester Airport Group (MAG), as part of their submission to the AC, make it clear that Heathrow would have to effectively close before a hub could be established at Stansted Airport.

6.2.4 In the case of Gatwick Airport, its owners, GIP, do not suggest that Gatwick could achieve hub status with an additional runway.

6.2.5 When assessing the impacts upon the local economies of each of the three boroughs, they key issue is whether Heathrow retains its status as an international hub airport. Only by retaining this status will the optimum effects of the catalytic impacts and the optimisation of direct, indirect and induced employment impacts be realised.

6.2.6 The scenarios to be evaluated are therefore characterised by the following hub status characteristics at Heathrow (the respective scenario abbreviations are also shown below):

- **S1 (no change)**: hub status retained with some dilution;
- **S2 (LHR3)**: hub status retained and enhanced;
- **S3 (LHR4)**: hub status retained and enhanced;
- **S4A (LHR2+LGW2)**: hub status retained with some enhancement;
- **S4B (LHR2+STN2)**: hub status retained with a slight possibility of some dilution;
- **S5 (LHR1+NAD)**: short term retention of hub status followed by diminished status and eventual loss; and
- **S6 (LHR0+NAD)**: hub status lost.

6.2.7 It is also important to note that the 'Do Nothing' scenarios for Heathrow have two distinct variations of significance in terms of overall economic impacts:

- S1 (no change): this will cause serious capacity problems at Heathrow (and elsewhere in the SE) with knock-on negative impacts upon the competitive advantage of the region and international connectivity that could influence (i) expansion of existing companies and (ii) attraction of inward investment, including Foreign Direct Investment (FDI); and
- S4A (LHR2+LGW2): this could result in some movement of point-to-point airline traffic from Heathrow to Gatwick relieving pressure on the former, including the possibility that one of the airline alliances would move from Heathrow to Gatwick.

6.2.8 A summary of those scenarios to be taken forward is provided below:

- **S1 (no change)**: taken forward (this is the Base Case);

- **S2 (LHR3)**: taken forward;
- **S3 (LHR4)**: this scenario is unlikely to be implemented before 2030 on several grounds. Firstly, there is no need for four runways at Heathrow until 2035 at the earliest and it would therefore be unlikely that HAL would want to consider such an expansion before 2025. Secondly, obtaining planning permission for a third runway at Heathrow may be challenging if this is combined with a planning application for a fourth runway. This could prove too difficult to achieve given that HAL's history of expansion has been based on incrementalism and it is expected that there will be no change in this policy. It will, however, be necessary to examine whether an early commitment to four runways at Heathrow would have any economic implications in addition to the "S2" impacts;
- **S4A (LHR2+LGW2)**: taken forward;
- **S4B (LHR2+STN2)**: taken forward (although this scenario is unlikely to relieve pressure on Heathrow in the same way as a second runway at Gatwick);
- **S5 (LHR1+NAD)**: although one of the scenarios considered the least likely to be implemented, an economic evaluation is necessary given that Heathrow will revert to a primarily 'national' and European short haul point to point airport; and
- **S6 (LHR0+NAD)**: taken forward.

6.2.9 We have therefore identified the following four <u>core</u> scenarios:

- **S1 (no change)**;
- **S2 (LHR2)**;
- **S4A (LHR2+LGW2)**; and
- **S6 (LHR0+NAD)**.

6.2.10 In addition, the following will also be evaluated:

- **S3 (LHR4)**;
- **S4B (LHR2+STN2)**; and
- **S5 (LHR1+NAD)**.

6.3 Timelines

6.3.1 The economic impact forecasts are developed for two 'forecast years', 2020 and 2030. The forecasts are derived from actual passenger data for the years 2010 to 2012 inclusive with 2010 defined as the 'Base Year'.

6.3.2 The economic modelling undertaken on the various scenarios above assumes the following timelines (these timelines have been set externally to this study):

- **S1 (no change)**: n/a as existing operations at Heathrow retained;
- **S2 (LHR3)**: new third runway at Heathrow opened in 2025/2026;
- **S3 (LHR4)**: third and fourth runways at Heathrow operational by 2035/2040 (this is outside the forecast timeframe up to 2030);
- **S4A (LHR2+LGW2)**: second runway operational at Gatwick by 2025;
- **S4B (LHR2+STN2)**: second runway operational at Stansted by 2025;
- **S5 (LHR1+NAD)**: 'new airport development' (NAD) operational by 2029 / Heathrow runway closed in 2029; and
- **S6 (LHR0+NAD)**: 'new airport development' (NAD) operational by 2029 / Heathrow completely closed in 2029.

7 THE IMPACT OF DIFFERENT SCENARIOS

7.1 Introduction

7.1.1 This chapter contains a summary of the modelling undertaken to estimate the employment impacts of the agreed airport development scenarios.

7.2 Modelling of Employment Impacts

7.2.1 An Excel-based model has been developed to estimate the employment impacts in Hounslow, Ealing and Slough. The period evaluated extends to 2030 as specified in the ToR for the study. The starting point is to collate and summarise the data for a defined 'base year'. Within the modelling process, 2010 is the assumed base year as this is the year during which the most recent employment data was collated (see Chapter 5 for further details).

7.2.2 An estimate of Heathrow-related employment by borough in 2010 is shown in the table below.

Table 7.1: Employment by Borough, 2010

	Ealing	Hounslow	Slough
Direct/Indirect/Induced	8,572	16,014	6,087
Catalytic Low	4,097	13,395	9,092
Catalytic Mid	8,195	20,093	10,911
Catalytic High	12,292	26,790	12,729

7.2.3 Table 7.1 replicates the earlier Table 5.8. The direct and indirect employment is therefore based on the Optimal report, with a multiplier of 1.2 used to derive the induced employment.

7.2.4 The 'catalytic' employment numbers shown above are based on applying a multiplier to the total non-catalytic employment, using the factors outlined in Chapter 5 (Table 5.6). They also take into account deflators that adjust for the local workforce element of the catalytic impact, using the same values outlined in section 5.6. In other words, based on the existing pattern of net flows of commuters for each borough, it is unlikely that all new catalytic jobs would be taken by resident workers and so a factor is applied to account for this.

7.2.5 Catalytic employment could generate further indirect and induced employment, in the same way that the direct employment does. The catalytic employment shown here does not include further indirect employment, although a multiplier of 1.2 is applied again to account for further induced employment associated with the catalytic impacts.

7.2.6 The next step is to produce forecasts of future Heathrow-related employment by borough and by scenario. In order to do this, a number of steps have been followed and these are summarised below:

- **Use existing passenger forecasts**: The first step is to 'scale up' the 2010 employment forecasts in line with future passenger forecasts at Heathrow, relative to the number of passengers in 2010. This has been undertaken by using Department for Transport (DfT) passenger forecasts, as shown in the table below. For years in between those that have forecasts available, straight-line interpolation is applied;

Table 7.2: Heathrow Airport: Million Passengers Per Annum (MPPA), Actual (2008-12) and Forecast

Scenario	2008	2010	2011	2012	2020	2030
S1	66.9	65.7	69.4	70	76	82
S2	66.9	65.7	69.4	70	87	109
S3	66.9	65.7	69.4	70	87	109
S4A	66.9	65.7	69.4	70	82	90
S4B	66.9	65.7	69.4	70	80	85
S5	66.9	65.7	69.4	70	76	25
S6	66.9	65.7	69.4	70	76	0

- **Apply productivity deflators**: For future years, employee productivity growth needs to be taken into account as this will impact on the number of jobs affected. For instance, if productivity increases by 25% between 2010 and 2030, this would suggest that the level of Heathrow-related employment in 2030 would be 25% less than in 2010, all else being equal.

  A set of productivity growth rates over time has therefore been taken into account; the growth rates vary by 1) *employment type* (direct, indirect and catalytic) and 2) *scenario* reflecting differences in skill levels by employment type and differences that may occur depending on future operations and activities at Heathrow. Using these growth rates, a set of deflators has been derived and applied to the future employment estimates.

7.2.7 The Heathrow employment estimates for each scenario (up to 2030) are then calculated and can be compared with the base option in order to estimate the likely impact of a particular scenario. The results are shown later in this chapter.

7.3 Impacts of the Different Options

7.3.1 On an individual basis, forecasting the impact on the three boroughs over the period to 2030 is an extremely complex process. The first issue to consider is whether particular factors underlying future employment levels are significant inflators or deflators of economic activity and whether these therefore induce employment growth. The table below provides a qualitative view of these factors.

Table 7.3: Summary of Impacts of Different Options

Scenario	LHR Hub Status	Direct on and off Employment	Indirect	Induced	Catalytic	Comments
S1	R[41] -	-	N[42]	Function of direct and induced though possibility of greater leakage with S5 and S6	-	Employment drivers eroded by productivity and catalytic impacted by decreasing competitive position of LHR
S2	R++	++	+		++	Positive employment impacts that could be inhibited by limited absorptive capacity of local economy
S3	R++	++	+		++	
S4A	R+	+	N		+	Relocation of certain carriers to LGW would allow LHR to enhance connectivity
S4B	R	N	N		N	STN less attractive for relocation of carriers from LHR
S5	Lost	--	-		-	Significant loss of LHR related jobs and many catalytic jobs would relocate
S6	Lost	---	--		---	Closure of LHR would result in complete loss of LHR related jobs and an overwhelming element of catalytic jobs would relocate

+ positive ++ very positive – negative – very negative --- extremely negative

41 R - retained
42 N - neutral

7.3.2 In the sections below, we provide modelled forecasts for each scenario analysed. Timelines for each scenario are based on those summarised in Chapter 6. It is not within the remit of this study neither to review these timelines nor to provide a view on deliverability. Indeed, the timelines may change subject to the speed of Government policymaking, the availability of funding, the willingness of promoters to follow through on their proposals etc. Although the forecast end date of 2030 is arbitrary, it is helpful as it encompasses most of the capacity changes that are likely to be under review by the AC. This is with the possible exception of those scenarios comprising 1) the construction of a new hub with four runways and 2) development of a four-runway airport at Heathrow. Both these scenarios are unlikely to be required until after 2035.

7.4 S1 (no change)

7.4.1 Table 7.4 indicates the effects of 1) the declining competitive position of Heathrow as a hub airport in Europe and 2) capacity constraints throughout the SE. In overall terms, job losses are noteworthy but not that damaging over the period under review. However, the longer term implications could be severe once Heathrow's position becomes severely compromised in the very long term.

Table 7.4: S1 Employment Impacts

	Ealing			Hounslow			Slough		
	2010	2020	2030	2010	2020	2030	2010	2020	2030
Non-catalytic	8,572	8,497	7,857	16,014	15,873	14,678	6,087	6,033	5,579
Catalytic	8,195	6,092	5,633	20,093	16,596	15,347	10,911	9,913	9,167
Total	16,767	14,589	13,491	36,106	32,469	30,025	16,998	15,947	14,746
Total in employment	151,900			120,200			61,400		
Change in employment		-2,178	-3,277		-3,637	-6,081		-1,051	-2,251

7.5 Scenarios 2 (LHR3) and 3 (LHR4)

7.5.1 Within the forecasting timeframe, the impacts of S2 and S3 are basically identical. It is unlikely that the possibility of a fourth runway at Heathrow post-2035 would have any impacts upon catalytic impacts pre-2030. Substantial impacts would take place before a third runway is open as existing catalytic companies would bring forward expansion and the pace of FDI into the area would increase on the back of increases in international connectivity to BRICS and other sources of inward investment. The likelihood of 'overheating' within the local labour market and the implications for local support infrastructure is more likely to take place in the short to medium term than the longer term in the period to 2030.

Table 7.5: S2 and S3 Employment Impacts

	Ealing			Hounslow			Slough		
	2010	2020	2030	2010	2020	2030	2010	2020	2030
Non-catalytic	8,572	9,727	10,220	16,014	18,170	19,092	6,087	6,907	7,257
Catalytic	8,195	13,948	14,655	20,093	30,397	31,940	10,911	14,443	15,176
Total	16,767	23,674	24,875	36,106	48,567	51,031	16,998	21,350	22,433
Total in employment	151,900			120,200			61,400		
Change in employment		6,907	8,108		12,461	14,925		4,352	5,435

7.6 Scenarios 4A (LHR2+LGW2) and 4B (LHR2+STN2)

7.6.1 The opening of a second runway at Gatwick will provide some short-term enhancement to the hub capability of Heathrow. In turn, this will lead to some small increases in employment generation in the short term and an overall neutral position in the longer term. The impact of a second runway at Stansted is marginally worse in terms of local employment within the Heathrow impact area.

Table 7.6: S4A Employment Impacts

	Ealing			Hounslow			Slough		
	2010	2020	2030	2010	2020	2030	2010	2020	2030
Non-catalytic	8,572	9,168	8,437	16,014	17,126	15,760	6,087	6,510	5,991
Catalytic	8,195	8,764	8,065	20,093	21,488	19,775	10,911	11,668	10,738
Total	16,767	17,932	16,502	36,106	38,613	35,535	16,998	18,178	16,729
Total in employment	151,900			120,200			61,400		
Change in employment		1,164	-265		2,507	-571		1,180	-269

Table 7.7: S4B Employment Impacts

	Ealing			Hounslow			Slough		
	2010	2020	2030	2010	2020	2030	2010	2020	2030
Non-catalytic	8,572	8,944	8,145	16,014	16,708	15,215	6,087	6,351	5,783
Catalytic	8,195	8,550	7,786	20,093	20,964	19,090	10,911	11,384	10,366
Total	16,767	17,494	15,931	36,106	37,672	34,305	16,998	17,735	16,150
Total in employment	151,900			120,200			61,400		
Change in employment		727	-836		1,566	-1,801		737	-848

7.7 Scenario 5 (LHR1+NAD)

7.7.1 The opening of a new hub in 2029 and the theoretical continuation of one runway at Heathrow would result in significant declines in employment by the end of the forecast period. Whilst the retention of a single runway would ensure that significant numbers of direct, indirect and induced jobs would be maintained, these would be at levels more akin to ratios experienced currently at Gatwick and Stansted. Furthermore, the catalytic impacts would decline markedly as companies relocate to the new hub and/or elsewhere.

Table 7.8: S5 Employment Impacts

	Ealing			Hounslow			Slough		
	2010	2020	2030	2010	2020	2030	2010	2020	2030
Non-catalytic	8,572	8,497	2,351	16,014	15,873	4,391	6,087	6,033	1,669
Catalytic	8,195	8,123	1,124	20,093	19,916	3,673	10,911	10,814	2,493
Total	16,767	16,620	3,474	36,106	35,788	8,065	16,998	16,848	4,162
Total in employment	151,900			120,200			61,400		
Change in employment		-148	-13,293		-318	-28,042		-150	-12,835

7.8 Scenario 6 (LHR0+NAD)

7.8.1 The closure of Heathrow in 2029 to coincide with the opening of a new hub will effectively eliminate all forms of employment facilitated by the airport. Some residents of Hounslow, Ealing and Slough working at Heathrow may decide in the short term to commute to the new hub. However, the costs of commuting are likely to deter the majority from extending their journey-to-work patterns. For catalytic impacts, as we have assumed that only those companies in 2010 that need to be in close proximity of the airport are included, these companies would relocate partly before LHR closure and fully at the time of closure. Clearly, there are activities in these companies that are not catalytically tied to hub location. However, we have assumed that given that companies will have several years in which to address these issues, the end result will be virtual complete relocation. It should be also noted that the indirect and induced impacts of these companies was not included in the 2010 assessments. In addition, the departure of these companies is likely to lead to an inward spiral of decline as companies that are part of clusters will relocate irrespective of whether international connectivity is an issue as long as the 'leaders' require connectivity and decide to relocate accordingly.

Table 7.9: S6 Employment Impacts

	Ealing			Hounslow			Slough		
	2010	2020	2030	2010	2020	2030	2010	2020	2030
Non-catalytic	8,572	8,497	0	16,014	15,873	0	6,087	6,033	0
Catalytic	8,195	8,123	0	20,093	19,916	0	10,911	10,814	0
Total	16,767	16,620	0	36,106	35,788	0	16,998	16,848	0
Total in employment	151,900			120,200			61,400		
Change in employment		-148	-16,767		-318	-36,106		-150	-16,998

7.8.2 The following set of charts are based on the information in the tables above, and show a comparison of employment in 2020 and 2030 relative to 2010, for each borough and scenario.

Figure 7.1: Change in employment relative to 2010 in Ealing

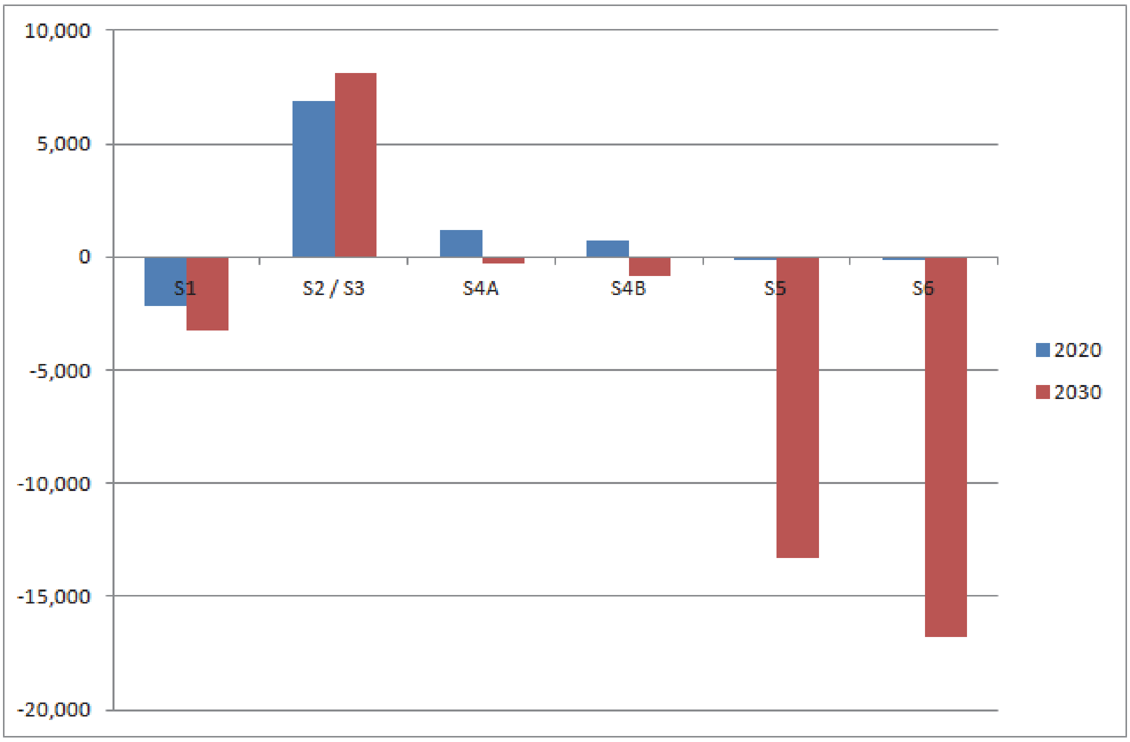


Figure 7.2: Change in employment relative to 2010 in Hounslow

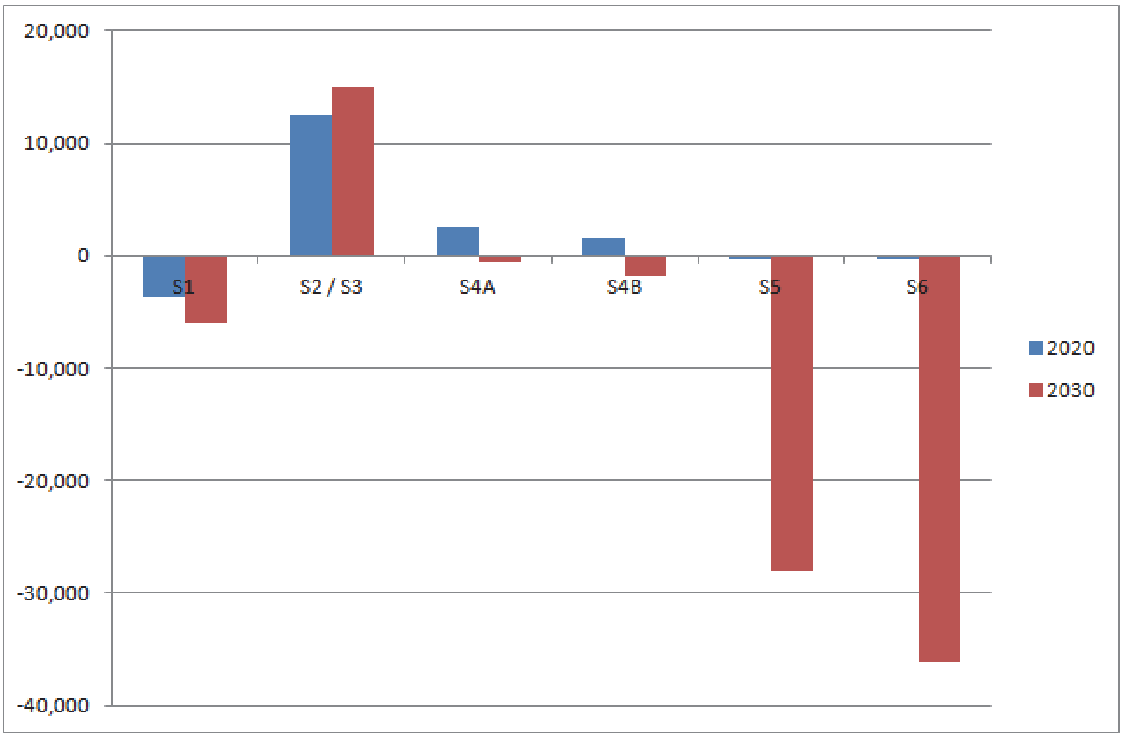
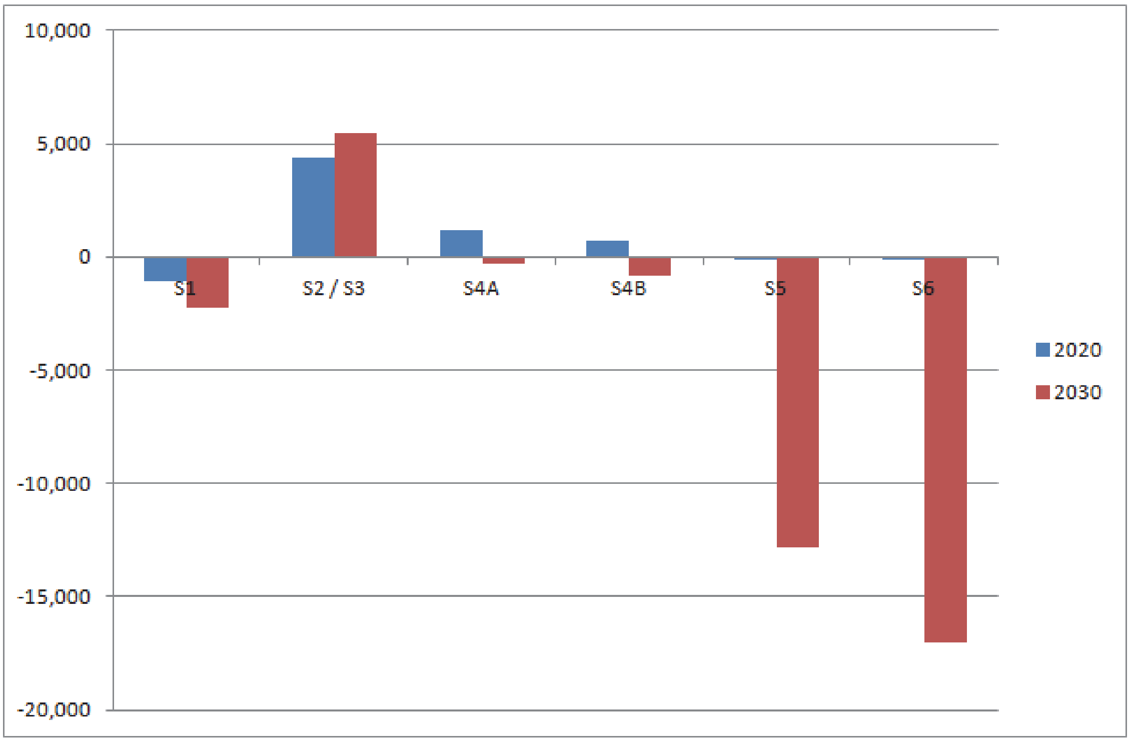


Figure 7.3: Change in employment relative to 2010 in Slough



7.8.3 The next set of charts show a comparison of each scenario relative to S1 in 2020 and 2030. These charts therefore represent the impact of each scenario relative to the baseline. For instance, in the charts above S4A and S4B show a decrease in employment in 2030, whereas in the charts below they show an increase. This is because there is a larger decrease in employment in 2030 in S1.

Figure 7.4: Difference in employment relative to S1 in Ealing

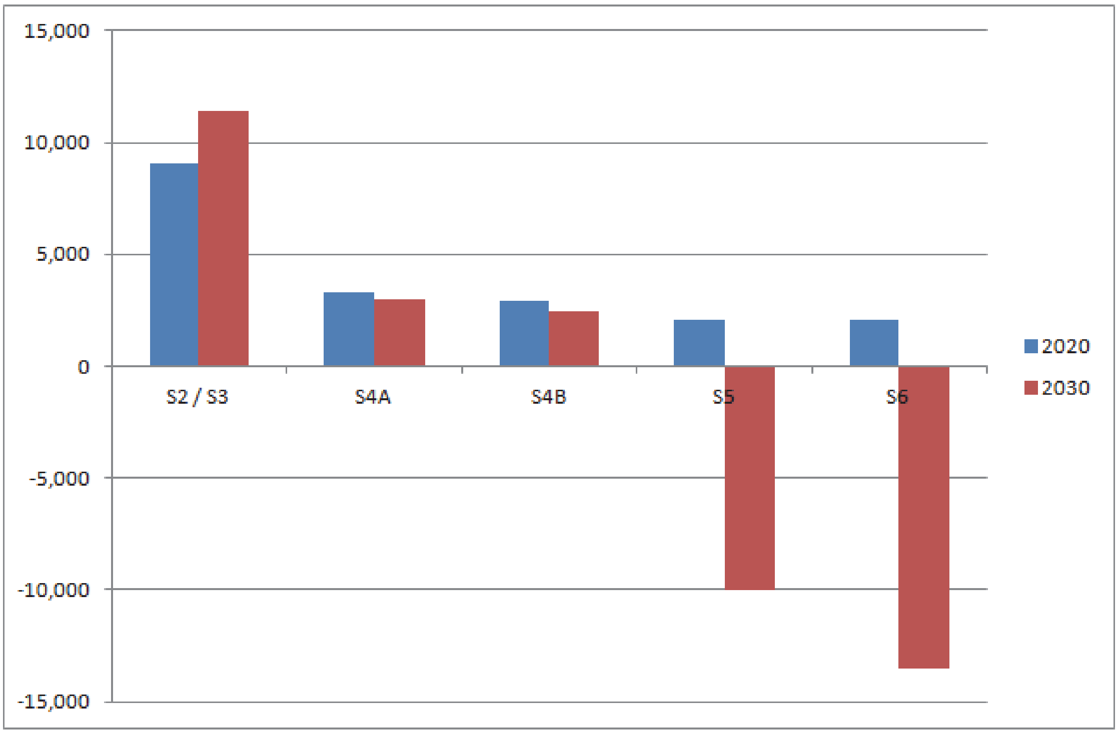


Figure 7.5: Difference in employment relative to S1 in Hounslow

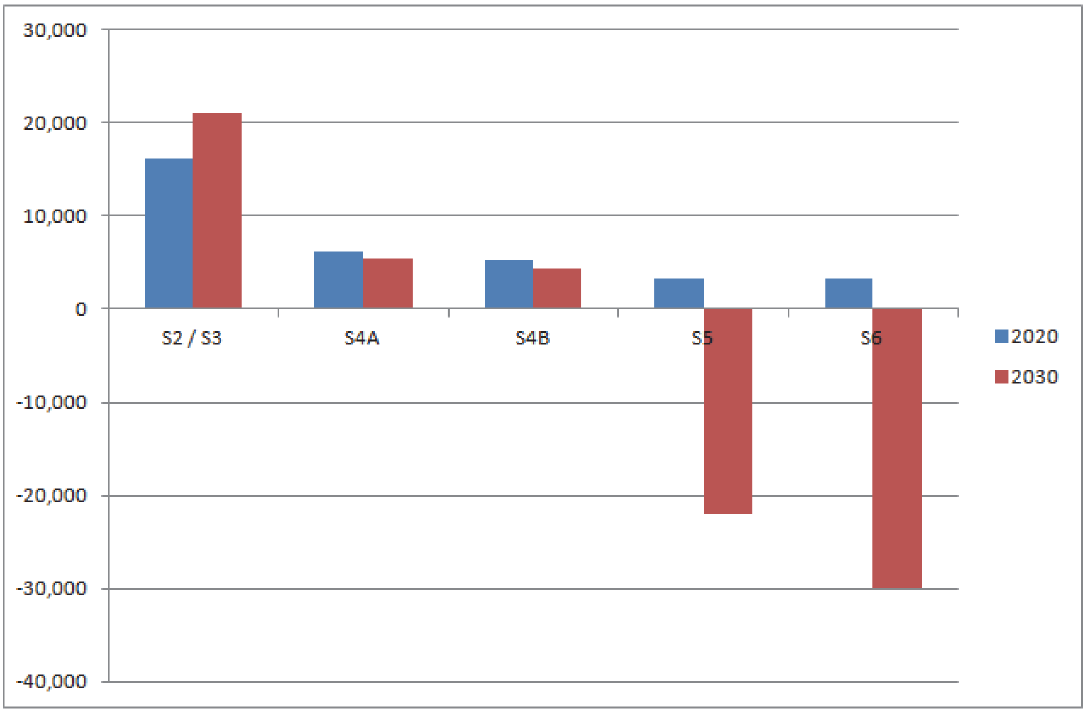
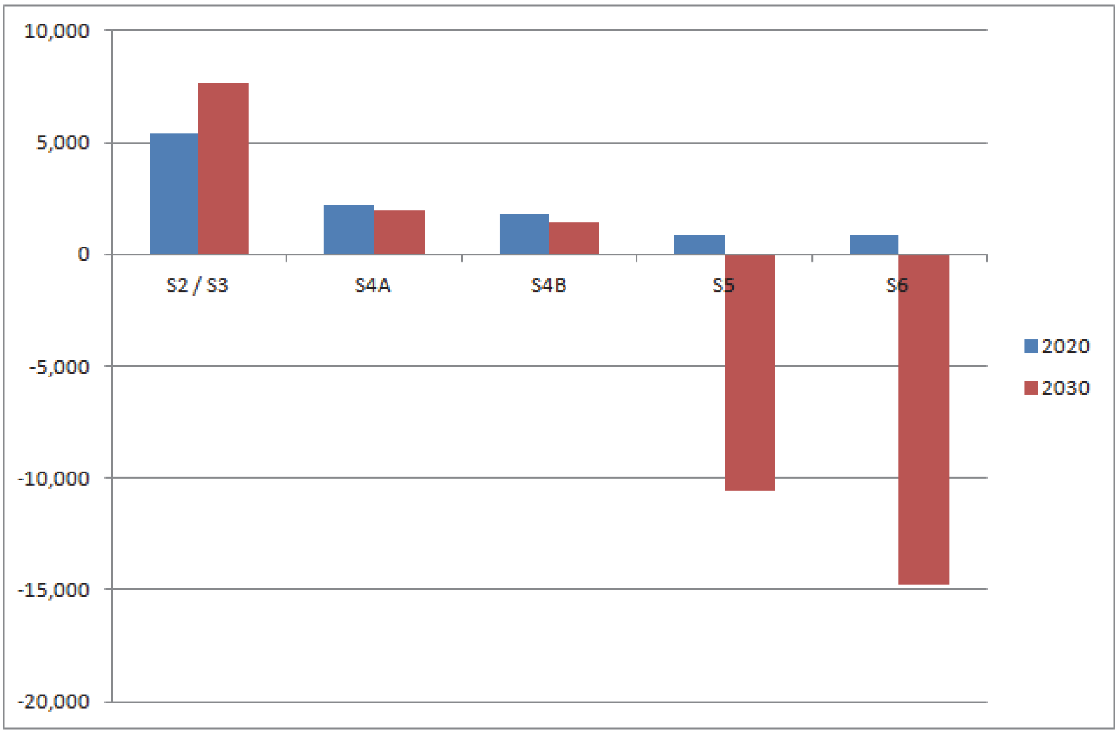


Figure 7.6: Difference in employment relative to S1 in Slough



7.9 Conclusions

7.9.1 In the context of local labour markets, S1, S4A and S4B have marginal impacts. There is a likelihood that Heathrow's position as a hub airport will gradually erode in S1 but it is unlikely to be severely affected in the period to 2030. GAL's response[43] to the AC indicates that S4A would enhance connectivity at Heathrow assuming that an alliance does not move. Even with an alliance moving (we assume that this does not refer to One World), Heathrow's connectivity is only slightly diminished and the total connectivity between Heathrow and Gatwick would increase. Overall, S1, S4A and S4B are extremely unlikely to have significant consequences for the economic well being of Hounslow, Ealing and Slough. However, the longer term consequences need careful consideration and Heathrow's ability to maintain competiveness will undoubtedly be compromised with consequential implications for catalytic impacts.

7.9.2 S2 and S3 will lead to labour market concerns in Hounslow and to some extent Slough. The situation in the 1990s in the Heathrow area led to an increasing journey-to-work pattern as the local economies achieved full employment. This had wage price implications to other sectors in the area – particularly the public sector. It is unlikely that this situation would be repeated given the reduction in public sector employment in recent years.

[43] Proposals for providing Additional Runway Capacity in the Longer Term, GAL Ltd, July 2013

7.9.3 Unsurprisingly, S5 and S6 result in significant local job losses. These impacts are probably underestimated for 2030 by the model and the period following – particularly for S6. HAL states in a recent report[44]:

"London's only comparable experience was the closure of the docks. Over a ten-year period, the five Dockland Boroughs lost 150,000 jobs. Despite billions of pounds of investment over the last 30 years, these jobs have never been fully replaced and employment in East London remains significantly below its peak, with the result that it suffers some of the highest deprivation and worklessness in the country."

7.9.4 In discussions with the Mayor of London's Office/TfL and based on their submissions, we understand that they opine that Heathrow would have to close in order for any of their options to succeed[45]. These statements encompass a consequence of an approximate 20 year fallow period in and around Heathrow with very slow economic recovery post 2029 (the estimated date of the new hub opening).

7.9.5 Indeed, the Economist summed it up in March 2013 claiming that a Thames airport would result in *"a Biblical migration of workers and businesses across the capital".*

7.9.6 There is a consensus that S6 would result in the closure of Heathrow – the key question is the *extent of the economic damage that would be consequential at the local level* both at the time of closure and in the years post closure. Indeed, it is evident that companies would begin relocating before closure and intended expansion would not take place. Indeed, impacts would occur as soon as Government policy became clear as some companies will delay decision making in the period leading up to the decisions

[44] Op cit [26]
[45] A view also expressed by MAG in their proposal for a hub at Stansted

8 CONCLUSIONS

8.1.1 The objectives of this exercise and report have been:

- To identify the extent that current employment in the three boroughs is dependent on operations at Heathrow Airport (including indicative findings with respect to catalytic employment);
- To agree a series of SE airport development scenarios that need to be analysed in the context of the Airport Commission's deliberations; and
- To produce indicative forecasts with respect to modelled employment impacts for each scenario.

8.1.2 There are several key findings from the analysis. Firstly, using robust data already compiled by HAL and Optimal Economics, there is a considerable amount of current employment in the local economy (defined as being the boroughs of Ealing, Hillingdon, Hounslow, Spelthorne and Slough) that is dependent on Heathrow.

8.1.3 When analysed at the 'three borough' level, even without catalytic employment, approximately 1 in 10 of the respective workforces in Hounslow and Slough can be termed as being dependent on Heathrow. Although the analysis for Ealing indicates a lower level of dependency, separate analysis of wards in the west of the borough indicates very high rates of dependency as the airport generates significant employment for the residents of these areas.

8.1.4 With respect to catalytic employment, data obtained from the ONS clearly demonstrates that Slough in particular and Hounslow to a lesser (though still significant) extent have very high incidences of foreign ownership of local businesses compared with regional and national averages. Empirical research indicates that the presence of foreign-owned business (and hence employment opportunities) in a particular area is highly dependent on excellent levels of international connectivity. The location of Heathrow in close proximity to these businesses in the local area provides clear evidence of the airport's impact on catalytic employment.

8.1.5 Based on the analysis of this data, we have derived a series of indicative catalytic multipliers to apply to the employment forecasts. These multipliers are based on prudent, realistic assumptions and are at the lower end of the scale compared to the impacts implied by some of the official data (such as ONS). We have also scaled back these impacts to take account of the fact that certain proportions of catalytic employment in each borough is taken up by workers commuting in from other areas.

8.1.6 Although the precise scale of current catalytic impacts is debatable, our analysis shows that they account for the generation of tens of thousands of jobs for local residents in Ealing, Hounslow and Slough.

8.1.7 In overall employment terms (midpoint), our modelling indicates that for Hounslow about 28% of residents in employment are in jobs facilitated by the existence of Heathrow as both an on-airport employment provider as well as an international hub offering unparalled international connectivity to catalytic companies. For Ealing the percentage is 10%, whilst for Slough the percentage 29%.These are borough-wide averages and it is evident that there are wards in Ealing (i.e. Southall Broadway and Southall Green) and Hounslow (i.e. Cranford and Heston West) that far exceed these average dependencies.

8.1.8 We have tested the employment impacts of four ‘core’ scenarios and three ‘additional’ scenarios. Scenario 1 is referred to as the Base Case as this assumes that operations (and capacity) at Heathrow remain as they are today and will continue into the future with HAL optimising the use of current capacity.

8.1.9 The economic modelling work utilises several input assumptions. These include current DfT passenger forecasts and assumed productivity deflators (i.e. current productivity factors may change going into the future and this will impact on the employment forecasts). A summary of the estimates for each scenario is provided below:

- **S1 (no change)**: job losses are noticeable but not that damaging at a borough level over the period to 2030. The longer term implications could be severe once Heathrow’s competitive position becomes severely compromised in the very long term;
- **S2 (LHR3)** and **S3 (LHR4)**: substantial impacts would take place before a third runway is open as existing catalytic companies would bring forward expansion and the pace of FDI into the area would increase on the back of increases in international connectivity to BRICS and other sources of inward investment;
- **S4A (LHR2+LGW2)** and **S4B (LHR2+STN2)**: a second runway at Gatwick will provide short to mid-term enhancement to the hub capability of Heathrow. This will lead to small increases in employment in the short term and an overall neutral position in the longer term. The impact of a second runway at Stansted is very marginally worse in terms of local employment within the vicinity of Heathrow;
- **S5 (LHR1+NAD)**: the opening of a new hub in 2029 and the theoretical retention of only one runway at Heathrow would result in significant declines in employment by 2030; and
- **S6 (LHR0+NAD)**: the closure of Heathrow in 2029 to broadly coincide with the opening of a new hub (though there would be an overlap in reality) will initially have a damaging impact on catalytic employment in the 10 year period prior to closure and effectively eliminate all forms of local employment facilitated by the airport once closed.

8.1.10 There are distinct differences between the impacts upon the three boroughs both in terms of direct/indirect/induced and catalytic employment categories. These have been explored in greater detail in the individual borough reports.

8.1.11 Clearly, S6 would have a severe – if not catastrophic – economic impact on the local area around Heathrow. A new hub airport would initially generate similar levels of direct/indirect/induced employment. However, our research has indicated that the loss of catalytic companies from the area around Heathrow is not necessarily compensated on a UK plc basis by these companies relocating near to the new hub. Indeed, it is apparent that there is the potential for some companies to relocate outside the UK. This situation is particularly sensitive with regards to several business clusters located in proximity to Heathrow. Certainly, the IT/telecommunications cluster that resides within Slough, Hounslow and in neighbouring authorities would need to relocate and whether this cluster would move near to the new hub is highly debatable. There must remain a possibility that this cluster would relocate outside of the UK.

8.1.12 In conclusion, it is evident that a considerable quantum of employment in the local economy is dependent on Heathrow and that the future impacts on employment would vary substantially between the different airport scenarios under consideration. Current research on the local employment impact of existing airport expansion is well documented and provides clear indicators for the economic consequences of increased capacity at Heathrow. Very scant research is available on the local and sub-regional economic consequences of the closure of an international hub airport. It is critical to not only address the more straightforward analysis encompassing direct/indirect/induced impacts but also to acquire an understanding about the numerically more important catalytic impacts. Certainly the Ramboll/Oxford Economics study on Heathrow closure omits this more important element as well some lesser impacts.

8.1.13 In total, we broadly estimate that some 70,000 jobs are at risk in the three boroughs in the event of Heathrow closure. This compares with the Regeneris study that estimates a totality of some 270,000/330,000 jobs at risk on a wider regional basis. A potential loss of jobs at this scale for each borough is clearly of immense consequence.