Appendix A

TOPIC BASED SCHEMES ASSESSMENT: AOS FOR CONSULTATION DRAFT AIRPORTS NPS

A-3 ECONOMY

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3 ECONOMY

3.1 INTRODUCTION

3.1.1 This topic based assessment considers each airport expansion scheme under the Economy topic. These are London Heathrow Extended Northern Runway (LHR-ENR), London Heathrow Northwest Runway (LHR-NWR) and London Gatwick Second Runway (LGW-2R) (together the shortlisted schemes).

3.1.2 By law, before designating an Airports National Policy Statement (NPS) an Appraisal of Sustainability (AoS) must be carried out. This AoS is a strategic level assessment. It is based on the contents of the draft Airports NPS. The AoS considers alternatives to the Government's preferred scheme as set out in the draft Airports NPS, including the outline masterplans supplied to the Airports Commission (AC) for the three shortlisted schemes. This AoS considers the impacts of expansion without the benefits of the mitigation package put forward by scheme promoters, unless stated otherwise. The Government has outlined that it expects a significant mitigation package to be put in place by the promoter of its preferred scheme to ensure that, wherever possible, significant effects are avoided, reduced or offset.

3.1.3 Further project level design will be required which will inform an Environmental Impact Assessment carried out by the promoter. This would include an assessment, which is likely to include effects identified in the AoS, as well as more detailed mitigation developed as detailed design progresses. This will also be developed through consultation with both affected communities and other stakeholders.

3.1.4 This assessment is based upon the previous assessment undertaken by the AC and Department for Transport (DfT), but also responds to the AoS Appraisal Framework. The Framework addresses economic issues which have been identified through a review of plans, policies and programmes, and also the economic baseline.

3.1.5 Each expansion scheme is considered against the AoS Appraisal Framework Objectives, and Appraisal Questions. The Objectives and Questions which are addressed within this assessment are as follows:

- **AoS Objective 4**: To maximise economic benefits and to support the competitiveness of the UK economy.
  - **AoS Question 6:** Will it enhance economic benefits?
  - **AoS Question 7**: Will it contribute to sustainable growth in employment?
  - **AoS Question 8:** Will it support the productivity of the UK economy?
- **AoS Objective 5:** To promote employment and economic growth in the local area and surrounding region.
  - **AoS Question 9:** Will it incorporate accessibility improvements, particularly with key local employment centres and areas of high unemployment?
  - **AoS Question 10:** Will it contribute to growth in the local economy?

3.1.6 This topic based assessment does not rely exclusively upon quantifying the economic value of the benefits and disbenefits associated with each scheme, as presented by the DfT in its *Further Review and Sensitivities Report*[1] published in November 2016. In this AoS, the broad economic benefits for each scheme are mainly reported under the assessment for Question 6. The other questions which are posed address particular national or local policy or sustainability issues which have been identified in the AoS Scoping Report, and have been taken forward for further assessment within this AoS.

3.2 POLICY AND LEGISLATION

3.2.1 The following policy and legislation relevant to the Economy assessment is summarised below and its context and applicability is explained as appropriate in the relevant sections of the assessment. Other topic specific policy and legislation has been covered in specific topic sections.

National Infrastructure Plan (2014)

3.2.2 The National Infrastructure Plan[2] sets out the challenges facing UK infrastructure and the Government's strategy for meeting the infrastructure needs of the UK economy. The Plan contains major commitments for investment in important infrastructure projects and explains how it will attract new private sector investment. The Plan sets out the following objectives for government policy on aviation in the UK, which must:

- ensure the UK has sufficient capacity to meet current and forecast needs;
- ensure the UK remains one of the best connected countries in the world via air links; and
- maintain aviation hub capacity.

National Planning Policy Framework (NPPF)

3.2.3 The NPPF[3] sets out the government's planning policies for England and explains how these should be applied in the planning decision making process. The NPPF is a material consideration in planning decisions. The NPPF does not contain specific policies for airports or nationally significant infrastructure projects which guide this assessment. However, the NPPF highlights the role the planning system has in supporting the economy by ensuring the right type of land is available in the right places, and at the right time to support growth and innovation.

[1] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.
[2] HM Treasury, 2013. *National Infrastructure Plan*. [online] Accessed 06/05/2016.
[3] DCLG, 2012. *National Planning Policy Framework*. [online] Accessed 06/05/2016.

DfT Web-based Transport Analysis Guidance (WebTAG)

3.2.4 WebTAG[4] is the guidance provided by the Government on undertaking the appraisal of transport projects and proposals. Projects or studies that require Government approval are expected to make use of this guidance in a manner appropriate for that project or study. WebTAG includes objectives and sub-objectives covering various assessment topics including economy. Assessments which have been carried out in accordance with WebTAG guidance form part of the evidence base which has supported this assessment, where possible and where appropriate.

Aviation Policy Framework (2013)

3.2.5 The Aviation Policy Framework[5] sets out the Government's policy to allow the aviation sector to continue to make a significant contribution to economic growth across the country. The Framework sets out the historic benefits of airport development to:

- the contribution of the air transport sector to gross domestic product (GDP) and jobs;
- the importance of air travel and air freight for supporting the import and export of high value or time critical goods and services;
- the value of the aerospace sector, and associated advance manufacturing to the economy;
- the economic value of the 'business and general aviation' sector;
- the contribution that aviation makes to supporting productivity and growth, particularly through improved connectivity for businesses, services, and in supporting the diffusion of knowledge and innovation;
- the benefits to consumers and businesses from improved connectivity, both in terms of reduced delays and disruption, and in terms of increased choice of destinations and frequency; and
- the role air transport plays in supporting tourism, a key sector of the UK economy.

3.3 BACKGROUND TO THE ASSESSMENT

3.3.1 The assessment is based on the following reports:

- Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report*[6];
- Airports Commission, 2015. *Economy: Wider Economic Impacts Assessment*[7];
- Airports Commission, 2015. *Economy: Updated Transport Economic Efficiency Impacts*[8];
- Airports Commission, 2015. *Economy: Updated Final Delay Impacts Assessment*[9];

[4] DfT, 2014. *Transport Analysis Guidance* (WebTAG). [online] Accessed 06/05/2016.
[5] DfT, 2013. *Aviation Policy Framework*. [online] Accessed 06/05/2016.
[6] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report*. [online] Accessed 25/11/2016.
[7] Airports Commission, 2015. *Economy: Wider Economic Impacts Assessment*. [online] Accessed 24/12/2015.
[8] Airports Commission, 2015. *Economy: Updated Transport Economic Efficiency Impacts*. [online] Accessed 24/12/2015.
[9] Airports Commission, 2015. *Economy: Updated Final Delay Impacts Assessment.* [online] Accessed 24/12/2015.

- Airports Commission, 2015. *Strategic Fit: Forecasts*[10];
- Airports Commission, 2015. *Local Economy: Impacts Assessment Post Consultation Updates*[11];
- Airports Commission, 2015. *Final Report*[12];
- PWC / Airports Commission, 2014. 2. *Economy: Wider Impacts Assessment*[13];
- Jacobs, 2014. *Local Economy Impacts: Assessment*[14]; and
- PWC / Airports Commission, 2014. *Local Economy: Literature Review*[15].

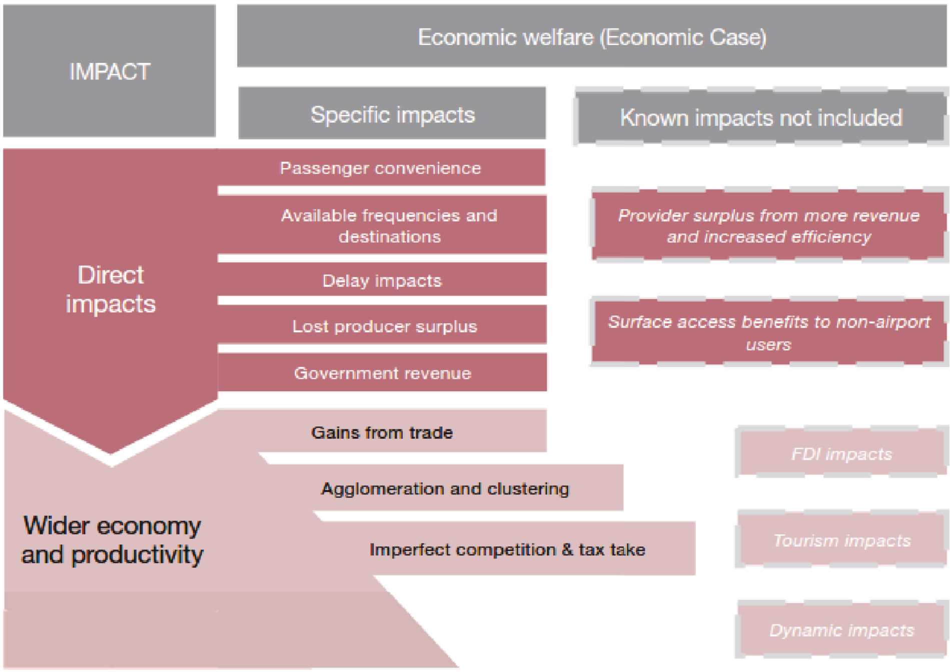
BACKGROUND

3.3.2 Economic effects within this assessment are separated into similar components to those considered by the AC, and are drawn from the reports listed above. The appraisal objectives and questions which are assessed within this appendix respond to the AoS Appraisal Framework, and are different to the AC and the DfT assessment. This assessment considers a range of economic effects, including direct impacts, wider impacts, and local impacts. The economic effects which are presented within this AoS are in accordance with the AC's assessment approach shown in Figure 3.1, and the approach set by the DfT's *Further Review and Sensitivities Report*[16] published in November 2016. This assessment presents economic impacts under the following headings:

- Direct economic: passenger, producer (including airline) and government impacts;
- Wider economic impacts including productivity impacts; and
- Local economic impacts.

[10] Airports Commission, 2015. *Strategic Fit Forecasts*. [online] Accessed 24/12/2015.
[11] Airports Commission, 2015. *Local Economy: Impacts Assessment Post Consultation Updates*. [online] Accessed 17/02/2016.
[12] Airports Commission, 2015. *Final Report*. [online] Accessed 24/12/2015.
[13] pwc / Airports Commission, 2014. *Economy: Wider Economic Impacts Assessment*. [online] Accessed 24/12/2015.
[14] Jacobs, 2014. *Local Economy Impacts: Assessment.* [online] Accessed 24/12/2015.
[15] pwc, 2014. *Local Economy: Literature Review*. [online] Accessed 24/12/2015.
[16] Airports Commission, 2015. *Final Report*. [online] Accessed 24/12/2015.

Figure 3.1: Airports Commission - Economic Impact Assessment modules



3.3.3 The AC '*Local Economy Impacts: Assessment*', '*Local Economy: Impacts Assessment Post Consultation Updates*', '*Economy: Wider Economic Impacts Assessment*' and the DfT '*Further Review and Sensitivities Report*'[17] provide further analysis of economic effects at a local level, including employment.

3.3.4 It is difficult to quantify wider economy and productivity impacts. As such, various methodologies have been used to quantify direct and wider economic impacts as complementary pieces of analysis. A small subset of the estimates of wider economic benefits (agglomeration and business output benefits) are additive to the direct economic benefits. Both the 'direct impacts' and 'wider economy and productivity' impacts have been assessed using methodologies based on current guidance developed by DfT in WebTAG, together with the AC's and DfT's supplementary analysis.

3.3.5 In addition to a detailed comparison of the relative 'direct' and 'wider' economic impacts, the AC's *Business Case and Sustainability Assessment*[18], and the DfT's *Further Review and Sensitivities Report*[19] monetise other environmental impacts, such as noise and air quality. Within this AoS, the significance of environmental effects are considered under the corresponding topic based assessments, and are generally not monetised.

APPROACH TO ASSESSMENT: DIRECT ECONOMIC IMPACTS

3.3.6 Direct Economic Impacts are set out in the *Further Review and Sensitivities Report*[20]

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[17] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report*. [online] Accessed 25/11/2016.
[18] Airports Commission, 2015, *Business Case and Sustainability Assessment Heathrow Airport Northwest Runway*. [online] Accessed 25/11/2016.
[19] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report*. [online] Accessed 25/11/2016.
[20] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report*. [online] Accessed 25/11/2016.

and include:

- passenger benefits from lower fares;
- passenger benefits from improved frequencies;
- passenger and producer benefits from reduced delays
- producer disbenefits from lower fares; and
- Government revenue impacts from people diverting their spending behaviour towards air travel.

3.3.7 As set out in the *Further Review and Sensitivities Report*, it is difficult to robustly assign producer dis-benefits between UK and non-UK residents. For consistency therefore, all direct economic impacts presented include impacts to UK and non-UK residents. For further information, please see the *Further Review and Sensitivities Report*, which, where possible, presents impacts for both UK and non-UK residents.

3.3.8 The direct passenger effects associated with enhanced airport capacity are assessed for each airport expansion scheme in *Economy: Updated Transport Economic Efficiency Assessment*[21]. The *Economy: Updated Final Delay Impacts Assessment*[22] also quantifies the benefits for airlines, passengers and carbon emissions of a reduction in delays in the UK airport system.

APPROACH TO ASSESSMENT: WIDER ECONOMIC IMPACTS

3.3.9 The AC's *Final Report*[23] and *Wider Impact Assessment Report*[24] and the DfT's *Further Review and Sensitivities Report*[25] describe the Wider Economic Impacts of airport expansion. The AC considered two approaches to estimating these impacts:

- conventional appraisal; and
- Spatial Computable General Equilibrium (S-CGE) modelling of GDP[26].

3.3.10 The estimated Wider Economic Impacts using the conventional appraisal approach are based on concepts in WebTAG and established in wider literature.

3.3.11 The Wider Economic Impacts assessed by the DfT and the AC include:

- increased productivity arising from more trade;
- agglomeration (the advantage of business clusters, being close to transport links and a dynamic work force);
- increase in business output in imperfectly competitive markets; and
- increase in Government revenue (tax-take) resulting from labour market impacts ("tax wedge").

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[21] Airports Commission, 2015. Economy: Updated Transport Economic Efficiency Impacts. [online] Accessed 24/12/2015.

[22] Airports Commission, 2015. Economy: Updated Final Delay Impacts Assessment. [online] Accessed 24/12/2015.

[23] Airports Commission, 2015. *Final Report*. [online] Accessed 24/12/2015.

[24] Airports Commission, 2015. *Economy – Wider Impact Assessment,* p. 22. [online] Accessed 24/12/2015.

[25] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

[26] Computable General Equilibrium (CGE) models are large-scale numerical models that provide a stylised representation of core economic interactions within the economy.

3.3.12 Subsequent to the AC's assessment, the DfT undertook further assessment[27] of the wider economic impacts, which aimed to build on the existing evidence base developed by the AC through sensitivity analysis, and where possible to replace or augment areas of lower analytical assurance. The key differences between the AC and the DfT's work are as follows:

- separate reporting of trade benefits due to the risk of double counting benefits identified in other areas of the appraisal, and the development of additional estimation methodologies;
- exclusion of tax wedge within the wider economic impacts, due to difficulty of establishing a robust methodology;
- modifications to the approach for calculating agglomeration benefits, and therefore the overall value of this benefit.

3.3.13 The assessment of Wider Economic Impacts provides a more comprehensive understanding of each expansion scheme's likely effects on the economy than the direct economic impacts in isolation. This AoS presents the wider economic estimates with the modifications made by DfT. The estimates of trade and productivity impacts have been used in this AoS to make inferences about international competitiveness of the UK economy.

3.3.14 The AC also considered the wider economic impacts from a top-down macroeconomic perspective in the report *Wider Economic Impact Assessment*[28]. In this approach, the impacts on UK GDP were calculated using S-CGE modelling, and by quantifying the extent to which the following wider economic impacts would contribute to GDP:

- changes in passenger flows;
- productivity effects (captured through international trade);
- frequency benefits to airport users; and
- transport economic efficiency effects.

3.3.15 The methods used for the assessment of macro-economic impacts are not well established for airports, and several uncertainties emerged within the assessment which could not be eliminated to the extent where the outcome was sufficiently certain. As a consequence the DfT do not report GDP impacts within its economic case in the *Further Review and Sensitivities Report*[29], and the GDP impacts estimated by the AC using S-CGE modelling did not form part of the AC's economic case. They are also not reported within this AoS.

[27] Department for Transport, 2016. Air*port Capacity in the South East: Further Review and Sensitivities Report* [online] Accessed 25/11/2016.
[28] Airports Commission, 2015. *Economy – Wider Impact Assessment,* p. 22. [online] Accessed 24/12/2015.
[29] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

APPROACH TO ASSESSMENT: LOCAL ECONOMIC IMPACTS

3.3.16 Airport expansion is expected to affect local economies, in particular through improvements to accessibility, and through generation of employment and business opportunities. These impacts will occur either during construction (given that a large number of workers will be employed during the construction phase) or through the operational life of the airport. Where economic effects are reported at a local level within this assessment, they are based upon the DfT's *Further Review and Sensitivities Report* unless otherwise indicated. The Further Review and Sensitivities Report builds upon two reports published by the AC and produced by Jacobs, *Local Economy: Impacts Assessment*[30] and *Local Economy Impacts: Assessment post consultation updates*[31]. The AC[32] and DfT[33] therefore describe the following local economic impacts:

- direct, indirect and induced additional jobs from airport expansion;
- clustering and agglomeration effects, which for example include attraction of air transit related industries to the vicinity of the airport;
- construction phase jobs; and
- surface access arrangements and effects on accessibility.

3.3.17 The DfT *Further Review and Sensitivities Report* provides an adjusted estimate of local employment effects to that reported by the AC. The DfT's additional assessment uses the same data as the AC (on-airport surveys) for the projections of direct jobs. However, for indirect and induced impacts, the DfT used data based on current employment at Gatwick and Heathrow. For indirect impacts, these are based on survey data whilst for induced impacts; these were based on work by Berkeley Hanover Consulting (BHC)[34] and Optimal Economics respectively[35]. The DfT presented this additional estimate of jobs alongside the AC's original assessment to reflect the uncertainty around these figures, and as such the same approach is taken in this assessment.

3.3.18 The growth in employment at an enhanced airport is likely to increase demand for housing and amenities given that additional workers will want to live in close proximity to the airport. These impacts are reported within the Jacob's Local Economy assessment report, and were considered when assessing Community[36] and Quality of Life[37] Topic Based Assessment (Appendices A-1 and A-2).

[30] Airports Commission, 2014. *Local Economy Impacts: Assessment.* [online] Accessed 13/05/2015.
[31] Airports Commission, 2015. *Local Economy: Impacts Assessment Post Consultation Updates*. [online] Accessed 17/02/2016.
[32] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.
[33] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.
[34] Berkeley Hanover Consulting, 2011. *Gatwick Airport Employment Generation to 2020 in the Context of the Local Labour Market. Report to West Sussex County Council*. [online] Accessed 25/11/2016.
[35] Optimal Economics, 2011. *Heathrow Related Employment*. [online] Accessed 14/07/2016
[36] WSP|Parsons Brinckerhoff, 2017. *AoS Appendix 1, Community*, published as part of the draft Airports NPS Consultation documentation.
[37] WSP|Parsons Brinckerhoff, 2017. *AoS Appendix 2, Quality of Life*, published as part of the draft Airports NPS Consultation documentation.

Demand Forecasts

3.3.19 The AC tested various passenger demand scenarios to identify the relative benefits of the three airport expansion schemes. These scenarios provide a means for comparing how demand for airports would respond to potential international social, political and economic trends. The scenarios reported within this assessment are consistent with those described in the AC's *Final Report*[38], and include:

- assessment of need;
- global growth;
- relative decline of Europe;
- low cost is king; and
- global fragmentation.

3.3.20 The assessment of need scenario is considered as the central scenario and is consistent with the forecasts underpinning the ACs assessment of need. In this scenario, future demand is primarily determined by past trends and the central projections published by sources such as the Office for Budgetary Responsibility (OBR), Organisation for Economic Coordination and Development (OECD) and International Monetary Fund (IMF). The other scenarios which were identified seek to test the schemes against changing international economic or market circumstances. Whilst these scenarios provide a robust context to the assessment set out in the DfT's *Further Review and Sensitivities Report*[39], the assessment of need scenario is the economic scenario included within the main section of this AoS to simplify the presentation of the assessment. The full range of economic outcomes under the AC's global scenarios, however, are presented in the sensitivities section of this Appendix.

3.3.21 The AC also considered two potential carbon policy futures: carbon-traded and carbon-capped. The AoS presents carbon-traded impacts where these were estimated by the AC. In the carbon-capped scenario, it has been assumed that aviation emissions will grow to meet the cap proposed in the Committee on Climate Change's (CCC's) planning assumption of 37.5 $MtCO_2$ and thereafter growth will be constrained. The carbon-capped scenario has been based on the assessment of need demand scenario. In the carbon-traded scenario, it has been assumed that emissions from the aviation sector may grow beyond the level assumed by the CCC's planning assumption, on the basis that that the aviation sector may trade emissions allowances with other sectors of the economy. Carbon-capped is included in the sensitivity analysis at the end of this appendix showing the range of economic impacts.

3.4 INTERACTION WITH OTHER TOPICS

3.4.1 Economy has broad interactions with other topic based assessments in this report. In particular, the following interactions are noted in Table 3.1.

[38] Airports Commission, 2015. *Final Report,* p. 18. [online]. Accessed 24/12/2015.
[39] Airports Commission, 2015. *Final Report*. [online] Accessed 24/12/2015.

Table 3.1: Interactions of the Economy topic with other topics

Topic	Interaction
Air Quality / Noise	Air Quality and noise regulations and scheme specific mitigation has the potential to restrict the economic benefits which are realised through development.
Community	Potential interaction with community in terms of the inward migration attracted by potential jobs associated with airport expansion, which may affect community cohesion.
Quality of Life	Additional employment gained from airport expansion will improve household incomes and have a direct improvement upon QoL of those affected.
Carbon	Potential interaction between the financial costs associated with running the airport, the potential effect that the airport will have on carbon emissions, and the contribution that the airport will make to carbon budgets.
Waste/ Resources	Diverting waste from landfill has significant benefits for avoiding costs associated with taxation, and for positively contributing to local and regional infrastructure designed to handle and recycle materials, and generate energy from waste.

3.4.2 In addition to the AoS interactions above, the airport expansion schemes seek to alleviate the aviation capacity constraints currently experienced and to deliver economic benefits. The constraints to airport capacity are projected to have an increasingly adverse effect on the economy over time[40].

3.4.3 The AC's *Final Report*[41], and DfT's *Further Review and Sensitivities Report* identify various scenarios in which mitigation for environmental issues would restrict the economic benefits which could be delivered through airport expansion. Mitigation measures considered within these reports include:

- Restrictions to night flying, to reduce noise impacts, affecting the ability of the airport to operate at capacity;
- A cap on carbon emissions set through planning;
- Restrictions to air quality emissions, particularly affected by surface access emissions; and
- Replacement of value of lost ecosystem services.

3.5 ASSESSMENT CRITERIA

3.5.1 The general criteria used for assessing the significance of effects within the AoS are set out in the methodology in Section 3 of the AoS Report. Identification of significance is set out in Table 3.2.

[40] Airports Commission, 2015. *Final Report,* p. 135. [online] Accessed 24/12/2015.
[41] Airports Commission, 2015. *Final Report,* p. 146. [online] Accessed 24/12/2015.

Table 3.2: Identification of Significant Effects in the AoS

++	*Significant positive effect*
+	*Positive effect*
-	*Negative effect*
--	*Significant negative effect*
+/-, ++/--	*Mixed positive and negative effect*
?	*Uncertain effect*
0	*No relationship / neutral effect*

3.6 SUMMARY OF BASELINE AND ISSUES

NATIONAL BASELINE

3.6.1 GDP in the UK grew steadily during the 2000s until a financial market shock affected UK and global economic growth in 2008 and 2009. Economic growth resumed towards the end of 2009, but generally at a slower rate than the period prior to 2008. This growth was also erratic, with several quarters between 2010 and 2012 recording stagnant or declining GDP. Since 2013, GDP has grown steadily, passing its pre-downturn peak in Quarter 3 (July to Sep) 2013[42].

3.6.2 Unemployment has been falling in the UK. In August - October 2016 there were 1.62 million unemployed people, 103,000 fewer than a year earlier (Office of National Statistics (ONS), 2016). Although the falling unemployment has been a benefit to the UK, this has been taking place at the same time as falling productivity amongst UK workers. The effects of the recession on productivity have been identified as a 'productivity conundrum' by the Office for Budget Responsibility[43]. The UK economy recorded productivity growth of 0.6% in 2014[44].

3.6.3 International demand for air travel is being driven by globalisation, technological innovation and increasing cross-border flows of goods, services and people. Global passenger demand for air travel has been on an upward trend since the middle of the 20th century and has grown particularly strongly since the 1970s. The UK airport sector has so far accommodated long-term growth in demand for air travel. Airline consolidation and liberalisation have strengthened Heathrow's role as the UK's major hub airport and its 70% share of the long-haul market. Gatwick has sought to compete more fully with Heathrow, and is the UK's second-largest long-haul airport, accounting for around 11% of scheduled flights.

[42] ONS, 2015. *Statistical bulletin: Gross Domestic Product Estimate, Quarter 1, Jan to March 2015.* [online] Accessed 13/05/2015.
[43] Office for Budget Responsibility, 2013. *Economic and fiscal outlook*. [online] Accessed 13/05/2015
[44] Housing of Commons Library, 2016. *Briefing Paper Number 064292*, 22 November 2016. [online] Accessed 20/12/2016.

3.6.4 Aviation demand has increased significantly over the past 30 years. Heathrow airport has been at capacity for many years, and Gatwick is operating at more than 85% capacity and is completely full at peak times. This makes it increasingly difficult for airlines to operate efficiently within the constraints of the existing infrastructure. Capacity constraints are increasingly affecting passengers' ability to fly conveniently to and from the UK, and to a broad range of destinations. It also creates negative impacts to the UK in terms of increasing risk of flight delay and unreliability; restricting scope for competition and lower fares; declining domestic connectivity, erosion of the UK's hub status relative to foreign competitors; and, constraining the scope of the aviation sector to deliver wider benefits to the UK economy.[45]

3.6.5 Going forward, aviation demand is due to increase even further, particularly in London and the South East. Demand is predicted to exceed capacity in London and the South East by 2040 or earlier in all five if the AC's global scenarios in the carbon-traded case, as well as the carbon-capped case. The gap between capacity and demand is forecast to rise to approximately 170,000 – 200,000 Air Transport Movements by 2050. All major South East airports are expected to be full by 2040 and there is little scope to redistribute demand away from London and the South East to less heavily utilised airports elsewhere in the country.[46]

LOCAL BASELINE

Gatwick

3.6.6 Gatwick is currently operating close to capacity at various times of year and this has an impact on the delays which are experienced by its users. Gatwick is the busiest single runway airport in the world and has a demand to capacity ratio of 94% in the summer months and 88% in the winter months. Gatwick faces three peaks over the summer months – early morning, late morning and evening. Demand exceeds capacity at mid-day. Whilst it faces several peaks during the day in the winter months, demand stays below capacity. The number of peaks at Gatwick is symptomatic of the low cost carrier model operated by airlines that served the airport in 2007/08[47].

3.6.7 Gatwick Airport supported 24,900 direct employees in 2011[48]. Airport employees are located predominantly (35%) in Crawley postcode districts, compared to 7% of employees in Horley, 6% in Brighton and 6% in Horsham. The share of total local authority employment at the airport varies between 0% and 2.6%. In 2013, the average rate of unemployment across the neighbouring local authorities (5.1%) was lower than the national average (6.4%)[49].

3.6.8 It was found that the number of high skilled workers (NVQ Level 4 and above) was lowest in Crawley compared to the surrounding boroughs, with 27% of working age people having this qualification compared to the national average of 35%.

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[45] Airports Commission, 2015. *Final Report*. [online] Accessed 24/12/2015.
[46] Airports Commission, 2015. *Final Report*. [online] Accessed 24/12/2015.
[47] Airports Commission, 2015. *Updated Final Delay Impacts,* p. 8 [online] Accessed 24/12/2015.
[48] pwc, 2014. Airports Commission *Local Economic Impacts Literature Review*, p. 13. [online] Accessed 25/11/2016.
[49] Jacobs, 2014. *Local Economy Impacts: Assessment,* p. 23, Table 12. [online]. Accessed 18/02/2016.

3.6.9 There is a clustering of businesses that are airport-related and these are located in the local authorities around Gatwick, particularly in Crawley (8.2%). However, many of these supporting industries require low skilled workers (who make up 25% of the population in Crawley). Across the rest of the local authorities, the majority of businesses are property and business services (34% in 2008), retail (11%), and construction (10%). Transport only accounts for around 3% of local business types, much lower than Crawley[50].

3.6.10 Growth in Gross Value Added (GVA) in the Gatwick Diamond (covering several surrounding local authorities[51]) has been below the South East average since 1999. Previous studies of the area indicate that a lack of knowledge based industries in the 'Gatwick Diamond' have resulted in a lower skilled workforce. There is an identified need to attract the type of businesses employing those with higher skill levels. The key potential growth areas are therefore seen to be the corridor between Gatwick and Redhill.

3.6.11 Passenger benefits at Gatwick are expected to be constrained by the existing capacity of the airport. These benefits include greater frequency of services, lower fares associated with the services and reduced delays[52].

3.6.12 The scheme will involve modifications to the existing surface access arrangements, which are likely to affect transport and accessibility, which in turn will have an impact on the local economy. Many people who live in other local authorities in the Gatwick Travel to Work Area[53] live a substantial distance away from their places of employment. Currently 65% of airport employees travel to Gatwick by car (Gatwick Airport Ltd Airport Employment Survey)[54].

3.6.13 The surface access requirements identified by the AC were determined using the highest demand scenarios at Heathrow as well as Gatwick. Therefore they should deliver more than sufficient improvements to accommodate the additional passengers associated with airport expansion under assessment of need.

Heathrow

3.6.14 Heathrow has a demand to capacity ratio of 98% in the summer months and 97% in the winter months. Across the year, Heathrow faces two peaks during the day – early morning and evening where demand exceeds the available capacity.[55] This increases the likelihood of delay.

3.6.15 Capacity constraints at Heathrow Airport have caused a reduction in the number of domestic connections at the airport over recent years. For example, no daily service has operated between Heathrow and Liverpool since 1991, Inverness since 1997 and Durham Tees Valley since 2008. On many of the remaining domestic routes the frequency of service has reduced; over the past 20 years the number of daily services operating to and from Glasgow and Edinburgh has fallen by over a third[56].

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[50] Jacobs, 2014. *Local Economy Impacts: Assessment,* p 32. [online]. Accessed 18/02/2016.
[51] Local authorities including: Horsham; Crawley; Mid Sussex; Tandridge; Reigate & Banstead; Mole Valley; Epsom & Ewell; West Sussex; and Surrey
[52] Airports Commission, 2015. *Economy: Updated Transport Economic Efficiency Impacts,* p. 8. [online] Accessed 24/12/2015.
[53] Travel to Work Areas are a statistical tool provided by the Office for National Statistics to support assessment of the distance people are willing to travel to work.
[54] Gatwick Airport Ltd, 2012. *Gatwick Airport Employment and Travel Survey 24/12/2015.*
[55] Airports Commission, 2015. *Economy: Updated Final Delay Impacts,* p. 8. [online] Accessed 19/02/2016.
[56] Airports Commission, 2015. *Final Report,* p. 311. [online] Accessed 24/12/2015.

3.6.16 Heathrow Airport supported 84,400 jobs in 2011[57]. Airport employees are drawn relatively evenly from Hounslow, Ealing, Slough, Hillingdon and Spelthorne. 42% of Heathrow's workforce lives in the five surrounding local authorities, including Hillingdon, Ealing, Hounslow, Slough and Spelthorne. The surrounding local authorities generally have lower unemployment that the London average (in 2010).[58]

3.6.17 There is existing agglomeration and clustering of businesses which are airport-related near to Heathrow. This effect is most significant in Hillingdon, where these are the six top employing industry activities. Across the five surrounding local authorities, businesses are predominantly property and business services (35% of industry groups), retail and public administration (11%), and other services (10%). Transport industries only account for 6% of the broad industry groups within these five local authorities, although the share is slightly higher for Hillingdon (7.2%)[59].

3.6.18 Historic growth in GVA (the measure of the value of goods and services produced in an area, industry or sector of an economy) has been above average in the Local Economic Partnerships (Buckinghamshire Thames Valley, Enterprise M3, and Thames Valley Berkshire). The majority of firms based around Heathrow are UK-owned but there is also an extensive cluster of foreign owned firms around Heathrow, which contribute over 170,000 jobs.[60]

3.6.19 Passenger benefits are expected to be constrained by the available capacity at Heathrow. In the future this constraint is expected to result in lower frequency of services, higher fares and increase delays[61].

3.6.20 Within the Heathrow Travel to Work Area[62], the majority of local authorities identify residents as commuting 5-20 km to work[63]. This indicates that employment opportunities are currently spread across the local area.

FUTURE BASELINE AND ISSUES

3.6.21 Existing airport capacity is expected to constrain the extent to which airlines can meet demand and to create significant barriers to entry for new airlines, putting pressure on the level of fares particularly in the long-haul market[64].

3.6.22 In addition, increasing capacity constraints at London airports are expected to continue to reduce domestic services from other areas of the UK, particularly the north of England and Scotland, into the largest London airports. This may affect the potential growth of their economies[65].

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[57] pwc, 2014. Airports Commission *Local Economic Impacts Literature Review*, p. 13. [online] Accessed 25/11/2016.
[58] Jacobs, 2014. *Local Economy Impacts: Assessment,* p. 52. [online] Accessed 24/12/2015.
[59] Jacobs, 2014. *Local Economy Impacts: Assessment,* p. 48. [online]. Accessed 18/02/2016.
[60] Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 75. [online] Accessed 24/12/2015.
[61] Airports Commission, 2015. *Economy: Updated Transport Economic Efficiency Impacts,* p. 8. [online] Accessed 24/12/2015.
[62] Travel to Work Areas are a statistical tool provided by the Office for National Statistics to support assessment of the distance people are willing to travel to work.
[63] Jacobs, 2014. *Local Economy Impacts: Assessment*. [online] Accessed 24/12/2015.
[64] Airports Commission, 2015. *Final Report,* p. 16. [online] Accessed 24/12/2015.
[65] Airports Commission, 2015. *Final Report,* p. 311. [online] Accessed 24/12/2015.

3.6.23 The AC has estimated that the costs of failing to address the existing capacity constraints could amount, over a sixty year time period, to £21-23bn of costs to passengers, such as fare increases and delays, lowering economic output by making aviation more expensive and less convenient to use, with knock on effects in lost trade, tourism and Foreign Direct Investment (FDI). It is very challenging to put a precise figure on these impacts, but using alternative approaches, the AC estimated these costs to be between £30 and £45bn over 60 years. The AC urged caution interpreting these figures, and they overlap with the direct passenger costs reported above and so are not wholly additional[66].

3.6.24 The Bank of England predicts that economic growth is projected to slow materially over the near term as a consequence of economic and political uncertainty since the EU referendum. The November 2016 Inflation Report from the Bank of England indicates that GDP is now expected to expand by 2.2% in 2016. This represents a slight reduction from the May forecast in the same time in the previous year, where growth of 2.4% was expected[67]. The Bank has also reduced its forecast for 2017 from 2.7% to 1.4%[68]. The Bank forecasts an improved rate of growth of 1.5% in 2018. The OBR forecasted that productivity growth will gradually improve to 2.1% by 2021[69].

3.7 MITIGATION INCLUDED IN ASSESSMENT

Although the schemes will deliver a wide range of economic benefits, there is not a requirement to mitigate beneficial economic effects, and as a consequence no mitigation is included within the design. Beneficial effects which would be realised through the scheme design are set out within the assessment of alternatives below. Other environmental effects which would arise as a consequence of development are considered within the other Topic based Assessments, and within the AoS.

3.8 APPROACH TO ASSESSMENT OF ECONOMY

The approach to the assessment of economic effects relies on information presented by the AC and the DfT, as described in Section 3.3. The conclusions presented within Section 3.9 are presented in the same terms as the Economic assessment elements within the AC and DfT Reports.

3.8.2 Impacts at the strategic level have been assessed for both construction and operational phases. For instance during construction, effects covered under economy arise from employment and economic activity associated with construction activities. During operation, improved airport capacity is expected to stimulate various economic benefits both locally, for passengers and business as a consequence of improved airport functionality[70] as well as indirect benefits to the wider national economy[71].

3.9 ASSESSMENT OF SHORTLISTED SCHEMES

3.9.1 The assessment of alternatives is discussed under each objective here and summarised in the following assessment tables.

66 Airports Commission, 2015. *Final Report,* p. 17. [online] Accessed 24/12/2015.
67 Bank of England, 2015. *Inflation Report August 2015.* [online] Accessed 15/09/2016.
68 Bank of England, 2015. *Inflation Report November 2016*. [online] Accessed 14/11/2016.
69 Office for Budget Responsibility, 2016. *Economic and fiscal outlook*. [online] Accessed 14/09/2016.
70 Airports Commission, 2014. *Local Economy Impacts: Assessment.* [online] Accessed 13/05/2015.
71 Airports Commission, 2014. *2. Economy: Wider Impacts Assessment.* [online] Accessed 13/05/2015.

AoS Objective 4: To maximise economic benefits and to support the competitiveness of the UK economy

LGW-2R

3.9.2 The economic effects which will be realised through airport expansion include both direct effects, and indirect effects on the wider economy, including enhanced productivity.

Direct economic impacts

3.9.3 Direct effects include improved passenger convenience, enhanced availability of flights, reduced airport delays and improved connectivity for businesses which rely on airport transit. For example, expansion has the potential to improve services for passengers, and reverse the long-standing trend of declining domestic links into London, providing new slots for airlines to operate services to and from areas of currently unserved demand. Expansion may also bolster existing domestic services into London, leading to a rise in the numbers of passengers on, and the frequency of, the most well serviced routes.[72]

3.9.4 The majority of the estimated passenger benefits from expansion are due to a transfer from airlines (producers) to passengers; expansion leads to lower fares for passengers, reducing airline (producer) profits. Passenger benefits include lower fares, frequency benefits and reduced delays, these benefits are expected to total £48.5bn[73] and include:

- Lower fares: £43.9bn;
- Frequency benefits: £3.2bn; and
- Reduced delays: £1.4bn.

3.9.5 Lower fares will also reduce airline (producer) profits and lead to changes in consumer spending, which affect government revenue and public finances.

- Producer impacts: -£40.8bn;
- Government revenue impacts: £2.5bn.

[72] Airports Commission, 2015. *Economy: Updated Transport Economic Efficiency Impacts*. [online] Accessed 24/12/2015.
[73] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

Wider economic impacts

3.9.6 Expansion in airport capacity provides better access to foreign markets, facilitates gains from trade and encourages greater exchange of knowledge and technology, thus improving the overall level of productivity in trade-related sectors of the economy. Two types of productivity-related impacts are expected to arise from airport development:

- enhanced productivity through increased trade and associated spin-off benefits; and
- increased productivity through strengthening agglomerations and clusters.

3.9.7 The 'present value' of the beneficial effects on the wider economy and productivity are reported below:

- additional business output in imperfectly competitive markets due to improvements in transportation costs, and reduced delays (£1.1bn);
- expansion is likely to lead to increased clustering of businesses (agglomeration) near to the airport. The clustering is likely to facilitate knowledge and technology spillovers as well as enhance access to larger input markets and labour markets. Agglomeration benefits associated with businesses being attracted to cluster in the vicinity of the airport, or growth in the supply chain associated with its construction and operation (£0.3bn to £1.6bn)[74]; and
- trade induced productivity benefits have been estimated via three separate methodologies, giving values of £6.9bn, £13.1bn and £43.0bn. These estimates are not additional to each other or to the other quantified economic impacts, as some of the value of these benefits is likely to have been captured within the other economic impacts.

3.9.8 Overall, the impact on jobs at the national level remains subject to uncertainties. It has not been possible to demonstrate that the jobs generated locally will result in a net increase in jobs at a national level – these may be displaced from elsewhere in the country due to passengers switching from other airports. Even within the local economy, the number of additional jobs will depend on how many jobs are taken up by people who were previously unemployed. Some jobs may be taken up by the existing stock of workers.

3.9.9 Expansion of capacity at one airport may, however, have an adverse impact on the level of activity at another airport. Evidence of this impact is shown in the AC's work on smaller airport passenger numbers in passenger forecasts (eg for Birmingham Airport, which are lower under each airport expansion scenario). Taking the LGW-2R scheme, passenger numbers at Birmingham are forecast to be over 5.6 million passengers fewer than the 'Base' Case in 2050.

3.9.10 Passenger volumes at other airports (such as Birmingham) may grow more slowly than they would do if the London and South East airport system becomes increasingly congested as forecast under the do minimum scenario[75], but are still expected to be greater than today.

[74] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

[75] represents the conditions which would exist if the scheme did not go ahead.

3.9.11 Cumulative effects are expected to occur as agglomeration and productivity benefits arising as a consequence of airport expansion will coincide with similar benefits arising due to other major infrastructure or development being provided in support of plans, policies, programmes and major projects such as those listed in Table 6-5 of the AoS Report. Nearby projects would include rail improvements such as Thameslink, road improvements to the A27 in West Sussex, to the M23, the M25 and also residential and commercial development which is planned in support of local authorities' development plans.

LHR-ENR

3.9.12 The economic effects which will be realised through airport expansion include both Direct effects, and Indirect effects on the wider economy, including enhanced productivity.

Direct economic impacts

3.9.13 Direct effects include improved passenger convenience, enhanced availability of flights, reduced airport delays and improved connectivity for businesses which rely on airport transit. For example, expansion has the potential to improve services for passengers, and reverse the long-standing trend of declining domestic links into London, providing new slots for airlines to operate services to and from areas of currently unserved demand. Expansion may also bolster existing domestic services into London, leading to a rise in the numbers of passengers on, and the frequency of, the most well serviced routes.[76]

3.9.14 The majority of the estimated passenger benefits from expansion are due to a transfer from airlines (producers) to passengers; expansion lowers shadow costs and leads to lower fares for passengers, reducing airline (producer) profits. Passenger benefits include lower fares, frequency benefits and reduced delays, these benefits are expected to total £46.9bn[77] and include:

- lower fares: £41.9bn;
- frequency benefits: £4.6bn; and
- reduced delays: £0.4bn.

3.9.15 Lower fares will also reduce airline (producer) profit and lead to changes in consumer spending, which affect government revenue and public finances.

- producer impacts: -£31.2bn.
- Government revenue impacts: £1.5bn.

Wider economic impacts

3.9.16 Expansion in airport capacity provides better access to foreign markets, facilitates gains from trade and encourages greater exchange of knowledge and technology, thus improving the overall level of productivity in trade-related sectors of the economy. Two types of productivity-related impacts are expected to arise from airport development:

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[76] Airports Commission, 2015. *Economy: Updated Transport Economic Efficiency Impacts*. [online] Accessed 24/12/2015.

[77] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

- enhanced productivity through increased trade and associated spin-off benefits; and
- increased productivity through strengthening agglomerations and clusters.

3.9.17 The 'present value' of the beneficial effects on the wider economy and productivity are reported below:

- additional business output in imperfectly competitive markets due to improvements in transportation costs, and reduced delays (£1.2bn);
- expansion is likely to lead to increased clustering of businesses (agglomeration) near to the airport. The clustering is likely to facilitate knowledge and technology spillovers as well as enhance access to larger input markets and labour markets. Agglomeration benefits associated with businesses being attracted to cluster in the vicinity of the airport, or growth in the supply chain associated with its construction and operation (£0.5bn to £2.1bn)[78]; and
- trade induced productivity benefits have been estimated via three separate methodologies, giving values of £5.5bn, £10.0bn and £85.8bn. These estimates are not additional to each other or to the other quantified economic impacts, as some of the value of these benefits is likely to have been captured within the other economic impacts.

3.9.18 As with the LGW-2R scheme, overall the impact on jobs at the national level remains subject to uncertainties. It has not been possible to demonstrate that the jobs generated locally will result in a net increase in jobs at a national level – these may be displaced from elsewhere in the country due to passengers switching from other airports. Even within the local economy, the number of additional jobs will depend on how many jobs are taken up by people who were previously unemployed. Some jobs may be taken up by the existing stock of workers.

3.9.19 Expansion of capacity at one airport may, however, have an adverse impact on the level of activity at another airport. Evidence of this impact is shown in the AC's work on smaller airport passenger numbers in passenger forecasts (eg for Birmingham Airport, which are lower under each airport expansion scenario). Taking the LHR-ENR scheme, passenger numbers at Birmingham are forecast to be over 3.8 million passengers fewer than the 'Base' Case in 2050.

3.9.20 Passenger volumes at other airports (such as Birmingham) may grow more slowly than they would do if the London and South East airport system becomes increasingly congested as forecast under the do minimum scenario, but are still expected to be greater than today.

3.9.21 Cumulative effects are expected to occur as agglomeration and productivity benefits arising as a consequence of airport expansion will coincide with similar benefits arising due to other major infrastructure or development being provided in support of plans, policies programmes and major projects such as those listed in Table 6-5 of the AoS Report. Nearby major infrastructure projects include HS2 and Crossrail, and also the residential and commercial development which is planned in support of local authorities' development plans.

LHR-NWR

3.9.22 The economic benefits which will be realised through airport expansion include both

78 Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

direct effects, and indirect effects on the wider economy, including enhanced productivity.

Direct economic impacts

3.9.23 Direct effects include improved passenger convenience, enhanced availability of flights, reduced airport delays and improved connectivity for businesses which rely on airport transit. For example, expansion has the potential to improve services for passengers, and reverse the long-standing trend of declining domestic links into London, providing new slots for airlines to operate services to and from areas of currently unserved demand. Expansion may also bolster existing domestic services into London, leading to a rise in the numbers of passengers on, and the frequency of, the most well serviced routes.[79]

3.9.24 The majority of the estimated passenger benefits from expansion are due to a transfer from airlines (producers) to passengers; expansion lowers shadow costs and leads to lower fares for passengers, reducing airline (producer) profits. Passenger benefits include lower fares, frequency benefits and reduced delays, these benefits are expected to total £55.4bn[80] and include:

- lower fares: £49.2bn;
- frequency benefits: £5.7bn; and
- reduced delays: £0.6bn.

3.9.25 Lower fares will also reduce airline (producer) profits and lead to changes in consumer spending which affect government revenue and public finances.

- producer impacts: -£38.0bn;
- Government revenue impacts: £1.8bn.

Wider economic impacts

3.9.26 Expansion in airport capacity provides better access to foreign markets, facilitates gains from trade and encourages greater exchange of knowledge and technology, thus improving the overall level of productivity in trade-related sectors of the economy. Two types of productivity-related impacts are expected to arise from airport development:

- enhanced productivity through increased trade and associated spin-off benefits; and
- increased productivity through strengthening agglomerations and clusters.

3.9.27 The 'present value' of the beneficial effects on the wider economy and productivity are reported below:

- additional business output in imperfectly competitive markets due to improvements in transportation costs, and reduced delays (£1.4bn);
- expansion is likely to lead to increased clustering of businesses (agglomeration) near to the airport. The clustering is likely to facilitate knowledge and technology

[79] Airports Commission, 2015. *Economy: Updated Transport Economic Efficiency Impacts*. [online] Accessed 24/12/2015.

[80] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

spillovers as well as enhance access to larger input markets and labour markets. Agglomeration benefits associated with businesses being attracted to cluster in the vicinity of the airport, or growth in the supply chain associated with its construction and operation (£0.7bn to £2.5bn)[81]; and

- trade induced productivity benefits have been estimated via three separate methodologies, giving values of £6.6bn, £11.9bn and £108.3bn. These estimates are not additional to each other or to the other quantified economic impacts, as some of the value of these benefits is likely to have been captured within the other economic impacts.

3.9.28 Overall, the impact on jobs at the national level remains subject to uncertainties. It has not been possible to demonstrate that the jobs generated locally will result in a net increase in jobs at a national level – these may be displaced from elsewhere in the country due to passengers switching from other airports. Even within the local economy, the number of additional jobs will depend on how many jobs are taken up by people who were previously unemployed. Some jobs may be taken up by the existing stock of workers.

3.9.29 Expansion of capacity at one airport may, however, have an adverse impact on the level of activity at another airport. Evidence of this impact is shown in the AC's work on smaller airport passenger numbers in passenger forecasts (eg for Birmingham Airport, which are lower under each airport expansion scenario). Taking the NWR scheme, passenger numbers at Birmingham are forecast to be over 5.3 million passengers less than the 'Base' Case in 2050 (though still more passengers than today).

3.9.30 Passenger volumes at other airports (such as Birmingham) may grow more slowly than they would do if the London and South East airport system becomes increasingly congested as forecast under the do minimum scenario, but are still expected to be greater than today.

3.9.31 Cumulative effects are expected to occur as agglomeration and productivity benefits arising as a consequence of airport expansion will coincide with similar benefits arising due to other major infrastructure or development being provided in support of plans, policies programmes and major projects such as those listed in Table 6-5 of the AoS Report. Nearby major infrastructure projects include HS2 and Crossrail, and also the residential and commercial development which is planned in support of local authorities' development plans.

Objective 5: To promote employment and economic growth in the local area and surrounding region

LGW-2R

3.9.32 Improvements to surface access planned under the do minimum scenario are expected to accommodate the additional passengers estimated. However, it is projected that there will be little difference in journey times associated with the expected improvements in surface transport, and therefore no accessibility benefits to key local employment centres, such as Crawley, are anticipated due to surface access improvements[82].

3.9.33 The surface access systems may provide short term accessibility benefits which would occur in conjunction with the benefits derived from other major infrastructure projects.

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81 Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

82 Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 96. [online] Accessed 24/12/2015.

Planned infrastructure includes major road and rail projects to support the National Networks National Policy Statement and the London Plan, and highways improvements which are planned by local authorities as part of their Local Development Plans. Specific improvements include the Thameslink programme and improvements to the M23 and A27. Long term increases in demand and traffic are expected to negate any benefits to journey times for other users of surface access systems around the airport. As a consequence no accessibility benefits to key local employment centres (such as Crawley) are anticipated[83]. Further enhancements to the surface network would be needed for accessibility benefits to be maintained in the long term.

3.9.34 The surface access requirements identified by the AC were determined using the highest demand scenarios. Therefore they should deliver more than sufficient improvements to accommodate the additional passengers associated with airport expansion under assessment of need.

3.9.35 The number of local jobs supported by the scheme depends on many factors, including the type of airport, size of the airport passenger and employment catchment areas as well as the size of these areas compared to the country as a whole. Reflecting these uncertainties, the DfT developed a range of local employment estimates for the LGW-2R. These indicated that between 5,290 and 12,500 additional local jobs would be generated by 2030 with between 18,700 and 44,190 generated by 2050[84]. The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment.

3.9.36 It is also anticipated that many jobs will be supported during the construction phase. These jobs will be temporary, but will be relatively long term, as construction would take place over many years.

3.9.37 The beneficial effects that airports have on agglomeration and clustering of business are well recognised. It is anticipated that these benefits are likely to be realised by the local economy.

3.9.38 Airport expansion would also have cumulative beneficial effects on local employment, as it is likely to attract businesses to locate on employment sites allocated for development within Local Development Plans.

LHR-ENR

3.9.39 The provision of improved, and more varied travel options under the do minimum scenario would improve the resilience of the travel system, and improve accessibility to local employment centres.[85] This benefit would be negated by the expansion of the airport and associated increase in passenger numbers. Further enhancements to the surface network would be needed for the accessibility benefits to be maintained in the long term.

3.9.40 The surface access requirements identified by the AC were determined using the highest demand scenarios. Therefore they should deliver more than sufficient improvements to accommodate the additional passengers associated with airport

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[83] Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 96. [online] Accessed 24/12/2015.

[84] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report*. [online] Accessed 25/11/2016.

[85] Airports Commission, 2015. *Local Economy: Impacts Assessment Post Consultation Updates*, p. 17. [online] Accessed 17/02/2016.

[85] Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 96. [online] Accessed 24/12/2015.

expansion under assessment of need.

3.9.41 The number of local jobs supported by the scheme depends on many factors, including the type of airport, size of the airport passenger and employment catchment areas as well as the size of these areas compared to the country as a whole. Reflecting these uncertainties, the DfT developed a range of local employment estimates. These indicated that between 37,830[86] and 76,650 additional local jobs would be generated by 2030 with between 32,750 and 65,610 generated by 2050[87]. The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment.

3.9.42 It is also anticipated that many jobs will be supported during the construction phase. These jobs will be temporary, but could last a number of years, as construction would take place over many years.

3.9.43 It is considered likely that airport expansion will serve as a catalyst to business investment in the surrounding area, continuing to attract high value firms[88].

3.9.44 Airport expansion would also have cumulative beneficial effects on local employment, as it is likely to attract businesses to locate on employment sites allocated for development within Local Development Plans.

LHR-NWR

3.9.45 The provision of improved, and more varied travel options under the do minimum Scenario would improve the resilience of the travel system, and improve accessibility to local employment centres.[89] This benefit would be negated by the expansion of the airport and associated increase in passenger numbers. Further enhancements to the surface network would be needed for the accessibility benefits to be maintained in the long term.

3.9.46 The surface access requirements identified by the AC were determined using the highest demand scenarios. Therefore they should deliver more than sufficient improvements to accommodate the additional passengers associated with airport expansion under assessment of need.

3.9.47 The number of local jobs supported by the scheme depends on many factors, including the type of airport, size of the airport passenger and employment catchment areas as well as the size of these areas compared to the country as a whole. Reflecting these uncertainties, the DfT developed a range of local employment estimates. These indicated that between 37,740 and 76,650 additional local jobs would be generated by 2030 with between 39,100 and 78,360 jobs generated by 2050[90]. The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment.

3.9.48 It is also anticipated that many jobs will be supported during the construction phase. These jobs will be temporary, but could last a number of years, as construction would take place over many years.

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[86] The lower end of the range for 2030 has been corrected since the Further Review and Sensitivities Report was published.

[87] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

[88] Jacobs, 2014. *Local Economy Impacts: Assessment,* p. 54. [online] Accessed 24/12/2015.

[89] Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 96. [online] Accessed 24/12/2015.

[90] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

3.9.49 It is considered likely that airport expansion will serve as a catalyst to business investment in the surrounding area, continuing to attract high value firms[91].

3.9.50 Airport expansion would also have cumulative beneficial effects on local employment, as it is likely to attract businesses to locate on employment sites allocated for development within Local Development Plans.

[91] Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 54. [online] Accessed 24/12/2015.

Objective 4: To maximise economic benefits and to support the competitiveness of the UK economy

Question 6: Will It Enhance Economic Benefits?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (including receptor)	Direct impacts: The total passenger benefits are valued at £48.5bn and include: → Lower fares: £43.9bn → Frequency benefits: £3.2bn → Reduced delays: £1.4bn Other direct benefits are as follows: → Total producer impact: £-40.8bn; → Government revenue: £2.5bn. Wider economic impacts: → Business output benefits: £1.1bn; → Agglomeration benefits: £0.3bn - £1.6bn. The trade benefits have been estimated at either £6.9bn, £13.1bn, or £43.0bn depending on the approach taken. However, it should be noted that these are not additive to the other wider economic impacts. Total benefits (excluding trade and producer impacts): £52.4 – 53.7bn	Direct impacts: The total passenger benefits are valued at £46.9bn and include: → Lower fares: £41.9bn → Frequency benefits: £4.6bn → Reduced delays: £0.4bn Other direct benefits are as follows: → Total producer impact: £-31.2bn; → Government revenue: £1.5bn. Wider economic impacts: → Business output benefits: £1.2bn; → Agglomeration benefits: £0.5bn - £2.1bn; The trade benefits have been estimated at either £5.5bn, £10.0bn or £85.8bn depending on the approach taken. However, it should be noted that these are not additive to the other wider economic impacts. Total benefits (excluding trade and producer impacts): £50.1 – 51.7bn	Direct impacts: The total passenger benefits are valued at £55.4bn and include: → Lower fares: £49.2bn → Frequency benefits: £5.7bn → Reduced delays: £0.6bn Other direct benefits are as follows: → Total producer impact: £-38.0bn; → Government revenue: £1.8bn. Wider economic impacts: → Business output benefits: £1.4bn; → Agglomeration benefits: £0.7bn - £2.5bn. The trade benefits have been estimated at either £6.6bn, £11.9bn, or £108.3bn depending on the approach taken. However, it should be noted that these are not additive to the other wider economic impacts. Total benefits (excluding trade and producer impacts): £59.2 – 61.1bn
Direct/ Indirect/ Cumulative	**Direct, Indirect and Cumulative** Direct benefits to the users and producers of aviation as well as government. Indirect benefits will include enhanced trade impacts and improved agglomeration effects. Cumulative beneficial effect on the economy when considered in conjunction with other development.	**Direct, Indirect and Cumulative** Direct benefits to the users and producers of aviation as well as government. Indirect benefits will include enhanced trade impacts and improved agglomeration effects. Cumulative beneficial effect on the economy when considered in conjunction with other development.	**Direct, Indirect and Cumulative** Direct benefits to the users and producers of aviation as well as government. Indirect benefits will include enhanced trade impacts and improved agglomeration effects. Cumulative beneficial effect on the economy when considered in conjunction with other development.

Question 6: Will It Enhance Economic Benefits?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Probability (High, Medium, Low, Very Low)	**High** There is a High probability that beneficial effects will be realised through development of this scheme.	**High** There is a High probability that beneficial effects will be realised through development of this scheme.	**High** There is a High probability that beneficial effects will be realised through development of this scheme.
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	**Operation, Long-term, Continual** Impacts have been calculated in PV terms (2014 prices) over a 60 year assessment period. It is anticipated that these benefits will extend beyond the assessment period[92].	**Operation, Long-term, Continual** Impacts have been calculated in PV terms (2014 prices) over a 60 year assessment period. It is anticipated that these benefits will extend beyond the assessment period[93].	**Operation, Long-term, Continual** Impacts have been calculated in PV terms (2014 prices) over a 60 year assessment period. It is anticipated that these benefits will extend beyond the assessment period[94].
Permanent/ Temporary Irreversible/ Reversible	**Permanent and Irreversible** Airport expansion will provide benefits to the economy beyond 2050 (benefits beyond 2050 are based on extrapolation). Over the appraisal period beneficial effects are considered to be irreversible, although they may diminish over time, or be reduced by external factors including social, economic and technological change[95].	**Permanent and Irreversible** Airport expansion will provide benefits to the economy beyond 2050 (benefits beyond 2050 are based on extrapolation). Over the appraisal period beneficial effects are considered to be irreversible, although they may diminish over time, or be reduced by external factors including social, economic and technological change[96].	**Permanent and Irreversible** Airport expansion will provide benefits to the economy beyond 2050 (benefits beyond 2050 are based on extrapolation). Over the appraisal period beneficial effects are considered to be irreversible, although they may diminish over time, or be reduced by external factors including social, economic and technological change[97].
Magnitude and Spatial Extent, incl. Transboundary	**High / National** The assessment focuses on addressing the economic impacts within the UK. Although trade benefits will be those accruing within UK only, the benefits to international passengers using UK airports are included.	**High / National** The assessment focuses on addressing the economic impacts within the UK. Although trade benefits will be those accruing within the UK only, the benefits to international passengers using UK airports are included.	**High / National** The assessment focuses on addressing the economic impacts within the UK. Although trade benefits will be those accruing within the UK only, the benefits to international passengers using UK airports are included.

[92] Airports Commission, 2015. *Economy: Wider Economic Impact Assessment,* p. 10. [online] Accessed 24/12/2015.
[93] Airports Commission, 2015. *Economy: Wider Economic Impact Assessment*, p. 10. [online] Accessed 24/12/2015.
[94] Airports Commission, 2015. *Economy: Wider Economic Impact Assessment*, p. 10. [online] Accessed 24/12/2015.
[95] Airports Commission, 2015. *Economy: Wider Economic Impact Assessment*, p. 10. [online] Accessed 24/12/2015.
[96] Airports Commission, 2015. *Economy: Wider Economic Impact Assessment*, p. 10. [online] Accessed 24/12/2015.
[97] Airports Commission, 2015. *Economy: Wider Economic Impact Assessment*, p. 10. [online] Accessed 24/12/2015.

Question 6: Will It Enhance Economic Benefits?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Assumptions and Limitations	The Passenger Forecasts used are based on assumptions about the national and international economy which are uncertain[98]. Passenger benefits have been calculated on the assumption that any increase in aero-charges could be absorbed by airlines and therefore would not be passed through to passengers as higher fares. The assessment of need scenario has been selected by the DfT as the central case. Significant positive economic benefits are estimated in each of the AC's global economic scenarios.	The Passenger Forecasts are based on assumptions about the national and international economy which are uncertain[99]. Passenger benefits have been calculated on the assumption that any increase in aero-charges could be absorbed by airlines and therefore would not be passed through to passengers as higher fares. The assessment of need scenario has been selected by the DfT as the central case. Significant positive economic benefits are estimated in each of the AC's global economic scenarios.	The Passenger Forecasts are based on assumptions about the national and international economy which are uncertain[100]. Passenger benefits have been calculated on the assumption that any increase in aero-charges could be absorbed by airlines and therefore would not be passed through to passengers as higher fares. The assessment of need scenario has been selected by the DfT as the central case. Significant positive economic benefits are estimated in each of the AC's global economic scenarios.
Significance	**Significant Positive effect (++)**	**Significant Positive effect (++)**	**Significant Positive effect (++)**
	Direct, indirect and cumulative effects from direct and wider economic impacts; high probability effects during operation (long-term continuous); permanent and irreversible; high magnitude and international extent.	Direct, indirect and cumulative effects from direct and wider economic impacts; high probability effects during operation (long-term continuous); permanent and irreversible; high magnitude and international extent.	Direct, indirect and cumulative effects from direct and wider economic impacts; high probability effects during operation (long-term continuous); permanent and irreversible; high magnitude and international extent.

98 Airports Commission, 2015. *Economy: Wider Economic Impacts Assessment*, p. 28. [online] Accessed 24/12/2015.
99 Airports Commission, 2015. *Economy: Wider Economic Impacts Assessment*, p. 28. [online] Accessed 24/12/2015.
100 Airports Commission, 2015. *Economy: Wider Economic Impacts Assessment*, p. 28. [online] Accessed 24/12/2015.

Question 7: Will It Contribute To Sustainable Growth In Employment?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (incl. receptor)	Although there will be local impacts, the extent of employment impacts at a national level remains unclear (due to displacement). It is also anticipated that many jobs will be created during the construction phase, although these may again be displaced from other potential construction activities.	Although there will be local impacts, the extent of employment impacts at a national level remains unclear (due to displacement). It is also anticipated that many jobs will be created during the construction phase, although these may again be displaced from other potential construction activities.	Although there will be local impacts, the extent of employment impacts at a national level remains unclear (due to displacement). It is also anticipated that many jobs will be created during the construction phase, although these may again be displaced from other potential construction activities.
Direct/ Indirect/ Cumulative	**Direct, Indirect and Cumulative** Direct and indirect employment impacts. Airport expansion would also have cumulative beneficial effects on local employment, as it is likely to attract businesses to locate on employment sites allocated for development within Local Development Plans.	**Direct, Indirect and Cumulative** Direct and indirect employment impacts. Airport expansion would also have cumulative beneficial effects on local employment, as it is likely to attract businesses to locate on employment sites allocated for development within Local Development Plans.	**Direct, Indirect and Cumulative** Direct and indirect employment impacts. Airport expansion would also have cumulative beneficial effects on local employment, as it is likely to attract businesses to locate on employment sites allocated for development within Local Development Plans.
Probability (High, Medium, Low, Very Low)	**High** There is a high probability of a beneficial effect.	**High** There is a high probability of a beneficial effect.	**High** There is a high probability of a beneficial effect.
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	**Construction and Operation, Long-term, Continual** Construction jobs will be temporary, but will provide a relatively long term benefit, as construction would take place over many years. It is anticipated that employment will be sustained into the future beyond 2050.	**Construction and Operation, Long-term, Continual** Construction jobs will be temporary, but will provide a relatively long term benefit, as construction would take place over many years. It is anticipated that employment will be sustained into the future beyond 2050.	**Construction and Operation, Long-term, Continual** Construction jobs will be temporary, but will provide a relatively long term benefit, as construction would take place over many years. It is anticipated that employment will be sustained into the future beyond 2050.
Permanent/ Temporary Irreversible/ Reversible	**Permanent and Irreversible** The beneficial effects are considered to be irreversible, although they may diminish over time.	**Permanent and Irreversible** The beneficial effects are considered to be irreversible, although they may diminish over time.	**Permanent and Irreversible** The beneficial effects are considered to be irreversible, although they may diminish over time.

Question 7: Will It Contribute To Sustainable Growth In Employment?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Magnitude and Spatial Extent, incl. Transboundary	**Medium / National** These effects are likely to be 'local' and there will be some displacement from elsewhere. This could include displacement from areas near other airports.	**Medium / National** These effects are likely to be 'local' and there will be some displacement from elsewhere. This could include displacement from areas near other airports.	**Medium / National** These effects are likely to be 'local' and there will be some displacement from elsewhere. This could include displacement from areas near other airports.
Assumptions and Limitation	Employment growth would be experienced at a local level with displacement from elsewhere in the UK.	Employment growth would be experienced at a local level with displacement from elsewhere in the UK.	Employment growth would be experienced at a local level with displacement from elsewhere in the UK.
Significance	**Significant Positive effect (++)**	**Significant Positive effect (++)**	**Significant Positive effect (++)**
	Direct, indirect and cumulative effects from direct and indirect employment impacts; high probability effects during construction and operation (long-term continuous); permanent and irreversible; medium magnitude and national extent.	Direct, indirect and cumulative effects from direct and indirect employment impacts; high probability effects during construction and operation (long-term continuous); permanent and irreversible; medium magnitude and national extent.	Direct, indirect and cumulative effects from direct and indirect employment impacts; high probability effects during construction and operation (long-term continuous); permanent and irreversible; medium magnitude and national extent.

Question 8: Will It Support The Productivity Of The UK Economy?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (incl. receptor)	Two types of productivity-related impacts are expected to arise: → enhanced productivity through increased trade and associated spin-off benefits; and → increased productivity through strengthening agglomerations and clusters.	Two types of productivity-related impacts are expected to arise: → enhanced productivity through increased trade and associated spin-off benefits; and → increased productivity through strengthening agglomerations and clusters.	Two types of productivity-related impacts are expected to arise: → enhanced productivity through increased trade and associated spin-off benefits; and → increased productivity through strengthening agglomerations and clusters.
Direct/ Indirect/ Cumulative	**Direct, Indirect** The move to more productive employment will arise both as a direct result of airport expansion, and indirectly as businesses attracted to locate in the vicinity of the airport contribute to improved productivity.	**Direct, Indirect** The move to more productive employment will arise both as a direct result of airport expansion, and indirectly as businesses attracted to locate in the vicinity of the airport contribute to improved productivity.	**Direct, Indirect** The move to more productive employment will arise both as a direct result of airport expansion, and indirectly as businesses attracted to locate in the vicinity of the airport contribute to improved productivity.
Probability (High, Medium, Low, Very Low)	**Medium** There is a medium probability of a beneficial effect.	**Medium** There is a medium probability of a beneficial effect.	**Medium** There is a medium probability of a beneficial effect.
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	**Operational, Long-term, Continuous** The impacts on productivity have been derived via changes in agglomeration and the impacts of improved trade. These impacts will be observed over the assessment period and are anticipated to extend beyond this period.	**Operational, Long-term, Continuous** The impacts on productivity have been derived via changes in agglomeration and the impacts of improved trade. These impacts will be observed over the assessment period and are anticipated to extend beyond this period.	**Operational, Long-term, Continuous** The impacts on productivity have been derived via changes in agglomeration and the impacts of improved trade. These impacts will be observed over the assessment period and are anticipated to extend beyond this period.
Permanent/ Temporary Irreversible/ Reversible	**Permanent and Irreversible** Airport expansion will continue to generate productivity improvements beyond 2050. Over the assessment period, the beneficial effects are considered to be irreversible, although they may diminish over time.	**Permanent and Irreversible** Airport expansion will continue to generate productivity improvements beyond 2050. Over the assessment period, the beneficial effects are considered to be irreversible, although they may diminish over time.	**Permanent and Irreversible** Airport expansion will continue to generate productivity improvements beyond 2050. Over the assessment period, the beneficial effects are considered to be irreversible, although they may diminish over time
Magnitude and Spatial Extent, incl. Transboundary	**Medium / Local** Enhanced productivity is expected to be positive at a net national level but will primarily benefit the local economy (i.e. in the clusters located near the airport).	**Medium / Local** Enhanced productivity is expected to be positive at a net national level but will primarily benefit the local economy (i.e. in the clusters located near the airport).	**Medium / Local** Enhanced productivity is expected to be positive at a net national level but will primarily benefit the local economy (i.e. in the clusters located near the airport).

Question 8: Will It Support The Productivity Of The UK Economy?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Assumptions and Limitation	The effects which are predicted are based on reductions in generalised cost which in turn depend on the Passenger Forecasts. These forecasts are based on assumptions about the national and international economy which are uncertain[101]. While the existence of wider economic benefits is recognised, their exact magnitude is inherently uncertain. The assessment of need scenario has been selected by the DfT and the AC as the central case. Significant positive productivity benefits are expected in each of the AC's global economic scenarios.	The effects which are predicted are based on reductions in generalised cost which in turn depend on the Passenger Forecasts. These forecasts are based on assumptions about the national and international economy which are uncertain[102]. While the existence of wider economic benefits is recognised, their exact magnitude is inherently uncertain. The assessment of need scenario has been selected by the DfT and the AC as the central case. Significant positive productivity benefits are expected in each of the AC's global economic scenarios.	The effects which are predicted are based on reductions in generalised cost which in turn depend on the Passenger Forecasts. These forecasts are based on assumptions about the national and international economy which are uncertain[103]. While the existence of wider economic benefits is recognised, their exact magnitude is inherently uncertain. The assessment of need scenario has been selected by the DfT and the AC as the central case. Significant positive productivity benefits are expected in each of the AC's global economic scenarios.
Significance	**Significant Positive effect (++)**	**Significant Positive effect (++)**	**Significant Positive effect (++)**
	Direct and indirect effects from the move to more productive employment; medium probability effects during operation (long-term continuous); permanent and irreversible; medium magnitude and local extent.	Direct, indirect and cumulative effects from the move to more productive employment; medium probability effects during operation (long-term continuous); permanent and irreversible; medium magnitude and local extent.	Direct, indirect and cumulative effects from the move to more productive employment; medium probability effects during operation (long-term continuous); permanent and irreversible; medium magnitude and local extent.

[101] Airports Commission, 2015. *Economy: Wider Economic Impacts Assessment*, p. 28. [online] Accessed 24/12/2015.
[102] Airports Commission, 2015. *Economy: Wider Economic Impacts Assessment*, p. 28. [online] Accessed 24/12/2015.
[103] Airports Commission, 2015. *Economy: Wider Economic Impacts Assessment*, p. 28. [online] Accessed 24/12/2015.

Objective 5: To promote employment and economic growth in the local area and surrounding region

Question 9: Will It Incorporate Accessibility Improvements, Particularly With Key Local Employment Centres And Areas Of High Unemployment?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (incl. receptor)	Long term increases in surface passengers associated with the airport are anticipated. In addition, there are also expected to be increases in the use of surface access systems by additional users not associated with the airport. The improvements to surface access planned under the do minimum scenario are expected to accommodate the additional passengers associated with airport expansion. However, long term increases in airport and non-airport related transport demands are expected to negate any network benefits to journey times for other users of surface transport systems around the airport. As a consequence no accessibility benefits to key local employment centres (such as Crawley) are anticipated[104]. Further enhancements to the surface transport network may be required to ensure accessibility benefits are maintained in the long term.	Long term increases in surface passengers associated with the airport are anticipated. In addition, there are also expected to be increases in the use of surface access systems by additional users not associated with the airport. Under the do minimum scenario, the planned improvements to the local transport network, particularly rail, will improve connectivity for those who live and work near these routes.[105] However, long term increases in airport and non-airport related transport demands are expected to negate any network benefits to journey times for other users of surface transport systems around the airport. Further enhancements to the surface transport network may be required to ensure accessibility benefits are maintained in the long term.	Long term increases in surface passengers associated with the airport are anticipated. In addition, there are also expected to be increases in the use of surface access systems by additional users not associated with the airport. Under the do minimum scenario, the planned improvements to the local transport network, particularly rail, will improve connectivity for those who live and work near these routes.[106] However, long term increases in airport and non-airport related transport demands are expected to negate any network benefits to journey times for other users of surface transport systems around the airport. Further enhancements to the surface transport network may be required to ensure accessibility benefits are maintained in the long term.
Direct/ Indirect/ Cumulative	**Direct, Indirect and Cumulative** Improvements or reductions to accessibility would directly affect the local economy.	**Direct Indirect and Cumulative** Improvements or reductions to accessibility would directly affect the local economy.	**Direct, Indirect and Cumulative** Improvements or reductions to accessibility would directly affect the local economy.
Probability (High, Medium, Low, Very Low)	**Medium** The effects on accessibility are complex in nature, and will vary across the routes and modes of transportation which are considered by the assessment.	**Medium** The effects on accessibility are complex in nature, and will vary across the routes and modes of transportation which are considered by the assessment.	**Medium** The effects on accessibility are complex in nature, and will vary across the routes and modes of transportation which are considered by the assessment.

[104] Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 96. [online] Accessed 24/12/2015.
[105] Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 96. [online] Accessed 24/12/2015.
[106] Jacobs, 2014. *Local Economy Impacts: Assessment*, p. 96. [online] Accessed 24/12/2015.

Question 9: Will It Incorporate Accessibility Improvements, Particularly With Key Local Employment Centres And Areas Of High Unemployment?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	Impacts on accessibility will be affected by both construction activities, and during the operational life of the scheme.	Impacts on accessibility will be affected by both construction activities, and during the operational life of the scheme.	Impacts on accessibility will be affected by both construction activities, and during the operational life of the scheme.
Permanent/ Temporary Irreversible/ Reversible	**Permanent and Reversible** The effects will be permanent and on-going. However, future transport improvements or changes to demand may reverse the scenario which is projected.	**Permanent and Reversible** The effects as they are described will be permanent and on-going. However, future transport improvements or changes to demand may reverse the scenario which is projected.	**Permanent and Reversible** The effects as they are described will be permanent and on-going. However, future transport improvements or changes to demand may reverse the scenario which is projected.
Magnitude and Spatial Extent, incl. Transboundary	**Low, Local** The effects described under this appraisal question are exclusive to the local economy, however it is expected that effects on accessibility are expected to be realised through improved access for other parts of the country to London. These effects are considered under the other appraisal questions within this assessment.	**Low, Local** The effects described under this appraisal question are exclusive to the local economy, however it is expected that effects on accessibility are expected to be realised through improved access for other parts of the country to London. These effects are considered under the other appraisal questions within this assessment.	**Low, Local** The effects described under this appraisal question are exclusive to the local economy, however it is expected that effects on accessibility are expected to be realised through improved access for other parts of the country to London. These effects are considered under the other appraisal questions within this assessment.
Assumptions and Limitation	The AC provides a generalised indication of the accessibility effects which will arise from the implementation of surface access proposals in the travel to work area around Gatwick Airport. There will be both improvements and / or reductions in the performance of individual road and rail connections which will affect users[107].	The AC provides a generalised indication of the accessibility effects which will arise from the implementation of surface access proposals in the travel to work area around Heathrow Airport. There will be both improvements and / or reductions in the performance of individual road and rail connections which will affect users[108].	The AC provides a generalised indication of the accessibility effects which will arise from the implementation of surface access proposals in the travel to work area around Heathrow Airport. There will be both improvements and / or reductions in the performance of individual road and rail connections which will affect users[109].
Significance	**Neutral (0)**	**Neutral (0)**	**Neutral (0)**

[107] Jacobs, 2014. *Local Economy Impacts: Assessment.* [online] Accessed 24/12/2015.
[108] Jacobs, 2014. *Local Economy Impacts: Assessment.* [online] Accessed 24/12/2015.
[109] Jacobs, 2015. *Local Economy: Impacts Assessment Post Consultation Update*, p. 17. [online] Accessed 24/12/2015.

Question 9: Will It Incorporate Accessibility Improvements, Particularly With Key Local Employment Centres And Areas Of High Unemployment?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
	Direct, indirect and cumulative effects on the local economy from improvements or reductions to accessibility; medium probability effects during construction and operation (long-term continuous); permanent and reversible; local extent.	Direct, indirect and cumulative effects on the local economy from improvements or reductions to accessibility; medium probability effects during construction and operation (long-term continuous); permanent and reversible; local extent.	Direct, indirect and cumulative effects on the local economy from improvements or reductions to accessibility; medium probability effects during construction and operation (long-term continuous); permanent and reversible; local extent.

Question 10: Will It Contribute To Growth In The Local Economy?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (incl. receptor)	The DfT developed a range of local employment estimates following from the AC's original estimates. These indicated that between 5,290 and 12,500 additional local jobs would be generated by 2030 with between 18,700 and 44,190 generated by 2050[110]. The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment. It is considered likely that airport expansion will serve as a catalyst to business investment in the surrounding area, continuing to attract high value firms. Employment and business which develops, or is maintained by the expansion of the airport will benefit the local economy and enhance local economic growth.	The DfT developed a range of local employment estimates following from the AC's original estimates. These indicated that between 37,830 and 76,650 additional local jobs would be generated by 2030 with between 32,750 and 65,610 generated by 2050. The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment. It is considered likely that airport expansion will serve as a catalyst to business investment in the surrounding area, continuing to attract high value firms[111]. Employment and business which develops, or is maintained by the expansion of the airport will benefit the local economy and enhance local economic growth.	The DfT developed a range of local employment estimates following from the AC's original estimates. These indicated that between 37,740 and 76,650 additional local jobs would be generated by 2030 with between 39,100 and 78,360 generated by 2050. The quantity and distribution of high skilled jobs has not been determined at this stage of the assessment. It is considered likely that airport expansion will serve as a catalyst to business investment in the surrounding area, continuing to attract high value firms[112]. Employment and business which develops, or is maintained by the expansion of the airport will benefit the local economy and enhance local economic growth.
Direct/ Indirect/ Cumulative	**Direct, Indirect and Cumulative** The local economy will grow both as a direct result of increased in employment associated with the airport, and also indirectly due to the agglomeration of businesses around the airport, and the airport acting cumulatively as a catalyst for growth with other development which is planned.	**Direct, Indirect and Cumulative** The local economy will grow both as a direct result of increased in employment associated with the airport, and also indirectly benefit due to the agglomeration of businesses around the airport, and the airport acting cumulatively as a catalyst for growth with other development which is planned.	**Direct, Indirect and Cumulative** The local economy will grow both as a direct result of increased in employment associated with the airport, and also indirectly due to the agglomeration of businesses around the airport, and the airport acting cumulatively as a catalyst for growth with other development which is planned.

[110] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.
[111] Jacobs, 2014. *Local Economy Impacts: Assessment,* p. 54. [online] Accessed 24/12/2015.
[112] Jacobs, 2014. *Local Economy Impacts: Assessment*, p 54. [online] Accessed 24/12/2015.

Question 10: Will It Contribute To Growth In The Local Economy?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Probability (High, Medium, Low, Very Low)	**High** There is a high degree of certainty that the local economy will benefit from growth as a result of the expansion.	**High** There is a high degree of certainty that the local economy will benefit from growth as a result of the expansion.	**High** There is a high degree of certainty that the local economy will benefit from growth as a result of the expansion.
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	**Construction and Operation, Long-term, Continuous** The local economy will benefit from construction activities. In addition, it is anticipated that long term growth will be brought about through businesses clustering around the airport.	**Construction and Operation, Long-term, Continuous** The local economy will benefit from construction activities. In addition, it is anticipated that long term growth will be brought about through businesses clustering around the airport.	**Construction and Operation, Long-term, Continuous** The local economy will benefit from construction activities. In addition, it is anticipated that long term growth will be brought about through businesses clustering around the airport.
Permanent/ Temporary Irreversible/ Reversible	**Permanent and Irreversible** The benefits to local employment and business growth are considered to be permanent for the operational life of the airport. It is possible that social, economic, political and technological changes may reduce the benefits which are derived through development but they will not be reversed.	**Permanent and Irreversible** The benefits to local employment and business growth are considered to be permanent for the operational life of the airport. It is possible that social, economic, political and technological changes may reduce the benefits which are derived through development but they will not be reversed.	**Permanent and Irreversible** The benefits to local employment and business growth are considered to be permanent for the operational life of the airport. It is possible that social, economic, political and technological changes may reduce the benefits which are derived through development but they will not be reversed.
Magnitude and Spatial Extent, incl. Transboundary	**High / Local** The impacts which are assessed within the Local Economic Impacts: Assessment Report are focussed on the neighbouring local authorities, and also those local authorities which are within the Travel to Work Area of the airport.	**High / Local** The impacts which are assessed within the Local Economic Impacts: Assessment Report are focussed on the neighbouring local authorities, and also those local authorities which are within the Travel to Work Area of the airport.	**High / Local** The impacts which are assessed within the Local Economic Impacts: Assessment Report are focussed on the neighbouring local authorities, and also those local authorities which are within the Travel to Work Area of the airport.

Question 10: Will It Contribute To Growth In The Local Economy?

SEA Topic	LGW-2R	LHR-ENR	LHR-NWR
Assumptions and Limitation	This assessment quantifies economic benefits where possible at a national level, as a consequence only local employment growth is quantified here. Other local economic impacts are described qualitatively. The economic scenario which has been selected (assessment of need) is considered to be the central case, however there is a degree of uncertainty about what economic, political, social and technological changes may develop. Significant positive local economic benefits are expected in each of the AC's global economic scenarios.	This assessment quantifies economic benefits where possible at a national level, as a consequence only local employment growth is quantified here. Other local economic impacts are described qualitatively. The economic scenario which has been selected (assessment of need) is considered to be the central case, however there is a degree of uncertainty about what economic, political, social and technological changes may develop. Significant positive local economic benefits are expected in each of the AC's global economic scenarios.	This assessment quantifies economic benefits where possible at a national level, as a consequence only local employment growth is quantified here. Other local economic impacts are described qualitatively. The economic scenario which has been selected (assessment of need) is considered to be the central case, however there is a degree of uncertainty about what economic, political, social and technological changes may develop. Significant positive local economic benefits are expected in each of the AC's global economic scenarios.
Significance	**Significant Positive effect (++)**	**Significant Positive effect (++)**	**Significant Positive effect (++)**
	Direct, indirect and cumulative effects on the growth of the local economy; high probability effects during construction and operation (long-term continuous); permanent and reversible; high magnitude and local extent.	Direct, indirect and cumulative effects on the growth of the local economy; high probability effects during construction and operation (long-term continuous); permanent and reversible; high magnitude and local extent.	Direct, indirect and cumulative effects on the growth of the local economy; high probability effects during construction and operation (long-term continuous); permanent and reversible; high magnitude and local extent.

3.10 MITIGATION

3.10.1 The airport expansion schemes which are considered within this assessment generally bring about various economic benefits at both the macro (national and regional), and micro (local) economic level. Mitigation for adverse economic effects is not required as the economic impacts are overall beneficial. However, the project is likely to be supported by further enhancement measures which provide a benefit to the economy, including the employment.

3.10.2 Environmental and social mitigation measures proposed within this AoS and later through the Environmental Impact Assessment process will have an effect on the economic impact assessment of airport enhancement proposals. There are several potential examples of this, including the impact of restricted night flying at Heathrow. Although the extent and nature of these mitigation proposals are not known at this stage, it is important that they are taken into account and that the economic impact assessment is updated to reflect particular initiatives.

3.10.3 The assessment identifies that the expansion of airport capacity may have an adverse impact on the level of activity at another airport, including nearby regional airports. The impacts on regional airport effects may require mitigation.

3.11 ASSUMPTIONS AND LIMITATIONS

3.11.1 The AC has undertaken a detailed consideration of various economic impacts at different spatial levels, as described in Section 3.3. The limitations to understanding and describing the beneficial effects which are projected by these assessments are summarised below.

3.11.2 Passenger Forecasts form a key part of the models which have been developed to understand the economic growth to be delivered through airport expansion. Although the economic scenario selected is considered to be the central case, there is uncertainty with respect to the economic, political, social and technological changes that may occur. The assessment of need scenario was adopted in the AC's Final Report[113]. In this scenario, future demand is primarily determined by past trends and the economic projections published by sources such as the OBR, OECD and IMF. However, it should be understood that forecasts are based on assumptions about the national and international economy which are uncertain[114]. To reflect this underlying uncertainty, the sensitivity section at the end of this appendix presents a range of economic impacts based on global aviation demand scenarios developed by the AC.

3.11.3 There are some types of potential economic impacts that are not included in the assessment due to the uncertainties associated with quantifying these. Examples include FDI, tourism and other 'dynamic' impacts on the UK economy.

3.11.4 Passenger benefits have been calculated on the assumption that any increase in aero-charges could be absorbed by airlines and therefore would not be passed through to passengers as higher fares. The DfT tested the impact of relaxing this assumption and found the benefits to passengers and the wider economy remained positive.

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[113] Airports Commission, 2015. *Final Report*. [online] Accessed 24/12/2015.

[114] Airports Commission, 2015. *Economy – Wider Impact Assessment,* p. 22. [online] Accessed 24/12/2015.

3.11.5 The employment forecasts that have been made relate strictly to the number of jobs created locally around the expanded airport – they do not refer to a net creation of jobs at the national level. Displacement impacts, whereby the employment generated is actually a transfer of workers from other areas, mean that some of these jobs will not be additional. In line with WebTAG guidance[115], estimating a net increase in jobs at the national level requires context-specific evidence that insufficient transport accessibility is a barrier to people entering employment. In the absence of such evidence, no increase in jobs at the national level can be assumed, and thus all additionally generated local employment must be considered 'displaced'.

3.12 CONCLUSIONS

As with any major infrastructure project, effects on the economy can be expected to arise during both construction and operation. The extent of any beneficial effects which are discussed within this assessment will depend on a number of key variables. These are presented as limitations and include:

- social, economic and political developments which affect demand for airport use;
- environmental regulations or mitigation which affect the operating schedule and frequency of the airport; and
- other tax and regulation from government which affect operation or profitability of the airport.

3.12.2 The impacts on the AoS objectives are considered below.

AoS Objective 4: To maximise economic benefits and to support the competitiveness of the UK economy

3.12.3 The economic impact work undertaken by the AC and DfT covers direct and wider economic benefits. These include the 'direct' benefits experienced by passengers and also providers of airport capacity, including through reduced delays, and increased frequency of flights. 'Wider impacts' include increased agglomeration, and increased output in imperfectly competitive markets. The results of the DfT's appraisal of these wider impacts are shown in Table 3.3 below.

3.12.4 When assessed against the objective of maximising economic benefits and supporting competitiveness, the LHR-NWR scheme generates the most benefits. As well as producing the highest direct benefits to passengers (passengers will benefit from lower fares once current capacity constraints have been removed whilst also benefitting from greater air service frequencies), this scheme also returns the highest wider economic impacts across the impacts considered (agglomeration and increased business output). It should be noted that this does not include the trade benefits, which are not treated as being additional to the other wider economic impacts. Depending on the modelling approach undertaken, these range from being slightly higher under the LGW-2R scheme, to being substantially higher under the LHR-NWR.

3.12.5 The competitiveness of the UK economy will also be enhanced to the largest extent by the LHR-NWR scheme given the overall productivity benefits. The agglomeration effects are particularly strong for the Heathrow schemes, as there is already extensive clustering of businesses nearby (in the M4 corridor, for example, where several 'hi tech' and biopharmaceutical companies have large bases) and this is why both the Heathrow schemes demonstrate a higher level of agglomeration improvements compared to the LGW-2R.

[115] Department for Transport, 2016 *TAG Unit A2.3 Appraisal of Employment Effects*. [online] Accessed 25/11/2016.

Table 3.3: Present Value (PV) of Economic Benefits, £ billion, 2014 prices[116]

Economic Impact	LGW-2R	LHR-ENR	LHR-NWR
Direct Impacts			
Lower Fares*	43.9	41.9	49.2
Frequency Benefits*	3.2	4.6	5.7
Reduced Delays*	1.4	0.4	0.6
Total Producer Impact	-40.8	-31.2	-38.0
Government Revenue	2.5	1.5	1.8
Wider Economic Impacts			
Business outputs benefits	1.1	1.2	1.4
Net agglomeration	0.3 to 1.6	0.5 to 2.1	0.7 to 2.5
Trade**	6.9,13.1, or 43.0	5.5, 10.0, or 85.8	6.6, 11.9, or 108.3
Total benefits (excluding trade and producer impacts)	52.4 to 53.7	50.1 to 51.7	59.2 to 61.1
* Combination of UK resident, Non UK Resident and International to International value. ** Trade is not additional to the other economic benefits described above. The three values represent three separate and equally valid attempts to quantify these impacts, which are not additive to each other.			

3.12.6 The conclusions with respect to economic benefits and UK competitiveness are summarised below:

- all three airport schemes have Significant Positive effects given the magnitude of direct and wider economic benefits forecast to be generated;
- all three schemes were assessed as having Significant Positive effects given the likely productivity enhancements from increased trade and clustering around airports. Productivity improvements will be more significant for the two Heathrow Airport schemes given the level of clustering that is already evident nearby.

AoS Objective 5: To promote employment and economic growth in the local area and surrounding region

3.12.7 The AC's Final Report (2015) and DfT's Further Review and Sensitivities Report contains forecasts of the employment generated locally for each of the airport expansion schemes. Adding runway capacity at Heathrow and Gatwick is forecast to generate additional local employment via direct, indirect and induced jobs. Direct jobs are those associated with airport activity (either on-site or off-site) while indirect jobs are those in supply and support sectors. Induced employment is that supported by the spending of workers in direct and indirect employment.

3.12.8 As reported in 3.3.17, the AC and DfT have generated a range of employment estimates for the number of local jobs created. Given the uncertainties associated with the type of airport and the size of the airport / employment catchment areas, these estimates are presented as a range.

[116] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.

Table 3.4: Local employment growth projections provided by the AC and the DfT[117]

	Year	AC Final Report[118]	DfT Further Review and Sensitivities Report[119]
LGW-2R	2030	12,500*	5,290 – 12,500
	2050	44,190*	18,700 – 44,190
LHR-ENR	2030	76,650	37,830 – 76,650[120]
	2050	65,610	32,750 – 65,610
LHR-NWR	2030	76,650	37,740 – 76,650
	2050	78,360	39,100 – 78,360
*Figures revised for consistency with the AC's stated method			

3.12.9 Displacement impacts, whereby the employment generated is actually a transfer of workers from other areas, have not been quantified. This could mean that at a national level, local employment impact is counterbalanced by a net 'no change' impact if all the additional workers transfer from other jobs elsewhere.

3.12.10 As well as employment displacement impacts, increase in activity at the airport to be expanded could reduce activity by a similar magnitude at another airport (an example would be reduced activity at one of the UK's regional airports, such as Birmingham Airport). These impacts will also need to be taken into account.

3.12.11 In the short term, some cumulative beneficial effects on accessibility are anticipated for all schemes. These are anticipated to arise due to improvements to surface access systems, including major infrastructure which is planned or under development. However, these benefits are expected to be negated by long term increases in demand and traffic. Further enhancements to the surface network would be required to ensure accessibility benefits are maintained in the long term.

3.12.12 With respect to promoting employment and economic growth in the local area, the following conclusions apply:

- All three schemes will have a Neutral effect on accessibility to local employment centres. Although new infrastructure will be provided, it is expected that any increase in provision will be offset by an increase in demand;
- All three schemes will have Significant Positive employment effects at the local level, primarily through job creation. This will be offset to some degree through displacement of employment from other areas in the UK.

[117] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.
[118] Airports Commission, 2015. *Final Report*. [online] Accessed 24/12/2015.
[119] Department for Transport, 2016. *Airport Capacity in the South East: Further Review and Sensitivities Report.* [online] Accessed 25/11/2016.
[120] The lower end of this range has been corrected since the Further Review and Sensitivities Report.

3.13 SENSITIVITIES

3.13.1 The AC identified a number of scenarios to capture uncertainty over future aviation passenger demand. These scenarios presented alternative cases based on how the global economy and aviation industry might develop. Tables 3.5, 3.6 and 3.7 show the economic benefits and local jobs impacts of airport expansion in the AC's global scenarios (in the carbon-traded case) and in the carbon-capped case. The tables have been produced by DfT for the AoS report.

3.13.2 Table 3.5, 3.6 and 3.7 show that the magnitude of benefits to passengers, the wider economy, trade and local employment vary depending on the global scenario. At the upper end, the low cost is king and global growth scenarios result in greater benefits than the assessment of need presented in the main report. At the lower end, the carbon-capped and global fragmentation scenarios result in a lower magnitude of benefits. The tables are intended to demonstrate the higher and lower ends of the range of scenarios, therefore the relative decline of Europe scenario is not included because it falls within the range set by the other scenarios.

3.13.3 The carbon-capped scenario has been assessed for the assessment of need demand scenario, and is not reported for other demand scenarios within this assessment. The range in forecast passenger demand would be constrained by policy in a carbon-capped scenario, and is therefore less varied than the carbon-traded range. The potential impact of carbon-capped scenarios in conjunction with different demand scenarios was considered within the AC's *Strategic Fit: Forecasts* [121].

3.13.4 Although the magnitude varies, under all scenarios expansion would lead to benefits to passengers, the wider economy, trade and local jobs. The conclusions set out against objectives 4 and 5 are still expected to hold in each of the economic scenarios.

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[121] Airports Commission, 2015. *Strategic Fit Forecasts*. p. 58- 61 [online] Accessed 24/12/2015

Table 3.5: Present Value (PV) of Economic Benefits in the AC global scenarios, LGW-2R, £ billion, 2014 prices

LGW-2R					
	Central (assessment of need)	**Low** (global fragmentation)	**Low** (carbon-capped)	**High** (global growth)	**High** (low cost is king)
Direct Impacts					
Lower Fares*	43.9	30.2	25.8	123.0	106.8
Frequency Benefits*	3.2	2.2	1.5	9.1	9.6
Reduced Delays*	1.4	1.3	1.6	1.0	-0.1
Total Producer Impact	-40.8	-28.7	-23.7	-109.7	-78.8
Government Revenue	2.5	1.0	1.0	8.4	5.6
Wider Economic Impacts					
Business outputs benefits	1.1	0.8	0.7	2.6	2.3
Net agglomeration	0.3 to 1.6	0.1 to 0.8	0.3 to 1.1	0.1 to 1.4	0.1 to 1.1
Trade**	6.9, 13.1 or 43	4.7, 9.2 or 31.3	4.3, 8.1 or 27.8	13.9, 31.9 or 94.7	10.4, 22.9 or 131.5
Total Benefits (excluding trade and producer impacts)	52.4 to 53.7	35.6 to 36.3	30.7 to 31.6	144.1 to 145.4	124.2 to 125.2
Local jobs (cumulative number)					
2030	5,293 to 12,504	- 1,277 to -3,018	3,304 to 7,806	10,182 to 24,056	19,072 to 45,059
2050	18,703 to 44,186	11,947 to 28,225	12,398 to 29,290	27,679 to 65,391	28,868 to 68,200

* Combination of UK resident, Non UK Resident and International to International value.

** Trade is not additional to the other economic benefits described above. The three values represent three separate and equally valid attempts to quantify these impacts, which are not additive to each other.

Table 3.6: Present Value (PV) of Economic Benefits in the AC global scenarios, LHR-ENR, £ billion, 2014 prices

LHR-ENR					
	Central (assessment of need)	**Low** (global fragmentation)	**Low** (carbon-capped)	**High** (global growth)	**High** (low cost is king)
Direct Impacts					
Lower Fares*	41.9	36.0	25.1	111.5	116.7
Frequency Benefits*	4.6	3.7	4.0	5.8	7.7
Reduced Delays*	0.4	0.6	1.5	0.4	0.3
Total Producer Impact	-31.2	-31.6	-21.0	-88.2	-94.7
Government Revenue	1.5	1.6	1.3	6.8	7.2
Wider Economic Impacts					
Business outputs benefits	1.2	0.9	0.7	2.4	2.5
Net agglomeration	0.5 to 2.1	0.8 to 2.7	0.9 to 3.1	0.4 to 1.9	0.6 to 2.4
Trade**	5.5, 10 or 85.8	5.3, 9.8 or 88.4	3.7, 6.7 or 107.5	9.8, 24.6 or 122	10.2, 25.3 or 107.5
Total Benefits (excluding trade and producer impacts)	50.1 to 51.7	43.7 to 45.6	33.5 to 35.7	127.3 to 128.8	135.1 to 136.9
Local jobs (cumulative number)					
2030	37,828 to 76,652	24,078 to 48,444	30,594 to 61,554	43,814 to 88,153	38,817 to 78,099
2050	32,752 to 65,605	29,653 to 59,223	31,995 to 63,899	46,464 to 92,798	45,940 to 91,751

* Combination of UK resident, Non UK Resident and International to International value.

** Trade is not additional to the other economic benefits described above. The three values represent three separate and equally valid attempts to quantify these impacts, which are not additive to each other.

Table 3.7: Present Value (PV) of Economic Benefits in the AC global scenarios, LHR-NWR, £ billion, 2014 prices

LHR-NWR					
	Central (assessment of need	**Low** (global fragmentation)	**Low** (carbon-capped)	**High** (global growth)	**High** (low cost is king)
Direct Impacts					
Lower Fares*	49.2	42.2	28.9	127.4	128.8
Frequency Benefits*	5.7	4.5	4.7	7.3	8.7
Reduced Delays*	0.6	0.8	1.9	0.7	0.4
Total Producer Impact	-38.0	-38.0	-24.7	-100.1	-103.6
Government Revenue	1.8	2.1	1.9	7.8	7.9
Wider Economic Impacts					
Business outputs benefits	1.4	1.1	0.8	2.8	2.9
Net agglomeration	0.7 to 2.5	0.8 to 2.9	1.2 to 4.1	0.5 to 2	0.6 to 2.6
Trade**	6.6, 11.9 or 108.3	6.2, 11.5 or 106	4.3, 7.8 or 125	11.4, 27.9 or 140.8	11.4, 27.5 or 126.4
Total Benefits (excluding trade and producer impacts)	59.2 to 61.1	51.5 to 53.6	39.4 to 42.4	146.4 to 148	149.4 to 151.4
Local jobs (cumulative number)					
2030	37,742 to 76,652	24,028 to 48,343	29,906 to 60,170	46,310 to 93,176	50,509 to 101,623
2050	39,095 to 78,361	35,938 to 71,776	37,804 to 75,502	51,682 to 103,219	52,803 to 105,457

* Combination of UK resident, Non UK Resident and International to International value.

** Trade is not additional to the other economic benefits described above. The three values represent three separate and equally valid attempts to quantify these impacts, which are not additive to each other.