



Gatwick Airport Northern Runway Project

The Applicant's Response to ISH9 Action Point 38 – Further discussions to take place between Applicant and JLA's regarding assessment of catalytic employment benefits and provide ExA with update on whether common ground can be reached

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1 Introduction

- 1.1.1 This note provides an update on the discussion that took place on Friday 9 August between the Applicant (represented by Oxera) and the Joint Local Authorities ('JLAs', represented by York Aviation) regarding the catalytic employment benefits and its assessment methodology.
- 1.1.2 Ahead of the meeting, the Applicant reviewed comments made by York Aviation in its Deadline 8 submission ([REP8-126](#), Appendix I) in response to the Applicant's own explanatory note on the catalytic methodology ([REP7-077](#)). The meeting focused on the content of the Deadline 8 submission by the JLAs to narrow down and resolve outstanding areas of disagreement.
- 1.1.3 This note also covers points raised by the New Economics Foundation ('NEF') at Deadline 8 ([REP8-173](#)) regarding the catalytic employment methodology.

2 Summary of the position reached following 9 August meeting

- 2.1.1 The meeting was helpful for the Applicant to understand the specific concerns of the JLAs and it confirmed that there is a fundamental difference over whether it is better to take the Applicant's approach to seek to measure total employment changes (to infer what the catalytic jobs would be) or seek to measure catalytic jobs directly. Following the exchange that took place, the parties reached the conclusion that there is lasting disagreement on the methodology chosen and how it was applied.
- 2.1.2 The Applicant would characterise the substantive issues (based on the JLAs' **Comments on any further information/submissions received by Deadline 7** [[REP8-126](#)] – Appendix I):
- York Aviation's preference for an alternative approach to the one taken that specifically factors in the characteristics of an individual airport in an individual area – in this case, Gatwick (paras 12, 13 and 15a of [REP8-126](#) – Appendix I).
 - Concerns that the methodology used is not sufficiently routed in actual passenger origin data. Therefore, a national elasticity may not hold for any individual airport (paras 8 – 11 and 15c of [REP8-126](#) – Appendix I).
 - Concerns that the method relies on cross sectional data and assumes the relationship is static over time, therefore, does not reflect the dynamism of airports (para 15d of [REP8-126](#) – Appendix I).

- 2.1.3 The impact of these concerns over the magnitude of impacts was also discussed. York Aviation repeated the view, expressed in the **Joint Local Authorities' Response to the Applicant's Deadline 7 Submissions** [[REP8-126](#)] Appendix I para. 16, that they have no confidence in the robustness of the impacts estimated but if anything understand these could be understated.
- 2.1.4 Paragraphs 16-18 of [REP8-126](#) – Appendix I state that if catalytic impacts are understated, there could be implications for the housing market. We understand that it is now common ground between the Applicant and the JLAs that there would not be housing market impacts in the operational phase so a higher number of catalytic jobs would not have an adverse effect.
- 2.1.5 In paragraphs 4 and 17 of [REP8-126](#), the JLAs raise concerns about the underlying traffic forecasts and displacement of demand from other airports. As this assessment is about the relationship between traffic and employment at the local level (in West Sussex), displacement from other airports would not materially change the results.
- 2.1.6 The Applicant has provided a response to York Aviation's remaining concerns is set out below.

3 Response to York Aviation's remaining concerns

3.1 General response to the concerns raised

- 3.1.1 The Applicant is of the view that the methodology used to assess total employment benefits including catalytic employment is robust and appropriate for the objective set out, that is addressing displacement and causality issues as explained in the **Explanatory Note on Catalytic Employment** [[REP7-077](#)]. These issues are important concerns that are typically raised in this type of assessment, and the approach used reflected the importance placed on not artificially overstating economic benefits.
- 3.1.2 The approach implemented by the Applicant is a standard statistical technique to address these issues (causality in particular) used extensively, both in the transport economics academic literature (approach replicated from Percoco 2010¹ and Brueckner 2003²) and in policy evaluation in the UK more specifically

¹ Percoco, M. (2010), 'Airport Activity and Local Development: Evidence from Italy, Urban Studies, 47:11, September, pp. 2427–2443 – available upon request.

² Brueckner, J.K. (2003), 'Airline Traffic and Urban Economic Development', Urban Studies, 40:8, July, pp. 1455–1469 – available upon request.

(BEIS refers to this approach as being used widely in ex post evaluations of local economic growth)³.

3.1.3 The Applicant is also confident that sufficient information has been provided in the submitted assessment (**ES Appendix 17.9.2 Local Economic Impact Assessment** [[APP-200](#)]) to assess the goodness of fit (i.e. a statistical term referring to how well the modelling performs against an appropriate benchmark) of the analysis in line with the commonly accepted practices in statistics.

3.1.4 York Aviation's concerns are discussed in turn below.

3.2 Preference for an alternative approach

3.2.1 **The Applicant's understanding of this concern:** The Applicant understands this is related to the lack of account taken, from York Aviation's perspective, of Gatwick airport's specific catchment area.

3.2.2 It was suggested at the meeting that an alternative approach could be to look at the airport's specific catchment area (i.e. what share of Gatwick's passengers actually originate from the Six Authorities Area) and assess its relationship to the local catalytic employment (not total employment) that would be generated locally.

3.2.3 **The Applicant's response:** The Applicant elected to focus on the link between total activity (i.e. all the traffic at an airport) and local employment, instead of the link between local traffic demand (e.g. limited to the airport's catchment area) and catalytic employment as suggested by York Aviation.

3.2.4 The relationship measured by the Applicant is very different to that described by York Aviation. Measuring instead the relationship between traffic demand from the local catchment area and catalytic employment has a number of disadvantages – some of which the Applicant covered in section 3.3 of [REP7-077](#).

- **It would fail to address the displacement issue.** One of the advantages of measuring changes in total employment is that any local job switching (displacement) between and within employment sectors locally would not lead to net employment gains (i.e. no change in total employment) as the only change in employment measured is the overall increase in employment. Focusing on catalytic employment implies that only the footprint of the

³ Please refer to the section on 'instrumental variables', page 13 of BEIS (2017), "Evaluation of policies for local economic growth: scoping study"; available under: <https://www.gov.uk/government/publications/evaluation-of-policies-for-local-economic-growth-scoping-study>

airport's own activity would be reflected without taking account of wider consequent effects in the local area – thereby overstating impacts.

- **The relationship measured would be overly time dependent.** As York Aviation states with respect to their third concern, the airport sector is dynamic such that it is reasonable to expect that Gatwick Airport's catchment area will evolve by 2047. The approach suggested by York would be very dependent on the definition of the catchment area used, and the share of local demand in the baseline year. The Applicant's approach does not suffer from this drawback as it infers the impact of an increase in airport activity from a comparison between UK airports (cross-sectional approach discussed below). A cross-sectional analysis is a preferred method when measuring a structural relationship (i.e. individual airports can increase activity over time but the average relationship between activity and employment across UK airports would stay constant).
- **It would require a disproportionate data collection / cleaning exercise.** Assuming that this assessment is done at a national level, including each UK airport, doing this analysis implies having to (1) define a catchment area for each UK airport, (2) collect passenger demand data for each specific catchment area, (3) identify employment sectors that are relevant for catalytic impacts, (4) gather employment data at a catchment area level for these employment sectors. The analysis the Applicant has undertaken makes efficient use of data that is readily available.
- **It would require developing a new analytical framework (i.e. controlling for different factors) which is also not proportionate.** The analysis the Applicant has undertaken makes best use of the latest available academic research on the employment impacts of airports and applies it to a UK context. Replicating peer-reviewed research provides the advantage of relying on a framework which has tested that the variables used in the analysis are robust and appropriately take into account the impact of other external factors on air traffic and employment. Without this framework, additional work would be required to test whether from an intuitive and statistical sense the factors used are still robust or need to be amended, and in that case to identify which other factors to use instead.

3.2.5 The responses above clarify why the Applicant has adopted the approach to the assessment that it has, and why it consider its approach to be preferable to that proposed by York Aviation. More generally, this type of approach reflects common practice in the literature and UK policy evaluation practice. The Applicant used an assessment framework that was well-established in the academic literature and replicated it with UK data, which would guarantee its

robustness. The alternative approach suggested by York Aviation does not benefit from a similarly well-established framework.

3.3 Methodology not sufficiently routed in actual passenger origin data

3.3.1 **The Applicant's understanding of this concern:** The Applicant understand this is related to the view expressed by York Aviation that CAA passenger survey data should have been used for this assessment (either as an input to the assessment or as an external sense-check) given such data is available in the UK but is not in other countries.

3.3.2 **The Applicant's response:** The Applicant has outlined why CAA passenger survey data could not be used for this assessment, either as an input or as a sense-check to the results ([REP7-077, paras. 3.2.3-3.2.4](#)). The set-up of the approach does not allow for it, because the Applicant does not produce local demand predictions (i.e. demand from the airport's catchment area) with this approach – which is what the CAA passenger survey data would be used for.

3.3.3 This point was addressed in section 3.2 of [REP7-077](#). As mentioned in para. 3.2.2, CAA passenger survey data is a good source to understand airport catchment areas as the data includes granular information about where passengers travelling through a specific airport come from within the UK. If the Applicant's analysis predicted the West Sussex share of Gatwick passengers (as suggested by York Aviation), then the survey data could be used to check whether the predicted values are close to actual demand estimates (external sense-check). Alternatively, if the Applicant's analysis predicted West Sussex share of Gatwick passengers, the Applicant could simply replace this prediction by CAA passenger survey data (input to the assessment – i.e. the prediction would not be needed because CAA data could be directly used⁴).

3.3.4 However, the Applicant's approach predicts total throughput, that is to say the total number of passengers that travelled through Gatwick Airport and not the West Sussex share of Gatwick passengers. Conceptually there is no possibility for the Applicant to use the CAA passenger survey data, in the manner suggested by York Aviation, to either check or replace the Applicant's approach.

3.3.5 It would not be possible to use CAA passenger survey data to check the analysis, as the output of the analysis is the total traffic at an airport (e.g. Gatwick Airport's total number of passengers) and the CAA survey data, while a good

⁴ As described above, CAA passenger survey data provides granular information about where passengers travelling through a specific airport come from within the UK. It would therefore be possible to use this dataset to calculate directly the number of Gatwick Airport passengers that come from West Sussex only, as per the example above.

source to check local passenger demand, is an imperfect source⁵ to compare with total traffic figures. It would not be possible to replace the Applicant's approach with the survey data, first because the approach does not produce local demand predictions (which the survey data is used for) and second because the survey data would not address the causality issue identified⁶ and only the type of statistical analysis implemented by the Applicant could (as explained in more detail below).

3.3.6 More generally, the approach taken by the Applicant does not require the use of CAA passenger survey data. The Applicant understands that this dataset would be useful in the context of the alternative approach York Aviation has outlined but it does not add value in the context of the assessment the Applicant has actually undertaken which is based on a different conceptual framework as discussed in section 3.2 above. The Applicant acknowledges York Aviation's questions regarding the external validity of the assessment, and using CAA passenger survey data to check this point. While the responses above clarify why the Applicant is not in a position to use the survey data in the manner suggested by York Aviation, the Applicant has provided sufficient information to check the external validity and the robustness of the results in the submitted assessment (Figure A5.1 and Figure A5.2 in [APP-200](#)).

3.3.7 It was also suggested that the papers from which this assessment was replicated (i.e. Percoco 2010) only used a statistical approach because the local equivalent of CAA passenger survey data was not available. This characterisation is not correct. While the Applicant is not aware of the US or Italy having data similar to the CAA passenger survey, they would still be required to use a statistical approach even if they had. This is because the only robust (i.e. academically accepted) approach to measuring any relationship between two factors (here employment and air traffic) that suffers from causality issues (as explained in paras. 2.1.7-2.1.9 of [REP7-077](#)) is a statistical analysis such as the two-stage least squares analysis implemented in this context. The Percoco paper outlines this point explicitly.

"In other words, equation (1) may suffer from an endogeneity bias caused by both the fact that airport location decisions are often taken on

⁵ As this dataset is a survey of passengers, the CAA typically only interrogates a subset of individuals travelling through an airport and re-weights the responses afterwards to reflect actual traffic levels. Data is not available for all airports every year (only a subset of UK airports are surveyed in a given year), making this dataset an imperfect source compared to other CAA datasets (e.g. [UK airport statistics](#), available each month and covering the total number of passengers travelling) to check total traffic data. For more information on the CAA passenger survey methodology, please refer to : <https://www.caa.co.uk/data-and-analysis/uk-aviation-market/consumer-research/departing-passenger-survey/sampling-methodology/>

⁶ In [REP7-077](#), para. 3.2.3, the Applicant explained in more detail why the CAA passenger survey data could not address the causality issue identified: "It is not possible however to separate out the share of this demand that is stimulated by airport activity from the share that itself stimulates airport activity (issue 2 of causality)".

the basis of the province's development (i.e. employment, E , may influence the level of T [i.e. traffic]) and the fact that once the airport is actually in place, the output, T , may still be a function of E because more developed areas tend to interact more with the rest of the world and thus increase airline traffic. To overcome this problem, I made use of a two-step procedure." (Percoco 2010, p.8)

- 3.3.8 Finally, York Aviation suggests that a national elasticity may not hold for any individual airport. The Applicant holds a different view, supported by the data as shown in Figure A5.1 of [APP-200](#) (copied for reference below).
- 3.3.9 This chart illustrates why the relationship measured by the Applicant's analysis exists (i.e. it is a sense-check on the approach). It shows the input data to the assessment (i.e. data before any analysis is undertaken) which was logged (a common transformation used in statistics) and plotted in a chart.
- 3.3.10 The figure clearly illustrates the linear relationship that exists between total traffic and local employment, which the Applicant's approach seeks to measure robustly. This data suggests that, as airport activity increases along the diagonal, so should total employment locally. The elasticity the Applicant measures represents by how much local employment should increase if traffic increases and it is reasonable to expect that this relationship should apply on average to all UK airports.

Figure A5.1 Air traffic and local employment are positively correlated



Source: Oxera.

3.4 Use of cross-sectional data

3.4.1 **The Applicant’s understanding of this concern:** York Aviation highlights that the elasticity was estimated as an average relationship across UK airports at one point in time (2018) as the chart copied above illustrates, which is referred to as a cross-sectional analysis. Provided there is a structural change in this relationship in the coming years (e.g. the slope of the line changes), the elasticity would also change but the Applicant’s analysis would not reflect it.

3.4.2 **The Applicant’s response:** This is a reasonable challenge, typically associated with analyses of this type, and which the Applicant has acknowledged in the submitted assessment:

“It is worth noting, though, that if recent changes towards remote working patterns become permanent, this would have an effect on the relationship between air traffic and local employment levels; for example, working from home may reduce the employment response in the service

sector resulting from increased air traffic. In the context of this EIA and absent sufficient information on the impact of the COVID-19 pandemic on remote working in the long term, it has been assumed that the empirical relationship estimated between air traffic levels and local employment pre-pandemic still holds.” ([APP-200](#), para. A5.24)

- 3.4.3 The Applicant notes that the alternative to a cross-sectional assessment, a time series analysis which would look at the average relationship between employment and traffic over time, also has significant and likely greater disadvantages in this specific context. Primarily, it is very challenging to account for factors that lead to changes in macroeconomic variables such as employment through time as a large number of different factors would potentially need to be included. A cross-sectional analysis is a preferred method when measuring a structural relationship such as this one, which is not expected to change significantly over time (e.g. airports could move up and down the line over time but the slope can stay constant).

4 Further points in response to NEF regarding catalytic employment benefits

- 4.1.1 The Applicant also notes that NEF has commented on this assessment in its Deadline 8 submission ([REP8-173](#)). While generally supportive of the approach taken, NEF has identified two issues with the assessment.

- Displacement / spillover impacts are not adequately measured
- Catalytic employment impacts rely on new business passengers

- 4.1.2 Responses to these two points are provided in turn below.

4.2 Displacement / spillover impacts are not adequately measured

- 4.2.1 NEF suggests the assessment of catalytic impacts has not properly considered displacement in two ways.

- 4.2.2 First, NEF asks for clarification regarding how many lost/displaced jobs the analysis implies in the regions surrounding the Six Authorities – making a reference to the spillover impacts from one region to another presented in Annex 5 of [APP-200](#).

- 4.2.3 In response, the Applicant would clarify that the assessment is undertaken at the county level (i.e. the relevant geographic unit for Gatwick is the West Sussex county) such that, to the extent there is displacement between regions as

measured in the analysis, the impact estimates reflect displacement that would occur between the counties constituting the Six Authorities Area (not between the Six Authorities Area and similarly-sized neighbouring areas).

- 4.2.4 The Applicant reflects the potential displacement within the Six Authorities Area in the analysis by assuming that the estimated employment impact will be distributed throughout the Six Authorities Area as explained in para. 2.3.3. in [REP7-077](#). This assumption is conservative as it is expected that the magnitude of impacts at a Six Authorities Area level would be larger than those at the West Sussex level, but it also reflects more accurately the expected geographic distribution of employment impacts and the expected displacement between counties.
- 4.2.5 Second, NEF mentions that there has been no assessment of the scheme's impact on jobs beyond the neighbouring regions – and highlights the example of the scheme's potential impact on the tourism sector.
- 4.2.6 In response, the Applicant notes that it has addressed NEF points regarding tourism impacts in **The Applicant's Response to Written Representations – Appendix D Response to New Economics Foundation Written Representation** [\[REP3-076\]](#) which the Applicant believes is relevant to these comments. Scheme impacts on employment beyond the local area would be relevant for the national economic assessment and, as discussed in paras. 4.1.3-4.1.8, national policy supports outbound tourism and it is unclear whether outbound tourism can be characterised as a welfare loss to UK society more widely.
- 4.3 Catalytic employment impacts rely on new business passengers**
- 4.3.1 NEF states that catalytic employment is generated through multiple channels, including in particular business passenger connectivity. By looking at the relationship between air traffic and total employment, air traffic is only a proxy for business use of air travel.
- 4.3.2 In response, the Applicant would agree that in principle catalytic employment is driven partly by business passenger connectivity. The Applicant would however note that in the approach used, the relationship derived is between air traffic and total employment and not between air traffic and specifically catalytic employment. This is important because in this case air traffic is not used as a proxy, but is in fact the main driver for the impact the Applicant seeks to measure – that is the impact of airport activity on local employment, which includes direct, indirect, induced, and catalytic employment.

- 4.3.3 While catalytic employment may be specifically driven by air travel demand, other types of employment related to airport activity are instead driven by the magnitude of airport activity (i.e. the more traffic at the airport, the more employment). In this assessment, catalytic employment is derived as a residual when subtracting the separately calculated direct/indirect/induced from the total local employment estimated.