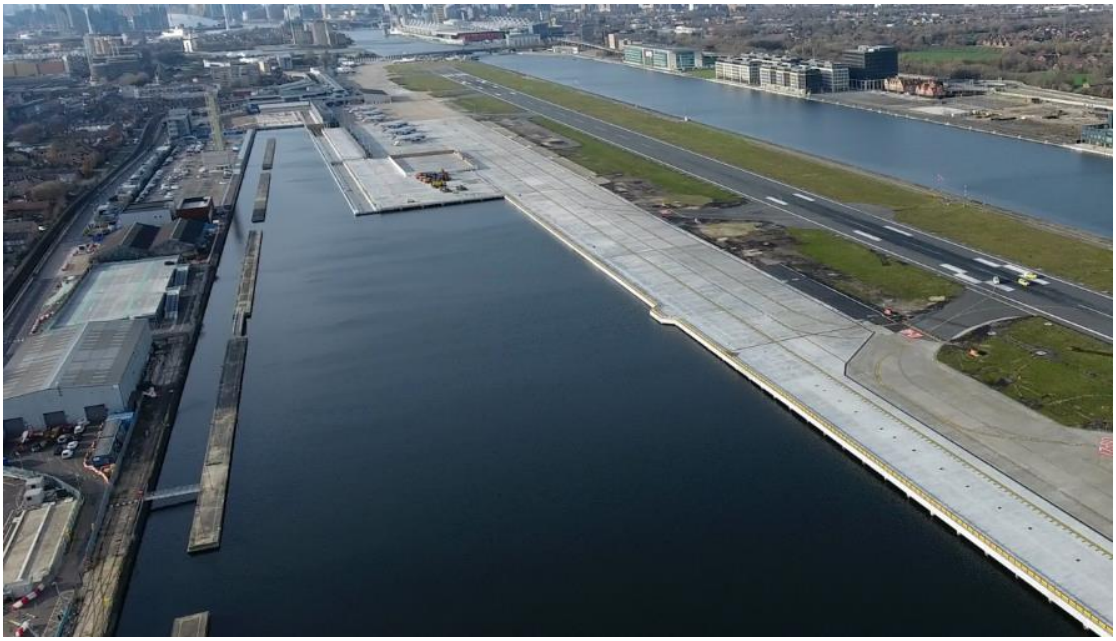


TOWN AND COUNTRY PLANNING ACT 1990, SECTION 73

TOWN AND COUNTRY PLANNING (INQUIRIES PROCEDURE) (ENGLAND) RULES 2000

APPLICATION BY LONDON CITY AIRPORT LIMITED

to vary Conditions 2, 8,

12, 17, 23, 25, 26, 35, 42, 43 and 50

attached to planning permission

13/01228/FUL allowed on appeal APP/G5750/W/15/3035673 dated 26th July 2016

LPA REFERENCE NUMBER 23/00059/REF

PINS REFERENCE NUMBER: APP/G5750/W/23/3326646

Proof of Evidence – Need

Dr Christopher James Smith

November 2023

Contents

1 Introduction

My Background

1.1 My name is Christopher James Smith and I am the founder of Chris Smith Aviation Consultancy Limited (CSACL). I have worked in the air transport industry for my entire professional career of 49 years.

1.2 I hold the degrees of BA (Hons) and MA in Physics from the University of Oxford, where I was an Open Scholar at Keble College, and PhD from the University of Aston in Birmingham. My Doctorate was awarded for research into the development of a regional airport and its relationship with local commerce and industry. During this research I was an employee of West Midlands County Council, the then owner of Birmingham Airport. I then worked for Thomson Travel Limited for three years, before becoming a management consultant specialising solely in the air transport industry. My consultancy career started with a small boutique consultancy, before 14 years with Coopers & Lybrand/PricewaterhouseCoopers. I then became Managing Director of the London offices of two specialist air transport consultancies. I established my own firm in July 2010.

1.3 During my career I have worked for airport operators, airlines, air traffic control organisations, ground handlers, government bodies and other agencies, as well as private sector investors in more than 70 countries around the world during the course of more than 200 individual project assignments. I have specialised in the several aspects of preparing business plans, covering market analysis and traffic forecasting, and for airports aeronautical revenue, pricing policies and economic regulation, commercial revenue projections, operating expenditure projections, and capital expenditure reviews. I have undertaken work of this nature on or for 160 airports on six continents. I have also worked on some 40 airline projects. This has provided me with very significant experience of many aspects of the air transport industry.

1.4 My project experience of the London Airports system includes:

- Expert witness for Hertfordshire and Essex County Councils during the first Stansted Public Inquiry (1980 to 1983);
- Assessment of impact of night curfews at London airports for the British Air Transport Association, the trade association for UK airlines (1997);
- Preparation of traffic and aeronautical and commercial revenue projections for the consortium that acquired a 30 year concession to operate London Luton Airport (1997-98);
- Review of BAA traffic forecasts for the Stansted G1 expansion for Uttlesford District Council (2005 to 2008), and preparation for the subsequently cancelled G2 Inquiry (2008 to 2009);
- Traffic forecasts, aeronautical and commercial revenue projections and a capex review for the Goldman Sachs consortium in its bid for BAA plc (2006);
- Traffic and capacity assessments for potential Lending Banks to a consortium bidding for London City Airport (2006);
- Extensive advice to London Luton Airport Operations Limited on traffic forecasts, financial viability of expansion, potential restructuring of its concession agreement, competitive position, and economic regulation of BAA (2005 to 2008);
- Study of the resilience of Heathrow's (and to a lesser extent, Gatwick's) runway system for the CAA (2008);
- Development of a secondary slot trading product for Airport Co-ordination Limited for Heathrow and Gatwick (2009);
- Traffic forecasts and potential airline incentive schemes for TPG Capital LLP, a leading US private equity fund, during its bid to acquire London Stansted Airport (2011 to 2012);
- Capacity assessment of London Luton Airport for Luton Borough Council as part of its consideration of a Planning Application (2013);
- Advice to easyJet on its assessment of London airport development options during the Davies Commission investigation (2014);
- Advice to the London Borough of Bromley on the request for extended opening hours by London Biggin Hill Airport Limited (2015);

- Support to London Borough of Newham in its consideration of an application to expand London City Airport (including appearance at the 2016 Public Inquiry) and review of its Draft Master Plan (2019); and
- Assessment of the financial viability of Manston Airport for Thanet District Council (2016-18).

1.5 I note that currently I am also advising five local authorities[1] on the DCO application made by Luton Rising to expand London Luton Airport. A formal Examination process started in July 2023 and extends until 10 February 2024, by which date the Examining Authority is required to have completed its assessment.

1.6 I consider this long experience of working on and observing the development of the London airports system, together with recent experience of LCY (outlined further below), has given me specific, relevant and recent qualifications and insights to equip me to advise on this Appeal application.

CSACL

1.7 Since establishing CSACL in 2010, I have worked on more than 40 engagements covering airports, airlines, ground handling companies and air navigation service providers for owners, operators, investors, planning authorities and other government agencies in some 20 countries around the world.

1.8 In October 2014, CSACL was appointed by the London Borough of Newham (LBN) to review the Need Statement prepared by London City Airport Limited's (LCY[2]) advisors, York Aviation, and also to review the possible impacts on the air transport industry of potential temporary closure of LCY to avoid 'Out Of Operational Hours' (OOOH) construction.

[11] Luton Bourgh Council, Dacorum Borough Council, North Hertfordshire Council, Hertfordshire County Council, and Central Bedfordshire Council

[2] LCY is used to refer to both the company owning and operating the airport, as well as to it as a physical entity, the context generally permitting understanding of which is being referred to.

1.9 CSACL was further contracted in the summer of 2015 to advise on the air transport issues associated with the appeal lodged by LCY against the decision made by the Mayor of London to refuse its application to expand facilities at the airport.

1.10 CSACL was asked in 2019 by LBN to review the Draft Master Plan prepared for LCY.

Structure of Proof of Evidence

1.11 I begin this Proof with an Executive Summary (Chapter 2). I then describe some unique features of LCY and the development of its traffic up to Autumn 2023. Chapter 4 considers future passenger forecasts, while in Chapter 5 I deal with other matters, covering Airports Policy, carbon emissions and airline re-fleeting. I give my overall conclusions in Chapter 6.

1.12 I concentrate in this evidence on matters where there is a disagreement between my client and LCY and will not repeat matters presented in other documents, or where there is agreement.

Scope of Evidence

1.13 My evidence covers only air transport matters and specifically focuses on the forecasts of passenger demand for facilities at LCY. I have not undertaken any analyses on the economic impact of LCY. Noise matters have been the concern of Mr Rupert Thornely-Taylor, while Mr Liam McFadden of LBN addresses planning issues.

1.14 I do not cover in this Proof areas that have already been agreed with LCY/York, namely:

- The requested relaxation of restrictions on aircraft operations at LCY would improve airline efficiencies, and that even with lower than forecast demand there would be aircraft operations in these additional hours (covered in the CSACL Needs Assessment Report of June 2023, Paras. 3.14 to 3.18);
- The aircraft movement forecasts are consistent with the passenger forecasts and predict a reasonable rate of increase in average passengers per Air Transport Movement (Paras. 3.49 and 3.50); and

- The terminal and airside capacities at LCY could handle the forecast volumes of passengers and aircraft movements (Paras. 3.57 to 3.66).

1.15 I refer frequently in this Proof to the Needs Assessment Report which I/CSACL prepared for the London Borough of Newham, and specifically the later version issued in June 2023. Earlier drafts of this document had been discussed with LCY and York Aviation.

1.16 Other principal documents are LCY's Need Case submitted to LBN as part of its original application, various traffic forecasting documents produced by the Department for Transport in 2017, 2022 and 2023, and the statistical series published by the UK Civil Aviation Authority (CAA). These latter statistics are hosted on its website, cover either airport or airline data, and are provided on monthly and annual bases.

1.17 I make frequent use of the concept of Moving Annual Total (MAT), which is the traffic observed over the previous 12 months. I consider this provides a gauge for assessing development against calendar year totals as an MAT largely eliminates seasonality issues, although the variability of the timing of Easter weakens this to a small extent.

1.18 While I give a list of list of abbreviations used at the end of this Proof, I make frequent reference to:

- LCY, or London City Airport meaning both the physical location and the airport company;
- LBN, or London Borough of Newham;
- DfT, or Department for Transport;
- CAA, or Civil Aviation Authority;
- mppa, or million passengers per annum as a measure of airport demand or capacity;
- MAT, or Moving Annual Total; and
- ATM, or Air Transport Movement either a landing or departure for commercial purposes by an aircraft operated by an airline or air taxi company.

2 Summary

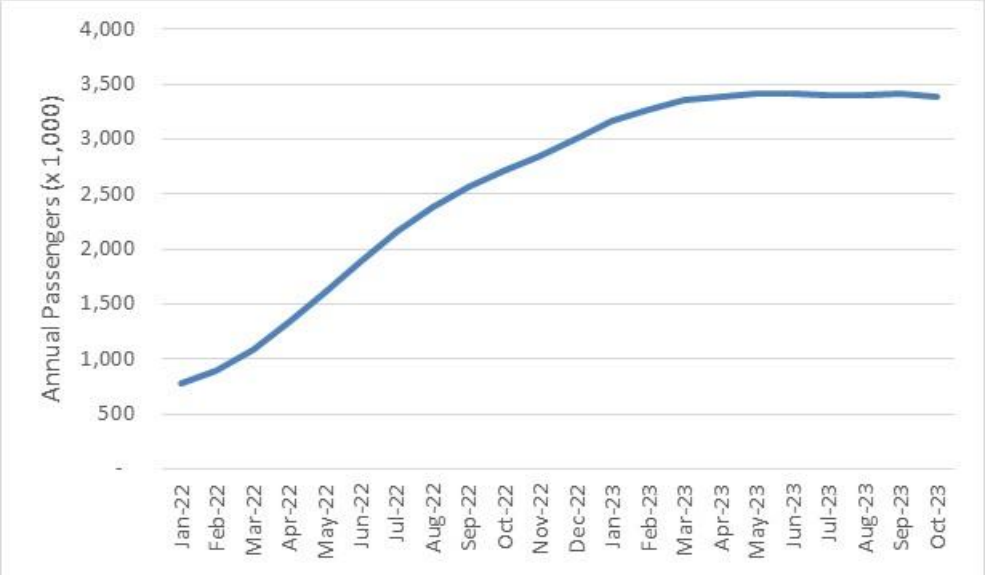
Features of London City Airport

2.1 London City Airport (LCY) has a number of features which distinguish it from other UK airports. Its short runway coupled with the steeper landing descent flight-path required by its location restrict the aircraft types which may serve the airport. Prior to the Pandemic, it had the highest proportion of passengers travelling for business reasons at 46%, the second placed airport being Heathrow with 26%. This very high business proportion reflects my understanding of the basis for the very establishment of the airport in the first place as a short take-off and landing facility close to the City of London and the then developing Canary Wharf complex. LCY also has a strict night curfew and closes for 24 hours at the weekend, a situation which is central to this Inquiry.

Historic Passenger Development

2.2 Passenger traffic at LCY had grown strongly up to the start of the Pandemic at the start of 2020. It suffered very badly during the Pandemic, and as noted in my report to LBN in June 2023 its recovery was lagging behind that of the other major London airports up to the end of January 2023. The gap between LCY's recovery and those of the other London airports has widened since then, and indeed LCY's growth has largely stalled over the summer months at 3.4 mppa.

Figure 2.1: Recovery of Passenger Traffic at LCY from the Pandemic



Source: Derived by CSACL from CAA Airport Statistics to August 2023, and estimated by CSACL thereafter.

2.3 Possible explanations for this are an increase in video-conferencing, more extensive Working From Home (WFH), and the impact of Brexit, although currently I have no data to offer a definitive explanation.

Future Growth in Traffic

2.4 On behalf of LCY, York Aviation Limited (York) has prepared forecasts of future growth in passenger numbers and aircraft movements. The approach used is largely unchanged from that used in the CADP process, the subsequent Public Inquiry (2016) and in the production of the Draft Master Plan in 2019. While non-standard, the approach is the most appropriate for use at LCY. It starts from an econometric assessment of demand in LCY's catchment area, followed by a route-level assessment of which services might be viable from LCY.

2.5 York's econometric model is based on the one used by the Department for Transport (DfT), and indeed York adopts a number of its assumptions. While York used the most recent economic growth (e.g. GDP) projections that were available, I have identified a number of weaknesses in several of the input assumptions, which collectively mean that there are

material down-side risks such that it is likely that the forecasts are optimistic.

2.6 Having established a base demand, York then assesses which routes would be viable from LCY and creates its passenger forecasts in this way. While the approach is detailed, the outputs are only as good as the input assumptions and judgements. The forecasts produced by York in 2016 had under-estimated both passenger demand and the rate of increase of passengers per ATM before the Covid-19 Pandemic struck.

Outcome of Forecasting Process

2.7 I consider it most unlikely that passenger numbers at LCY will reach York's forecast of 4.9 mppa in 2024 given that traffic to the end of October had reached 3.4 mppa on an MAT basis.

2.8 Consideration of the overall demand in the London area airports suggests that LCY would need to more than double its share of the London market from its current level of 2.0% to reach 4.4% in 2031 to realise the York forecasts, as discussed at Paragraph 4.38 below.

2.9 Passenger traffic growth is very likely to be slower than that forecast by York, which will in turn mean that economic benefits will be slower to materialise.

2.10 Analysis of capacity at the London area airports indicates that the additional throughput sought in this Appeal of 2.5 mppa could be easily handled in the system without needing any further contribution from LCY.

Other Matters

2.11 In relation to Airports Policy issues, I consider that there is little between LBN and LCY, with both cases being potentially consistent with current Government policy.

2.12 I have also identified that not only could this incremental demand of 2.5 mppa be handled at other London airports, but also that the extra carbon emissions would be materially lower than if these passengers used LCY. This would result from the use of larger aircraft with much lower

emissions per passenger at other London airports than would be the case at LCY. If this demand were handled elsewhere, it would assist Government in complying with its legal obligation to reach Net Zero by 2050.

2.13 While any decision to acquire new generation aircraft would be assisted by the new proposed longer operating hours, I consider that there are other and more powerful factors that will drive this decision forward. Certainly, longer operating hours at LCY is not the only factor that will be considered.

Conclusion

2.14 There are a number of weaknesses in the assumptions used by York in developing its passenger forecasts. Coupled with the stagnation of traffic recovery at LCY since March 2023, and the ability of other London airports to accommodate the incremental demand sought by LCY, it is not clear to me that the Need Case for this relaxation of conditions has been established.

2.15 Slower growth would in any event mean that economic benefits were delivered at a later time, even though the environmental costs and the noise intrusion would start immediately.

2.16 A further consideration is the lower carbon emissions which would result if the incremental demand were handled at other airports.

3 LCY Background and Historic Traffic

Introduction

3.1 In this chapter, I first describe a number of features of London City Airport, before examining the growth in the demand it has experienced.

London City Airport Features

3.2 LCY has a very short runway which limits both the destinations that may be served and the aircraft types which may use it. The airport uniquely in the UK closes for 24 hours over the weekend, in addition to having a full closure every night.

3.3 In 2019, LCY had the highest proportion of business passengers of any UK airport (46%), with Heathrow being the next highest (26%), against a London airports average of 20%[3]. This potentially made LCY a high fare airport with knowledgeable but demanding customers.

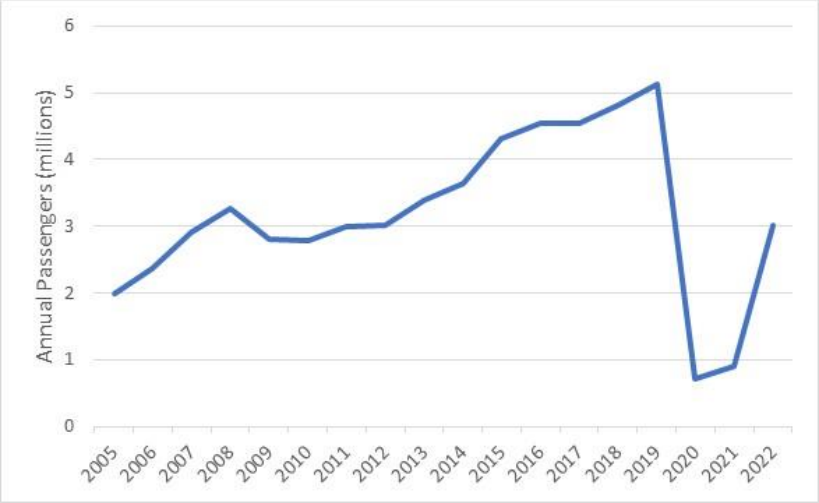
3.4 These high proportions of business passengers illustrate why LCY was built, opening in 1987, and growing alongside the development of Canary Wharf and the City of London.

Historic Traffic Development at LCY

3.5 Until the start of the Pandemic, growth in passenger numbers at LCY had been strong. This was faster than York had forecast in 2015/16, although I had stated at the 2016 Public Inquiry that I believed passenger growth would be more rapid than York had projected. However, LCY fared badly during the Pandemic and indeed it closed completely for some three months in the Spring of 2020 as shown in Figure 3.1.

[3] Derived by CSACL from UK Civil Aviation Authority Passenger Survey Report 2019. Excluding these two high performers, the London average drops to 14%

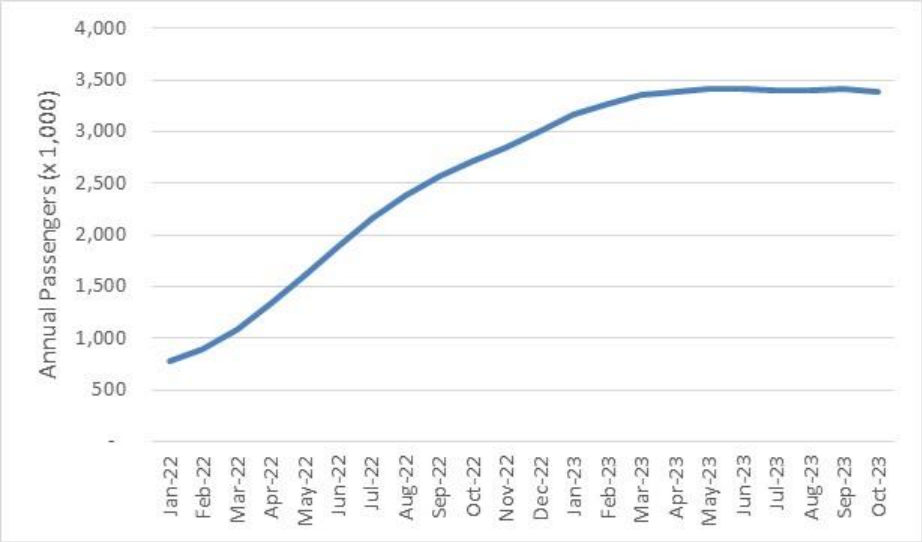
Figure 3.1: Growth of Passenger Traffic at LCY, 2004 to 2022



Source: CSACL analysis of CAA Statistics

3.6 From a low point in March 2021, passenger numbers have improved, as shown on an MAT basis (to minimise seasonality effects) in Figure 3.2 below. These data are actual figures from the CAA Airport Statistics series, with the exception of figures for September and October this year, which I have estimated. By the end of December 2022, passenger numbers had reached 3.0 mppa, approximately 59% of the 2019 level of 5.1 mppa, and had only grown to 3.4 mppa by the end of October 2023.

Figure 3.2: Recovery of Passenger Traffic at LCY



Source: Derived by CSACL from CAA Airport Statistics to August 2023, and estimated from (a) LCY quarterly report to LBN for September, and (b) number of flights reported by EuroControl for October.

3.7 Moreover, it may also be seen in Figures 3.2 and 3.3 below that from March 2023 growth has more or less ceased. London City Airport is the only major London airport to display such a stagnation: the other airports have continued their recovery, reaching 93%[4] of 2019 levels in the year to the end of October 2023, compared to 66% at London City.

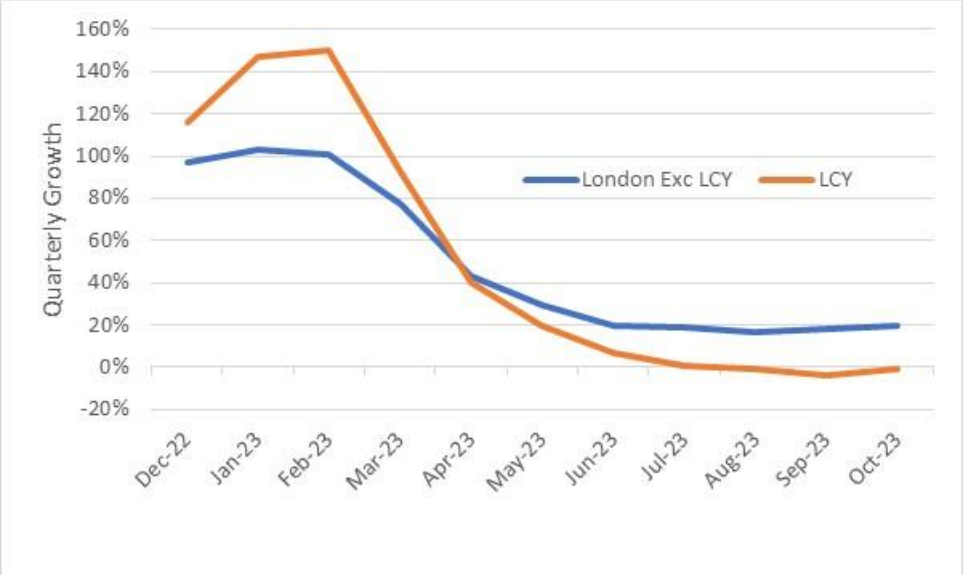
Figure 3.3: Growth at London Airports relative to 2019 (on MAT Basis)

Source: CSACL derived from CAA Airport Statistics

3.8 Recent growth rates reflect this stagnation at LCY. Figure 3.4 shows the growth rates on a rolling quarterly basis (i.e. comparing the passenger numbers in a three month period with the same period a year earlier). I have used a three month measure as monthly traffic at LCY is sensitive to the number of weekend days and bank holidays in the month. Since April 2023, the average quarter-on-quarter growth rate at other London airports is about 15 percentage points higher than at LCY, where there has been zero net growth in the Moving Annual Total since April.

[4] Led by Stansted at 99%, followed by Heathrow (97%) and London Luton (90%) with Gatwick recording 87%

Figure 3.4: Progression of Passenger Growth Rates on a Quarterly Basis



Source: CSACL derived from CAA Airport Statistics

3.9 There are a number of possible reasons why the markets at other London airports have continued their recovery during the summer 2023, but those served by LCY have not.

3.10 It may be a consequence of the continuation of teleconferencing after the end of the Pandemic, as acceptance and familiarity with this has spread, with flexibility, time and travel cost savings, and better 'Green' credentials having been appreciated. As noted at the start of this chapter, LCY had the highest proportion of business passengers. The ability to reduce business travel is particularly the case for internal company communications, and historically some 30% of business passengers at UK airports had been travelling for internal affairs[5].

3.11 Another 'hang over' from the Pandemic, Working From Home (WFH) may also be having an effect, albeit potentially temporary, as business travellers opt to use an airport closer to their home than their office when flying.

[5] From CAA Passenger Surveys

3.12 It is also possible that the Pandemic masked any impact which Brexit had on business behaviour, office and headquarter locations and travel patterns. If it did then this effect, like that of teleconferencing, could easily be a permanent impairment of elements of LCY's market.

3.13 The cause might be due to a shortage of aircraft of LCY's main airline, BA CityFlyer: in August 2019, it operated 23 aircraft (17 Embraer 190s and six smaller Embraer 170s) on average, while in August 2023 it flew 20 Embraer 190s[6]. However, the passenger market at LCY was 47% larger in August 2019 than in August 2023, so fewer aircraft should be expected.

3.14 In a presentation to LBN in November 2023, LCY indicated that the weak traffic performance had been the result of reduced aircraft availability for two continental European airlines and cabin crew sickness at its major airline. That other London airports were not so severely effected by factors such as these illustrates for me the unique conditions that apply when airlines serve LCY.

3.15 I understand that LCY also noted that it expected some routes that had been moved to Heathrow during the Pandemic would in due course return to LCY to make way for long-haul services at Heathrow, illustrating the link between traffic developments at the two airports.

3.16 At the present time, I have not identified any information which allows the cause or causes for this stagnation to be identified with any certainty. It is partly for this reason that I am no longer able to agree that LCY would eventually reach a throughput of 9 mppa (if this Appeal were to be successful), as I had done in my June report for LBN (Para. 2.8). I indicated this and the reasons behind it to Ms Congdon of York Aviation on 3 October during discussions on the Statement of Common Ground.

[6] CAA Airline Statistics, Table 8.2

4 Future Traffic at LCY

4.1 In this chapter I discuss the passenger forecasts prepared by York for LCY. I consider the approach used, the assumptions applied and the outputs which this process has produced.

Approach to Forecasting

4.2 Passenger and aircraft movement forecasts for LCY have been produced by York Aviation Limited, although here I discuss only the passenger forecasts. These forecasts have a starting point of 2024 and extend to 2040, although forecasts are presented only to 2031 for the Development Case, 2033 for the Slower Growth Scenario, as in these years passenger numbers reach 9 mppa, the throughput for which permission is sought.

4.3 York uses an econometric model to forecast demand in LCY's catchment area at a route level, and then assesses whether that level of demand could support air service from LCY. The econometric model is similar to that used by the Department for Transport (DfT) and uses the same segmentation of passenger demand (viz. residency, journey purpose and geographic world region), and the same growth drivers (viz. economic growth and price changes) and elasticities as used by the DfT, albeit that the DfT looks at national demand and effectively York works at an individual route level.

4.4 In general terms, the approach to producing passenger forecasts used by York is the same as it has adopted in previous exercises for LCY, although there are changes at a more detailed level. I continue to agree that this approach is the most appropriate given the unusual circumstances of LCY even though it is far from being standard. It is important to recognise though that the strength of the forecasts (and their subsequent accuracy) depends on the accuracy and quality of the input assumptions and forecaster judgements applied. This is particularly true with York's approach given its need for a large number of judgements. A more detailed

approach does not of itself confer accuracy, as was seen at the last LCY Inquiry.

4.5 I consider this point on robustness was illustrated during the 2016 CADP1 process, and in my Needs Assessment Report to LBN I give two examples to support my view:

- The major difference in forecasts for two major routes between forecasting exercises made less than a year apart (Needs Assessment, Paragraph 3.20 and Table 3.3); and
- York's material under-forecasting of the growth in average passengers per Air Transport Movement (Needs Assessment, Paragraph 3.11 and Figure 3.1).

4.6 York's passenger forecasts are prepared at an individual route level using the approach and assumptions consistent with the Department for Transport's (DfT's) national traffic forecasts, to forecast demand in the London boroughs considered by York to constitute LCY's core catchment area. This is done on a yearly basis, and if the proportion of demand from this core area that might be captured by LCY is considered viable for an operation from LCY, that demand is included in LCY's forecast numbers (subject to there being aircraft and airport capacity available).

4.7 York's forecasting approach means that it is neither possible to verify and/or recreate the forecasts, nor then if desired to assess the impact of different input assumptions on the forecasts, for several reasons:

- York's use of a Monte Carlo simulation precludes this: as an illustration, without such a simulation, an assumed increase in GDP of 1.7% combined with an income elasticity of 1.1 should lead to a passenger growth rate of 1.9%, whereas a Monte Carlo simulation produces a passenger growth rate of 1.3%. (This is described in Paragraph 3.47 of the CSACL Needs Assessment Report to LBN of June 2023);
- There are simply too many input assumptions, especially at the detailed level, which cannot be sourced independently but which must rely of the forecaster's judgement and experience. At the most detailed level, these are not disclosed although I stress that I have neither requested disclosure nor consider the non-disclosure to be unreasonable.

4.8 In view of this, I have focused on reviewing those assumptions which come from external sources and/or are higher level in nature, followed by an assessment of the output forecasts resulting from York's assumptions.

Macro-Assumptions used by York

4.9 The starting point for York's current forecasts are assumptions which feed the forecasts prepared by the DfT as the basis for its Jet Zero Strategy consultation in 2022, except when more recent assumptions from the same (or comparable) sources are available. Table 3.7 in the June 2023 CSACL Need Assessment Report to LBN sets out the details.

Macro-Economic Assumptions

4.10 In Paragraph 3.40 of that report I note that the forecasts for the main economic variables used by York while more recent than those used by the DfT in producing its Jet Zero Strategy still largely pre-date the Russian invasion of Ukraine.

Price Assumptions

4.11 The other driver of changes in demand is price. Here the DfT model is based on four cost components of air fares, namely fuel costs, carbon costs, Air Passenger Duty (APD) and other costs, and York has used the same components. I now discuss each of these elements in turn.

Fuel Costs

4.12 Three parameters contribute to the fuel cost included in the average air fare: the unit price of the fuel; fuel burn; and the rate of improvement in fuel burn. The DfT and York base the price of fuel on future assumptions of the price of oil, specifically Brent Crude. York's starting point is the 2019 forecasts produced by BEIS (Department for Business, Energy & Industrial Strategy), but it has then increased the prices to 2030 to reflect the high price of oil when the forecasts were being prepared. I consider these adjustments to be reasonable.

4.13 In addition to using fuel burn per seat-kilometre assumptions from the 2017 DfT forecasts, York has adopted the improvements in fuel efficiency assumptions of the Government's Jet Zero Strategy in its

preferred High Ambition scenario. The independent consultant which prepared these assumptions described these assumptions as 'optimistic' (DfT Jet Zero Further Technical Consultation, Para 3.17).

4.14 It is important to note that the fuel implicitly referred to is Jet A1 Kerosene, a hydrocarbon and a product of 'cracking' crude oil. The DfT in its forecasts to date, has not taken into account the additional costs of using Sustainable Aviation Fuel (SAF). I discuss this at some length in my Needs Assessment for LBN (Paragraph 3.31 *et seq.*), but to summarise, SAF is the cornerstone of the Jet Zero Strategy, it is already being introduced, but its price is 2 to 6 times that of Kerosene. While airlines using SAF do not have to pay carbon costs (discussed below), these savings are outweighed in the period to the early 2030s (at least) by the higher SAF costs.

4.15 In September 2023, I requested and held a meeting with the DfT to discuss a number of matters including this one. In the context of the meeting I considered it inappropriate to suggest there should be an agreed minute, although I did follow up with an e-mail to the Department setting out my understanding on the matters discussed. I have received no corrections to this understanding.

4.16 The DfT indicated that it is intending to (a) introduce a Mandate specifying a minimum level of SAF that airlines must use set against a specific timescale, and (b) that in the next set of forecasts which it is currently preparing, there would be an explicit inclusion of SAF costs. I interpret these actions as indications that the DfT considers (a) the carbon costs used in the medium term would not provide an incentive to use SAF, and (b) that it could improve its modelling of the costs of SAF.

Carbon Costs

4.17 The carbon costs included in the DfT's model are for the purchase of emissions permits bought as part of the UK ETS and CORSIA schemes. Flights within the UK and from the UK to the two European regions used in both the DfT's and York's forecasts fall within the UK ETS, while all other travel is assumed to be covered by the CORSIA scheme.

4.18 The funds raised by these carbon charges are intended to pay for the purchase of permits from sectors that are easier to de-carbonise than aviation, for offset schemes and for carbon removal projects including Carbon Capture and Storage (CCS) infrastructure. I note that over the period covered by York's forecasts for LCY, there is a very considerable difference between the carbon costs for the two different schemes, with CORSIA costs in 2030, for example, assumed to be £6 per tonne of CO_2, while the ETS cost is £150 per tonne of CO_2 (CADP1_S73_ES_VOL_3_NEED_CASE-3466583, Table D.5).

4.19 While these assumptions are the same as used in the DfT's Jet Zero modelling, the very low CORSIA costs are likely to create issues. They certainly provide no incentive for airlines to purchase SAF to avoid paying carbon costs, and the differences in levels between the two schemes clearly means that the cost of only one of the schemes could possibly reflect the cost of off-setting or removing carbon. I note that CORSIA is a voluntary, global scheme organised by the International Civil Aviation Organisation (ICAO), an agency of the United Nations. As such, it would be normal for decisions to be reached slowly and by consensus.

4.20 There is no reason why these abatement costs in total should equal the total incremental costs of purchasing SAF (rather than Kerosene), unless, as a policy, carbon costs were set sufficiently high to act as an incentive. This would firstly require the total for the true aviation carbon costs to be less than the total incremental costs of SAF; and secondly it would need agreement within CORSIA and to a lesser extent the ETS for this to be implemented. It may of course be that carbon costs are greater than incremental costs of SAF, although the exercise I have undertaken and noted in Para 3.35 suggests that this is not the case in the short/medium term to the early/mid 2030s, largely as a consequence of very low CORSIA carbon costs: CORSIA flights account for some 70% of UK emissions.

4.21 I acknowledge that virtually all operations at LCY will be covered by the UK ETS, and it is demand to/from regions covered by CORSIA that would

be reduced. However, any reduction in CORSIA demand at other London airports would make competition for European traffic more intense.

Air Passenger Duty

4.22 Although the most recent Budget in March 2023 limited increases in APD to below-inflationary levels, the likelihood is that after the forthcoming General Election, a new Administration will recognise the need to strengthen the country's finances. Real-term increases to Air Passenger Duty levels may well be identified as an easy target, with or without a green spin: air travel is largely a discretionary activity undertaken by those not struggling with paying for essentials.

Other Airline Costs

4.23 Although given least attention in discussions on airline costs, this is the largest component of air fares: in the 2017 DfT forecasts, it represented 70% of the total costs in the base year (2016), and despite a forecast decline to 53% in 2050, was still expected to be the major component.

4.24 Costs in this component include staff salaries, equipment maintenance, depreciation or lease, insurance, navigational and airport passenger handling fees, landing and departure fees and parking charges, and marketing, promotion and other general administration costs (DfT Jet Zero Modelling Framework, Para 2.27). In 2017, the DfT only excluded explicitly provision for airline profitability from this category (Para 5.22), assuming it was sourced from non-fare revenue. Hence, costs for bought-in services (e.g. ground handling) and airline financing costs including interest payments on debt should also be included in this category.

4.25 In the description to its 2017 forecasts (Para. 5.21 *et seq.*) the DfT detailed how it had approached this cost category by comparing fare data with financial data held by the CAA, and establishing a 'best fit' curve. This work showed that this cost component had reduced gradually in real terms and the DfT assumed this would continue at a slowing pace until 2030 when there would be no further reduction.

4.26 I noted in my Needs Assessment Report to LBN (Para 3.42) some cost areas which might well experience pressure for real-terms increases as

a result of the Pandemic. While increases in some, such as salary costs could prove to be part of an 'up-curve' of a medium term oscillation, others including servicing debt and re-building balance sheets will have a long term impact on demand forecasts.

4.27 To the areas I noted in my report, I would add that during my September meeting with the DfT it noted that when it considered the introduction of new aircraft types it did not incorporate a feedback loop to reflect any variations in capital costs (although it does have a feedback loop to adjust demand projections for improvements in fuel burn and changes in carbon costs resulting from new types). Additional aircraft capital costs represent another down-side risk for demand growth.

Incorporation of Air Fares into Forecasting Model

4.28 I described in the Need Assessment Report (Para. 3.29 *et seq.*) how the DfT in its most recent forecasts moved from a single fare assumption for all regions to four separate fares, one for each forecasting region, but did not provide any details on this area. York has also adopted regional fares assumptions into its modelling. While the approach York described is I believe very similar to that used by the DfT, the accuracy of the outputs remain as untested as do those of the DfT. I regard this an area of uncertainty rather than being an obvious down-side risk.

Elasticities

4.29 The final macro input assumptions are those for demand elasticities which quantify the best historic relationship between changes in a driver of demand and the change produced in the number of passengers flying. These were revised in 2022 by the DfT for the Jet Zero Strategy, and have been used by York. I do not dispute that these are the most appropriate elasticities available, but it is important to stress that the relationships reflect behaviour and attitudes which existed up to 2019, as I discussed in the Need Assessment Report (Para. 3.44). Since that time, much has changed in relation not just to the use of teleconferencing, but also potentially in awareness of Climate Change and possibly to the use of disposable income.

4.30 The DfT model recognises that as a market grows it may become more mature. It reflects this in reductions over time in the initial elasticities. This is described in some detail for its 2017 forecasts (DfT uk-aviation-forecasts-2017, Paras. 2.20 *et seq.*), and no change in this for its 2022 forecasts was described.

Conclusions on Input Assumptions

4.31 Uncertainty over the future values of input assumptions and their relationship to passenger growth affects all forecasts. I have identified above a number of these uncertainties in relation to economic growth, changes to air fares and the relationships between the demand drivers and passenger growth. In the main, the uncertainties point in one direction only: lower growth.

4.32 This assessment does not cover the emergence of further 'unknown unknowns', of which several have appeared in recent months, including problems with local government finances and the problems associated with RAAC concrete which can only add to financial pressure on the Public Sector, while the outbreak of extreme violence in the Middle East must impact economic stability and growth.

4.33 Perhaps the most significant downside risk is represented by a Policy Change. I have noted in the Needs Assessment Report (Paras. 3.6 and 3.7,) that the Climate Change Commission's (CCC's) advice has not been incorporated into Government Policy. Briefly, the CCC concluded that emissions from aviation could not be held to levels compatible with the 2050 Net Zero target unless demand were held down significantly, Table 4.1 below illustrating the extent of the suppression it recommended.

Table 4.1: Long Term UK Passenger Forecasts

Forecaster	Year	Scenario	Passengers (mppa)	
			2040	2050
DfT	2017	Central Unconstrained	422	494
DfT Jet Zero	March 2022	High Ambition	422	482
DfT SAF Mandate	March 2023	High Ambition	394	435*
CCC	Dec 2020	Balanced Pathway	321	365

* Forecast extends to 2040 only. Grown to 2050 by CSACL at 1.0% per annum

Source: As in first column

4.34 It remains possible as knowledge of the science of Climate Change improves and if the rate of progress on the development of technologies to handle it is not as rapid as the Government has assumed, that there is a change in Government policy.

4.35 I have highlighted a number of downside risks to the forecasts prepared by York. While it is possible that not all these will happen, I find it difficult to believe that none will have an impact on traffic development.

Assessment of Outputs of the Forecasting Exercise

4.36 I turn now to discuss the results of the forecasting exercise.

2024 Forecasts

4.37 York has forecast 2024 throughput from a 2019 base using the same econometric approach as for later years, and it assumes that specific Covid-related travel restrictions will have ceased by 2024. This approach produces a 2024 traffic level of 4.9 mppa. To reach this level from an actual throughput of 3.4 mppa at the end of October 2023 would require a growth of 44%, or some 37% per annum on average to December 2024. I consider this will be very challenging to achieve.

Implied Market Share

4.38 Based on the most recent forecasts produced by the DfT in March 2023, and assuming London airports collectively handle 60% of total UK passenger demand, to achieve York's Development Case forecast of 9 mppa in 2031, LCY's share of the London airports' market would need to climb to 4.4%, significantly higher than historically achieved, and more than twice its current share of 2.0%.

Figure 4.1: LCY's Share of the London Airports' Market

Note: Data point for 2023 is share to 12 months ending October 2023
Source: CSACL derived from CAA Statistics, DfT 2023 forecasts and York forecasts for LCY

London Area Airports Capacity

4.39 In the CSACL Needs Assessment (Para. 3.51 *et seq.*) I demonstrated that an extra demand of 2.5 million passengers per annum, the increase in passenger cap sought by the Appellant, could be handled at other London area airports. As this is an important conclusion, I update the table showing the demand:capacity balance below. In addition to including Gatwick Airport's own assessment of its capacity, I have also incorporated the recently approved increase to London Luton's capacity. While both Heathrow's and Gatwick's capacities increase as a result of growth in passengers per ATM, the capacities of LCY, Stansted and London Luton are fixed by Planning caps on throughputs[7]. Demand comes from the DfT March 2023 forecasts[8], notwithstanding the fact that the DfT forecasts are also potentially exposed to some of the downside risks I identified for York's forecasts.

[7] Southend's small contribution is fixed at the maximum throughput it has handled historically
[8] DfT sustainable-aviation-fuel-mandate-dataset March-April 2023 (Excel Spreadsheet)

Table 4.2: Passenger Demand:Capacity Balance in the London Area, 2024 to 2031 (mppa)

	2025	2026	2027	2028	2029	2030	2031
Demand							
UK Total	304	313	319	324	329	340	341
London Area	183	188	191	195	198	204	205
Capacity							
Heathrow	82	83	84	85	86	86	87
Gatwick	48	51	54	57	57	58	59
Stansted	43	43	43	43	43	43	43
Luton	19	19	19	19	19	19	19
London City	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Southend	2	2	2	2	2	2	2
Total	200.5	204.5	208.5	212.5	213.5	214.5	216.5
Balance	17.5	16.5	17.5	17.5	15.5	10.5	11.5

Note: Assumes a regional airport share of demand of 40%.

Source: CSACL analysis of DfT sustainable-aviation-fuel-mandate-dataset March-April 2023

4.40 It is also relevant to note that two of the potential capacity expansion projects mentioned in Paragraph 3.52 of the CSACL Needs Assessment report have formally entered the Planning process, with the owners of both London Luton Airport and London Gatwick Airport lodging DCO applications over the summer. The Luton application is to raise its passenger cap to 32 mppa, with its capacity restricted to 21.5 mppa until 2037 when a new terminal would come into use. Gatwick's application is to bring its emergency runway into normal use for departures by smaller aircraft (including the Boeing 737 and Airbus 320 families) from 2030, taking its capacity to some 80 mppa by the mid-2040s. I do not though include either of these potential capacity increases in this analysis, of course, as they are subject to approval and indeed could only affect the capacity availability towards the end of the forecast period being considered at this Inquiry.

4.41 This assessment leads me to conclude that aside from any doubts about whether York's passenger forecasts for LCY can be achieved, there is sufficient ability to handle the extra demand (were it to arise) to allow best use to be made of existing capacity at other London Area airports.

5 Other Matters

5.1 In this chapter, I consider three other matters, starting firstly with Policy considerations, before dealing with carbon emissions and re-fleeting considerations.

Policy

5.2 I discussed Airports Policy in my June report to LBN (Para. 3.2 *et seq.*). In this first paragraph, I noted that the basic principle cited by York which derives from the various Government policy documents is "*…making best use* [MBU] *of existing runway capacity…*", generally referred to as the MBU policy. I went on to note the four different combinations found in different government policy documents using the three words of the phrase 'existing runway capacity', and the different interpretations that each could have, and these points remain relevant.

5.3 It is also important to explore this phrase itself. At the highest level, it may reasonably be interpreted as meaning the number of runways. At a more detailed level, runway capacity may be measured in both hourly and annual numbers of aircraft movements that can be handled. Both hourly and annual numbers are influenced by several factors including the mix of aircraft types being handled and the availability of parallel taxiways and 'fast turn-offs' from the runway. I note that LBN approved additions of a parallel taxiway and improved turn-offs for LCY in 2016.

5.4 A difference between hourly and annual runway capacities (and part of the relationship between them) is the number of hours each year for which the runway is in use. To ask a rhetorical question: is the number of hours fixed by the adjective 'existing' or may it be varied? If the question were posed in relation to loosening the night curfews at Heathrow or Gatwick, then the answer would most likely be that relaxation is not possible and the existing hours must prevail. (Indeed, this would seem to be incorporated into Government policy, given the recognition that local authorities are able to refuse airport developments on noise grounds.) With this interpretation of the MBU policy, the refusal by LBN of the application

for extension of operating hours on Saturday (and movements numbers in the early morning) is entirely consistent with Government Policy.

5.5 Hence, the position of both LBN and LCY could be considered to be consistent with Government policy depending on interpretation, so that rather than Airports Policy being a 'tie-breaker', the decision rests on whether the economic benefits outweigh the environmental costs.

5.6 I note here that the benefits and the costs fall to/on different groups of people (who have different values) and are measured in different 'currencies'. I further note that while the environmental impacts would be experienced from the first time an aircraft operates during the new hours, the economic benefits would only come in step with demand growth.

5.7 Irrespective of the interpretation of Airports Policy, the Government has a legal obligation to reach a Net Zero position by 2050, an obligation that would be assisted by turning down this Appeal, as I now describe.

Carbon Emissions

5.8 The London Borough of Newham did not consider carbon emissions when assessing the application from LCY, and reached its decision based on noise and intrusion grounds. It is though pertinent to this Inquiry to note that not only could the incremental demand of 2.5 mppa which LCY seeks be accommodated at other London airports, but also use of other airports would result in a significantly lower emissions than if it was to use LCY.

5.9 This is a consequence of aircraft size being restricted at LCY, and emissions per passenger (and per passenger-kilometre) being greater for smaller aircraft than for larger aircraft of the same generation of technical development. I gave an illustration of this for just one route, Palma de Mallorca, in my Needs Assessment report (Paras. 3.55 and 3.56, and Table 3.9), but similar contrasts will exist for all routes: there will be variations in the differences between the carbon emissions depending on the length of the route studied, but the smaller aircraft will always produce higher emissions per passenger. For convenience, I reproduce the summary table from the Needs Assessment report below.

Table 5.1: Comparison of CO_2 Emissions on Flights to Palma

Airport	Aircraft	Seats	Load Factor	Passengers	Round Trip Emissions (Tonnes CO_2)	CO_2 Emissions Kg per RT Passenger
LCY	E190	98	74.8%	73.3	23.5	320
Gatwick	A320	183	91.0%	166.9	29.6	177
Stansted	B737-800	189	96.0%	181.4	32.2	178
Heathrow	A321	185	79.5%	147.0	37.0	251

Source: CSACL analysis of CAA Airline data (Table 1.11.2) for seats and load factors[9] and EMEP EEA Air Pollutant Emission Inventory Guidebook 2019 for emissions estimates.

5.10 It may be seen that emissions per passenger from an E190 operating from LCY are nearly twice those of aircraft operating from Gatwick or Stansted.

5.11 This analysis had been discussed earlier with York after sharing of an earlier draft of my Needs Assessment report. York seemed to have assumed that the illustration related solely to operations on a Saturday afternoon: in a response to CSACL (Quod CASL response 5523, Para. 29 and Figure 1), it included a chart showing the predicted carbon emissions for six different flights from London to Palma, three from airports other than LCY (which were in agreement with the estimates I had made), and three from LCY using different variants of Embraer aircraft. Two of these types were new generation, while the third was the Embraer 190, the sole type used by LCY's main airline operator, BA CityFlyer.

5.12 The carbon emissions per passenger calculated by LCY for the EMB 190 were 53% higher than would be produced by an A320 from Gatwick or a B737-800 from Stansted, despite the use of a passenger load factor by LCY of (I estimate) some 87%, significantly higher than the year-round average achieved in 2019 by CityFlyer on this type of 74.8%. The incremental 2.5 million passengers sought by LCY would fly throughout the year and to a range of destinations, so that the use of fleet-wide average

[9] These need to be derived from the data given in the table by (a) dividing available seat kilometres by aircraft kilometres to give average seats; and (b) dividing used seat kilometres by available seat kilometres to give load factor.

annual load factors is appropriate, while use of a summer peak period load factor by LCY/York is not.

5.13 LCY's source of the emissions data for the other two variants, the EMB 190 (Gen 2) and the EMB 195 (Gen 2) was not cited. Neither variant is included in the datasets[10] which I used to produce the carbon emissions estimates given in my table. In any event, comparisons between new generation aircraft and those of an earlier vintage are not valid.

5.14 My original choice of aircraft types was constrained by the two datasets used to assemble the information: not all the most modern aircraft types were contained in both datasets. Hence, the comparisons were made between types of a similar technological vintage, namely the A320, the A321, the B737-800 and the EMB190. More modern 'neos' in the Airbus A320 family already feature significantly on the UK aircraft register (there were nearly 90 at the end of August 2023), the B737 Max 8 is also there although in smaller numbers (18), but the EMB 190 Gen 2 seems not yet to be used by UK operators. Hence, at Heathrow, Gatwick and Stansted newer generation aircraft are already in operation, so reducing the need for the airport operators to introduce incentives for airlines to move to these more efficient types.

5.15 DfT documents give estimations of the degree of improvement expected from the types used in the CSACL comparison. It may be seen from Table 5.2 that this is 15% for all types considered here.

Table 5.2: Estimated Efficiency Improvements for More Modern Aircraft Types

Current Aircraft Type	Future Type	Fuel Burn relative to Current
B737-800	B737 Max 8	-15%
E190	E190-E2	-15%
A320	A320neo	-15%
A321	A321neo	-15%

Source: DfT Air Passenger Forecasts 2017, Page 52, and DfT Jet Zero Modelling Framework, Page 38

5.16 Hence, as and when data on the more modern types are published the expectation is that the current advantage enjoyed by the larger aircraft

[10] These datasets are also used by the DfT in its analysis of this aspect of forecasting.

types would be maintained. The difference between the emissions levels of aircraft at LCY and those used from other airports is material, and I am content that my thesis (that lower emissions would result if demand were satisfied at other airports) remains valid.

Re-Fleeting

5.17 LCY has stressed the importance of the new and longer operating hours to the decision by BA CityFlyer to re-equip with new generation aircraft. I have acknowledged that extending the operational hours at LCY would improve airline operating efficiency by providing opportunities for aircraft assets to be used for more hours each week, thereby spreading annual costs over more flying hours. I do not though agree that extended hours are the only factor which will be considered by the airline in its complex decision-making process.

5.18 Aircraft operating costs will be important considerations, with fuel, carbon and maintenance costs being significant elements. The newer types as noted above benefit from greater fuel efficiency and thereby lower carbon costs. Aircraft maintenance costs increase with age so that airlines will often consider replacement when aircraft reach 15 to 20 years of age. Newer types often offer the advantage of slight increases in seating capacity. Airlines then need to assess whether these benefits offset any increases in capital or lease costs.

5.19 The extent to which longer hours on a Saturday would support a re-fleeting decision is clearly limited although it would be expected to be positive. It is also the case that longer hours on a Sunday would also help although this has not been applied for by LCY. BA CityFlyer has adapted its business model to increase its flying hours by operating several flights from other airports including Southampton on Saturdays and Sundays.

6 Conclusions

6.1 There are a number of weaknesses in the assumptions used by York in developing its passenger forecasts. These lead me to believe that there are significant down-side risks to the forecasts: while not all the risks I have identified may happen, I consider it improbable that none will come into play and reduce demand growth below that forecast by York.

6.2 Indeed, the stagnation of passenger development over the summer of 2023 may be a sign that these downside factors are already being seen in LCY's markets.

6.3 I consider it unlikely that passenger numbers at LCY will reach the level forecast by York for 2024, while a very significant increase in LCY's share of the London airports' market by 2031 would be required to reach York's forecast for that year.

6.4 The likelihood of slower growth means that economic benefits would also largely be later in the assessment period whereas the noise intrusion would be felt from day one as the aircraft would be operating in the newly available hours as soon as they were in airlines' fleets.

6.5 It is also apparent that the incremental traffic of 2.5 mppa sought by this Appeal could be handled at other London area airports, and furthermore this would result in lower volumes of carbon emissions.

6.6 It is not clear to me that the Need Case for the lifting of the passenger cap and the extension of operating hours has been demonstrated.

7 Witness Declaration

7.1 This proof of evidence includes all facts which I regard as being relevant to the opinions that have been expressed and the Inquiry's attention has been drawn to any matter which would affect the validity of that opinion. I believe that the facts that I have stated in this proof of evidence are true and the opinions expressed are correct; and I understand my duty to the Inquiry and to help it with matters within my expertise and I have complied with that duty.

7 November 2023

Glossary of Terms

Organisations

ACL: Airport Co-ordination Limited, the schedule co-ordinator in the UK

CAA: UK Civil Aviation Authority

CSACL: Chris Smith Aviation Consultancy Limited

DfT: UK Department for Transport

LBN: London Borough of Newham

LCY: London City Airport Limited

ICAO: International Civil Aviation Organisation, an agency of the United Nations

Air Transport Terminology

ATM: Air Transport Movement – a take-off or landing of an aircraft carrying commercial traffic (passengers, freight or mail). Normally these are revenue-generating flights conducted by airlines, but the CAA includes in the term operations by air taxis (flights (often one-off) commissioned by a single customer).

CADP: City Airport Development Programme.

Frequency: number of flights on a particular route in a specified time period.

(Passenger) Load Factor: The proportion of seats occupied by revenue-paying passengers, and may also be referred to as Seat Factor. For airlines, across a network an average load factor should be weighted by the distance of each flight, although for airport purposes this is not necessary.

MAT: Moving Annual Total – sum of last 12 months' traffic, a useful measure to track development of traffic while largely eliminating seasonal distortions.

mppa: million passengers per annum.

(Revenue) Passenger-Kilometre (RPK): Industry unit measuring passenger demand. One RPK is generated when a revenue-generating passenger flies one kilometre.

Documents Referred To

Applicant's Need Statement (CADP1_S73_ES_VOL_3_NEED_CASE-3466583)

CAA Airport and Airline Statistics and Surveys (http://www.caa.co.uk/data-and-analysis/)

- Passenger statistics: Airport Statistics, Table 9 monthly series
- Passenger surveys: Consumer Research, Departing Passenger Surveys
- Aircraft movement statistics: Airport Statistics, Table 3 monthly series
- Airline load factors and fleet size: Airline Annual Statistics, Table 1.11.1 (all airlines) and Table 1.11.2 (individual airlines)

Needs Assessment for LBN, CSACL (June 2023)

DfT uk-aviation-forecasts-2017

DfT jet-zero-modelling-framework, March 2022

DfT Jet Zero Further Technical Consultation, March 2022

DfT sustainable-aviation-fuel-mandate-dataset March-April 2023 (Excel Spreadsheet, Aviation Demand sheet, Row 23 onwards)

Quod CASL response 5523 (May 2023)