London City Airport

London City Airport Master Plan

Socio-Economic Assessment Report

Final Report

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ARUP

Contents

Glossary

ABP	Asian Business Park
ABP	Associated British Ports
AC	Airports Commission
ATM	Air Transport Movements
CAA	Civil Aviation Authority
CADP	City Airport Development Programme
CAGR	Compound Annual Growth Rate
CO_2	Carbon Dioxide
DfT	UK Department for Transport
DLR	Docklands Light Railway
ExCeL	Exhibition Centre London
EZ	Enterprise Zone
FinTech	Financial Technology
FTE	Full Time Equivalent
GCs	Generalised Costs of Travel
GDP	Gross Domestic Product
GED	Green Enterprise District
GLA	Greater London Authority
GVA	Gross Value Added
IMD	Index of Multiple Deprivation
LBN	London Borough of Newham
LCC	Low-Cost Carriers
LCY	London City Airport
LDA	London Development Agency
LIP	London infrastructure Plan
LQ	Location Quotients
MHCLG	Ministry of Housing and Communities and Local Government
MPPA	Million Persons Per Annum
NO_2	Nitrogen Dioxide
NVQ	National Vocational Qualifications
ONS	Office for National Statistics
PV	Present Value
TOIW	Take off Into Work
UK	United Kingdom
V&A	Victoria and Albert Museum
WebTAG	Web Transport Appraisal Guidance

Executive Summary

This socio-economic impact assessment is part of a package of works commissioned to Arup, to inform the draft master plan for consultation by London City Airport (LCY) to cater for 11 million passengers per annum in 2035, compared to 6.5 million passengers per annum currently being implemented under the City Airport Development Programme (CADP). This corresponds to a 69% increase in passenger growth, which would result in a range of positive local and wider economic impacts.

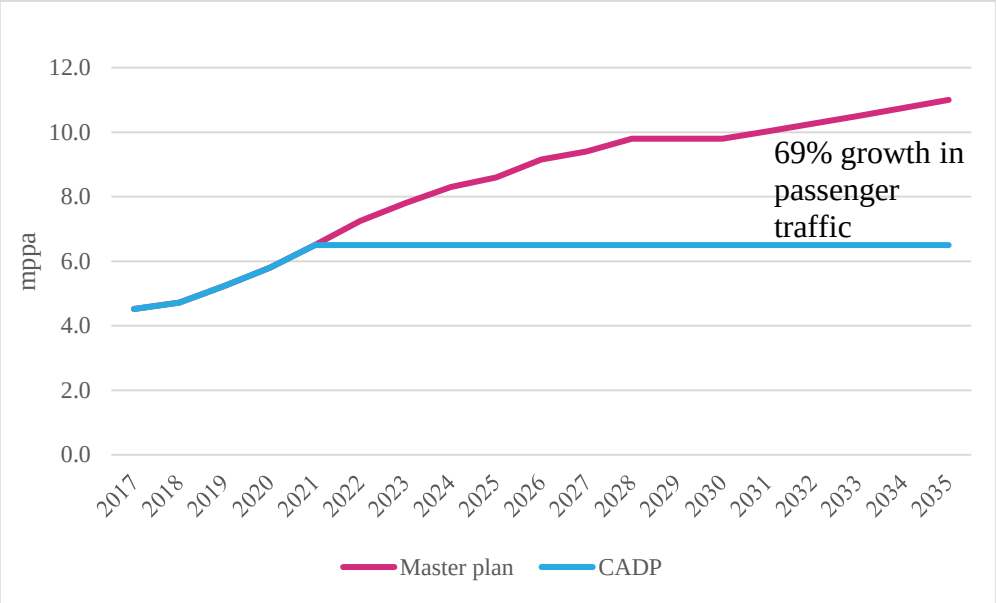


Figure 1 LCY traffic forecasts (million passengers per annum) (Source: York Aviation)

Business travel remains a core part of LCY's service but there will be an increased focus on leisure passengers and retail, generating more direct and indirect employment opportunities and attracting a wider mix of passengers.

The assessment shows growth in passengers would lead to a **60% increase in direct jobs** at the airport by 2035.

A significant wider economic impact is also expected, particularly increased investment and productivity levels benefiting businesses in London and the UK economy.

LCY is a key economic asset for east London, an area experiencing significant population and employment growth. Much of London's growth by 2035 is expected to occur in the Eastern boroughs, most of which are within LCY's employment catchment area. The local study area is characterised by:

- Significant projected **population increases**
- Significant projected **employment growth**

- Lower but **rising per capita income**
- Lower but **rising productivity levels**
- **Lower levels of skills** compared to the London average

LCY is located in an area of London undergoing rapid regeneration. Although the area has improved significantly from a socio-economic perspective over the last five years, it remains below the London average with regards to income, skills and productivity. LCY can help regenerate the area by attracting investment and providing employment opportunities for the local population.

Analysis of LCY's current impact draws the following conclusions:

- **LCY has the highest share of business trips of all airports serving London.**
- **LCY supports regeneration schemes in east London**, where substantial growth in new housing and public realm schemes is planned.
- **LCY supports domestic connectivity** showing the highest share of domestic flights of all airports serving London.
- **The direct economic contribution** of LCY today is highly significant, contributing **£0.76 billion** to the UK economy each year (2019 prices), expected to grow to £1.5bn in 2022.
- **LCY supports local and national employment** through direct employment and its wider supply chain of businesses throughout the UK. Currently LCY employs directly about 2,200 people.
- **LCY supports local employment**, as a significant proportion of LCY employees (65%) live in the local area (around 2,000 Full Time equivalent jobs)

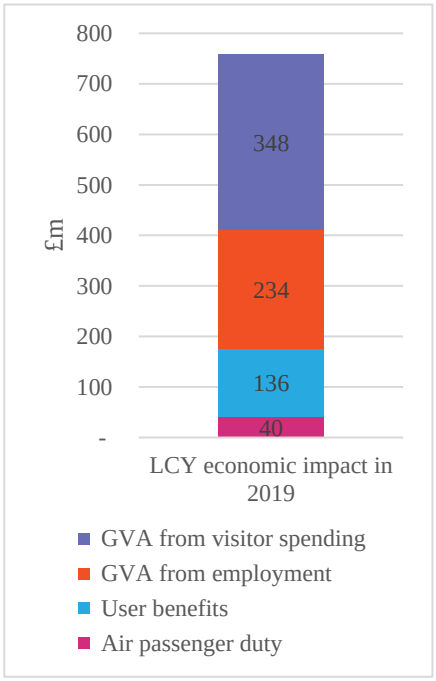


Figure 2 The economic impact of LCY today in £million (2019 prices) (Arup analysis)

LCY is a key economic asset to east London, contributing £0.76bn every year to the UK economy. LCY plays a big role in supporting local employment, with 65% of employees residing in the local area.

There is an economic case for enabling an increase in passenger numbers at LCY to accommodate forecast air travel demand in London and support further economic growth across the country. An analysis of the potential costs of not allowing passenger growth shows that economic growth could be constrained as a result of the following outcomes:

1. **Operational capacity and resilience constraints** in the face of unplanned delays and disruptions
2. **Airfare increases and unmet demand** resulting from higher airport charges and competition for slots and capacity constraints

If the expected long-term shortfall in airport capacity is not addressed, opportunities for additional economic growth would be missed, particularly for the London economy but also in the broader UK economy. The costs of these outcomes include:

- **Lower contributions to London's GVA** through lower agglomeration and clustering effects, as well as trade
- **Reduced productivity** resulting from service disruptions and delays
- **Avoided additional direct employment**, with flow-on effects for avoided indirect and induced employment in the local area
- **Avoided additional tourism contributions** to GVA
- **Potential adverse distributional effects** resulting from real increases in airfares

Without capacity expansion, LCY will be unable to meet the forecast passenger demand which supports sustainable economic growth in east London.

Local employment benefits compared to 2018

Compared to 2018, our analysis shows the following employment and GVA impacts:

- An additional 1,800 new direct FTE jobs[1] (equivalent to 2,100 jobs) at the Airport and around 700 new indirect and induced FTE jobs in 2035, excluding construction jobs (2,500 FTE jobs in total)
- An additional £210 million in annual economic output (GVA) - £132 million in GVA generated through new direct employment in 2035 and another £76[2] million in GVA from indirect and induced employment.

Benefits compared to 2035

The benefits for users, the local economy and the national economy in increasing passenger numbers to 11 mppa have been assessed in comparison to a scenario in which there is no increase beyond CADP. We have estimated the following benefits in 2035:

User benefits

For users, increased airport capacity will result in journey time savings. The surface access improvements expected to be implemented will also generate benefits.

[1] Equivalent to 2,000 new jobs
[2] Numbers may not add up due to rounding

- Journey time savings: **£58 million p.a**[3]**.**
- Surface access benefits**: £10 million p.a**

Local employment benefits

The master plan will support ongoing direct employment, as well as indirect employment supporting the industry which are generated as an indirect result of growth in airport capacity and operations. A further round of this multiplier effect is likely to be felt in the wider economy, generated through the expenditure of direct and indirect employees in the economy. In 2035, compared to a scenario without growth, we estimate the following local employment benefits:

- Direct, indirect and induced employment of **1,980 jobs (FTE)**
- GVA from direct, indirect and induced employment: **£160 million p.a.**

Wider economic impacts

The master plan will also lead to **wider economic impacts of up to £358 million**, including impacts from increased productivity, investment and trade. We estimate these impacts to be:

- Productivity from increased trade: **up to £73 million p.a.**
- Productivity and economic growth: **£190 million p.a.**
- Tax take from move to more productive jobs: **£95 million p.a.**

The socio-economic benefits are summarised in the table below.

Table 1 Estimated economic impact of the proposed growth to 2035

Impact (£ million, 2019 prices)	Annual benefit in 2035 (central scenario), undiscounted	PV (60 years, 2035-2094)
User benefits – journey time savings	58	831
User benefits – surface access benefits	10	148
Total user benefits	**68**	**980**
GVA from direct employment	105	1,657
GVA from indirect employment	28	436
GVA from induced employment	28	436
Total local impacts	**160**	**2,521**
Trade impacts (high scenario)	73	1,054
Productivity and economic growth	190	2,628
Move to more productive jobs	95	1,382
Total wider economic impacts high	**358**	**5,135**
Total	**586**	**8,636**

These results confirm the various benefits that enhanced connectivity will have upon the wider economy. The largest expected benefit is the productivity benefit

[3] All results are presented in 2019 prices. Annual values are undiscounted.

from enhanced agglomeration resulting from improvements in connectivity, as the airport attracts an increased number of businesses to the local area. Increased business travel demand will also provide better access to foreign markets, facilitating trade between the UK and the rest of the world. This is directly attributable to LCY as a result of the increase in business passengers, and their subsequent effect on trade. Finally, the increased productivity from agglomeration will also result in higher tax income as people move to more productive jobs.

By 2035, The proposed growth of LCY is projected to generate:
£68 million in user benefits
£160 million in local employment benefits (additional to the local area)
£358 million in wider economic benefits (net additional to the UK economy)
£586 million additional to the UK economy in total

Note that the £210m expected in local employment benefits compares a scenario with growth in 2035 with today (2018). This benefit is £160m if we compare a scenario in 2035 with and without growth.

Taking all benefits into consideration, the proposed growth could add £586 million to the UK economy. Adding this impact to the £1.5bn impact that LCY is currently expected to reach under CADP, the airport could reach a £2bn annual contribution to the UK economy by 2035.

Regeneration

At a local scale, growth beyond CADP to 2035 will continue promoting increasing rates of inward investment and economic regeneration. At a wider scale, implementing growth will support existing and planned regeneration projects through provision of enhanced connectivity.

Tourism impacts

Through implementation of proposals the airport is likely to attract tourists that in the absence of increased airport capacity would have not travelled to London. Enabling the increase in passengers is expected to nearly double the number of foreign passengers travelling for leisure purposes at LCY, from 0.77 to 1.47 mppa by 2035.

As a key sector of the UK economy (9% of the UK's GDP), promoting the tourism sector is expected to have a positive income on economic growth. London is a key market for tourists coming to the UK, with east London becoming increasingly more attractive as new tourist attractions are developed, for example the Olympic Park and the proposed new V&A museum complex expected to be completed in 2023.

However, although positive impacts on tourism are expected locally, the net impact of tourism is difficult to estimate, as increased airport capacity may also lead to more people spending more leisure time abroad.

Social and environmental impacts

From a social perspective, the improvement in airport operations and increased capacity during peak periods will reduce access costs for airlines resulting in reduced fares for new and existing users (consumer surplus). This can have a positive distributional impact as a wider range of passengers is able to afford air fares.

From an environmental perspective, the project's air quality assessment undertaken by Arup's Environment team found that NO2, PM10 and PM2.5 concentrations will decrease in 2035 compared to 2017. The analysis also shows that there are no exceedances predicted for annual mean NO2, PM10 and PM2.5 concentrations at any receptor location in 2035. From a noise perspective, analysis commissioned by LCY shows that the growth in air transport movements will also be accommodated within existing noise contour limits.

Alignment with local and national policy

The proposals are aligned with the stated objectives of a range of key policy, strategy and planning documentation for aviation and economic growth in London and the UK.

These include policy documentation authored by:

- The Mayor of London
- HM Government
- Greater London Authority
- Secretary of State for Transport
- London and Partners
- Newham Council
- Mayor of London and Mayor of Newham

Therefore, the analysis presented in this report demonstrates that the growth to 2035 is expected to generate positive local and wider social and economic benefits while keeping environmental impacts within acceptable levels.

1 Introduction

As part of a package of works to inform a draft master plan for consultation for London City Airport (LCY), Arup was commissioned to undertake a socio-economic impact assessment of the proposals. This document outlines our approach and outcome of this assessment.

1.1 A master plan to accommodate future growth

A master plan for accommodating future passenger growth at LCY to 2035 has been specifically designed to optimally use the existing assets and infrastructure at the airport and minimise the need for physical expansion.

Without any physical alteration to the runway, it is forecast that passenger demand will increase to 11 million per annum by 2035.

1.2 Our Approach

Our approach to assessing the socio-economic impacts is structured in two parts.

The first part of this document sets out a baseline analysis of the current estimated economic impact of LCY as well as the role of the airport in supporting both local and national economic growth.

The second part considers the direct and indirect impacts of growth to 2035 (local economic impacts, wider economic impacts, social and environmental impacts).

The analysis has drawn upon standard economic impact framework and the UK Department for Transport (DfT) WebTAG guidance. Our impact analysis considers:

- The alignment of growth to 2035 with local, regional and national transport, planning, economic development and environmental policies
- The role of LCY in meeting future aviation demands
- The role of LCY in helping east London grow and improve economic performance
- Opportunities for the local area, such as those associated with tourism, local employment and agglomeration, as well as regeneration.

The analysis reported in this document has been undertaken in conjunction with York Aviation, who have produced passenger forecasts, direct employment forecasts and user benefits. The analysis undertaken by Arup has therefore focused on assessing the indirect and induced local economic impacts as well as the wider economic impacts to the UK economy.

1.3 Structure of the report

This report is structured as follows:

- Chapter 2 provides an overview of our approach;
- Chapter 3 presents an overview of LCY, an analysis of the employment catchment area of LCY, as well as the economic impact of LCY today;
- Chapter 4 describes the likely outcomes and the key economic, social environmental impacts of no growth beyond CADP;
- Chapter 5 presents an overview of the growth to 2035; and
- Chapter 6 presents the results of the socio-economic impact analysis of the proposals.

At the time of writing, analysis has been based upon the assumption of no material change to the operations of the air transportation industry resulting from the United Kingdom's withdrawal from the European Union. It is assumed that the movement of people and goods via air transportation will continue to operate subject to minimal constraint.

The assessment assumes that a third runway at Heathrow will be delivered by 2029.

2 Study approach

This section outlines our approach to assessing the economic impacts of LCY today (as consented by CADP) and of the proposed passenger growth up to 11 mppa by 2035.

Our methodology relies on a standard economic impacts framework as well as the technical guidance set out by the Department for Transport's (DfT) (WebTAG), and its adaptation to the aviation context by the Airports Commission. This approach measures an airport's economic contribution as resulting from four different sources: the direct, indirect and induced employment impacts, and the catalytic impacts (the wider economic impacts from enhanced connectivity to wider markets and economic actors).

2.1 Overview of methodology

In our assessment, we have considered the following aspects:

- The current economic impact of the airport including its role as a major local employer and a driver of regeneration in east London, looking both at the context in which the airport operates and its direct economic impact
- The local economic impacts including supply chain effects
- The wider economic impacts to the UK economy

Our methodology is based on two different methods to estimate economic impacts:

- A standard Economic Impacts Framework
- A wider economic impacts methodology looking at the wider economic impacts of airport activity at a UK level

In addition to these, our report includes user benefits estimated by York Aviation.

Below we present an overview of the tasks undertaken as part of this study. A more detailed methodology including relevant parameters and assumptions is included in Appendix A.

2.2 Baseline analysis

Our analysis of the economic impact of LCY starts with setting the context in which the airport operates. This includes looking at key socio-economic indicators for the local area such as population growth, job density and the current level of skills, which indicate the current work opportunities and the dynamism of the area. This is important as the airport is focused on maximising its impact at a local level.

After setting the context, we undertake an assessment of the current direct economic impacts of the airport including:

- GVA impact from direct employment and supply chain impacts
- GVA impact from visitor spending for both leisure and business passengers, including indirect and induced impacts
- Productivity benefits to business passengers in the form of time savings in their journey to and through the airport
- Air passenger duty

This gives us the total direct economic contribution by LCY to the UK economy. This analysis is undertaken using relevant multipliers, GVA per job statistics as well as statistics on tourism spending for air travel for both leisure and business passengers in the destinations that LCY currently serves obtained from Visit Britain.

2.3 Local economic impact analysis

To assess the impact of growth in airport capacity, we first apply a standard economic impacts framework to estimate the employment and GVA impacts resulting from increased economic activity at the airport. This includes estimating direct, indirect and induced economic impact.

Our analysis is driven by the direct employment impacts provided by York Aviation. To estimate the indirect and induced impacts, we apply relevant multipliers and GVA per job figures to assess the supply chain effects of increased direct employment at the airport. All our employment numbers are Full Time Equivalent (FTE).

This analysis shows the total additional direct, indirect and induced employment and GVA impact, expected to be most significant at a local level.

2.4 Wider impacts analysis

The present study includes an analysis of the additional wider economic impacts expected to be generated by growth to 2035. This analysis is based on the DfT's WebTAG guidance adapted to an aviation context as recommended by the Airports Commission. The DfT's WebTAG approach to wider economic impacts is a widely adopted methodology in the appraisal of different transport modes in the UK to assess those benefits not captured by local or user benefits. These impacts include:

- **Productivity benefits** resulting from increased concentration of economic activity and improved business to business interactions driven by improvements in connectivity (agglomeration impacts)
- **Increase in trade and productivity improvements** resulting from increases in trade
- **Increases in tax** take as connectivity improvements lead to a better match of labour supply and demand leading to people moving more productive jobs

- Additional **increases in economic output** driven by imperfect competition which leads companies to increase output as travel costs decrease

Details on the methodology and parameters employed can be found in Appendix A.

3 Current baseline: the socio-economic footprint of LCY

This chapter presents the current context within which the London City Airport (LCY) operates. It provides an analysis of the London Borough of Newham to understand better the residents within LCY's immediate employment catchment area, including their standards of living, skills and levels of education compared to the rest of London. The chapter gives insights on local employment, the state of the property market around the City airport, and the general trends that make east London a dynamic business environment. It then looks specifically at the current economic impact of LCY. This provides the context for the rest of the study in terms of identifying the environment in which LCY is evolving and growing in.

3.1 London City Airport – the gateway to east London

LCY is an airport located in the Royal Docks, in the London Borough of Newham in east London. It is one of six international airports serving London and one of two airports located within the Greater London Authority's (GLA) boundaries. LCY is the closest airport to central London and key employment locations such as Canary Wharf and the City, only 2 and 6 miles from them respectively.

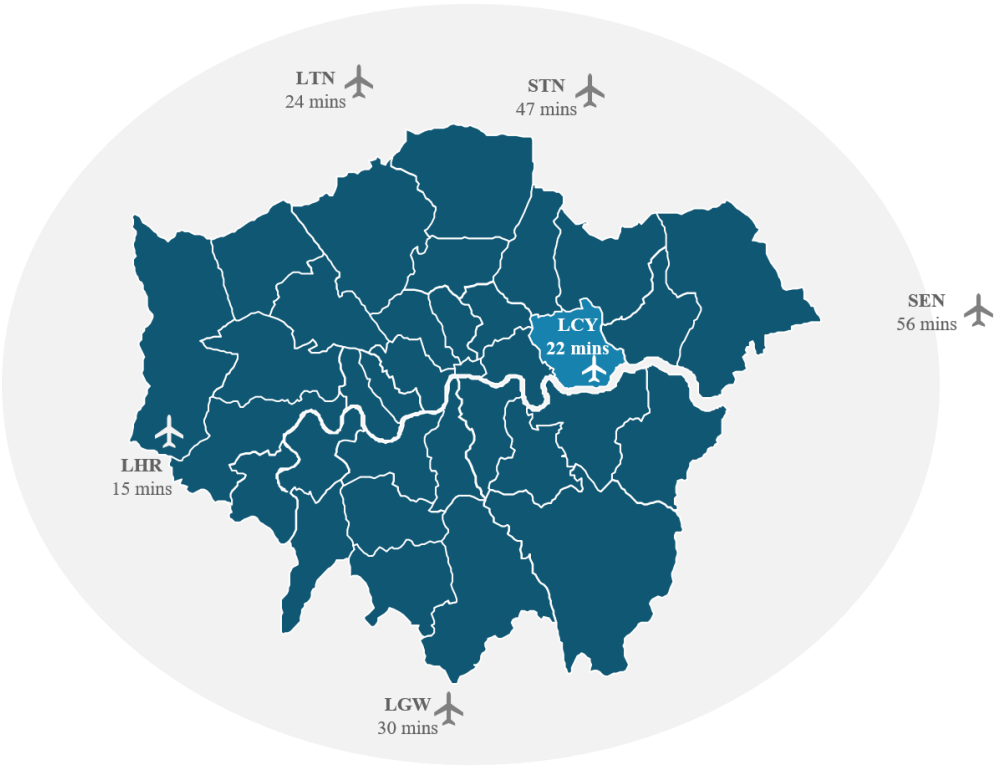


Figure 3: Map of London's main commercial airports including travel times to central London (minutes) (Source: Visit London)

LCY opened in 1987 and in 2018 catered for more than 4.8 million passenger trips per year. Passenger numbers grew at a 10.5% Compound Annual Growth Rate (CAGR) between 2004 and 2017, making LCY the airport with the fastest

annual growth in passengers serving London, after London Southend. Today it is the 14th largest airport in the UK in terms of passenger numbers.[4]

Overall, in the wider London area, the total volume of passengers has grown consistently over time, with an average growth rate of 3% per annum (CAGR), reaching 171 million in 2017. LCY's share of passengers held at London airports has grown faster than average growth at 7.4% per year. This is in contrast to the decline in market share experienced by Heathrow and Stansted airports, which saw decreases in passenger shares of 1.3% and 0.7% per year respectively to 45.6% and 15.1% in 2017.[5]

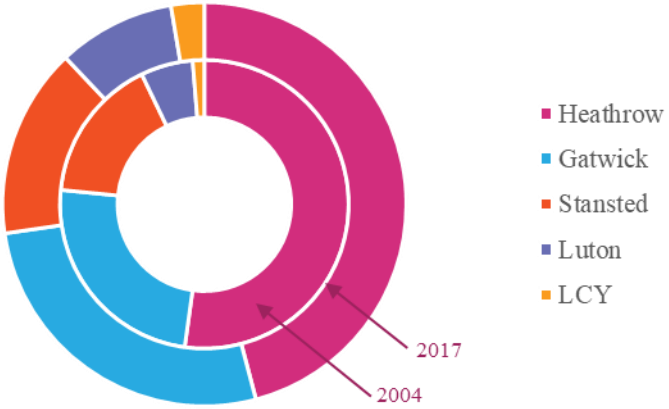


Figure 4: Share of passengers by London airports[6] (Source: CAA)

The airport mainly serves European destinations, while also operating domestic flights. Its top 10 destinations have not changed considerably between 2016 and 2018, with the top three destinations in terms of passenger numbers remaining Amsterdam, Dublin and Zurich between 2016 and 2018. The table below shows the ten cities that have contributed the most passengers at LCY in 2018.

Destination	Number of passengers	Share of total number of passengers	Destination	Number of passengers	Share of total number of passengers
Amsterdam	624,965	13%	**Frankfurt**	249,937	5%
Edinburgh	496,961	10%	**Glasgow**	230,223	5%
Dublin	484,467	10%	**Geneva**	196,756	4%
Zürich	422,734	9%	**Belfast**	184,881	4%
Milan	362,960	8%	**Luxembourg**	184,068	4%

Table 2: Top 10 destinations at LCY (Source: CAA, 2018)[7]

These ten destinations account for 72% of the total annual passenger flow at LCY, and clearly demonstrate the airport's importance and crucial role in London's connectivity to other European business centres, with seven European cities in this top 10.

[4] (Civil Aviation Authority, 2017)
[5] (Civil Aviation Authority, 2017)
[6] (Civil Aviation Authority, 2017)
[7] (Civil Aviation Authority, 2018)

However, in addition to providing connectivity to key centres of economic activity in Europe, LCY is also the airport with the highest share of domestic passengers out of all the six London airports. In both 2018 and 2017, more than 20% of the passengers at LCY were on domestic flights, compared to 7% on average only for the other five London Airports, as can be seen in the figure below. LCY therefore plays a key role in connecting cities across the UK, facilitating trade within the country, which supports the integration and productivity of the UK economy.

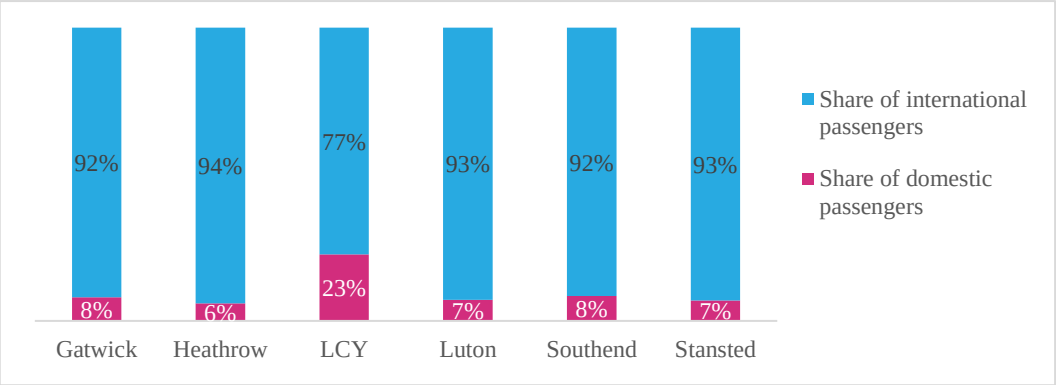


Figure 5: Share of domestic to total passengers at London Airports in 2018 (CAA, 2018)

LCY is located close to two high-density employment areas in the service sector (Canary Wharf and the City). With the highest share of business passengers of all airports serving London, LCY accommodates both business and leisure passengers in equal measure. In comparison, at other airports serving London at least 70% of passengers handled were travelling for leisure purposes (2017 data). Of the 51% of passengers at LCY who travelled for business purposes, three quarters had an international origin or destination. The same proportion applies to origins and destinations for LCY leisure passengers.[8]

According to the latest quarterly survey, 69% of passengers get to or from LCY using public and sustainable transport, including 64% by DLR.[9] This high share of public transport modes makes it a more environmentally sustainable airport than other airports in the wider London area, which have higher shares and numbers of car trips. LCY aims to increase the share of public and sustainable transport use up to 75% according to their latest surface access strategy and propose to further increase this to 80% by 2035.

3.2 A key asset for the local area

LCY represents a key asset for east London, an area experiencing significant population and employment growth and showing lower levels of economic performance compared to other parts of London.

[8] (Civil Aviation Authority, 2017)
[9] (London City Airport, 2018)

Acting as the gateway to east London, LCY plays a role in helping regenerate this area and putting east London on the map. Despite improvements in recent years in the socio-economic conditions of the area, the immediate employment catchment area of the airport still shows signs of deprivation.

Overall, the immediate and wider employment catchment areas of LCY (Newham and east London) show the following socio-economic characteristics:

- Growing population in the immediate catchment area – Newham has grown at 1.6% annually[10] since 2012, more than the 1% population growth rate for London on average
- Younger population with an average age of 32.6 years-old in Newham and 35.2 years-old in east London, compared to 36.2 years-old in London as a whole
- Strong decline in unemployment for the resident population in line with the London trend
- Significantly lower but growing income per person compared to the London average (40% lower in Hackney and Newham)
- Low job density in the immediate catchment area (Newham) – half of London's job density, but similar job density in the wider employment catchment area compared to outer London
- Different sector mix focused on public administration, education and health, and construction in Newham compared to London, which shows a high share of financial services
- Lower productivity levels and growth – east London's productivity has grown at 2.5% compared to 3.1% for London from 2002 to 2017
- Higher levels of deprivation compared to the rest of London
- Faster growth in property development in east London compared to other parts of the city

A detailed baseline analysis of this area is presented below.

3.2.1 Employment catchment area

For the purposes of this baseline analysis, we have looked at data for the London borough of Newham, which represents the immediate catchment area of the airport as well as a wider group of 11 east London Boroughs (Tower Hamlets, Greenwich, Bexley, Lewisham, Southwark, Barking and Dagenham, Havering, Redbridge, Waltham Forest, and Hackney) and the local authority of Epping Forest, which we refer to as the local area / catchment area. All of these boroughs are within the GLA boundaries except for the local authority of Epping Forest, which lies just outside London.

These boroughs represent the area where most of the LCY employees reside. Specifically, 65% of LCY employees reside in this area, with 42% of them

[10] CAGR

residing in Newham[11]. This definition of local area is consistent with the definition used in LCY's Annual Performance Report (2017).

The employment catchment area of LCY, contains 3.3 million people, 35.4% of the London population, excluding Epping Forest which lies outside the boundaries of the GLA. Newham specifically contains 348,000 people, about 4% of the London population. A map of this area is shown on Figure 6.

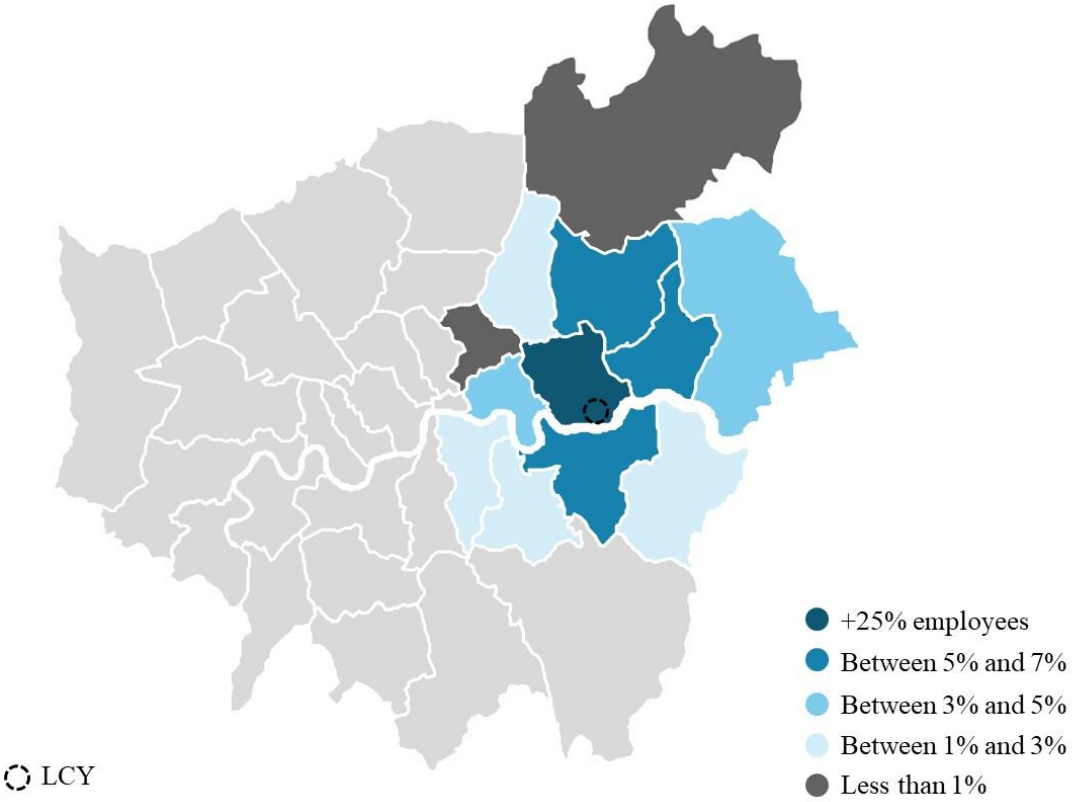


Figure 6: The share of on-site employees at LCY living in the employment catchment area (figures as of 2017)

The immediate catchment area of the airport shows a faster population growth rate compared to the rest of the city. The population of Newham has been growing by about 1.6% annually[12] on average since 2012, which is faster than the London average of 1.0% and the local area, which shows an average growth rate of 1.3%. The borough that has grown the most in terms of population since 2012 within LCY's catchment area is Tower Hamlets, which shows a growth rate of 2.6%.

Looking at the Royal Docks ward specifically, the ward within Newham where LCY is located, the population has experienced a 3% growth from 2016 to 2017, showing that the immediate local area of the airport is growing fast.

Relative to London and the rest of the country, the population within LCY's catchment area is young. The mean age in Newham is 32.6 years old against 36.2 and 40 years-old in London and the UK respectively. Within LCY's catchment area, the average age is still lower than the London average at 35.2[13]. The

[11] (London City Airport, 2017)
[12] Compound Annual Growth Rate (CAGR)
[13] (Office for National Statistics, 2017)

boroughs closest to LCY, Tower Hamlets, Newham and Barking and Dagenham, show the lowest average age of the population within LCY's catchment area. This is important because it shows the need for employment opportunities for young people in east London.

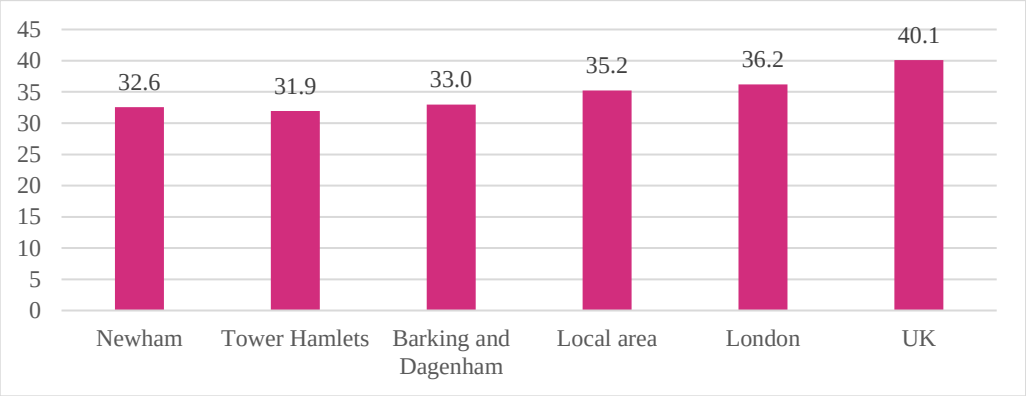


Figure 7 Average age of population[14] (Source: ONS)

3.2.2 Lower economic activity rates but improving employment conditions

In terms of economic activity, that is the proportion of people economically active (either employed or looking for a job), the catchment area of LCY shows a slightly lower economic activity (77.8%) than the London average (78.3%). The boroughs closest to LCY show the lowest economic activity rates – Newham, Tower Hamlets and Barking and Dagenham show an economic activity rate of 74%.

Unemployment figures show a strong downward trend, with unemployment now showing similar levels in the local area compared to the rest of London. Newham shows a stronger downward trend and now has a lower unemployment rate than the rest of London, suggesting that the LCY catchment area has improved considerably over the last five years.

[14] (Office for National Statistics, 2017)

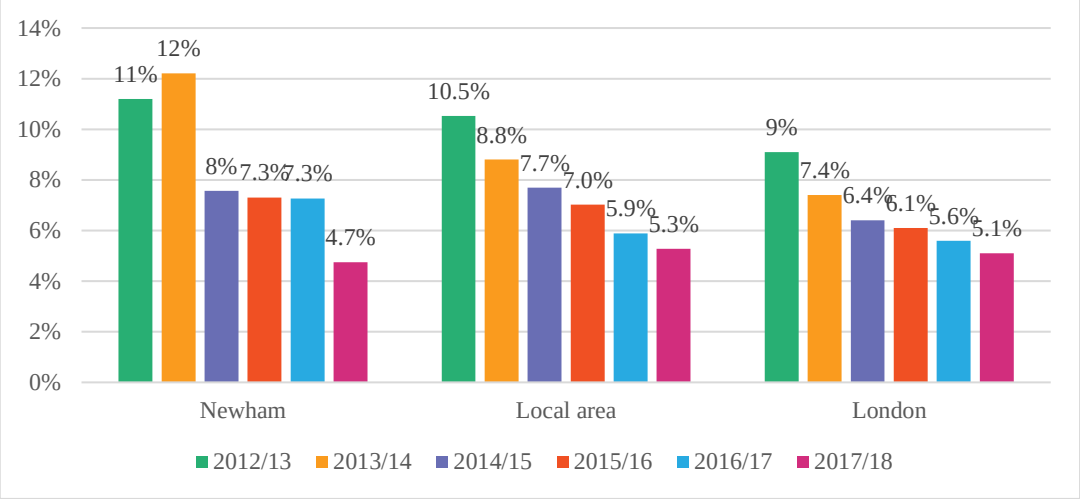


Figure 8: Unemployment rate (%) - aged 16+ [15] (Source: ONS)

Overall this shows that although the employment situation of the population in the local area has improved considerably in recent years, there is still a need to attract more people into the labour market to increase economic activity levels.

3.2.3 Lagging income per person

The income per person in the local area of LCY shows that east London is still below the London average and has scope to grow. The gross income per head in Newham is 40% below the income per head in London although in line with the UK average.

Income per person has shown strong growth in recent years in the LCY catchment area. The gross disposable household income grew by 3% in Hackney and Newham between 2015 and 2016, and 3.6% in Barking and Dagenham and Havering.[16]

Although the latest statistics show stronger growth in income per head in Newham and other boroughs within the local area in the last couple of years compared to London, the gap between the local area of LCY and London remains considerable.

[15] (Office for National Statistics, 2017)
[16] (Office for National Statistics, 2018)

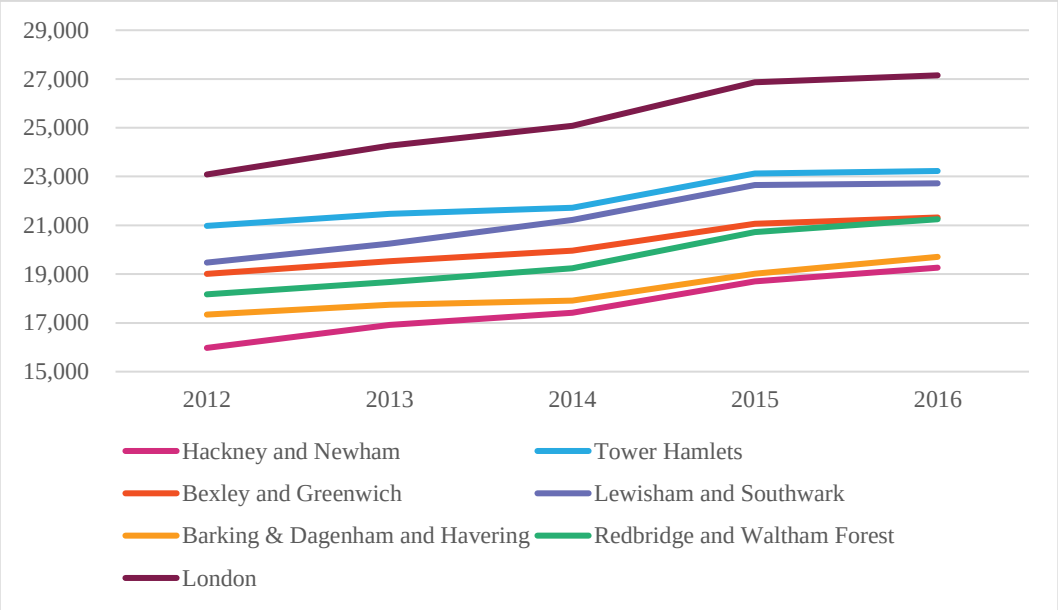


Figure 9: GDHI per head (nominal) by NUTS2 area [17] (Source: ONS)

3.2.4 Need for employment opportunities

Job density in Newham, measured as jobs per resident, is half of what it is London-wide, and almost a third of the job density at Tower Hamlets, according to 2017 data[18]. This, again, shows the potential for increased employment in the area. When looking specifically at the local area, which shows an average job density of 0.7, only Tower Hamlets (1.4) and Southwark (1.37) have job densities above 1. Newham has a lower job density than nearby local authorities such as Epping Forest (0.78), Hackney (0.7), Havering (0.64), Bexley (0.58) and Greenwich (0.53).

Newham	Local Area	Inner London	Outer London	GLA
0.51	0.7	1.48	0.69	1.02

Table 3: Job densities (jobs per resident aged 16-64) [19] (Source: ONS)

The location quotients (1 LQ) for the area presented below, representing which industries have a greater presence compared to the national average, show that Newham has a higher concentration of jobs in eight industry sectors compared to the rest of London.

[17] (Office for National Statistics, 2018)
[18] (Office for National Statistics, 2018)
[19] (Office for National Statistics, 2018)

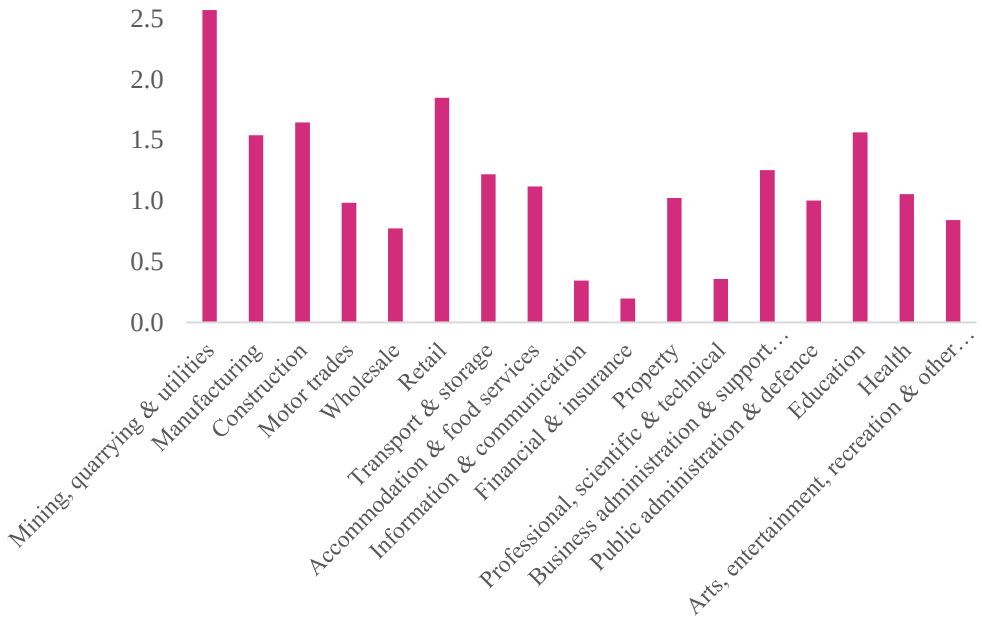


Figure 10: Newham's location quotients[20] (Source: ONS)

Newham is home to a large concentration of jobs in the ‘mining, quarrying and utilities’ sector (LQ = 2.6), the ‘retail’ sector (LQ = 1.85), the ‘construction’ sector (LQ = 1.65), the ‘education’ sector (LQ = 1.56) and the ‘manufacturing’ sector (LQ = 1.54). This profile is very different to Tower Hamlets’, where it can clearly be observed that the main job cluster is the financial and insurance sector (LQ = 3.3).[21]

In Newham, real estate activities as well as distribution, transport, accommodation and food contributed 20% each to the GVA in 2016. Together with public administration, education and health, and construction, these four industries are the sectors in Newham where a higher proportion of GVA is generated in comparison to London and the wider local area. Conversely, it is in the financial and insurance activities, and information and communication sectors that Newham’s profile differs significantly to both London’s and the local area’s. Sectors contributing significantly to the borough’s GVA further reflect an industry profile that significantly differs to the rest of London, as can be observed on the figure overleaf.

[20] (Office for National Statistics, 2017)
[21] (Office for National Statistics, 2017)

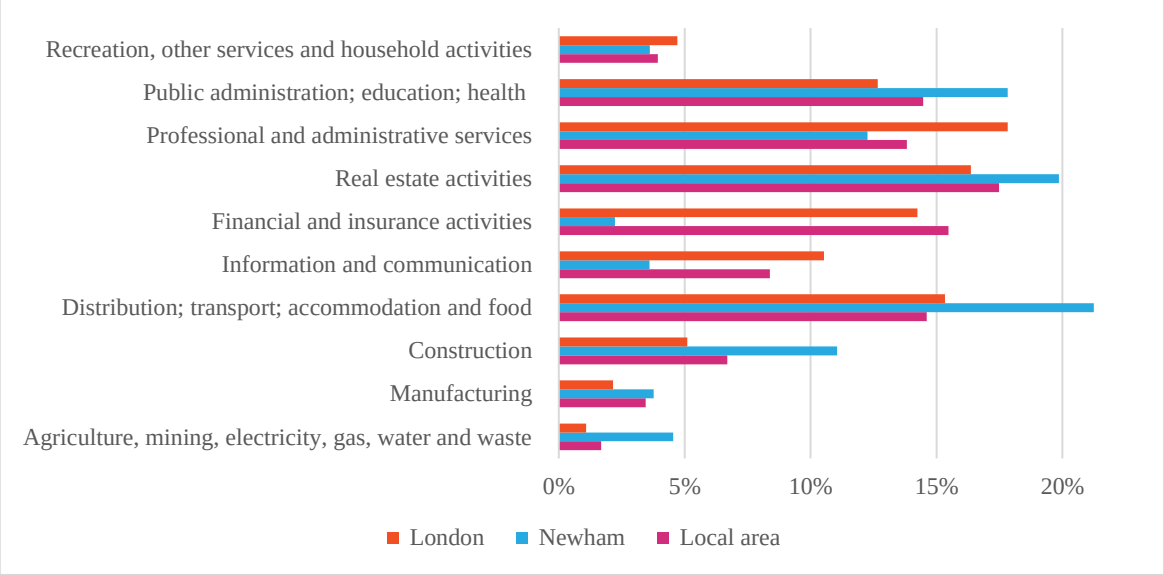


Figure 11: Share of GVA per industry in 2016[22] (Source: ONS)

The two main private employment centres in the borough of Newham are LCY and the Tate & Lyle sugar factory. Although the sugar factory has been operating at only half its capacity, it employs 850 persons including 170 (20%) from the local area.[23] Over time, the factory has shifted from hiring greater levels of manual labourers to predominantly highly skilled labour (mainly engineers and chemists). Production and employment capacities could increase, as the UK's withdrawal from the European Union might in theory lead to fewer restrictions on sugar production from cane in the UK, in the long term.

As shown in the analysis earlier in this section, the secondary sector (secondary industries such as manufacturing) remains the main source of employment in Newham, as opposed to the rest of London's employment, which is largely composed of the tertiary or services sector, which contributes significantly more to the city and the country's total economic output.

However, through redevelopment schemes, Newham seems to be attracting an increasing number of employers creating large employment opportunities in the tertiary sector and further adding to the high concentration of such opportunities in neighbouring Canary Wharf. The recent developments taking place in the Borough (International Quarter, ExCel London, the Royal Docks, Silvertown Quays, the Asian Business Port)[24] as well as the move of large employers to Newham (Transport for London, the Financial Conduct Authority, Cancer Research and the British Council) are examples of this trend.[25]

[22] (Office for National Statistics, 2018)
[23] (Newham Recorder, 2018)
[24] (Arup, 2015)
[25] (Evening Standard, 2017)

3.2.5 Lower level of skills

Overall, the latest data on skills shows that Newham and the local area lag behind the London average, indicating the need for investment in skills.

In 2017, 42% of Newham's population had NVQ4 qualifications (higher education certificate such as university degree) or higher, less than the average of 47% for the local area around LCY and 52% for London, yet stronger than the UK level of 38%. While the proportion of the population of Newham having a certain type of qualification level is in line with the levels of the local area and of London, it can be observed that 14% of Newham's population holds 'Other qualifications' (vocational, work-related qualifications, or foreign qualifications) compared to 9% in both the local area and London. Finally, a slightly greater portion (12%) of Newham residents hold no qualifications at all compared to 8% on average in the local area and 7% in London.

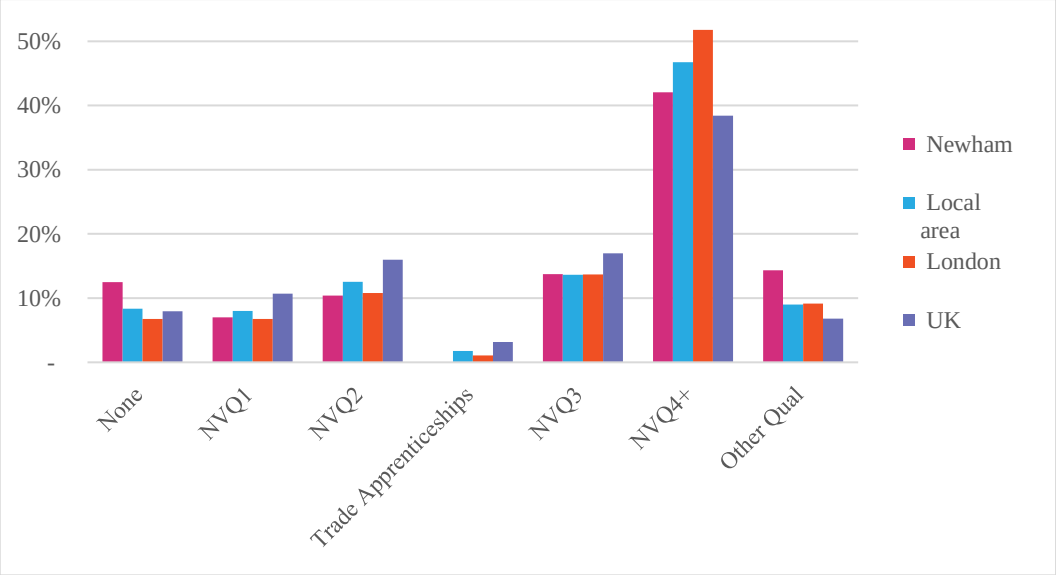


Figure 12: Qualification levels (Proportion of people aged 16-64) [26] (Source: ONS)

3.2.6 Lower productivity levels and growth

In line with income growth, Newham's productivity has been increasing at the same pace to that for the local area with an annual growth rate of 2.5% in GVA per job between 2002 and 2017, slightly slower than London's average annual growth rate of 3.1%. In 2017, the GVA per job in Hackney and Newham was £62,902 (2019 prices) against £68,208 in the local area and £77,144 in London.[27]

[26] (Office for National Statistics, 2018)
[27] (Office for National Statistics, 2018)

Figure 13: Annual growth in GVA per job 2002-2017[28] (Source: ONS)

3.2.7 Higher deprivation than other parts of London

Although Newham has the reputation of being one of the most deprived boroughs in London and the UK, the situation has improved between 2010 and 2015 and Newham has become less deprived by every measure of the Index of Multiple Deprivation (IMD).

According to the latest IMD data published in 2015 by the Ministry of Housing and Communities and Local Government (MHCLG), 6.5% of the local area's lower-layer super output areas (LSOA), a UK Census geographical unit, were amongst the 10% most deprived, against 8% in Newham and 5.7% in Greater London.[29] Finally, while slightly more than half of the local area's LSOAs lie

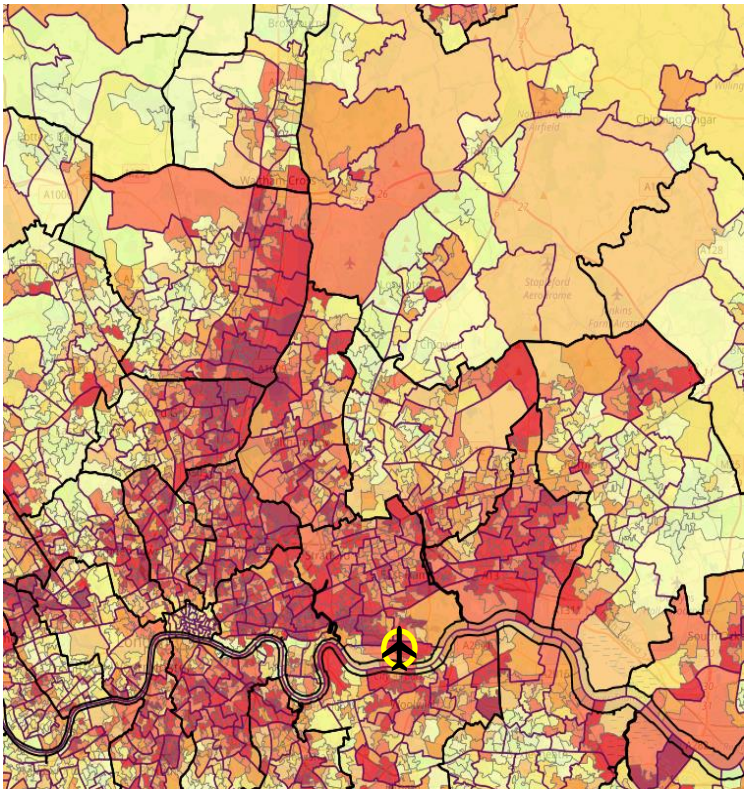


Figure 14: Mapped IMD of LCY's local area[1] (Source: MHCLG)

[28] (Office for National Statistics, 2018)
[29]**Invalid source specified.**

within the 30% most deprived UK LSOAs, more than 80% of Newham's LSOAs fall in that range against less than 40% of Greater London's LSOAs.

3.2.8 An active property market

Although the volume of residential property sales seems to have followed a similar trend in Newham and Tower Hamlets compared to London and the UK, the growth in sales volume has been significantly stronger in Newham relative to Tower Hamlets, London and the UK. Figure 15 shows the indexed number of completed house sales per year. Between 2009 and 2017, property sales volumes have grown by 13% per annum in Newham against 2% in Tower Hamlets and 3% in London (5.2% in the UK). This shows stronger demand for housing in this borough.

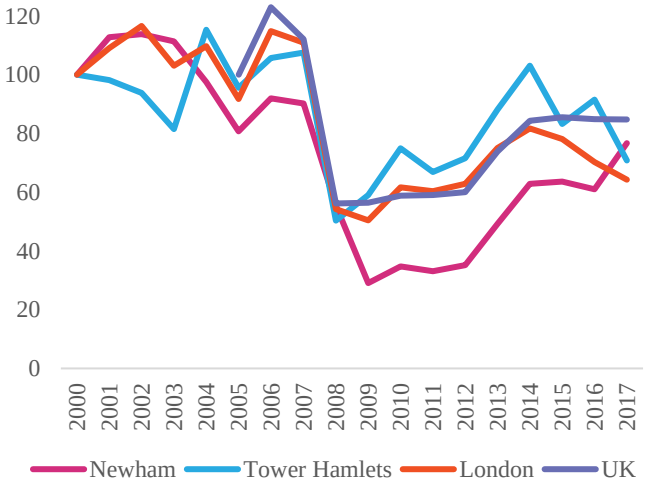


Figure 15: Indexed Property Sales Volume[30] (Source: HM Land Registry)

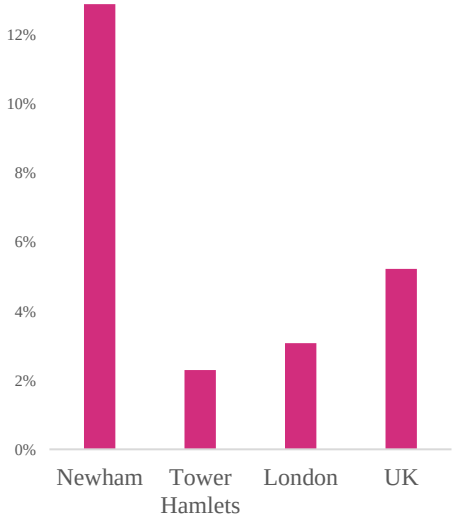


Figure 16: Sales of property volume growth 2009-2017[31] (Source: HM Land Registry)

Average house prices in east London have historically been lower than for the rest of London. Prices in 2016 remained lower in east London than in the rest of London by more than £100,000[32]. Whilst prices in Tower Hamlets (£460,000) were similar to the London average (£480,000) in 2017 [33], the average house price in Newham in was £362,000, or three quarters of the London average.

The rate of growth in dwellings in east London is projected to outpace the rest of London by 2026[34]. In a similar trend to property sales volumes, growth in Newham, Tower Hamlets, Greenwich, and Barking and Dagenham are expected

[30] (HM Land Registry, 2018)
[31] (HM Land Registry, 2018)
[32] (Savills, 2018)
[33] (HM Land Registry, 2018)
[34] (Savills, 2018)

to be above 2.3% per annum. Importantly, these are the only boroughs projected to achieve such a high rate of growth.

LCY is therefore located within London's fastest developing and relatively affordable districts.

3.3 LCYs contribution to the economy

3.3.1 The role of aviation in London and the South East

As a net exporter of goods and services, London benefits substantially from international connectivity. At a global scale, London is considered amongst the top cities for doing business and its overall competitive position. According to the latest Global Cities Report conducted by ATKearney in 2018[35], London is the second most influential city in the world, only surpassed by New York City. According to this ranking, London is also the top city from a cultural experience perspective, demonstrating its role as a hub for cultural and leisure experiences, and a magnet for visitors. Thus, maintaining strong links internationally is key for London.

This is recognised in the current Draft London Plan, which states that "The Mayor supports the case for additional aviation capacity in the south east of England providing it would meet London's passenger and freight needs, recognising that this is crucial to London's continuing prosperity and to maintaining its international competitiveness and world-city status"[36].

The prominent role of London and the South East as drivers of the UK economy make it essential that sufficient international connectivity is provided within this region to continue supporting economic growth at a national level. The previous analysis has shown that constrained airport capacity may result in lower demand and demand being displaced to other parts of the country. This risks having an impact on London's ability to conduct business abroad and attract investment.

3.3.2 The economic impact of LCY

Looking at LCY specifically, LCY has a strong positive impact on the economy, supporting businesses' access to markets and increasing productivity[37], while also supporting regeneration at a local level.

A report produced in 2011 demonstrated that LCY and the connectivity it provides is and has been one of the key drivers in the regeneration and growth of east London. This study estimated that, at the time, LCY directly contributed over £0.5 billion to the UK economy each year (in 2008 values)[38]. This study showed the following benefits:

- £197 million spent by business tourists coming via LCY;

[35] (ATKearney, 2018)
[36] (Mayor of London, 2018)
[37] (London City Airport, 2011)
[38] (York Aviation, 2011)

- £115 million spent by leisure tourists coming via LCY;
- £71 million from productivity benefits delivered through journey time savings by using LCY;
- £21 million in Air Passenger Duty to the Exchequer; and
- £100 million through operations and businesses at LCY that also support over 2,700 jobs both on and off site.

We have undertaken an updated assessment of the current economic impact of LCY. Our analysis shows that the current economic impact of LCY in 2019 is approximately £760m[39], broken down as follows[40]:

- £217 million GVA impact of international business visitor spending, including indirect and induced impacts
- £131 million GVA impact of international leisure visitor spending, including indirect and induced impacts
- £234 million in GVA impacts from current direct, indirect and induced employment
- £136 million in productivity benefits (time savings for business passengers)
- £40 million in Air Passenger Duty

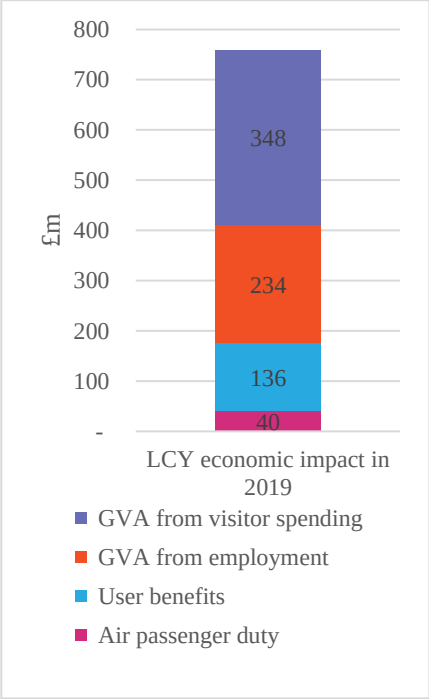


Figure 17 The economic impact of LCY today in £million (2019 prices) (Arup analysis)

Analysis by LCY shows that this impact is expected to go up to £1.5bn once CADP is implemented in 2022.

LCY is often the preferred airport for travel by individuals travelling from central and eastern locations of London for both business and leisure. Clearly, the airport plays a key role in supporting the local and regional economies through direct business and leisure expenditure. Its proximity to business services districts in Canary Wharf and the City makes it an attractive option for those travelling between these locations and other European financial and business centres. Travel time to the airport from Canary Wharf is only approximately 20 minutes compared to over 1 hour to Heathrow Airport, offering journey time savings to people working or residing in that area.

Given the significant projected population growth in east London, increased capacity at LCY would encourage an additional share of total leisure trips resulting from this region to be routed through LCY, while continuing to support businesses by offering quick and high quality international connections.

[39] 2019 prices
[40] Note that the methodology for tourism impacts is calculated slight differently from York's study as it has accounted for the ratio of GVA to consumer spending (40%), based on analysis by London and Partners

3.3.3 Supporting local and national employment

The employment generated at airports tends to be significant, given the labour-intensity of transfer operations, security requirements, and long operating hours.

Currently LCY directly generates around 2,000 full time equivalent (FTE) jobs[41] and in doing so is one of the largest employers in the local area. Out of these, 65% of jobs are occupied by local residents[42] with the aim of maximising the local economic impact in the area. A lot of LCY's spend is focused on the local area, as one of LCY's objective is to support local businesses. One way this is achieved is through LCY's "Royal Docks Meet the Buyer event" which gives local small and medium enterprises an opportunity to create ongoing relationships with buyers in their supply chain. Currently, the airport spends £34.5 million with local businesses.

In addition to supporting local employment, the supply chain of LCY contains businesses across the UK, with some 53% of businesses being based in London and the South East[43]. This shows that the economic footprint of LCY spreads much more widely than London and that increasing passenger capacity at the airport will lead to economic benefits at a national level through supply chain effects.

Figure 19 shows the geographical spread of the businesses in the airport's supply chain[44].

[41] York Aviation analysis 2019
[42] (London City Airport, 2018)
[43] (LCY 2016)
[44] Only businesses displayed where postcode was available (89% of businesses)

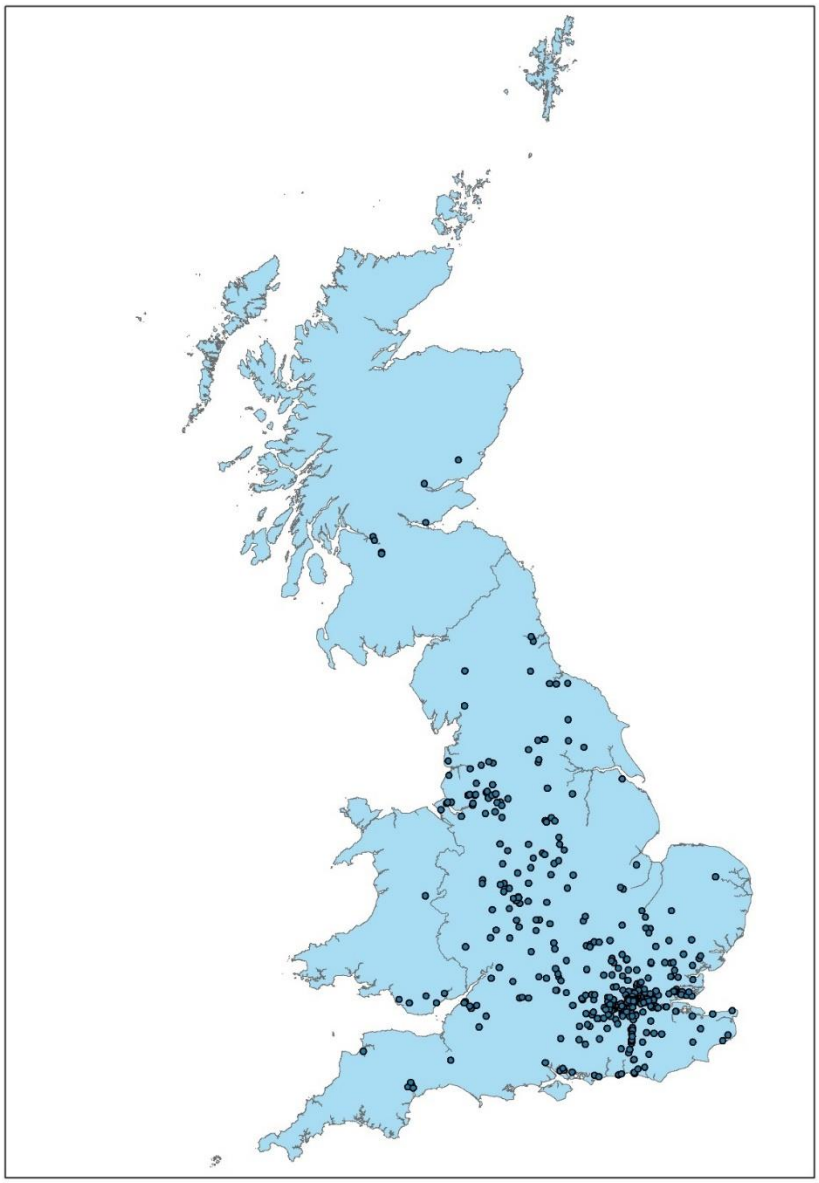


Figure 18 Businesses in LCY direct supply chain (2016) (Source: Arup analysis of LCY data)

3.3.4 Summary

LCY is located in the London Borough of Newham, a relatively economically deprived borough. Although still relatively deprived, Newham's economy as well as the economy of the local area of LCY have significantly improved and strengthened over the last five years. Unemployment has reduced significantly and has been accompanied by strong growth in income per capita. While the immediate catchment area of the airport is still carrying its industrial heritage and holds a large concentration of jobs in the secondary sector compared to the rest of London, this area is increasingly diversifying.

However, skill levels, economic activity rates and income per capital still remain below the London average, suggesting that the local area could benefit from

improved employment opportunities that attract more people into the labour market, while having a positive income on skills and income.

In this context, LCY, contributing £760 million to the UK economy every year, is a valuable asset for the local area, not only providing direct employment and training opportunities but also attracting increasing investment and raising the profile of east London.

4 Future baseline: the impact of not investing

To assess the impact of increasing passenger numbers up to 11 mppa, we first need to understand what would happen in the absence of additional airport passenger capacity at LCY from an economic perspective. In this section, we first look at the current CADP expansion plans and how much capacity they will provide. We then review existing economic theory and evidence to identify the arguments to accommodate further growth, before we estimate the benefits in 2035 in Section 6.

4.1 Current CADP expansion plans

With the aim of increasing passenger demand for the airport and accommodating new generation aircraft, LCY is currently implementing the City Airport Development Programme (CADP). This comprises an extended terminal building, a new eastern passenger pier and associated platform works over the King George V Dock, as well as eight new aircraft parking stands (CADP) and new aircraft stands are proposed to the east of the existing stands 21-24. As part of this, there will be an extension to the aircraft taxiway running along the eastern length of the runway. It also includes the provision of a new passenger forecourt in front of the terminal building, including a new office building and a Hotel.

The current passenger limit of 6.5 million per year is expected to be reached in 2022.

4.2 Future demand for air travel

Considering the projected increases to London's population and the growth in key business districts, all things being equal, demand for air travel is likely to rise. This logic is supported by the latest (constrained and unconstrained) aviation demand forecasts developed by the Department for Transport (DfT[45]) in 2017.

4.2.1 London and the South East – a constrained market

In the national context, and without constraints to airport growth, demand (under the central scenario) is forecast to reach 355 million passengers by 2030 and 495 million passengers in 2050, showing an 85% growth up to 2050 compared to 2016. Therefore, sustained growth in air travel demand is expected at a national level in the long term[46].

Looking at the London area specifically, DfT estimates that, in an unconstrained scenario with unlimited airport capacity, demand could grow for passengers originating from London by 30% for the period between 2016 and 2030, and by 88% between 2016 and 2050, showing significant growth slightly above the UK average up to 2050. Demand by ground origin for passengers originating from

[45] (Department for Transport, 2017)
[46] (Department for Transport, 2017)

London and the UK in each of 2016, 2030 and 2050 (central scenario) is shown in Figure 19.

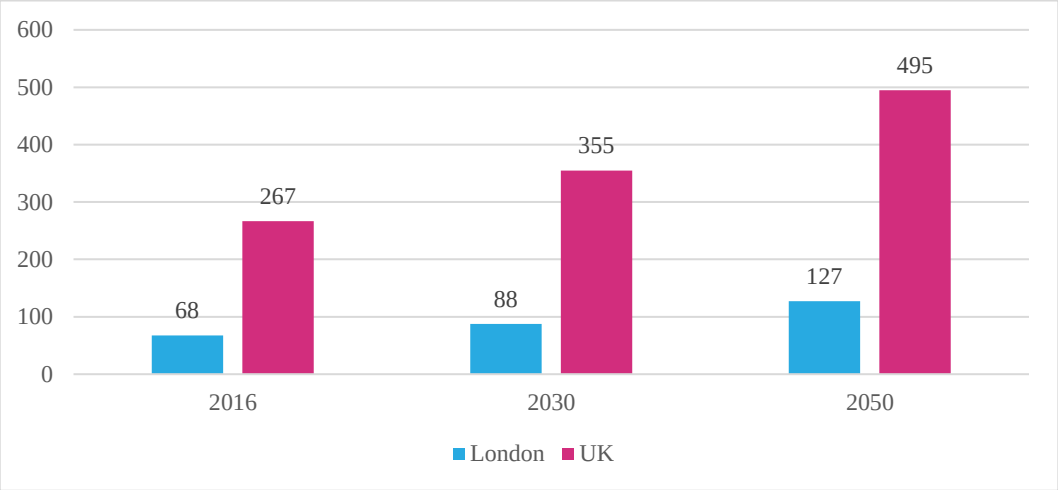


Figure 19 Unconstrained demand forecasts (mppa) for London and the UK (Source: DfT 2017)

The Airports National Policy Statement indicates that the whole London airport system is forecast to be full by the mid-2030s if additional capacity is not provided[47]. For LCY specifically, the airport is expected to reach full capacity after 2022, with a capacity of 6.5 million passengers per year. This shows that, in the absence for further airport expansion, LCY will not be able to cater for the additional demand expected for air travel originating in London. This would translate into dis-benefits for passengers who would have to use other airports which may be located further away thus resulting in longer journey times to them. This is also likely to have knock-on effects on the economy.

There is currently significant uncertainty with regards to future airport capacity provided by airports serving the London market. While Heathrow Airport is expected to build a third runway over the next decade, significant challenges need to overcome before this can be delivered. The third runway at Heathrow is therefore not expected to be operational until the late 2020s and this assessment has assumed an operational year of 2029. Other airports in London have also put forward plans to expand to accommodate future demand increases as follows:

- Stansted's proposal to expand from 35 to 43 mppa has been approved in November 2018.
- Gatwick has put forward a proposal to increase capacity up to 70 mppa by 2032 through the use of their emergency runway. It is unclear when and whether this will go ahead. It is expected that Gatwick may seek planning permission for this in 2020.
- Luton is undergoing a three-year expansion programme to increase capacity by 50% to accommodate 18 mppa by 2020.

[47] Department for Transport (2018)

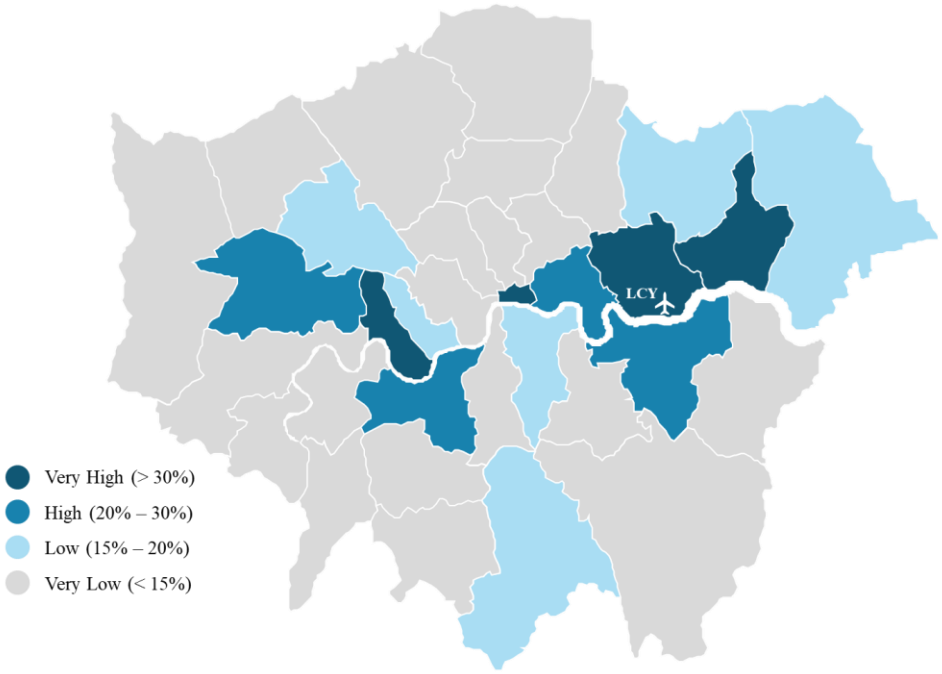
Overall, additional capacity in London and the South East is welcome to enable faster national growth, as recognised by DfT. The growth in airport capacity at LCY can support this.

4.3 A growing, eastward-shifting London population

London's population is growing significantly. The Greater London Authority (GLA)[48] project an increase of 1.4 million residents by 2035. The most recent central population projections[49] anticipate London's population rising from 9.0 million in 2018 to 10.4 million in 2035.[50]

Strong growth is projected specifically in east London, showing that the centre of gravity of population and economic growth is gradually moving east. Figure 20 shows the spatial distribution of future population growth. It can be seen that strong growth is expected in east London in the boroughs closest to LCY, such as Newham, which expects its population to grow by 31%, equivalent to over 100,000 people, by 2035.

[48] (Mayor of London, 2016)
[49] (Greater London Authority, 2016)
[50] (Greater London Authority, 2017)



Borough	% growth	Persons growth	Borough	% growth	Persons growth	Borough	% growth	Persons growth	Borough	% growth	Persons growth
Hammersmith and Fulham	**39%**	72k	Southwark	**19%**	62k	Lewisham	**11%**	35k	Kensington and Chelsea	**9%**	15k
Barking and Dagenham	**36%**	78k	Brent	**18%**	59k	Hounslow	**11%**	31k	Westminster	**9%**	23k
Newham	**31%**	109k	Kingston upon Thames	**16%**	29k	Waltham Forest	**10%**	30k	Camden	**9%**	22k
City of London	**30%**	2k	Croydon	**16%**	61k	Sutton	**10%**	21k	Haringey	**8%**	23k
Greenwich	**26%**	75k	Redbridge	**15%**	47k	Bromley	**10%**	34k	Islington	**8%**	19k
Tower Hamlets	**24%**	77k	Bexley	**13%**	33k	Harrow	**10%**	26k	Lambeth	**7%**	24k
Wandsworth	**20%**	66k	Merton	**13%**	27k	Enfield	**10%**	34k			
Ealing	**20%**	69k	Barnet	**13%**	51k	Hackney	**10%**	28k			
Havering	**19%**	50k	Hillingdon	**11%**	35k	Richmond upon Thames	**10%**	19k			

Figure 20: Distribution of London's population growth (2018 – 2035) (% and absolute figure, total growth) (Source: GLA) [51]

As the GLA's projected employment estimates show in the table below, the boroughs in the east of London demonstrate strong rates of total employment growth between 2018 and 2035. When looking at the five boroughs with the fastest growing total employment in the Greater London, three boroughs are concentrated around the City airport (Newham,

[51] Adapted from (Greater London Authority, 2016)

Tower Hamlets and Hackney), one borough (Southwark) is in the south east, and only one borough (Hammersmith and Fulham) is in the west of London.[52]

Table 4: Total projected employment growth for the boroughs showing highest employment, 2018 – 2035 (%)[53]

Borough	Total employment growth (2018 – 2035)
Barking and Dagenham	9%
Bexley	14.6%
Greenwich	15.2%
Hackney	35.2%
Havering	9.8%
Lewisham	16%
Newham	59.5%
Redbridge	17.6%
Southwark	24%
Tower Hamlets	47.6%
Waltham Forest	16.3%
Total, Greater London	**18.6%**

In addition to this, projections developed by Oxford Economics to the year 2026 (referenced by Savills[54]) show that key boroughs in close proximity to LCY have an increasing rate of real disposable income per capita. The highest growth is expected in Hackney, Newham and Tower Hamlets and other central and south eastern boroughs in the LCY catchment area. The average annual growth in disposable income in these boroughs is projected to be 1.1% in real terms. In contrast, the greater east London area will have a lower rate of income growth in comparison with the rest of London. Much of LCY's wider, 60-minute catchment will experience this lower overall rate of growth[55].

Notwithstanding a lower level of growth in disposable income than for London as a whole, increases in employment and population in east London are likely to result in increased demand for services in this area, including airport services.

Furthermore, following the completion of Crossrail, an additional 300,000-500,000 people will be brought into the one-hour catchment area of LCY[56], increasing its accessibility to wider London. Currently, a station is planned at Custom House, in the vicinity of LCY. This station will only be one stop away from Canary Wharf, a key business district, and three stops away from Liverpool Street, in the City. Although the airport is currently well connected by DLR services, this will lead to further time savings to the airport, as people working in central and east London are able to access the airport quickly, and foreign passengers are able to much more easily access key London destinations.

[52] (Greater London Authority, Labour Market Projections, 2017)
[53] (Greater London Authority, 2017)
[54] (Savills, 2018)
[55] (Savills, 2018)
[56] (Arup, 2015)

4.3.1 Expanding business districts and development

In understanding the future increases in employment that are expected in east London, it is important to consider how the local economy will evolve. Key to this are expanding business districts, an important characteristic of the east London's economy.

There are four key business clusters in east London: Canary Wharf, Stratford, Lee Valley and Royal Docks; home to the Asian Business Park (ABP) and Silvertown Quays. Figure 21 highlights the key growth centres in London, which we also describe below:

In addition to expanding business districts, east London is undergoing a process of substantial regeneration, expanding significantly its offer for residents through new housing and public realm schemes. Major developments are planned across different sites which will contribute to elevate the profile of east London and contribute to the population growth projected by the GLA.

East London accounts for 12 of the 38 Opportunity Areas[57] identified across London. The area is positioned between two nationally significant growth corridors; the London-Stansted-Cambridge and Thames Gateway growth corridors, identified as major development areas within the London Plan.

[57] Opportunity Areas are London's major source of brownfield land which have significant capacity for development – such as housing or commercial use - and existing or potentially improved public transport access.

The key regeneration schemes likely to have a significant impact on the overall regeneration of east London are presented in the figure and table below.

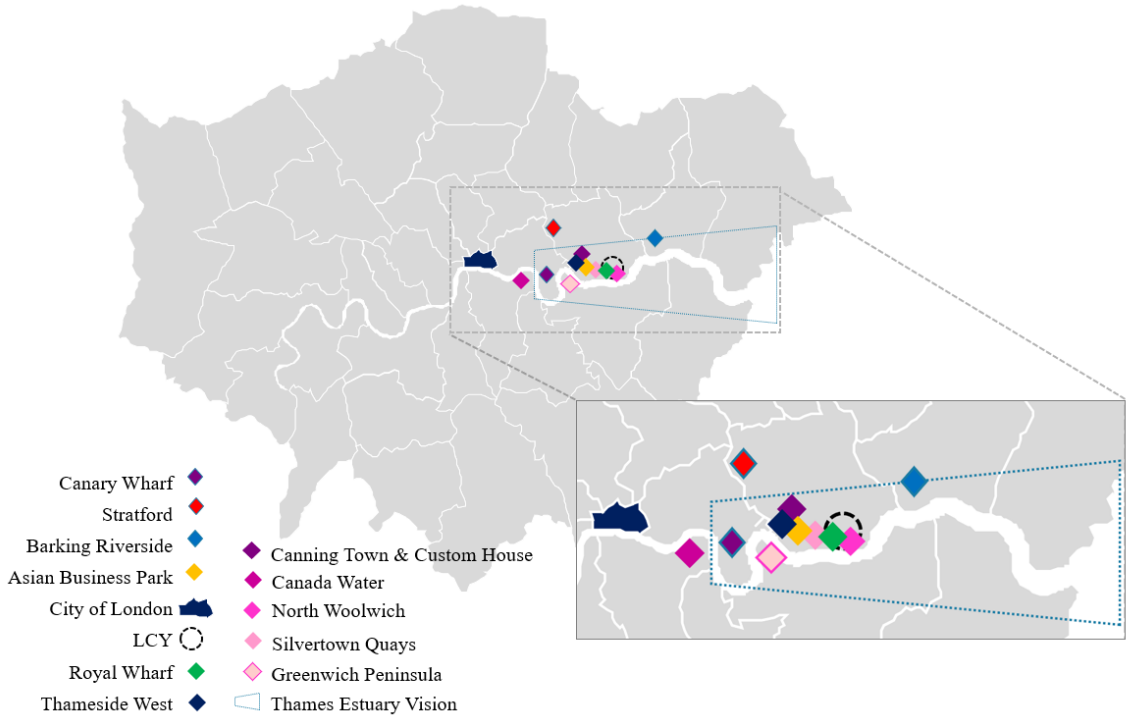


Figure 21: Planned regeneration schemes in east London

Table 5: Key business districts and regeneration schemes in east London

Schemes	Description	Jobs / homes	Investment (£)
Stratford	An area of London that has transformed in the past decade, with new developments, including Queen Elizabeth Olympic Park and East Village and major schemes along the High Street such as Strand East	• 1,200 homes • 58,000 sqm of workspaces	£9 billion
Asian Business Park, Royal Docks	Enterprise Zone, ABP is creating a brand new waterside development and dynamic commercial district. It will transform Royal Albert Dock into London's third business and financial district, becoming a hub for businesses from Asia looking to reach new markets in Europe and for European companies seeking to do business with them and expand into the Far East. The 4.7 million sq ft development comprises mainly	• 4.7 million sq ft	

	offices, with residential, retail and public realm		
Canary Wharf	One of Canary Wharf's largest developments, Wood Wharf, will see by 2023 an additional 455,000 square metres of mixed use development, 177,000 square metres of commercial offices, and additional volumes of retail space, restaurants and housing. Wood Wharf is expected to create an additional 20,000 high-value jobs, providing spaces for clusters of tech, education and creative businesses58. The estate is also diversifying its portfolio substantially to attract businesses outside of financial services, including Shell, Alibaba, and more than 176 tech start-ups focusing on FinTech, retail, cyber security and smart cities technology.	• 120,000 homes (expected to double within 20 years[59]	N/A
Canada Water Masterplan[60]	Plans for a large 53-acre regeneration of Canada Water – which include a new high street, town centre and leisure centre – have been submitted to the council after four years of consultation in the summer of 2018. In addition to new homes, the Canada Water Masterplan would provide workspace and retail, leisure, entertainment and community space. The outline submission also includes detailed plans for the project's first three buildings which would be built on Surrey Quays shopping centre's current overflow car parks between Deal Porters Way and Canada Water Dock, as well as the empty site at Roberts Close.	• 3,000 homes	N/A
Canning Town and Custom House[61]	Regeneration scheme for private and affordable homes.	• 12,000 homes	£3.7 billion
Silvertown Quays	Regeneration of a 62-acre neglected site in the West Ham area of Newham which centres around the restoration of the 1930s Millennium Mills and will include 3,000 homes including affordable housing, offices, a school, health centre, retail facilities and a new Roundhouse music venue. Residents are expected to move in by 2020.	• 3,000 homes	£3.5 billion

[58] (Canary Wharf Group PLC, 2018b)
[59] (Canary Wharf Group PLC, n.d.)
[60] (Canada Water Masterplan, 2018)
[61] (Newham Council, 2018)

North Woolwich[62]	A series of proposed developments on the banks of the River Thames at Woolwich will bring a set of historic buildings back into use to house cultural organisations and industries. Royal Arsenal Riverside will deliver a hotel, office and retail space and a community centre. The redevelopment of Spray Street will include restaurants, offices, shops, cafes, leisure facilities such as a cinema, and new and improved public spaces. Other mixed-use redevelopment projects include Thomas Street and the Woolwich Estates.	• 5,000 homes at the Royal Arsenal Riverside • 650 homes at the Spray Street	N/A
Greenwich Peninsula[63]	An revamp of 150 acres of former industrial land and gasworks around the O2, opposite the financial district of Canary Wharf has planning consent to build 15,720 homes in seven neighbourhoods, along with a new design district, film studio, two schools, health services, shops and offices. It is built as the biggest regeneration project by a single developer in the UK and is expected to be completed by 2032.	• 15,720 homes	£8.4 billion
Thames Estuary	Located further in the East, the Thames Estuary, covering approximately 65km from east London to Southend-on-Sea in Essex and Kent is a long-term priority area for growth regeneration. In 2016, The Thames Estuary Commission was formed to develop a 2050 vision for the area focusing on five productive places. One of these places, referenced as 'City Ribbon' corresponds to the London Boroughs of Tower Hamlets, Newham, Barking and Dagenham, Havering, Lewisham, Bexley and Greenwich and the London Legacy Development Corporation, and therefore affects the catchment area of LCY. The vision aims to deliver £190 billion of additional GVA by 2050. Regarding the City Ribbon place specifically, the vision aspires to convert this place into a hub for production with spaces for start-ups and small and medium sized businesses, for example through the creation of creative enterprise zones and strategic transport infrastructure projects. Within the vision, LCY is recognised as a	• 1.3 million jobs	N/A

[62] (Royal Borough of Greenwich, 2019)
[63] (Homes & Property UK, 2017)

	significant strategic asset providing employment and international connectivity.		
Barking Riverside	Located along the banks of the River Thames, covering 443 acres, Barking Riverside will include 10,800 new homes of mixed size and style. There is also provision for 65,000 square metres of commercial floor space for shopping, restaurants, cafés, community and leisure facilities, healthcare and schools. There are also plans for large open spaces, public squares and a brand new rail station with bus and river transport interchange providing excellent links to central London.	• 10,800 homes	
Thameside West	Thameside West is a riverside development on one of the largest brownfield sites in London that will play host to more than 5,000 new homes, multiple new retail spaces, a new school, a new nursery, spaces for creative industries as well as a new London parkland. There are also plans for a new Thames Wharf DLR station.	• 5,000 homes	
Royal Wharf	Royal Wharf will comprise of 3,385 residential sites on a prime riverside location, incorporating a communal square, high street, 2.4 acre park and a riverside promenade. The development will be served by Royal Wharf Pier – a brand new riverboat terminal in collaboration with MBNA Thames Clipper, providing river connections to central London.	• 3,385 residential sites	

Generally, strong growth in office floorspace in London is expected in projections developed by Savills[64], showing the increasing role of east London as an employment centre. Although east London currently has a low stock of office floorspace in comparison to central London, it is projected to increase by almost 30% over the period from 2016 to 2039. This is expected to be near to double the expansion for the rest of London over the same period. LCY's own borough of Newham has the highest projected annual growth rate of 1.6%.

Within the wider LCY catchment area, strong growth in office floorspace of over 10% is expected by 2041, reaching a total of 28 million square metres[65]. Overall all, LCY has greater access to office floorspace within its catchment than Heathrow Airport does, according to analysis by Savills. This is a reflection of the high rate of accessibility to the airport via public transportation and the business

[64] (Savills, 2018)
[65] (Savills, 2018)

growth in east London and highlights the role of the airport in providing business international connectivity.

The local area also has lower average office rents than does the rest of London and is not expected to increase, providing affordable employment spaces for businesses[66].

Collectively, current development plans for business districts and office space suggest that the location of LCY will become even more advantageously located for a growing population and number of businesses.

Regarding the relationship between aviation and regeneration, the Mayor of London "supports the role of London's airports in enhancing London's spatial growth, particularly within Opportunity Areas well connected to the airports by public transport and which can accommodate significant numbers of new homes and jobs"[67]. It is therefore recognised within current policy that airports can play a role in further regenerating key areas of London.

In summary, significant growth is expected in east London, brought about by increases in population and employment, partly as a result of expanding and new business centres and large regeneration schemes being developed there. To maximise this growth, plans for employment generation, infrastructure provision and access to services (including aviation services) must be developed to match demand for services and further promote regeneration in east London.

4.4 The impact of not investing

The direct output of not being able to meet increasing demand for airport services in London and particularly at LCY is likely to result in passenger dis-benefits as well as wider socio-economic impacts, as set out in Figure 22. This section outlines the likely direct and indirect outcomes from LCY being unable to meet this demand into the future.

[66] (Savills, 2018)
[67] (Mayor of London, 2018)

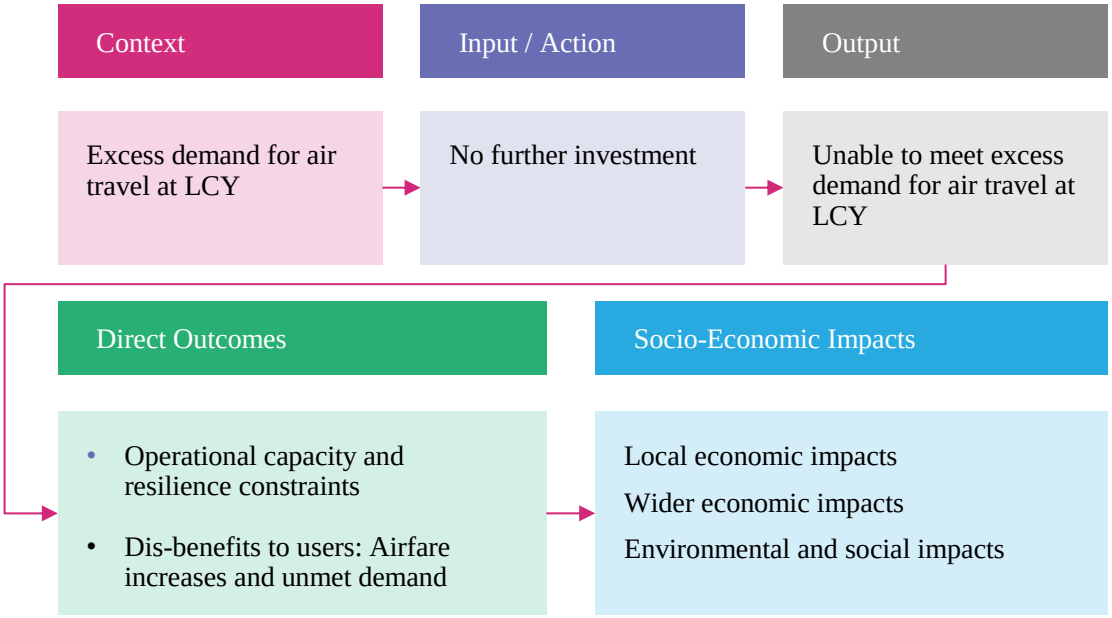


Figure 22: Intervention logic map for the reference case

The next sections below outline in more detail the logic chain of outcomes and impacts resulting from not investing further beyond CADP underpinned by economic theory and evidence.

4.4.1 Outcome: Operational capacity and resilience

If LCY was unable to sufficiently meet demand, this will result in pressures on operational capacity. Operational capacity is affected by the physical attributes of the site and its infrastructure, but also by factors such as weather conditions, environmental constraints, airspace configuration and the operational choices of operators. The capacity for an airport to cope in peak periods is key, as demand will always vary across peak and off-peak periods. As an airport approaches capacity, indications of capacity pressures manifest themselves progressively in the form of congestion and delays, disruption to schedules and loss of potential opportunities for new services.

By operating infrastructure close to its maximum capacity, an airport's ability to manage unplanned disruptions such as poor weather is negated. The costs of flow-on impacts for through-traffic can be severe.

Increased capacity may allow LCY to optimise operations in a way that they might not be able to in the case of not growing beyond CADP.

4.4.2 Outcome: Dis-benefits to users: Airfare increases and unmet demand

Congestion from insufficient airport capacity results in an inability to meet unconstrained passenger demand. This relative scarcity can result in higher airfares being charged to passengers, which occurs whether or not airports price congestion charges to airlines efficiently. Airports can pass on the full or partial cost of congestion (depending on regulations), which puts financial pressure on

airlines, some of whom may cease operations at the airport. Lower levels of competition combined with increasing passenger demand incentivises airlines to charge scarcity rents to a market clearing level.

A 2017 study[68] found that a 10% capacity constraint could result in an increase of up to 2.2% in average airfares. Research[69] indicates that fares at constrained UK airports can be approximately 10% higher than at less constrained airports.

Finally, there is also a dis-benefit to passengers resulting from decreased connectivity to different destinations, as airports are less able to serve a high number of destinations due to capacity constraints. Evidence cited by McKinsey[70] suggests that congestion drives airlines to drop routes involving connections in favour of those with high point-to-point demand, as these tend to be more profitable. There is also a tendency to increase flight frequency on existing routes rather than to offer new destinations. Congested airports offer more flights to fewer cities, whilst unconstrained airports serve more cities, less frequently.

Domestic connectivity may also not be able to improve or even decline in the case of not investing further beyond CADP. For example, the number of domestic services into Gatwick Airport fell by over 25% between 2010 and 2015. The decline has been more dramatic at Heathrow as domestic flights fell from 40,000 in 1990 to 23,000 in 2014[71]. An underlying driver of this decline is the lower profitability per passenger of domestic versus long-haul flights.

Overall, not investing further has important implications for passengers, which then have knock-on effects on the economy, as is discussed below.

4.4.3 Economic Impacts

In the longer term, constraints in LCY's capacity and unmet airport demand in east London are likely to have wider socio-economic implications, affecting business and investment decisions. The socio-economic impacts resulting from these key outcomes are summarised in the following sections. These impacts are:

Economic Impact	Impact Type
• Agglomeration and clustering	• Avoided additional
• International trade	• Avoided additional
• Inward investment	• Avoided additional
• Productivity impacts from service disruptions	• Decline from baseline
• Employment impacts	• Avoided additional

[68] (SEO Amsterdam Economics, 2017)
[69] (Airports Commission, 2013)
[70] (McKinsey & Company, 2015)
[71] (Airports Commission, 2015)

Agglomeration and clustering

Agglomeration benefits refer to those realised through the concentration of complementary firms and sectors to key factors of production in a geographic area. Agglomeration is driven by reduced transportation costs (and therefore input costs), increased access to skilled specialist labour, and reduced barriers to knowledge sharing and innovation. The financial and technology professional services cluster within the nearby Canary Wharf area is an excellent example of the enterprise areas within London which benefit from the effects of agglomeration and clustering.

Close and efficient air connectivity both reduces the cost of transportation and minimises the perceived geographic barriers between regions; thereby contributing to productivity, knowledge sharing and innovation. It may also widen the pool of skilled labour inputs, opportunities for collaboration, potential suppliers and markets. Improved air connectivity benefits businesses connected to the airport and may encourage more businesses to locate closer to airports to improve their access to markets[72].

In the case of LCY, no growth in the airport's capacity may result in a decline in the relative attractiveness of east London compared to other areas in London. In the context of the potential expansion of other London airports, businesses may find it more attractive to locate closer to them. This would be the case for instance of businesses that rely on substantial international travel or businesses that cater for tourists, who may have had increased incentives to stay in east London if they were flying into LCY when coming to London.

A decline in overall network connectivity has implications for GVA. Reduced connectivity is a constraining influence upon business and trade between regions, as well as within the leisure market segment. The impact of LCY on overall business productivity has been identified by multiple sources[73]. Businesses in a global market will continue to make connectivity a material consideration in where they invest. Longer-term prosperity may be damaged where that connectivity deteriorates.

International trade

The increased connectivity provided through increased airport capacity results in better access to foreign markets, facilitating trade between the UK and the rest of the world. This can lead to increased trade, as well as productivity benefits from increased trade, as trade encourages competition and incentivises businesses to become more efficient. This is important for LCY, an airport frequently used by business passengers as a quick gateway to short distance destinations.

Inward investment

Foreign direct investment (FDI) is also an important economic impact of aviation. FDI refers to cross-border investments made by residents and businesses from one

[72] (Airports Commission, 2015)
[73] (Airports Commission, 2015) (York Aviation, 2011) and (London City Airport, 2011)

country into another, with the aim of establishing a lasting interest in the country receiving investment. Currently, the UK has £1.6 billion of FDI assets[74]. Since 2003, foreign investment has added an estimated 800,000 jobs to the UK economy, and 6.5 million jobs to Europe's economy[75].

As a global capital of investment, London benefits from substantial FDI which supports the growth of the London economy. Promoting FDI in London has a significant impact on the rest of the UK, as companies that first invest in London often decide subsequently to spread their investment across other parts of the country. London Partners estimate that foreign companies that have expanded from London to other parts of the UK have contributed £7.6 billion to the rest of the UK, creating 38,712 jobs outside London between 2003 and 2015. The impact has been particularly strong in the IT and software sector.

Improved international connectivity makes it easier for foreign firms to invest by reducing business travel costs, thereby encouraging inward investment. Oxford Economics show that there is a positive correlation between international connectivity and FDI[76]. Given the strong role that LCY plays in enabling quick and easy business travel, not expanding LCY's capacity could potentially limit future FDI opportunities.

Productivity impacts from service disruptions

Increasing severity and/or frequency of delays at LCY can lead to declining business productivity if, for example, it is as a result of not proceeding with capacity expansion. Delays resulting from congestion reduce confidence in travel time reliability, and waste time which could otherwise have been used more productively or in pursuit of leisure.

The more direct impact of service disruptions can be seen through costs to airlines through additional charges, and for passengers, particularly business travellers whose reduced productivity results in costs to business. This effect can feed through to the whole economy as additional costs are incurred through making alternative arrangements or allowances in managing this disruption. The Commission's 2013 report[77] estimates the future costs of these disruptions as being £5.1 billion over the period from 2021 to 2080.

Employment impacts

Not growing airport capacity beyond CADP may also prevent local employment opportunities in east London from happening, resulting in less work opportunities for the local population and a reduction in tax take from employment. This impact relates to the increased tax revenue accruing to the government from changes in the labour supply, or from changes in the nature of employment.

It should be noted that UK economic appraisal guidance assumes no net additionality in employment for most infrastructure projects. Rather, it is assumed

[74] (ONS 2016)
[75] (London and Partners, 2016)
[76] (Oxford Economics, 2014)
[77] (Airports Commission, 2013)

that employment generated through the direct and indirect impacts of such projects are redirected from other areas in the economy. However, the nature of employment may change as a result of the project, for instance in moves to more or less productive jobs. The redistribution of employment impacts to the local area as a result of the project is also worth considering.

In the absence of further investment, additional tax take from more productive jobs (perhaps realised through increased levels of agglomeration), would not be realised. Similarly, increased tax revenues resulting from the inflow of workers into the local economy would also not be realised, as would be the case with the flow-on effect of subsequent government expenditure as a result of this increased tax take.

Tourism impacts

The tourism sector is a key sector of the UK economy, contributing an estimated £127 billion every year or 9% of GDP[78]. According to analysis by Visit Britain, this is expected to reach £257 billion by 2025, just under 10% of UK GDP, supporting 3.8 million jobs. A significant proportion of tourism impacts are generated in London and the South East, with 40% of tourism expenditure in the UK being in these two areas[79].

Aviation is a key sector supporting the tourism economy, as the share of visitor spend accounted for by visitors who fly into the UK corresponds to 87%[80]. In London, 20 million visitors spend about £14 billion every year.

Capacity constraints may hinder future growth of this sector. Analysis by Deloitte and Oxford Economics shows that by 2050, Britain would have capacity to receive 32 million fewer international visitors compared to a scenario with unconstrained capacity[81]. This has a negative impact on economic growth, affecting a wide range of sectors involved in tourism activities, such as culture, food, accommodation, retail and transport.

4.4.4 Impacts: Social

The increased cost of travel posed by airport capacity constraints ultimately results in a growing proportion of demanded trips remaining unmet, and higher economic costs for those which do proceed. The social impacts of this are felt primarily by the leisure traveller market segment.

The key consequences of this upon social outcomes are:

[78] (Visit Britain, 2013)
[79] (Office for National Statistics, 2013)
[80] (Office for National Statistics, 2013)
[81] (Deloitte and Oxford Economics, 2013)

Social Impact	Impact Type
• Distributional impacts	• Decline from baseline

The relative impact of congestion upon leisure versus business travellers has been established, however, these impacts will not be shared equally between sub-sets within the leisure traveller demographic. An increased total cost of travel could disproportionately affect lower income and lower socio-economic demographic groups, which are more prevalent in east London where LCY is located.

4.4.5 Impacts: Environmental

The increasing congestion resulting from combined airport capacity constraints and growing passenger demand results in delays.

The key consequences of this upon environmental outcomes are:

Environmental Impact	Impact Type
• Increased pollutant emissions • Declining air quality • Noise	• Dependent on aircraft and operations

With increasing environmental pressures on airport activity, the air transport sector needs to balance accommodating increased consumer demand whilst also meeting tightening emissions targets and keeping noise at constant or lower levels. Therefore, in pursuing a balanced approach to economic growth and environmental protection, airports must consider the impacts that congestion has upon delays, and therefore excessive pollutant emissions.

Enabling growth in airport capacity will enable the use of more new generation aircraft that would lead to a smaller amount of emissions per passenger. At an aggregate level, whether total emissions would increase will depend on the type of aircraft operated. In terms of the impact on nearby residents, this will also depend on how operations are configured which will determine the spatial extent and concentration of key pollutants that affect air quality.

Finally, increased air traffic movements may lead to increases in noise, depending on the type of aircraft used. This is considered acceptable if noise levels remain within the current noise contour area limit.

Overall, the net environmental impacts will depend on how operations are designed. In any case, the airport has an obligation to meet established environmental targets to make sure it does not negatively impact upon the local community.

4.5 Summary

In summary, there is a case to accommodate future growth, leading to improvements in operational capacity and positive economic and social impacts.

The outcomes of the do-nothing scenario will be increasingly constrained operational capacity and increased airport charges and competition for slots resulting in the increased costs of airfares for consumers.

The economic impacts of these outcomes will be avoided additional benefits from agglomeration and clustering; declining domestic and international connectivity; productivity impacts resulting from service disruptions; imperfect competition; and tax take.

Social impacts will include reduced affordability and accessibility of air services, particularly for leisure travellers, and a subsequent reduction in overall wellbeing. The distribution of these adverse social impacts will also disproportionately affect more vulnerable demographic groups.

Finally, the environmental impact of these outcomes will depend on the balance of increased emissions from airport delays due to constrained capacity vs. increased emissions resulting from the operation of a larger number of flights.

There is therefore a clear economic rationale to proceed to help make the case for passenger capacity growth beyond what is currently being implemented. As the Airports Commission in their final report clearly concluded, “building new capacity is the only real solution to a growing problem”.

5 Growth to 2035

The following section presents the draft master plan as conceived after a robust option development and appraisal process. This master plan was not only designed to handle the growth in air transport demand and its changing nature, but also to ensure that the airport becomes as efficient and flexible given significant ongoing and future technological changes, while aiming to optimise the use of already existing infrastructure and minimise the impact on our surroundings.

5.1 Overview

5.1.1 Traffic forecasts

This master plan will enable LCY to gradually accommodate an increasing number of passengers beyond the capacity provided by CADP. By 2035, LCY will be able to cater for 11 million passengers per annum, compared to 6.5 million movements per annum that CADP accommodates, corresponding to a 69% growth. The forecasts for total passengers relative to CADP are shown in Figure 23.

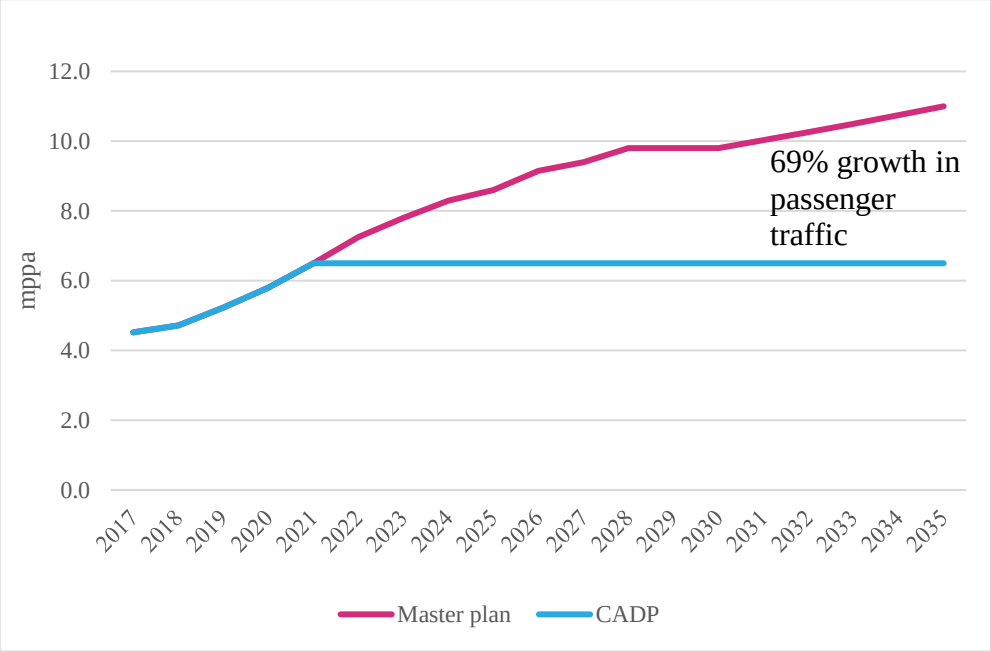


Figure 23 LCY traffic forecasts (mppa) (Source: York Aviation)

High-level analysis undertaken by York Aviation suggests that some of these passengers will be additional to the London area – that is they would not have travelled to London in the CADP scenario, specifically 0.1%-0.6% of passengers are expected to be additional by 2035. At a national level, this increase in demand is unlikely to be additional by 2035. These forecasts assume that a third runway at Heathrow is implemented from 2029.

At LCY, as air traffic increases over time, the balance of business and leisure passengers, currently 50% and 50% respectively is expected to change over time.

According to York Aviation, in 2035, with proposed growth, demand is expected to bring the proportion of business and leisure passengers market segments to 36% and 64% respectively, converging towards a balance more commonly observed at other London airports.

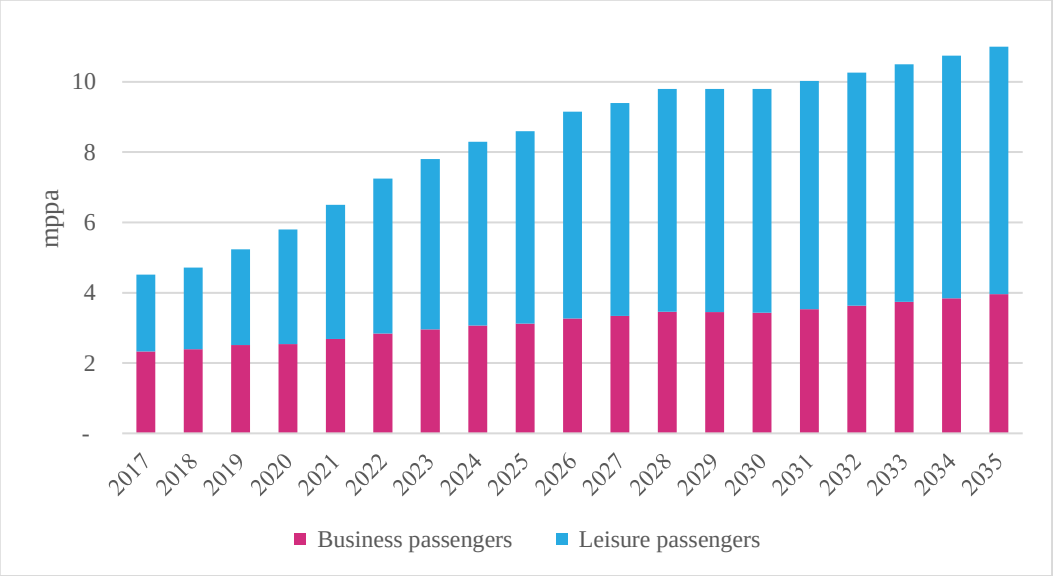


Figure 24 Forecast business and leisure passengers (mppa) (Source: York Aviation)

Further growth of the airport's passenger capacity will also continue to support domestic connectivity. It is expected that the share of passengers on domestic flights will increase at the expense of European passengers who see their share of total demand drop.

This therefore means there would be a greater share of domestic passengers than without growth beyond 2022, increasing from 25% to 27% in 2035, thereby strengthening the City Airport's significant role in providing high-quality domestic connectivity to places where road and rail alternatives are likely to be considerably slower.

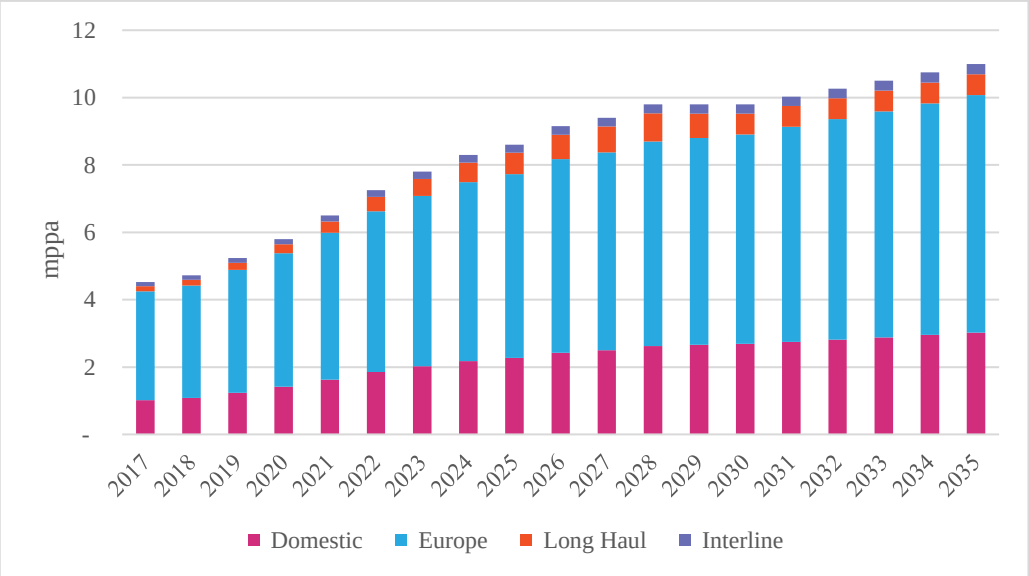


Figure 25: Number of passengers (mppa) at LCY per destination with CADP and the master plan (York Aviation)

Currently, links to Edinburgh and Belfast support domestic connectivity for the financial services sector, whilst Glasgow provides a key link for media and creative industries as well as manufacturing. The Airport plays an important role in providing links to the Crown Dependencies of Jersey and the Isle of Man, contributing both to the economic activity and vitality of these islands. These domestic links also provide high-frequency services which are attractive to inbound tourists from across the UK, as well as serving the needs of the population around the Airport, providing easy access to visit friends and relatives.

5.1.2 Direct employment

The airport today (in 2018) employs 2,200 people, equivalent to approximately 2,000 Full-Time equivalent (FTE) jobs. By 2035, the airport could generate approximately 1,400 direct jobs (FTE), 59% more compared to CADP. Compared to 2018, it will bring 1,800 additional FTE jobs (equivalent to 2,100 new onsite jobs) by 2035.

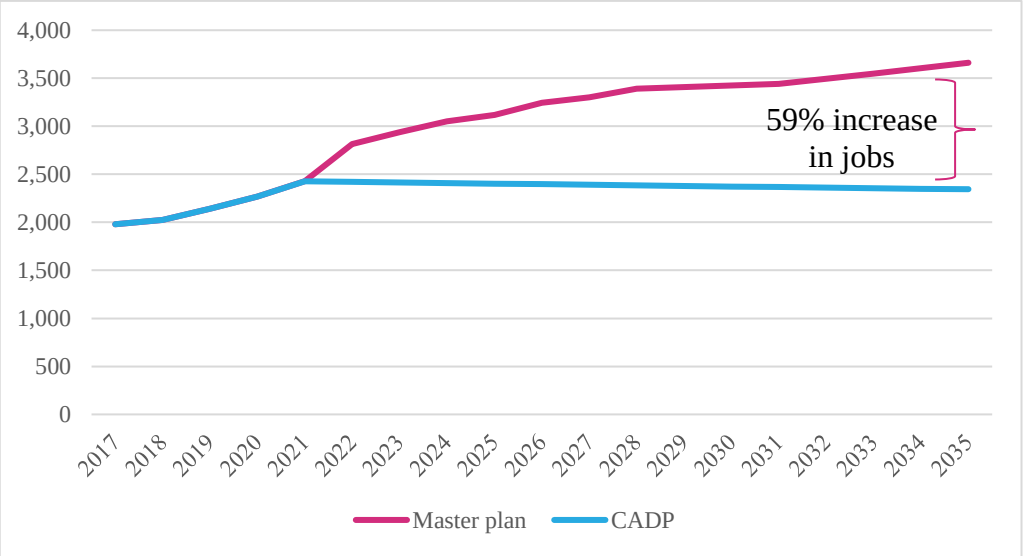


Figure 26 Direct forecast employment at LCY (Annual FTE) (Source: York Aviation)

In terms of which employment sector is expected to grow the most, retail employment shows the highest projected increase as it is expected to nearly double between 2021 (before the implementation of the proposals) and 2035. After retail, airline and operations are expected to grow significantly.

Table 6 Forecast direct employment (FTE) for the 2035 growth scenario (Source: York Aviation)

Forecast direct FTE jobs	2018	2021	2035	2021-2035 change%
Retail	193	233	464	99%
Airline	365	491	696	42%
Operations	1,189	1,554	2,193	41%
Other Concession	34	47	51	7%
Administration	98	100	110	10%
Contractor	153	258	283	10%
Total	**2,032**	**2,683**	**3,797**	**42%**

In summary, the assumed growth to accommodate up to 11 mppa will lead to a transformation of LCY with an increased growth in leisure passengers and retail, generating a wide range of employment opportunities and attracting a wider mix of passengers. A 69% growth in passengers is expected with respect to what CADP will be able to accommodate, leading to 60% increase in direct jobs at the airport by 2035. The proposals therefore will allow the airport to grow significantly meeting forecast demand for air travel in London.

6 The socio-economic impacts of the draft master plan

LCY is one of the two main private employers in the borough of Newham and a key economic asset for London. Expanding capacity will have a considerable positive impact on the economy. After discussing how the draft master plan will fit in and contribute to both the city and the country's strategic economic development, this section estimates the economic impacts of implementing the draft master plan additional to those provided by CADP.

6.1 Alignment with policy objectives

The preferred project is aligned with the stated objectives of a range of key policy, strategy and planning documentation for aviation and economic growth in London and the UK. The following outlines the importance of aviation in securing the future of London and the wider UK's economic growth and international competitiveness:

- The Mayor's Economic Development Strategy for London (Draft for Consultation), Mayor of London, December 2017
- Aviation 2050, The future of UK aviation: a consultation, HM Government, December 2018
- The Mayor's Transport Strategy, Mayor of London, March 2018
- The Draft London Plan, Mayor of London, December 2017
- London Infrastructure Plan (LIP) 2050, Mayor of London, 2015 Update
- Royal Docks Enterprise Zone Delivery Plan 2018/19 to 2022/23, Greater London Authority, August 2018
- Aviation Policy Framework, Secretary of State for Transport, March 2013
- A tourism vision for London, London and Partners, 2017
- Newham 2027; Newham's Local Plan - The core strategy, Newham Council January 2012
- The Royal Docks Vision (L BILLION/LDA), Mayor of London and Mayor of Newham, July 2010

Several of these documents including the Mayor's Economic Strategy for London 2017 and London Infrastructure Plan 2050 highlight the need for effective and targeted investment in domestic and international connectivity. The Aviation Policy Framework promotes making use of existing capacity to improve performance while the LIP 2050 is opposed to expansion at Heathrow. These policy documents also highlight the criticality of ensuring that expansion in aviation capacity supports positive environmental and social outcomes.

Refer to Appendix A for a more detailed analysis of these policies and how the draft master plan would fit with them.

6.2 Local economic impacts

The proposals will impact on local economic conditions by allowing more passenger flights to and from London from a wider range of destinations. As has already been highlighted, this will lead to a range of positive economic impacts; some of which will be experienced locally.

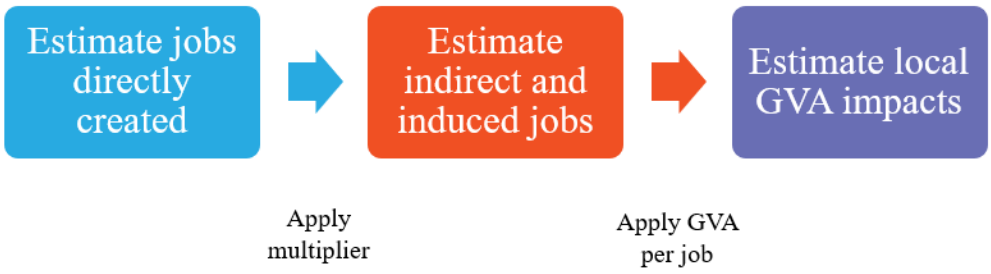
6.2.1 Employment impacts

Impacts additional to CADP in 2035

With access to quality employment being one of the key objectives of the Mayor of London, employment impacts are an important consideration when assessing investments at LCY. LCY is located within a growing area of London in the process of regeneration and so far has played a key role in accelerating this process[82]. Accommodating further growth at the airport will create opportunities for local employment through direct and indirect supply chain effects resulting from increased economic activity at the airport. These would occur directly through increased activity relating to airport operations (as detailed earlier in this chapter), as well as indirectly through LCY's supply chain. As a result of the increase in direct and indirect jobs, further employment would also be induced.

The purpose of this analysis is to quantify the extent to which the preferred scheme promotes employment and economic growth in the local area over and above what is already approved (CADP). The total value of this new employment in jobs and GVA terms is expected to be mostly additional at a local level[83].

Using the following approach and assumptions, we have estimated the total number of jobs and corresponding GVA contribution created locally.



The total estimated impact of the preferred project in terms of direct, indirect and induced employment is summarised in the table below. Different scenarios have been considered to reflect the uncertainty around supply chain impacts in 2035. For our central scenario, we expect the proposals to result in an additional 1,977 jobs, leading to an increase in GVA of £160 million per annum.

[82] (York Aviation, 2011)
[83] Current UK Government appraisal guidance assumes no net additionality of jobs when considered at a national level. That is, there is assumed to be a diversion of jobs from existing employment demanded during the project's construction and operational phases.

Table 7: Annual employment and GVA impacts in 2035 (additional to a do-nothing scenario)

Impact	FTE jobs	GVA (£ million, 2019 prices)
Direct job creation at LCY	1,412	105
Indirect job	Low: 141 Central: 282 High: 565	Low: 14 Central: 28 High: 55
Induced job creation	Low: 141 Central: 282 High: 565	Low: 14 Central: 28 High: 55
TOTAL	Low: 1,694 Central: 1,977 High: 2,542	Low: 133 Central: 160 High: 215

Many of the new jobs generated directly or indirectly by the project will be filled by workers residing in the local area in line with current employment patterns and the airport's targets – currently 65% of airport employment is filled by local workers. The airport will develop targets for local employment following the example of CADP – which (for October 2017) aim for at least 40% of new recruits for on-site employment to be residents of Newham, and at least 70% to be filled by residents within the Local Area.

The wider effects of both direct and indirect generated employment will be significant for the Newham area, which experiences higher than average rates of unemployment. Overall, both employment and GVA impacts are expected to be additional at a local level, probably as a result of the displacement of jobs both within and outside London, and unlikely to be additional at a national level.

In terms of the distribution of impacts, as the supply chain analysis in Section 3 showed, the benefits of expanding airport capacity are likely to spread over the country through supply chain effects, as LCY currently draws on suppliers across the country to obtain the goods and services they need to operate.

Impacts compared to today (2018)

In addition to estimating the economic impact of the proposals over and above CADP in 2035, we have also analysed the number of jobs and economic impact that further growth would deliver compared to today. This enables us to picture how the airport would impact the local economy over time.

Compared to 2018, our analysis shows the following employment and GVA impacts:

- An additional 1,800 new direct FTE jobs (equivalent to 2,100 jobs) at the Airport and around 700 new indirect and induced FTE jobs in 2035, excluding construction jobs (2,500 FTE jobs in total)

- An additional £210 million in annual economic output (GVA) - £132 million in GVA generated through new direct employment in 2035 and another £76[84] million in GVA from indirect and induced employment.

This shows a growth in employment of over 85% by 2035 compared to today[85], expanding employment across all sectors and requiring a wide variety of skills.

6.2.2 Local regeneration and inward investment

Regeneration encompasses various changes in the economic and social characteristics of an area as a result of inward investment. It is associated with improvements in business activity and competition, skills development and employment earnings. It can also have an impact on land values, which creates additional incentives for developers to invest in the area.

Investment in high quality transportation infrastructure and services can contribute to improved perceptions of an area's accessibility, and therefore the potential for exploiting economic opportunity.

The proposals will continue to promote increasing rates of inward investment and economic regeneration. Overall, acting as an international gateway to east London, further expansion of LCY's passenger capacity will help promote this part of London.

The location of LCY is conducive to the quick and efficient access to markets for businesses located in the growing enterprise areas to the East of London. A thriving, active and accessible city airport is an important contributor to business innovation and investment. Research[86] confirms the relationship between high quality international transportation nodes and business productivity, with international connectivity often cited as an influence on companies' decisions of where to locate headquarters and key offices.

[84] Numbers may not add up due to rounding
[85] Over 60% compared to the forecast number of direct jobs over and above CADP in 2035
[86] (Airports Commission, 2015)

A survey of businesses regarding the current expansion of LCY (CADP) undertaken in 2016 demonstrated the strong support for expanding the airport.

A majority of business decision-makers in the major London business districts supported LCY's proposals for expansion (73%) at the time, with this support being generally consistent across business sector and size. Businesses located closer to the airport in Canary Wharf or east London were more likely to support the proposals (77%) than those based further away in West London or Westminster (63%).

More than half of business decision-makers in central London business districts said that more aviation capacity will be needed in the short-term in London before 2029 (55%). Multi-national corporations with operations overseas were more likely to say the expansion will have a positive impact on their business than SMEs.

Businesses interviewed regarding the wider economic benefits to London and the UK (83%) quoted greater opportunities for foreign inward investment (78%) and the creation of new jobs of the airport (77%) as the most important to their business.

Figure 27 Key insights from LCY's Business Survey 2016

6.2.3 User Impacts

The improvement in airport operations and increased capacity during peak periods will reduce access costs for airlines resulting in reduced fares for new and existing users (consumer surplus).

The greater numbers of flights and destinations, together with the provision of more spare capacity should improve operational reliability at LCY, will result in a reduction in generalised journey times for air passengers. The proposals will therefore result in more efficient journeys for existing users of London City Airport and induce new trips that otherwise would not have been made.

The benefits for users at the airport have been estimated by York Aviation considering how passengers would choose to travel if they were forced to use the next best airport option for their journey. CAA Passenger Survey data has been used to examine journey patterns within the LCY catchment area and the relative popularity of alternate options. This has been combined with an analysis of access times and distances from the different parts of the catchment area to London City and the other relevant airports: the amount of time saved and the reduced distances travelled by using LCY rather than the next best alternative represent benefits to users. These benefits have then been monetised using values of time taken from the Airports Commission Final Report and WebTAG guidance on surface access costs.

The estimated impacts from journey time savings and surface access improvements are £58 million and £10 million respectively, leading to total user impacts of £68 million (2019 prices) in 2035[87].

6.3 Wider economic impacts (London and UK economies)

LCY provides key international connectivity that allows businesses to access markets and operate more efficiently. A capacity expansion at LCY is likely to generate significant productivity impacts for London and UK businesses.

This section explores a range of wider economic impacts upon the London and UK economy, including:

- Productivity from increased trade
- Agglomeration and clustering impacts
- Tax take from move to more productive jobs
- Increased output from imperfect competition

As these impacts result from increases in productivity, they are considered to be additional at the UK level. That is, as a result of the project, benefits beyond the UK's economic baseline are able to be realised.

6.3.1 Productivity from increased trade

The increased connectivity provided through expanded airport capacity results in better access to foreign markets, facilitating trade between the UK and the rest of the world, leading to increased trade and productivity benefits from increased trade.

The productivity impact stems from the fact that British exports encourage knowledge and technology transfers between international businesses and contribute to increased domestic production for global markets through economies of scale. Imports increase competition amongst businesses and provide access to a greater variety or goods and services, also serving to promote the efficient use of resources throughout supply chains. These impacts serve to raise baseline productivity in trade-related sectors. This is particularly important for London, as a net exporter of goods and services.

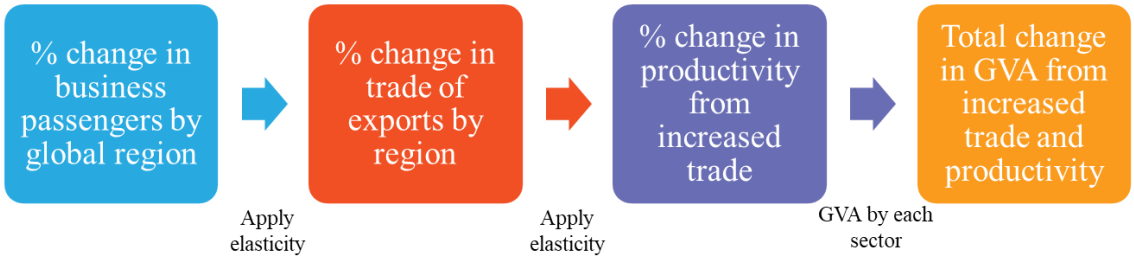
Although we do not expect a net increase in business passengers resulting from the proposals at a national level, it is expected that, at a London level, the increase in net passengers would range from 0.1% to 0.6%. We have therefore used these estimates to derive a productivity impact for the London region.

As mentioned in Section 3, the strength of the London economy stems to a large extent from the high levels of productivity and output generated by sectors that are highly dependent on international connectivity. A local increase in business

[87] Analysis provided by York Aviation, updated to 2019 prices. Numbers may not add up due to rounding.

passengers is therefore likely to lead to productivity impacts from improved access to international markets.

Using an approach developed by the Airports Commission, we have calculated the impacts following the steps below. The detailed assumptions and inputs used in the calculations are presented below. More details on the parameters used are presented in Appendix 1.



The results show that impact of increasing passenger capacity on trade, including productivity impacts from increased trade, is estimated to be in the range of £12 million to £71 million per year in 2035 (2019 prices). This figure provides an estimate of the total (net additional) impact that the project would have on London. We note that this impact may not be considered additional at a national level.

6.3.2 Productivity and economic growth

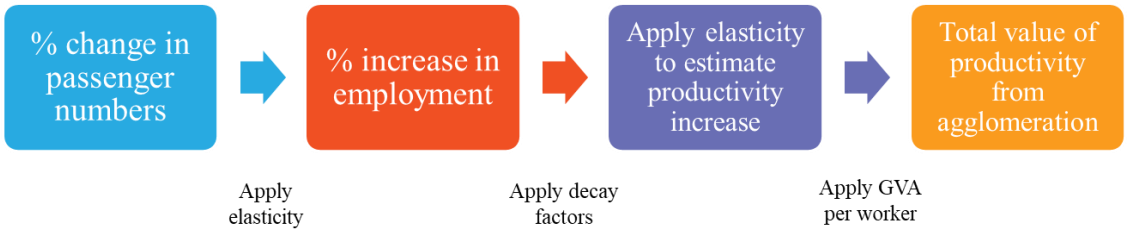
Agglomeration effects are driven by the extent of spatial clustering of businesses. This can take place as a result of different factors including improvements in connectivity. There is a considerable body of evidence to suggest that agglomeration leads to improvements in productivity, as firms are able to access markets more easily and facilitate innovation and knowledge spillovers by being brought closer together.

In the case of LCY, increased passenger capacity at the airport is expected contribute to increased agglomeration as firms move closer to the catchment area of the airport. This in turn leads to higher productivity. This effect is well documented in the Airports Commission analysis work. Such benefits can be considered net additional at a UK level in UK government appraisal guidance.

The enhanced connectivity to be delivered through a master plan will contribute to enhanced agglomeration in key business districts such as Canary Wharf and the Royal Docks, as well as growing developments to the East.

To estimate the agglomeration impacts resulting from the proposals, we follow the methodology set out by the Department for Transport's (DfT) WebTAG guidance[88], which was adapted to the aviation context by the Airports Commission.

[88] DfT (2018). WebTAG Unit A2.4



Based on this analysis, we estimate that the proposals would lead to £181 million in productivity benefits in 2035 (2019 prices, undiscounted) resulting from agglomeration compared to a scenario where no further capacity expansion and only CADP is implemented.

As shown in Section 4, significant growth in business districts is expected in east London. Providing further international connectivity to this part of the city can further accelerate the growth of businesses in an area showing low job density compared to central parts of London.

In addition to productivity impacts from agglomeration, there is a small impact on economic growth related to imperfect competition. Imperfect competition occurs when marginal units are produced at a lower cost than the price of a good or service. A reduction in input costs (i.e. air transportation) resulting from the project reduces the cost of production and enables businesses to increase output. As the direct benefits calculation assumes perfect competition, under those circumstances these impacts are captured through direct benefits to consumers. However, these benefits are not captured in direct benefit calculations where markets are assumed to be imperfectly competitive. DfT guidance recommends that these impacts are included to reflect the increased output resulting from reduced travel costs

Research by DfT indicates that the impact of this is estimated to be 10% of direct UK business output benefits resulting from higher transport economic efficiency and reduced delays. This value should be added to the value of business time savings and changes to the reliability of business travel[89].

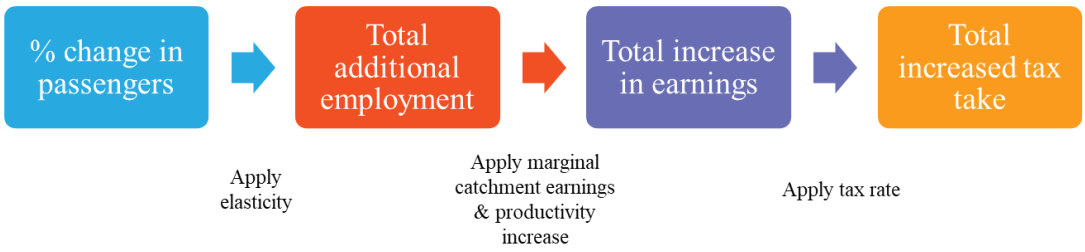
Taking 10% of the business user benefits estimated by York Aviation and adding these to the productivity benefits from agglomeration, we obtain a total benefit of £190 million in 2035 from productivity and economic growth.

6.3.3 Tax impact from more productive jobs

The increases in agglomeration are likely to attract workers as the increases in productivity resulting from agglomeration effects lead to higher wages. This will have a positive impact on tax revenue, which is not captured in the user benefits.

To estimate the tax impact resulting from people moving to more productive jobs, we follow the steps set out below.

[89] (Department for Transport, 2005)



Applying a 30% tax rate[90] to the additional earnings estimated, we estimate an increase in tax revenue of £95 million in 2035 (2019 prices, undiscounted).

6.3.4 Impact on business rates

In addition to the quantified economic impacts resulting from increased business productivity and output, the growth to 2035 could result in increased business rates income. This is important as it will lead to additional income for the borough of Newham and Greater London Authority.

Currently, LCY contributes over £1.5 million in business rates every year, based on a rateable value of over £3 million pounds including the airport and other facilities located at the airport. This is detailed in the table below.

Table 8 LCY business rates[91]

Address	Current rateable value (£)	Business rate spend[92]
Exec Air Cargo Services Kgv House London City Airport	£33,000	£16,269
Airport, London City Airport, King George V Dock	£2,510,000	£1,237,430
London City Airport Kgv House, London City Airport	£14,000	£6,902
Radio Mast Cs4922 On Roof Of Terminal Building, London City Airport, King George V Dock,	£23,750	£11,709
Radio Mast 90105 On Roof Of Terminal Building, London City Airport, King George V Dock,	£22,750	£11,216
HM Immigration Terminal Building, London City Airport	£147,000	£72,471
HM Revenue & Customs Terminal Building, London City Airport	£151,000	£74,443
HM Met Police Terminal Building, London City Airport,	£50,500	£24,897
Kgs: Bs101 Blue Shed London City Airport,	£2,950	£1,454
Building Tao 021, West Pier, London City Airport,	£44,000	£21,692
Tmuk & Hutchison (e0099) London City Airport	£22,000	£10,846
Vodafone (34008), London City Airport, King George V Dock,	£16,250	£8,011
Costa Coffee At DLR Station, London City Airport	£31,000	£15,283
O2 (30780) London City Airport Terminal Building	£22,000	£10,846
Total	**£3,090,200**	**£1,523,469**

[90] In line with WebTAG guidance.
[91] (Valuation Office Agency, 2019)
[92] Estimated based on 2018/19 business rate multiplier of 49.3p.

The proposals will have a significant impact on business rate income, which is estimated based on the amount of commercial space.

With increased capacity, it is estimated that the commercial space will go up from 7,250 sqm of commercial area within the terminal, to 9,240 sqm by 2035. The approximate 2,000 squares metres that will be added to the airport are estimated to generate over £200,000 every year in additional business rate income every year from 2035 (in 2019 prices). This is a conservative estimate based on average rates in the borough of Newham, as the rates for the airport are not available publicly.

6.3.5 Tourism impacts

A benefit of expanding capacity at LCY is the attraction of international tourists who, in the absence of further capacity, would otherwise not have travelled to London.
The Airports Commission analysis framework states that tourism impacts are one of the benefits generated by increased airport capacity.

London tourism is a growing sector expected to increase in the long term, contributing to the London's economy. Demand for London accommodation is projected to reach 196.4 million nights by 2041 from 138.5 million visitor nights in 2015. This is driven by a 42.9 million increase in international visitor nights, and a 15.0 million increase in domestic visitor nights, according to research by the Greater London Authority (GLA).

It is forecast that the number of foreign passengers travelling for leisure purposes would double from 0.77 in 2019 to 1.47 mppa by 2035. Analysis by York Aviation has revealed that this growth is likely to result in a small proportion of additional passengers at a London level. In addition to this, the overall share of leisure passengers is expected to increase compared to the current mix of business and leisure passengers that LCY serves. This indicates that the master plan is likely to have a positive impact on tourism.

The capacity expansion and improvement of services offered at LCY are likely to promote east London as a tourist destination. With an expanding cultural offer, east London is attracting visitors and developing into a new area of interest for international tourists. This currently includes new and old tourist and visitor attractions such as the Olympic Park, ExCel Exhibition Centre, Greenwich Observatory, and the district of Shoreditch amongst others, but is set to expand. For example, the Victoria and Albert Museum (V&A), with their V&A east project will create two interconnected sites in Queen Elizabeth Olympic Park, London – a brand-new museum at Stratford Waterfront, and a new collection and research centre at Here East. Opening in 2023, V&A East will also host a unique and unprecedented partnership between the V&A and the Smithsonian Institution – the largest museum and research complex in the world. This signals an increasing interest in this area.

At a national level however, the traffic forecasts suggest that there will also be an increase in outbound UK passengers, which may lead to increased spending abroad. Therefore, while it is likely that the proposals will have a positive local

impact on east London and London as a whole, it is difficult to estimate the net impact on UK economic growth.

6.4 Wider social and environmental impacts

Social impacts in the context of the proposals relate to issues in the distribution of project benefits. Environmental impacts focus on the change in adverse operational impacts between the project case and the do-minimum baseline.

6.4.1 Distributional impacts

As outlined in detail in Chapter 4, the adverse impacts of increased air fares and reduced accessibility are not distributed equally amongst the population. The relative impact of congestion is most severe for price-sensitive leisure travellers, who tend to have lower incomes or may otherwise belong to more disadvantaged demographic groups.

An overall reduction in the cost of travel will reduce the number of persons within the catchment area who would otherwise be excluded from accessing affordable air transportation.

6.4.2 Environmental impacts

The project's air quality assessment undertaken by Arup's Environment team found that NO2, PM10 and PM2.5 concentrations will decrease in 2035 compared to 2017. The analysis also shows that there are no exceedances predicted for annual mean NO2, PM10 and PM2.5 concentrations at any receptor location. From a noise perspective, analysis commissioned by LCY shows that the growth in air transport movements will also be accommodated within existing noise contour limits.

This means that from an air quality and noise perspective the growth enabled by the proposals will be accommodated within current environmental constraints.

6.5 Impact summary

The following table summarises the quantified economic impacts resulting from the proposed increase in capacity.

In summary, the assessment undertaken as part of this report shows that the proposal is likely to generate by 2035 the following annual benefits (2019 prices):

- £160 million in GVA from direct, indirect and induced employment created on site and off site at the airport
- £68 million in user benefits
- £358 million in wider economic impacts

Adding all these benefits together shows a total impact of up to £586 million[93]. Adding this benefit to the expected impact of the airport after the implementation

[93] It is possible that adding all the benefits may lead to double counting.

of CADP (£1.5bn), it is expected that LCY will contribute £2bn annually to the UK economy by 2035.

In addition to annual benefits in 2035, when the master plan is expected to be fully implemented, we also present the present value (PV) of benefits over a 60-year period, the standard appraisal period used in the UK. Benefits have been discounted using a discount rate of 3.5% for the first 30 years and 3% subsequently in line with UK appraisal guidance. All impacts are presented in 2019 prices.

Table 9: Estimated economic impact of the master plan

Impact (£ million, 2019 prices)	Annual benefit in 2035 (central scenario), undiscounted	PV (60 years, 2035-2094)
User benefits – journey time savings	58	831
User benefits – surface access benefits	10	148
Total user benefits	**68**	**980**
GVA from direct employment	105	1,657
GVA from indirect employment	28	436
GVA from induced employment	28	436
Total local impacts	**160**	**2,521**
Trade impacts (high)	73	1,054
Productivity and economic growth	190	2,628
Move to more productive jobs	95	1,382
Total wider economic impacts high	**358**	**5,135**
Total	**586**	**8,636**

From a qualitative perspective, the master plan is expected to have a positive impact on tourism, inward investment and overall regeneration of east London, while keeping environmental impacts within acceptable levels.

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Appendix A

Methodology and assessment of relevant policy documents

A1 Alignment with policy objectives

The following policy, strategy and planning documentation pertaining to London's economic development were reviewed in the context of LCY's master plan. The key messages, objectives and/or themes for each of these are outlined in the table below, alongside brief commentary outlining relevance for the LCY master plan.

Document	Key points
Aviation 2050, The future of UK aviation: a consultation HM Government, December 2018	This document forms part of the final consultation phase on the policy proposals for the Aviation Strategy to 2050. The key themes are: • Build a global and connected Britain • Ensure aviation can grow sustainably • Support regional growth and connectivity • Enhance the passenger experience • Ensure a safe and secure way to travel • Support General Aviation • Encourage innovation and new technology The document also outlines 'Partnerships for sustainable growth' in the aviation sector. These are: • Future growth; • Air Quality; • Managing noise; • Modernising airspace for the future; • Efficiency; • Community engagement; • Tackling climate change Whilst LCY is not specifically discussed in depth, encompassing issues include: • Airspace: outdated infrastructure will struggle to keep pace with growing demand. The situation will deteriorate further in the coming years as demand for air travel continues to rise, resulting in delays for passengers of 30 minutes on every 1 in 3 flights by 2030 if no action is taken • Ensuring effective competition, with regards to the issue of few or a single airline dominating airports • A need to increase connectivity

The Mayor's Transport Strategy, Mayor of London, March 2018	*Key themes* • Inclusive, high quality and seamlessly integrated public transportation • Meeting the needs of a growing city • Developing and creating regional, national and international links The strategy also highlights the importance of improving public transport links to London's airports. It supports the further introduction of full-length and more frequent DLR services to London City airport, and acknowledges the importance of improving bus, coach, cycling and walking facilities in improving access to airports.
The Mayor's Economic Development Strategy for London (Draft for Consultation), Mayor of London, December 2017	*Key themes* • A fairer, more inclusive economy • Creating conditions for growth • Supporting London's sectors *Aims for London's economy in 2041:* • Healthier, happier lives • Living standards improving with real incomes growing year on year • A fairer and more inclusive economy • Access to quality employment • The most talented workforce in the world • A global leader in innovation and creativity • World capital for business, trade and investment • The best city in which to start and grow a business • More people walking, cycling and using public transport • One of the greenest, cleanest and most resource efficient economies in the world • London has the highest productivity among global cities *Relevance to and implications for the the master plan* • The Strategy's aims for London's economy in 2041 will be achieved through strong, inclusive economic growth. This will be achieved in part though effective and targeted investment in domestic and international connectivity. • The Strategy highlights London's need for better international connections and additional runway capacity. London's airports provide essential connectivity for trade, investment, tourism and employment. Capacity constraints create delays and reduce reliability, resulting in higher fares, fewer routes and comparatively less frequent flights.

	• However, the Strategy promotes the need for additional capacity which is balanced with environmental and social impacts (such as noise and air quality externalities).
The Draft London Plan, Mayor of London, December 2017	*Key aims for aviation growth in London* • Additional capacity is needed to meet London's passenger and freight needs; this is critical to London's continued prosperity and international competitiveness • Environmental and climate change impacts resulting from aviation activities must be fully acknowledged, and these external costs met • Benefits of regulatory and technology improvements should be fairly shared with affected communities • Better use should be made of existing airport capacity • Surface transport networks must be able to accommodate additional trips alongside forecast background growth • Better coordination between airports, airlines, Transport for London and other transport providers should be pursued to promote seamless and integrated connectivity.
London Infrastructure Plan 2050, Mayor of London 2015 Update	*Key messages* The following excerpts reveal the importance of strong aviation links (including Heathrow and other London airports) for London's economic growth: • *"There is strong evidence that the very high employment densities in Central London are a result of powerful agglomeration economies. This agglomeration effect depends on the 'hyper connectivity' Central London enjoys at the heart of the rail system and in its access to a leading international hub airport"* (Ch 6, pg. 19) • *"London's international links remain vitally important to its economy which is highly dependent on its openness to the global economy. The Mayor firmly believes London needs a new hub airport with sufficient capacity to serve long term growth and is opposed to expansion at Heathrow".* (Ch 6. Pg. 20) • *"The value to London and the surrounding regions of maintaining a leading global hub airport was recognised in particular by local authorities in the broader region surrounding London. These stakeholders identified investment in airports as their second highest priority (after rail)".* (Ch 6. Pg. 20)

Royal Docks Enterprise Zone Delivery Plan 2018/19 to 2022/23, Greater London Authority, August 2018	*Key themes* The strategic objectives of the Delivery Plan are: • Place: Transforming the Royal Docks into a modern 'Great Estate' for London • Connectivity: Boosting capacity and connectivity make Royal Docks one of the most accessible places in London to do business • Economy: Supporting diverse growth and its reputation as an international centre for innovation, enterprise and trade • Activation: Enhancing liveability by nurturing culture and events • Promotion: Drawing business, people and visitors into the area through distinctive marketing and investment. LCY is identified as one of the three key gateways to the Royal Docks, which acts as a driver of transformation in the area. Each of these gateways are identified as being a priority for intervention within the Delivery Plan, with investment focussed on enhancing the overall environment, offer and user experience.
Aviation Policy Framework, Secretary of State for Transport, March 2013	The Policy framework sets out the government's policy to allow the aviation sector to continue to make a significant contribution to economic growth across the country. *Key themes* • Supporting growth and the benefits of aviation • Climate change • Noise and local environment • Working together • Planning *Relevance to and implications for the master plan* The Policy highlights aviation's contribution to connectivity and economic growth, noting that London's airports will exceed capacity as soon as 2025. In the short-term, it promotes making best use of existing capacity to improve performance, resilience and the passenger experience. In the longer-term, the capacity challenge at London's airports will necessitate a consistent and coordinated planning to ensure the UK's excellent connectivity is maintained in over time.
A tourism vision for London London and Partners 2017	*Key themes* Tourism is vital for London, employing 700,000 people and contributing £36 billion a year to the economy. The key aims are to improve: • pre-visit promotion

	• the visitor experience and information • infrastructure and amenities • development of infrastructure for business visits and events *Relevant barriers to tourism growth* • Increasing aviation capacity is key to meet forecasts Whilst not directly mentioned, the expansion of LCY would contribute to the development of each of these key aims for London's tourism growth. The new cultural quarter on the Queen Elizabeth Park is highlighted as a key tourist attraction, which is directly supported by trips through LCY.
Newham 2027; Newham's Local Plan - The core strategy, Newham Council January 2012	The Newham 2027 Local Plan outlines the spatial boundary of the area's 'Arc of Opportunity', which stretches from Stratford in the north down, and eastward to encompass the Royal Docks and LCY. The borough has several challenges, including higher levels of deprivation and worklessness, low household incomes and a higher churn of people within the borough. However, the Royal Docks is ideally positioned as a business and leisure destination along the waterfront with the expanding ExCeL estate, the growing University of East London, new investment by Siemens and the proximity to Canary Wharf and the O2 Centre.
The Royal Docks Vision (LBN/LDA), Mayor of London and Mayor of Newham, July 2010	*Relevant objectives* The Vision's aim is to redefine the Royal Docks as a place with its own centre of gravity and identity, with clusters of activity blending educational centres of excellence, hi-technology and first-class office accommodation. It is also home to the global market place of ExCeL London City Airport, linked into the City and Canary Wharf, and Stratford Metropolitan. In doing so it is well-placed to become an area of *national economic importance in new economic sectors* Specifically, the Vision would see the Royal Docks: • as an expanded tourist and visitor economy • as part of a wider a *Green Enterprise District* across east London along the north bank of the Thames (managed through a separate strategy) It highlights the importance of LCY as a major employer, but also that its operation impacts upon the local environment and constrains some types of development in the Public Safety Zone to the east and west of the runway.

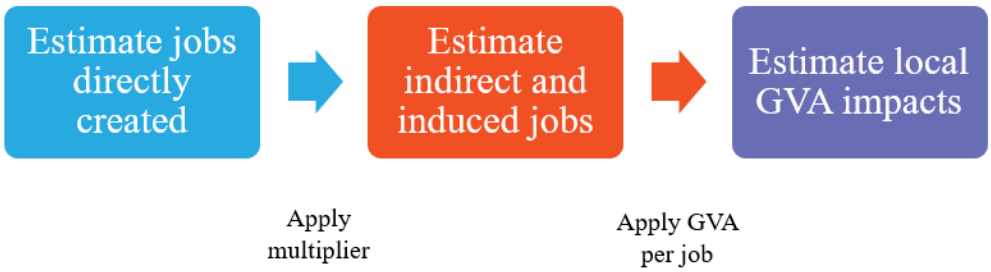
A2 Methodology

A2.1 Employment impacts

The purpose of this analysis is to quantify the extent to which the preferred scheme promotes employment and economic growth in the local area.

Current UK Government appraisal guidance assumes no net additionality of jobs when considered at a national level. That is, there is assumed to be a diversion of jobs from existing employment demanded during the project's construction and operational phases. However, the total value of this new employment in jobs and GVA terms is expected to be mostly additional at a local level.

Using the following approach and assumptions, we have estimated the total number of jobs and corresponding GVA contribution created locally.



1. Parameters

The Airports Commission[94] recognises the challenges in estimating an accurate multiplier to estimate indirect and induced effects. The multiplier effect of creating direct jobs onsite at the airport depends on how productive the airport is and the supply chain structure of the airport. This is likely to vary in the future, particularly as automation is increasingly adopted across different employment sectors.

In order to find appropriate multipliers for the assessment of local employment impacts, we have undertaken a review of different studies to find a suitable range.

Table 10 shows estimated multipliers for other UK airports based on benchmarking of different studies looking at the local economic impacts of the master plan. Overall these studies are broadly consistent, showing a multiplier between of 1.1 and 1.7.

Table 10: Other estimates of aviation employment multipliers[95]

Location/airport	Multiplier type	Multiplier
Ayrshire	Indirect + induced (regional / national)	1.2 / 1.7
Glasgow	Indirect + induced	1.95

[94] (Airports Commission, 2014)
[95] (SQW Consulting, 2008) (Glasgow Airport, 2011), (York Aviation, 2009) and (Belfast International Airport, 2011) (Glasgow Airport, 2008)

Edinburgh	Indirect / Induced	1.4/1.6
Belfast	Indirect + induced	1.1
Luton[96]	Indirect + Induced	2.9
Gatwick[97]	Indirect / Induced	1.07 / 1.08

In addition to looking at overall multipliers based on a benchmarking exercise, we have also looked at the ONS Type 1 employment multipliers[98] for the sectors where employment will be created. These are shown in the table below:

Table 11 ONS employment multipliers for sectors relevant to onsite airport activity

Sector	ONS indirect employment multiplier
Air transport	2.16
Retail Trade, Except of Motor Vehicles and Motorcycles	1.36
Warehousing and support activities for transportation	1.95
Food and beverage Service Activities	1.25
Office administrative, office support and other business support activities	1.46

Based on this review, we have chosen a range of multipliers based on low, central and high multiplier scenarios to derive the indirect and induced employment that will be generated locally as a result of the preferred masterplan. These are shown on Table 12.

Table 12 Employment multipliers

Impact type	Low	Central	High
Indirect jobs	1.1	1.2	1.4
Induced jobs	1.1	1.2	1.4
Combined indirect and induced	1.21	1.42	1.96

2. Estimate the jobs directly created at the airport

The number of direct jobs to be added onsite through the implementation of the master plan has been estimated by York Aviation, as detailed in Section 5.

Based on this analysis, by 2035, the airport is expected to add 1,318 direct jobs onsite as a result of the preferred master plan.

3. Estimate the indirect and induced jobs created

[96] (Oxford Economics, 2015)
[97] (Airports Commission, 2014)
[98] (Office for National Statistics, 2018)

Using the multipliers listed above and the direct employment at the airport, we estimate that the additional number of jobs that would be created at the airport from indirect and induced employment impacts is likely to be between 264 and 1,054, with our central scenario forecasting 527 additional indirect and induced jobs.

4. **Multiply total new jobs by a relevant measure of GVA per job to obtain local GVA impacts**

To obtain the impact on GVA from the direct, indirect and induced jobs created at a local level through the implementation of the master plan of the airport, we have multiplied the number of jobs estimated by the average GVA per job in the local area (Hackney and Newham). The results show the resulting GVA impact from direct, indirect and induced jobs generated as a result of the implementation of the master plan is likely to between £117 and £190 million.

A2.2 GVA from visitor spending

To estimate the GVA impact from visitor spending, we have taken the number of foreign business and leisure passengers and divided this by two to obtain the number of visitors. We then multiply this by the average spending by visitor obtained from analysis of Visit Britain data from 2018[99] on air passengers by leisure and business purposes separately, focusing on European destinations that LCY currently serves. We estimate that the average spending per visitor is £464 and £569 for leisure and business passengers respectively.

To obtain the GVA impact of these spending impacts, we multiply total spending in a given year by 40%, a factor reflecting the ratio of GVA to spending in the tourism sector estimated by London and Partners (2016)[100].

Finally, to obtain the indirect and induced impacts, we multiply the direct GVA impact by a Type II multiplier of 1.8, estimated by Visit Britain for the tourism economy in the UK.

A2.3 Business passengers time savings and Air Passenger Duty

Productivity benefits for business passengers in the form of time savings and Air Passenger Duty contributions by LCY have been estimated by taking the benefits estimated by York Aviation in 2008 and reported in their 2011 study and updating these based on the ratio of passengers in 2019 to the passenger sin 2008. These benefits have also been updated to 2019 prices.

[99] http://www.visitbritain.org/latest-quarterly-data-area
[100] London and Partners (2016), The impact of tourism on London's economy

A2.4 Wider economic impacts (London and UK economies)

LCY airport provides key international connectivity that allows businesses to access markets and operate more efficiently. The preferred master plan to expand LCY is likely to generate significant productivity impacts for London and UK businesses.

This section explores a range of wider economic impacts upon the London and UK economy, including:

1. Productivity from increased trade
2. Agglomeration and clustering impacts
3. Tax take from move to more productive jobs
4. Increased output from imperfect competition

As these impacts result from increases in productivity, they are considered to be additional at the UK level. That is, as a result of the project, benefits beyond the UK's economic baseline are able to be realised.

A2.4.1 Productivity from increased trade

The increased connectivity provided through expanded airport capacity results in better access to foreign markets, facilitating trade between the UK and the rest of the world, leading to increased trade and productivity benefits from increased trade.

The productivity impact stems from the fact that British exports encourage knowledge and technology transfers between international businesses and contribute to increased domestic production for global markets through economies of scale. Imports increase competition amongst businesses and provide access to a greater variety or goods and services, also serving to promote the efficient use of resources throughout supply chains. These impacts serve to raise baseline productivity in trade-related sectors. This is particularly important for London, as a net exporter of goods and services.

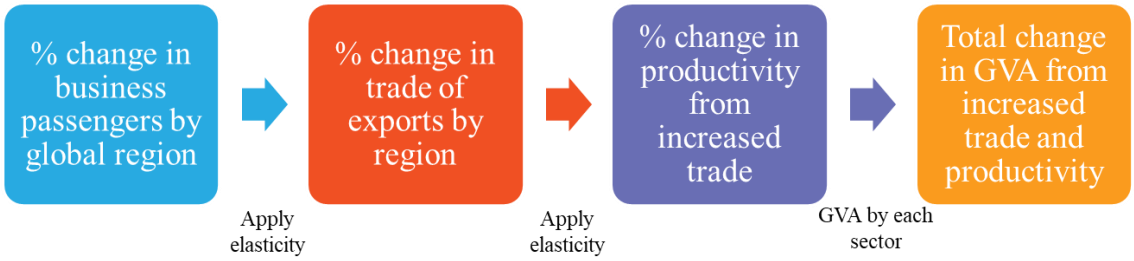
The Airports Commission developed an approach to estimating the trade impacts and productivity benefits from increased trade. According to this approach, these benefits are driven by a net increase in business passengers to the UK. However, in this case, it is unlikely that the preferred master plan will lead to a net increase in business passengers at a national level[101], which suggests the change in trade and resulting productivity impacts would be neutral.

Although we do not expect a net increase in business passengers resulting from the preferred master plan option, it is expected that, at a London level, the increase in net passengers would range from 0.1% to 0.6%. We have therefore used these estimates to derive a productivity impact for the London region.

[101] Qualitative analysis by York Aviation

As mentioned in Section 3, the strength of the London economy stems to a large extent from the high levels of productivity and output generated by sectors that are highly dependent on international connectivity. A local increase in business passengers is therefore likely to lead to productivity impacts from improved access to international markets.

Using the approach developed by the Airports Commission, we have calculated the impacts following the steps below. The detailed assumptions and inputs used in the calculations are presented below.



1. Parameters

The following table outlines the inputs used in estimating the productivity impacts which may result from increased trade as a result of the project.

Table 13: Parameters for estimating productivity impacts from increased trade

Parameter	Value	Source
% Change in business passengers in London	0.1%-0.6%	York Aviation estimates
Trade Elasticities (Europe)	Export of goods: 0.256 Export of services: 0.248 Import of goods: 0.034 Import of services: 0.000	(Airports Commission, 2015), citing PwC research
GVA elasticity to trade (consumer, manufacturing and producer services)	0.1	(Airports Commission, 2015)

2. Estimate the difference in business passengers by global region between the project and do-nothing scenarios

The trade elasticities cited by the Airports Commission[102] estimate the impact of increased passenger flows on the imports and exports of goods and services between regions. Only exports have been considered in the analysis as the impact in increase in imports in considered to be negligible. In the interests of a

[102] (Airports Commission, 2015)

conservative analysis, it is assumed that all business passengers travel to or from Europe.

By multiplying the change in business passengers by the elasticities outlined in the parameters above, the change in trade was estimated to be in the range of 0.02%-0.15% for goods and 0.02%-0.15% for services at London level by 2035.

3. Estimate the increase in GVA from productivity increases

To obtain the total increase in GVA from increased productivity, we first apply the GVA elasticity to trade to the GVA of trading sectors (producer and consumer services). This gives us the GVA impact in percentage terms from increased productivity.

As outlined in the parameters table above, the applicable GVA elasticity to trade for consumer services, manufacturing and producer services is 0.1. Applying this elasticity, we obtain an increase in GVA of 0.002%-0.015% for goods and 0.002%-0.015% for services at London level by 2035.

4. Estimate the total change in GVA from increased trade

The final step is to apply the estimated percentage increases in GVA from both increases in trade and productivity to the baseline GVA of the exported sectors. To do this, we have used the current value of London's exports of goods and services and grown this in line with the trend observed since 2011 in terms of growth in exports, estimated to be 0.9% per year, to obtain a baseline trade value figure for 2035.

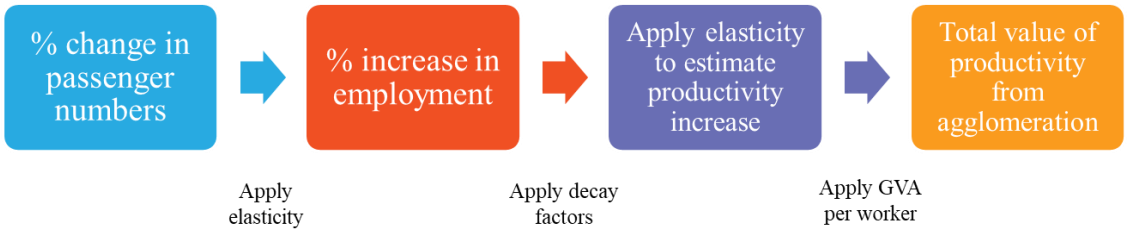
Summary

The results show that impact of the master plan on trade, including productivity impacts from increased trade, is estimated to be in the range of £12 million to £71 million per year in 2035 (2019 prices). This figure provides an estimate of the total (net additional) impact that the project would have on London. We note that this impact may not be considered additional at a national level.

A2.4.2 Productivity from agglomeration and clustering

To estimate the agglomeration impacts resulting from the preferred master plan, we follow the steps set out below. First, we estimate the increase in employment in the catchment area driven by the increase in air passengers. Then we estimate the productivity impacts in line with the methodology set out by the Department for Transport's (DfT) WebTAG guidance[103], following the approach developed by the Airports Commission.

[103] DfT (2018). WebTAG Unit A2.4



1. Parameters

The following parameters were adopted for the calculation of this impact.

Table 14: Parameters for estimating agglomeration and clustering impacts

Parameter	Value	Source
Elasticity of change in passenger numbers to employment	0.1	(Airports Commission, 2014) Central estimate
Decay factors (consumer and producer services)	Consumer: 1.818 Producer: 1.746	WebTAG Wider Impacts guidance (Unit A2)
Agglomeration elasticities (consumer and producer services)	Consumer: 0.024 Producer: 0.083	WebTAG Wider Impacts guidance (Unit A2)

In addition to these parameters, data employment and GDP per worker has been obtained from DfT's WebTAG guidance. Employment in producer services and consumer services by each borough within LCY's catchment area is shown in the table below / overleaf.

To undertake agglomeration calculations, it is necessary to obtain the generalised costs (GCs) of travel between the zones included in the analysis, in this case the local authorities within a 30-minute catchment. GCs refer to the total monetary and non-monetary costs of transportation, such as the time taken to travel from a set origin to a destination, waiting time, overcrowding and so forth.

In this case, the journey times between the central point of each local authority to the other local authorities within the catchment were obtained as a proxy for GCs. These were obtained using Arup's Movement Insight tool, which is able to record this information for a given time in the day. In this case, 8am was chosen as the time to record this information, reflecting peak time activity. The choice of time however was not considered to have a material impact on the results as the benefits in this case are driven by changes in employment as supposed to improvements in surface access connectivity.

2. Estimate increase in local employment due to agglomeration

To estimate the impacts of agglomeration, we first estimate the expected impact on local employment as a result of businesses moving closer together to the airport. Note that this is different from the supply chain impacts estimated previously.

To do that, we first define the catchment area where we think employment will increase as a result of expanding the airport. The Airports Commission

recommends a 45-minute catchment for the analysis of agglomeration impacts. However, in the interests of pursuing a conservative analysis and in avoiding the double counting of benefits, a 30-minute public transport catchment area was assumed. This minimises the likelihood of overlapping productivity impact calculations with Heathrow and Gatwick airports' catchment areas. There are ten local authorities within a 30-minute catchment area of the airport, according to analysis by Savills, as shown in Figure 28.

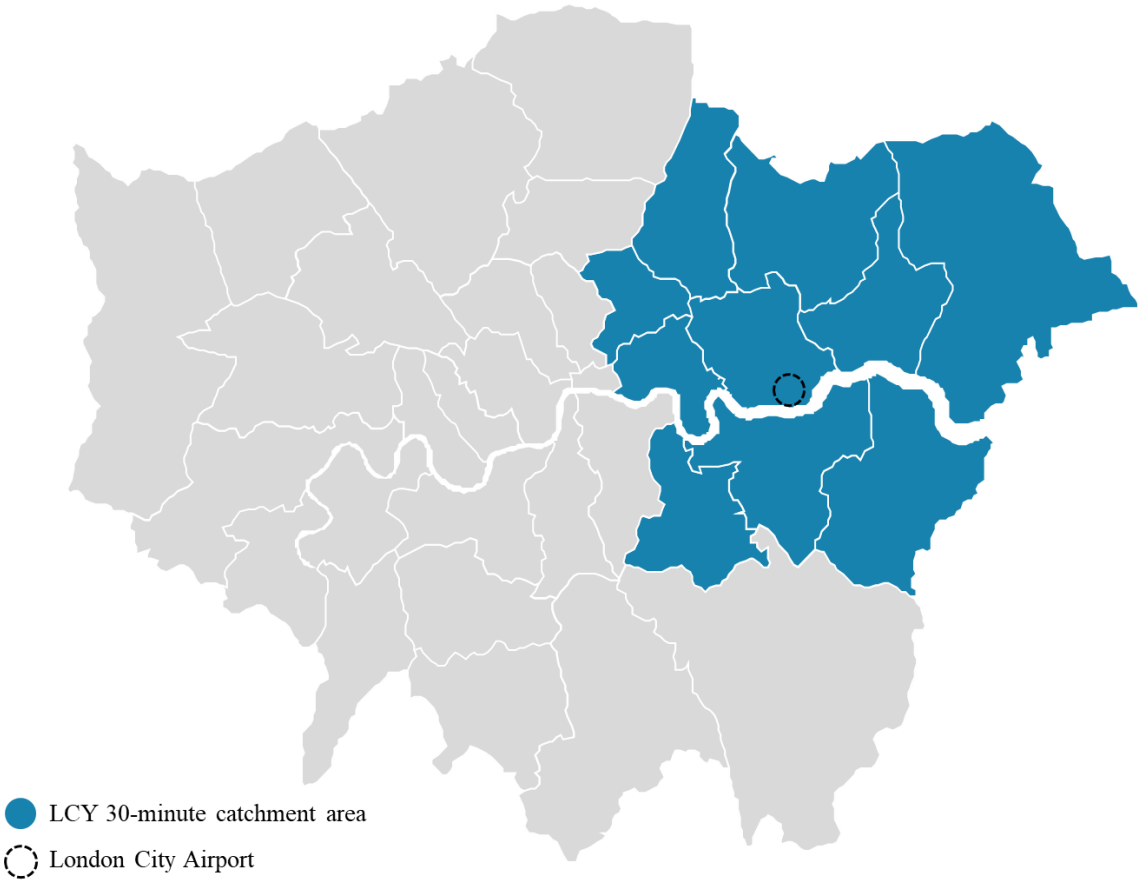


Figure 28: 30-minute catchment area for LCY[104]

The change in employment in the catchment area is driven by the change in passengers. Only employment in consumer and producer services sectors is assumed to be affected in line with the Airports Commission methodology based on a review of the available evidence. As the estimates of passenger forecasts show a significant increase in passengers by 2035 (from 6.5 million to 11 million), we therefore expect the increase in employment attracted by the airport to be considerable, equal to approximately additional 32,000 jobs in the catchment area, based on the elasticity recommended by the Airports Commission. It is important to note that it is assumed that there is no net additional employment in the UK and that all these additional jobs in the preferred master plan option are being displaced from outside the catchment area, in line with government guidance.

[104] Adapted from (Savills, 2018)

3. Estimating the productivity increase

The productivity increase from increased agglomeration is estimated using the formula from DfT's WebTAG and the parameters set out previously. This is undertaken for the sectors related to consumer and producer services only, as these are the sectors most likely to benefit from productivity benefits related to agglomeration. The productivity benefit is driven by the increase in employment in the catchment area.

4. Total economic impact from agglomeration

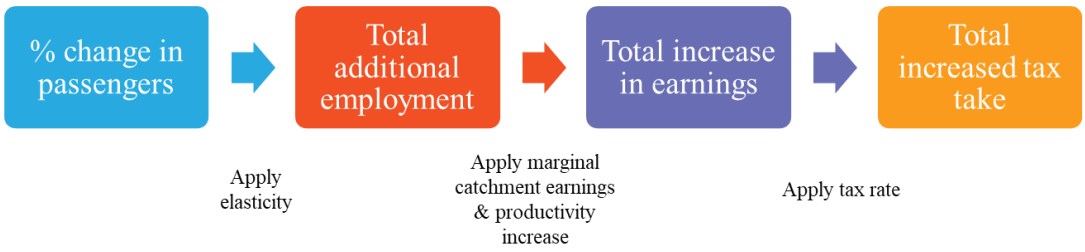
To arrive at the total value of the productivity increase resulting from increased agglomeration, we multiply the relevant average GVA per worker for each sector by the estimated increase in productivity.

Based on this analysis, we estimate that the preferred master plan would lead to **£181 million in productivity benefits** in 2035 (2019 prices, undiscounted) resulting from agglomeration compared to a do-nothing scenario.

A2.4.3 Tax impact from more productive jobs

The increases in agglomeration are likely to attract workers as the increases in productivity resulting from agglomeration effects lead to higher wages. This will have a positive impact on tax revenue, which is not captured in the user benefits.

To estimate the tax impact resulting from people moving to more productive jobs, we follow the steps set out below.



1. Parameters

The following parameters were adopted for the calculation of this impact.

Parameter	Value	Source
Average tax rate	30%	WebTAG (Unit A2.1)
Change in earnings per job by local authority	Various	WebTAG Wider Economic Impacts dataset

2. Estimate additional earnings from moving to more productive jobs

In this calculation we use the additional employment estimated in the agglomeration calculation within the catchment area of the airport. This employment is assumed to move to more productive jobs. The average change in

earnings from these jobs is taken from the earnings differentials by local authority contained in the DfT WebTAG's guidance.

3. Tax revenue resulting from more productive jobs

Applying a 30% tax rate[105] to the additional earnings estimated in the step above, we estimate an increase in tax revenue of £95 million in 2035 (2019 prices, undiscounted).

[105] In line with WebTAG guidance.