March 2006

Master Plan for Consultation

LondonCityAirport

Foreword

This Master Plan outlines how London City Airport plans to develop over the next decade and beyond. In these plans, we want to be as open as possible about what we are doing and why we are doing it. So before getting into the detail, I thought it would be useful to set out some of the context – to explain the bigger picture.

London City Airport is an integral part of the way London, and in particular the City of London and Docklands, operates. It is a key attractor for foreign businesses looking to locate in London and a key factor in London's status as a world city, with 59% of London City Airport's flights currently serving the Square Mile and wider business market

And it is not just me saying this. The Government says we are 'particularly well placed to serve a niche business market'[i] and the Mayor of London describes us as a 'world gateway' which is 'attractive to international investment'[ii]. Newham Borough Council, in which we are located, say we are 'a major strategic asset to the borough and to London as a world city'[iii].

At a more local level, the Airport is a force for regeneration which has not only created jobs and prosperity in the immediate area, but has also helped to spearhead the success of landmarks like Canary Wharf and ExCel London and to drive recent and future extensions to the Docklands Light Railway (DLR).

We are going to be very well placed to continue to drive the economic prosperity which will flow from the London Olympic and Paralympic Games in 2012.

But to do all this, we need to grow. The Government, which is trying to manage the UK's increasing demand for flights, believes that air travel will double or treble by 2030. This demand will only partially be met by the larger airports, such as Heathrow, Gatwick and Stansted, which provide a greater number of long-haul flights and, increasingly, fewer short haul flights.

At London City Airport, the length of our runway and other constraints preventing us from ever building another one or materially extending the existing runway, mean long haul flights cannot operate. Instead, market forces dictate that ever more passengers on short haul flights to destinations in the UK and Europe are using London City Airport. Again, the Government and Mayor and local borough all agree – this pressure needs to be accommodated.

For most airports, expansion brings with it all sorts of implications regarding environmental impacts such as noise, road traffic and air pollution. London City Airport is different. If I tell you that between 2004-2005 we had just 24 complaints about noise and that, now and in the future, we will not operate flights at night and also keep a 24 hour period clear of any flights at the weekend; I think you will agree we are pretty unusual.

There is even evidence that we contribute to – rather than detract from – land and property values in the surrounding area. People want to be associated with the Airport, not lobby against it.

So you won't find any of these plans too dramatic. Certainly, we are going to need to increase passenger numbers and aircraft movements. But these will be accommodated almost entirely within our existing 'footprint' – the area we or our sister companies currently own, or within King George V Dock.

We are not going to be handling bigger aircraft – partly because we can't and partly because the future of short haul aviation depends on filling more seats on aircraft around the same size as those operating at London City Airport today.

Increases in aircraft noise as a result of our plans will be marginal, mainly due to improvements in aircraft technology and the current tight restrictions we impose, which will continue. And any increase in road traffic will be exceeded by increases from general traffic growth in the region – something we are doing our bit to alleviate through encouraging use of the DLR and other excellent public transport links.

But I am now getting into the detail and that should be best left to the plan itself. I hope you find it useful. Please don't hesitate to contact me or my team about any aspect of it.

I will leave you with one final thought: London needs London City Airport and we very much need London, and the support of Londoners, for our future.

Richard Gooding
Managing Director

March 2006

[i] Aviation White Paper, 2003
[ii] The Mayor's London Plan, 2004
[iii] Newham Borough Council, policy 7.108

Contents

Summary

In December 2003 the Government published a White Paper 'The Future of Air Transport' which sets out policy for the development of airport capacity in the UK to the year 2030. This document forecasts that by 2030 demand for air travel could be between two and three times what it is today. Some airports are close to capacity now and the Government believes that failure to increase capacity could have serious national economic consequences. The Government indicates that the starting point must be to make the best use of existing airports wherever possible and so has asked airport operators to bring forward plans for increased airport capacity in the form of a Master Plan detailing possible development to 2030. An outline Master Plan, in the form of a High Level Statement of Intent, was published on London City Airport's Consultative Committee website (www.lcacc.org) in December 2004.

The London City Airport (LCA) Master Plan explains how LCA could expand, in phases, to meet the growing demand for air travel over the next 25 years. This vision of future development is shown in three phases. Future growth of the Airport will impact on local communities and this plan considers the nature and scale of these environmental, economic and traffic impacts. The Government has stated that airport master plans will not have any legal basis; development proposals will need to be considered through the planning system in the normal way. The key points of the Master Plan are summarised below.

Market Position and Operating Characteristics

- London City Airport from the outset was designed to serve a niche, primarily business market, serving domestic and European destinations. It is expected that LCA will continue to serve these markets and maintain its bias towards business travel.
- It is likely that LCA will remain the starting or finishing point for most of its travellers' air journeys as opposed to becoming a hub airport which passengers use to connect onwards to other destinations.
- Corporate aviation - the operation of aircraft by individual companies and not for public hire - is facilitated at LCA and has grown considerably in recent years. LCA anticipates that it will remain a relatively small proportion of the overall business.
- It is not anticipated that the operating hours of LCA will significantly change in the future. The increasing volume of passengers will be accommodated within approximately the same hours as today.
- LCA has no plans to operate at night nor does it envisage a change to the 24 hour closure period currently operating at weekends.

Scheduled Air Passenger Forecasts 2006 – 2030

- The White Paper forecast that LCA will handle around 5 million passengers per annum (mppa) in 2030.
- LCA forecasts that passenger numbers will grow from 2 mppa today to 3.5 mppa in 2015 and to 8 mppa by 2030.
- These forecasts are based on the economic growth projections for East London contained in the Greater London Authority's London Plan. East London is expected to provide for almost a third of all London's housing provision and an even greater proportion of its jobs.
- The hosting of the Olympic Games in London in 2012 means that growth in passenger numbers at LCA is likely to be particularly strong in the early years of the plan since LCA is just two miles from the main Games site which will be served by new DLR links from the Airport, and ideally placed to play a key role in the years running up to the Games and during the Games themselves.

Aircraft Movements Forecast 2006 – 2030

- The runway at LCA is not currently used to its full potential capacity; this Master Plan describes how it would be possible to make better use of the existing runway. There are no plans for a second runway.

- In 2005, London City Airport handled 71,000 aircraft movements from its runway, 61,000 of which were scheduled Air Transport Movements (ATMs)[1]. To meet and accommodate passenger demand, the number of scheduled ATMs operated per year is forecast to be around 100,000 movements by 2015 rising to around 143,000 in 2030.
- Growth in air transport movements to 2015 and 2030 will be less than the growth in passenger numbers over the same period because the average passenger seating capacity of aircraft operating at LCA is likely to increase. There will not be a change to larger aircraft types from those operating today, but instead a general phasing out of smaller aircraft types in favour of more movements of regional jet aircraft.
- These forecasts also predict that a higher proportion of the seats on each flight will be occupied.
- The Airport will seek to develop an environmental impact based system of control with the planning authorities.

Scheduled Aircraft Parking Stands

- Scheduled aircraft parking stands required will increase from 14 stands in 2006 to 19 stands by around 2015 and 25 stands in 2030.

Corporate Aviation Forecast 2006 - 2030

- Corporate aviation is traditionally measured in terms of number of aircraft movements rather than passenger numbers because the volume of passengers carried is small. The number of corporate aviation movements is expected to increase from around 10,000 per year in 2005 to around 28,000 per year in 2030.
- It is expected that further aircraft parking apron to accommodate these movements will be located at the west end of the airfield by converting a number of stands that are currently used for scheduled services.

Land Use at LCA in 2015 and 2030

Phase 1

Developments to allow LCA to accommodate up to 3.5 mppa by 2015:

- Up to five new aircraft parking stands built over King George V Dock.
- Further aircraft parking for corporate Jet Centre at western end of Airport site.
- Extension to Jet Centre building
- Extension to main terminal building on western side on land isolated by DLR railway line and station.
- A new purpose built Airport Fire Station.
- An aircraft hangar at the western end of the site to allow aircraft maintenance.
- A support building to accommodate airline ground handling and engineering.

Work currently underway to extend the Docklands Light Railway (DLR) from King George V under the Thames to Woolwich is expected to be completed in early 2009.

Phase 2

Developments to allow LCA to handle up to 6 mppa between 2015 and 2025:

- Five further scheduled aircraft parking stands could be built over the King George V Dock to increase aircraft handling capacity.
- Access to the runway from aircraft stands could be improved by the construction of a taxi-lane running the length of the runway to join with the runway hold point.
- Terminal building further extended on eastern side.
- Vehicle pick-up and drop-off area extended eastwards over the current short-term car park.
- Provision of a multi-storey car park on the site of the existing car park to include car hire services.
- Relocation of the fuel storage facility to the eastern end of the Airport site.
- Extension to hangar building.
- Vacant land at the eastern end of the site currently on long-term lease to the Airport Group could be developed for either airport related uses (should demand dictate) or non-aviation related medium density mixed-use development.

Phase 3

Developments to allow LCA to handle 8 mppa by 2030:

- A further area of apron and terminal pier could be built to accommodate up to five scheduled aircraft stands.
- This extension would allow the temporary closure of the original terminal for re-modelling work to split the building into distinct areas for arriving and departing passengers.
- New air traffic control tower provided in newly realigned terminal.
- The terminal drop-off zone and associated public transport facilities would be extended eastwards.

Development would occur incrementally in order to ensure that growth in capacity is matched to passenger demand. This factor, together with advancements in technology, is likely to mean that the precise timing, location and configuration of capacity enhancements may be subject to change.

Impacts of Future Growth

The Environment

Noise

- Since its inception LCA has operated in a manner that ensures noise emissions are controlled and cause minimal impact on the community. This has been achieved by a combination of physical and operational noise control measures such as:
  - No night time flights
  - Restriction of aircraft types operating at the Airport
  - Maintaining Preferred Noise Departure Routes
  - Maintaining an Approach Glide Slope of 5.5 degrees for all aircraft

[1] An ATM is an air transport movement by a civil aircraft engaged in the transport of passengers, cargo or mail on commercial terms

- Maintaining a Sound Insulation Grant Scheme

- Air noise contour maps for 2015 and 2030 give an indication of areas that might be exposed to different levels of air noise in the future. These contour predictions show that the contour representing high levels of annoyance (69 dBL_{Aeq}) in 2015 is completely contained within the Airport site and dock areas with no properties located within it. By 2030 approximately 28 properties south of the Airport may be contained within this contour.
- LCA will continue to monitor noise levels in this area and undertakes to offer to purchase any properties that are exposed to noise levels of 69 dBL_{Aeq} or higher.
- Assessments were also undertaken on the impact of noise generated other than by aircraft in flight. Ground noise from aircraft taxiing and the use of auxiliary power units is expected to increase by between 1 dBL_{Aeq} and 2 dBL_{Aeq} in line with more aircraft movements. However, the impact of these increases is predicted to be negligible since only changes of 3 dBL_{Aeq} are deemed to be perceptible.

Air Quality

- All airports produce an effect on the air quality in the surrounding area. Pollutants emitted from airports generally arise from the combustion emissions associated with road traffic generated by the Airport, emissions from aircraft and airport facilities, including space heating, which are very minor sources.
- Three types of pollutants are of concern in these emissions: Nitrogen Dioxide (NO_2), Fine Particulate Matter (PM_{10}) and the mixture of hydrocarbon vapours that have the distinctive smell of aircraft engines – 'airport smell' - which does not affect health but is of importance to local residents.
- Detailed guidance on local air quality management has been published by the Department for the Environment Food and Rural Affairs (DEFRA). This Guidance sets out criteria to determine where detailed assessment is required and deals with road traffic and aircraft movements.
- LCA appointed consultants to assess the potential changes to air quality resulting from predicted growth to the years 2015 and 2030. Emissions from road based traffic associated with the Airport are dependent on the use of the DLR and a number of scenarios were tested.
- Results show that by 2015 vehicle emissions are unlikely to increase by more than 8% over 2005 on the Connaught Bridge and the impact on roadside concentrations of NO_2 and PM_{10} will not be increased to the same extent and will remain acceptable.
- In the worst case scenario by 2030, airport related road traffic could grow by 24% compared to 2005. Changes in vehicle exhaust emissions make the prediction of changes in roadside pollutant concentrations uncertain. However it is considered unlikely that air quality standards will be breached as a result of growth in airport passenger traffic.
- The DEFRA Guidance recognises that the scale of the air quality impacts of aircraft emissions at airports can be related to the scale of operations in terms of annual passenger throughput. The thresholds to determine when detailed assessment is required are as follows:
  - For NO_2 - Detailed assessment is required where the predicted total passenger throughput is more than 5 mppa
  - For PM_{10} - Detailed assessment is required where the predicted total passenger throughput is more than 10 mppa
- As LCA is not expected to reach 5 mppa, the NO_2 threshold value, until approximately 2020, detailed assessment is not required at this stage. Similarly, there is no need to make a detailed assessment for PM_{10}.
- Changes in aircraft types are likely to result in a change in the distribution or the pattern of the emissions over the area of the Airport. Emissions are likely to be transferred away from the terminal buildings and taxiways where they are present today, to the runway and flight paths. The emissions 'footprint' is likely to alter from one that is fairly circular today to one more oblong in shape that follows the alignment of the east-west runway.
- Despite the lack of a formal requirement, LCA has adopted a strategy for full air quality assessment to ensure and demonstrate that any future growth of the Airport can be realised without producing unacceptable air quality impacts.
- Using computer models to simulate and predict future air quality conditions has significant limitations. LCA will therefore directly measure and monitor by summer 2006:
  - local background air quality
  - the effects of road traffic and surface access

  LCA will also investigate changes in aircraft types and dispersion patterns around the Airport.
- The main air quality aspect of interest to local residents is 'airport smell' originating from the fuels used in aircraft engines. Since the earliest days of LCA's operation odour generation has been controlled by operational management procedures limiting the unnecessary running of aircraft engines made possible by the provision of Fixed Electrical Ground Power or mobile ground power to all aircraft stands on the apron. Such management procedures will continue.
- LCA is investigating ways to minimise the potential risks associated with blast from jet engines on the apron and beyond. One possible solution being considered is the use of a line of 'deflectors', structures that would also have the effect of reducing odour. Particularly in light wind conditions, when complaints of airport smell have occurred most, airport smells would be better dispersed by being deflected upwards.

Impacts of Future Growth
Surface Access

- 76% of passengers surveyed by the CAA in 2003 used public transport to access LCA. The introduction of the DLR to LCA in December 2005 greatly increased public transport and provided an opportunity to reduce traffic on the local road network. The introduction of the DLR led to the withdrawal of shuttle bus services which removed approximately 116,000 bus trips from the road network per year. Early indications also suggest that there has been a material reduction to taxi usage but data on this is not yet available.
- Approximately 64% of employees drive to work, 33% travel to work on public transport with 3% either travelling by motorbike, cycling or walking. Approximately 77% of staff work shifts, the majority working 'early' and 'late' shifts with early morning start times falling between 04.30 and 05.30 hours and late finishing times usually falling between 21.00 and 22.30 hours.
- LCA commissioned Atkins to review the future surface access needs of passengers and employees and assess the likely impact of these demands on the local transport network in the years 2015 and 2030. Since it is not possible to predict precisely the proportion of passengers that will travel by different transport modes a number of different scenarios were tested.
- Results from the study show that in 2015 under the scenario where 80% of passengers use public transport, with 40% using the DLR, the volume of passengers would be easily accommodated on the Woolwich branch of the DLR network, scheduled for completion in 2009 and bringing with it increased train frequencies. LCA is projected to represent 9-10% of overall demand between the Airport and Canning Town in 2015. By 2030 the morning peak hour passenger demand is projected to rise further but this level of demand would be within the capacity of a three-car DLR service operating at 15 trains per hour. Such a service is already planned for other parts of the DLR network and is likely to be required before 2030 due to increased non airport background demand. Demand from the Airport is predicted to remain at about 9% of overall passenger volume.
- A number of road links around the Airport will be nearing or exceeding capacity by 2015. On the local road network background traffic growth is forecast to cause the Airport Roundabout, Hartmann Road Roundabout and Connaught Road to exceed operational capacity although this situation may self-regulate, i.e. people will opt to use the DLR in order to avoid congestion. The situation on these roads will deteriorate further by 2030. Monitoring, further investigations and subsequent action, such as traffic management, local widening and junction improvements, will be needed to increase capacity at these locations.
- By 2015 forecast growth in background traffic on the strategic road network will be approaching capacity on the A406 North Circular and Blackwall Tunnel. By 2030, the increase in background traffic will cause these road links to operate beyond their theoretical capacity. However the contribution of airport generated traffic on the wider road network is minimal. Measures to address these problems will be needed at a London-wide level and could include capacity improvements or a range of policy measures to reduce travel by car.
- London City Airport is committed to a policy of maximising the proportion of passengers and staff accessing the Airport by public transport in general and in particular DLR. It is likely to remain challenging to reduce significantly the proportion of staff using a car to access LCA unless the hours of operation of the London Underground and the DLR are extended to fully accommodate shift working start and finish times.

Impacts of Future Growth
Economic & Social Benefits

To understand London City Airport's importance and contribution to the economic and social well-being of the area now and in the future, LCA appointed York Aviation and the University of East London (UeL), to undertake a detailed Economic and Social Impact Assessment of the Airport.

Economic Benefits

Key findings from the assessment work were:

- In 2004, 1,445 jobs were supported by London City Airport; 66% of employees lived locally in one of the surrounding London boroughs.
- In 2004 expenditure on wages amounted to £24.5m with over £7m going to staff that live in Newham.
- Nearly £20m is spent per year by the Airport and companies based on the site on local goods and services in Newham.
- If LCA was to grow to 3.5 mppa by 2015 the number of jobs supported by the Airport is forecast to grow to 2,637. By 2030, with LCA handling around 8 mppa the total number of jobs supported is forecast rise to 4,150.
- The jobs provided at LCA require employment skills that are relevant to the skills base of the local population.
- The total direct, indirect and induced income impact of LCA in the Core Study Area comprising 11 local authorities in 2004 was £43.5 m. This income impact is forecast to more than double to £98.6 m in 2015 if the Airport expanded to 3.5 mppa, rising to £212.7 m in 2030.

LCA continues to be an important factor in local regeneration, business development, transport and tourism infrastructure and its impact is felt beyond its immediate catchment. It is credited as a 'flagship' project in the Royal Docks that changed perceptions and gave potential developers and tenants confidence to invest in key developments in the area such as Canary Wharf and Excel.

Gateway to London, the inward investment promotion arm of the Thames Gateway Partnership, considers the existence of LCA vital in efforts to attract new investment to the area, and suggests that it would be 80% less successful in attracting new office developments if the Airport did not exist.

Canary Wharf Management Company, owner, developer and promoter of much of the land and office space at Canary Wharf, considers proximity to LCA as the second most important selling point to prospective new international tenants, after good London wide surface access links. Think London, the official foreign direct investment agency for London, also stated that LCA had been a significant factor in the recent decision of a financial services company to move to Canary Wharf.

Findings from the Canary Wharf Employee Travel Survey 2005 show that LCA is second to Heathrow as the most frequently used airport for business travellers starting their journeys at Canary Wharf with 34% of trips. This mirrors results published by the Corporation of London in their 2002 report 'Aviation Services for the City of London' showing that LCA is the second most important airport, after Heathrow, for business travellers starting their journey in the City of London.

The existence of LCA in the Royal Docks has acted as a catalyst for the provision of improved transport links such as Transport for London buses and notably the DLR extension, where potential passenger levels generated by the Airport were found to be the key driver for the provision of the extension accounting for 50% of expected patronage on the line, thereby making the service financially viable. This line has greatly improved accessibility for local residents in Silvertown and North Woolwich, an area previously very reliant on bus services.

York Aviation developed a method of assessing the importance of different airports to the global 'connectedness' of an area, known as 'value connectivity'. After Heathrow, LCA adds most to the

connectedness today of both Central London and the Thames Gateway London boroughs than any other London airport. The connectivity added by LCA, if it grows as forecasts suggest, will more than double in importance over the period to 2030. This will be valuable in maintaining London's competitiveness as a World City.

The growth of LCA and how it is linked with growth in population and employment in surrounding boroughs was also investigated to establish how important further growth of LCA will be in achieving the growth expectations for East London and the Thames Gateway identified in the London Plan. The relationship between growth in passenger traffic at the Airport since it opened and growth in employment in the business and financial services sectors in four adjacent local boroughs was examined. Using this relationship, York Aviation estimated the extent to which growth in employment in these sectors, as projected in the London Plan, could drive growth in demand at LCA. On this basis, passenger demand for LCA could reach up to 11.2 mppa by 2030. This analysis suggests, that if LCA is unable to meet demand arising from this growth, at least from within local boroughs, businesses there would be faced with higher costs to access short haul air travel than currently because they would be forced to use alternative airports further away.

The effect of additional time costs on business productivity may impact on the attractiveness to business of locating in new development areas in the Thames Gateway. Faced with higher travel time costs, some businesses may choose not to locate in the area and others might even relocate to areas closer to other airports or even other countries. York Aviation concluded that constraining the growth of LCA could have implications regarding the achievable pace and scale of development in the Thames Gateway London area.

Social Benefits

Social benefits associated with LCA's operation are found in communities surrounding the Airport via the wealth of relationships that have evolved since it opened: relationships with people, organisations and groups such as local residents, schools, colleges, charities, hospitals, sporting clubs, art societies, local businesses and social enterprises. The Airport actively encourages communities to take an interest its operation and aims to reach out and support local projects and initiatives, one example being the annual Airport Family Fun Day.

In developing the Master Plan, LCA believed it was important to understand local residents' views of the Airport. The University of East London carried out a survey of 500 residents and held focus groups of local people to capture some of the issues involving everyday experiences of the Airport together with their views on how well the Airport integrates into the area. LCA is considered to be a good neighbour by 56% of respondents and overall only 8% suggest that the Airport is a bad neighbour. 70% of respondents reported at least one positive reason for liking the Airport, improved local transport links being the most mentioned benefit. Some respondents felt that one of the benefits of living close to the Airport was the absence, by necessity, of tall enclosing buildings, which like the river, serves to create a feeling of space.

Listening to your views

The publication of this Master Plan gives London City Airport the opportunity to consult with a wide audience about its future plans. Views are actively sought from everyone who wishes to contribute. London City Airport has, and will be, meeting with representatives from local authorities, MPs, the London City Airport Consultative Committee, business organisations and others in the local community to understand people's opinions on the further growth of London City Airport. We welcome any comments that you may have by 31 May 2006.

London City Airport aims to publish the final Master Plan during the summer of 2006 after considering all comments received. Any future development at LCA will be considered via individual planning applications brought forward as and when the environmental and business cases can be justified.

1. Introduction

1.1 Background to the Master Plan

In December 2003, after extensive public consultation, the Government published 'The Future of Air Transport' White Paper. This document sets out a strategic framework for the development of airport capacity in the UK over the next 25 years to 2030.

The demand for air travel in the UK is predicted to grow two to three times current levels by the year 2030. Therefore airport capacity around the country needs to increase as failure to do so will have a negative impact on regional and national economic growth and international competitiveness. The Government's balanced approach recognises the importance of reducing and minimising the environmental impacts of this airport growth.

The White Paper clarified the need for new runway capacity in the South East and urges airports to make maximum use of existing runway capacity. The White Paper classifies London City Airport (LCA) as one of the smaller South East airports, the role for which is to meet local demand and thereby help relieve pressure on the main airports. This role is recognised and further development is supported in principle, subject to relevant environmental considerations.

The White Paper states: *'London City provides services within the UK as well as to a wide range of key European destinations such as Paris, Amsterdam and Zurich. Our forecasts show that the airport is likely to grow steadily and that this growth would not be significantly affected by the addition of runway capacity at the major London airports. It is particularly well placed to serve a niche business market. Several of the surrounding local authorities supported growth to 5 mppa. The airport operator believes that with some further development a higher throughput could be achieved.'*

The White Paper does not itself authorise or preclude any particular development, but sets out policies to inform and guide the consideration of planning issues.

The White Paper required airport operators to produce a master plan within the subsequent 12 months, taking account of the conclusions on future development outlined in the document. Further guidance published by the Department for Transport (DfT) in summer 2004 recognised that this timescale was challenging and instead requested that airports produce an outline master plan in the form of a high level Statement of Intent by December 2004.

London City Airport's Statement of Intent was submitted to DfT and published on London City Airport's Consultative Committee website (www.lcacc.org) in December 2004. A more detailed master plan is now required to explain how London City Airport proposes to take forward the Government's strategic framework. The Government requires airport operators to provide details of proposed development to 2015 and present indicative plans for land use for the period 2016-2030. The Government has stated that airport master plans will not have any legal basis; development proposals will need to be considered through the planning system in the normal way.

1.2 Planning for the Future

The purpose of this plan is to set out how LCA expects activity to grow over the coming years. It explains how much the Airport's facilities need to be enhanced in order to accommodate that growth and considers the economic, social and environmental dimensions of the Airport's operation in 2015 and 2030. This Master Plan recognises, as stated in the White Paper, that there needs to be a balance between the benefits of air travel and environmental impacts.

A further objective of this Master Plan is to inform other major planning decisions in the surrounding area.

This Master Plan is NOT an application for planning permission for development. It describes how the Airport could develop over the next 25 years. It does not include detailed designs for new facilities or a full Environmental Statement.

1.3 Listening to Your Views

Airport operators need to plan their airport's future in close consultation with the people affected. We place great emphasis on having an honest, open and constructive dialogue with our local communities. This plan has been published to provide an opportunity for our many diverse interest groups to consider and comment on our thinking. It is important to stress that this Master Plan aims to outline our strategy for growth rather than presenting a definitive and detailed plan of the future, about which there will always be a degree of uncertainty.

We will consider all comments we receive before producing a final version of this plan later in 2006. Once completed, this Master Plan will inform the content of the Local Development Framework and specifically the Local Area Action Plan being prepared by the London Borough of Newham, and possibly those of neighbouring local planning authorities.

We welcome any comments that you may have by 31 May 2006. To assist and prompt you, we have set out a number of questions in Chapter 9. You are also invited to give us further views relating to the operation and growth of the Airport. Please send them as soon as possible to:

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If you require further clarification of any of the information presented here please ask, using the above email address.

2. Statutory & Regulatory Context

Introduction

Government at national, regional and local level exerts an influence on the operation and development of airports. This chapter outlines those policies that have a bearing on the future development of London City Airport (LCA). Airports are regulated in a number of areas and these are briefly outlined too.

2.1 UK Airports Policy

The Future of Air Transport White Paper published in December 2003 is the main policy document providing strategic direction for the development of air travel in the UK up to 2030. London City Airport is classified in this document as a 'Smaller South East Airport'.

Policies from the White Paper that particularly relate to the further development of London City Airport are stated in the following paragraphs:

11.93 Small airports have an important part to play in the future provision of airport capacity in the South East. Their ability to provide services to meet local demand, and thereby help relieve pressures on the main airports, will be particularly important.

11.94 There is support from a wide range of stakeholders that the small airports in the South East should be allowed to cater for as much demand as they can attract. From the studies undertaken for the White Paper and the responses to the consultation, it appears that some further development could be possible at any of the smaller airports that have been assessed without insurmountable environmental constraints.

11.99 We consider that all these airports could play a valuable role in meeting local demand and could contribute to regional economic development. In principle, we would support their development, subject to relevant environmental considerations.

11.100 The ability of business aviation to gain access to the main airports in the South East will continue to be problematic as capacity constraints cause airports to focus on more valuable commercial traffic. The Government recognises the important contribution made by small airports in the South East in providing capacity for business aviation. We support the adoption of policies which encourage the continued provision of these services.

The White Paper states the need for regional and local planning policy documents, such as the emerging Local Development Frameworks, to reflect government aviation policy. Airports in turn need to take into account Regional Spatial Strategy, Regional Transport Strategy and local transport plans in drawing up their master plans.

2.2 Regional Planning Policies

London City Airport is situated within the Greater London Authority (GLA) administrative boundary so future development of LCA is influenced by policy formulated by the Mayor of London. The Mayor's policies are subject to consultation with the London Assembly (comprising elected representatives for the region) and scrutiny by the Government Office for London (GoL) to ensure conformity with Government policy.

The Mayor of London took over responsibility for strategic planning in London from the Secretary of State in 2000 and was required to produce a Spatial Development Strategy for the capital for the next 15-20 years. Known as the London Plan, this was published in February 2004 and replaced Regional Planning Guidance for London (RPG3). The London Plan is a wide-ranging strategic plan for London's development that aims to put planning issues into context with other areas of responsibility for

the Mayor such as economic and social development as well as the environment.

The following extracts from the London Plan summarise the Mayor's relevant policy statements for London City Airport:

Policy 3C.6 states that 'the Mayor supports the development of a sustainable and balanced London area airport system, and recognises that further runway capacity in the South East will be required to meet London's needs. This should include substantial new capacity that will support the regeneration of the Thames Gateway as well as servicing the needs of London and its economy as a whole'.[1]

Policy 3.175 states 'The needs of the London economy should be promoted alongside a substantial increase in the capacity of airports that can serve and stimulate development in the Thames Gateway.'

Policy 5C.1. One of the strategic priorities for the East London sub-region is to promote the sub-region's contribution to London's world city role, especially in relation to the City and Isle of Dogs. Another priority is to enable the necessary development for a successful sustainable Olympics in 2012.

Policy 5.50 identifies East London as the Mayor's priority area for development, regeneration and infrastructure improvement. Thirteen opportunity areas for employment and housing growth are identified for East London; all are within a 6 mile radius of London City Airport.

Policy 5.55 suggests that East London should become London's gateway to mainland Europe, building particularly on the Stratford International Railway Station, but also on access to the City and Stansted airports……economic development should be geared for the long-term opportunities that these present.

In Policy 5.72 it is stated that 'the DLR City Airport extension will support further growth of the City Airport, providing a direct link between the airport and central London, with the extension to North Woolwich improving access from the south.

The Economic Development Strategy for London, 'Sustaining Success', has been produced on behalf of the Mayor of London by the London Development Agency. This strategy published in January 2005 notes and supports the importance of East London as the Mayor's priority area for regeneration, development and infrastructure investment. It also notes the importance of an effective transport system to the delivery of the Strategy.

To help implement the strategy in the London Plan, in May 2005 the GLA published a draft East London Sub-Regional Development Framework to provide a step between the broad policies of the London Plan and their more local implementation. Although not a legal document, this document will be a large consideration in local and strategic decision making as well as influencing preparation of Local Development Documents (see below) and future revisions to the London Plan. An annex to the framework document highlighting key issues for the Royal Docks Opportunity Area states:

'take into consideration the airport expansion to 8 million passengers per annum.'

2.3 Local Authority Policy

London City Airport is located in the London Borough of Newham, and regeneration is central to the Council's overall vision for the Borough, which states that "By 2010 Newham will be a major

[1] The London Plan was published shortly after the Aviation White Paper, the implications of which will therefore be addressed when the London Plan is reviewed during 2006 and 2007.

business location, a place where people choose to live and work."' The London Borough of Newham is the Airport's local Planning Authority responsible for determining applications for development at LCA. The current local plan is the Unitary Development Plan (UDP) adopted in June 2001 and designed to run to the period 2006/7.

With reference to London City Airport, the following appears:

Policy 7.108: The Airport is a major strategic asset to the Borough and to London as a World City, linking business centres in the West End, City, Docklands, East London and elsewhere in Thames Gateway….It is an incentive to further development in the Royal Docks and is an important direct and indirect generator of employment. The Council's policy towards London City Airport is one of support and encouragement in recognition of its strategic and economic importance to the Borough and sub-region.

Changes to the planning system require Newham Council to prepare a new plan for the borough called the Local Development Framework. This will replace the existing UDP in 2007 and cover the period to 2020.

In May 2005 Newham Council published 'Draft Preferred Options for Core Strategy'. In paragraph 6.48 it is stated that land will be protected for the implementation of major transport proposals, including *'increasing capacity of London City Airport to serve and stimulate development in the Thames Gateway'.*

2.4 Other Criteria

Development Control

A limited amount of development at an airport can be allowed without the need to submit a planning application. Instead plans can be submitted for consultation to the local planning authority. This is permitted under the Town and Country Planning (General Permitted Development) Order 1995. The scope of such works is limited to development in connection with the provision of airport related services and facilities and by the scale of such facilities. However, the permitted development rights exclude:

- Development on non-operational land.
- Non-operational buildings (i.e. unrelated to the movement or maintenance of aircraft or the embarking or disembarking of passengers).
- The extension of a runway.
- A passenger terminal with a floorspace greater than 500m² or an extension to an existing terminal building of more than 15%.
- Development falling within the scope of the Environmental Assessment Regulations.

Airport Safety & Design

London City Airport is required to operate in accordance with the International Civil Aviation Organisation (ICAO) agreed criteria and it is the Civil Aviation Authority (CAA) in the UK that is charged with ensuring that we do. LCA requires a licence, issued by the CAA, to operate. To obtain and retain this licence, LCA needs to satisfy and continually adhere to the CAA's rigorous safety related standards.

Safety related standards affecting the design and layout of an airport are set out in a CAA publication, CAP168. They cover such matters as:

- Layout, separation and widths of runways and taxiways.
- Aircraft stands and apron layout
- Height and design of buildings and structures.
- Airport fire service facilities.

The CAA undertakes an annual audit to ensure that London City Airport's facilities meet their requirements. Any future development of the Airport will always be subject to CAA approval at the time.

Airport Security

The Department for Transport (DfT) regulates security standards at airports both at an operational day-to-day level and from the standpoint of facility design. DfT requirements need to be taken into consideration in the planning stages of new airport or airfield facilities as their directions will relate to such things as the segregation of arriving and departing passengers, baggage screening and airside access arrangements.

The Metropolitan Police Service carries out the day-to-day policing of the Airport.

Aerodrome Safeguarding

To operate an airport safely it is necessary to 'protect' the airspace around the runway. This is done through a series of what are known as 'obstacle limitation surfaces', effectively lines in the sky which define, relative to the runway, maximum acceptable heights for buildings and other structures. Safeguarding of aerodromes occurs through the planning system by a process of consultation between the airport operator, the applicant of any proposed development and the local planning authority. The process is intended inter alia to:

- Ensure that an airport's operation is not negatively affected by developments, buildings or structures which might infringe the aerodrome's obstacle limitation surfaces.
- Protect visual flight paths, for example by ensuring that runway approach lighting is not obscured by development, and that lights elsewhere cannot cause confusion.
- Protect the accuracy of radar and other electronic aids to air navigation.
- Reduce the hazard from bird strikes to aircraft, associated with land uses such as waste disposal and sewage treatment sites.

London Borough of Newham and other local planning authorities have been issued with a safeguarding map for London City Airport which identifies those planning applications on which there must be further consultation with the Airport. As a consequence of consultation, LCA may either object to the proposal, not object, or not object subject to appropriate conditions being met.

The Aviation White Paper specified that the Aerodrome Safeguarding process should be used to protect land outside existing airports, needed for future expansion, against incompatible development in the intervening period. London City Airport's safeguarding map is available to any local planning authorities who wish to consult it (contact Rob Grafton, Environment and Planning Manager, rob@londoncityairport.com). We do not expect proposals laid out in this plan to change the safeguarding criteria which are currently applied to developments surrounding London City Airport.

Public Safety Zones

Public Safety Zones (PSZs) are areas at either end of an airport's runway where the risk of an aircraft accident, whilst extremely low, warrants restrictions on the development and use of the land. The Government has undertaken studies of the risk of death or injury to people on the ground in the event of an aircraft accident on take-off or landing, and has defined parcels of land (triangular in shape) where there should be no material increase in the number of people living, working or congregating.

Airspace

The safe use of airspace in the UK is regulated by a division of the Civil Aviation Authority, the Directorate of Airspace Policy (DAP). National Air Traffic Services, as well as providing air traffic control services, is responsible for designing and developing the UK airspace to meet increases in air traffic demand, and is accountable to DAP. It is anticipated that there is sufficient airspace capacity to meet the increasing volumes predicted in this Master Plan. Developments of airspace including variations or additional flight paths in the vicinity of the Airport will be the responsibility of DAP.

Environmental Regulation

London City Airport operates within a variety of national and local regulations and policies relating to the environment. A number of these are described in greater detail in Chapter 6 of this plan. In particular, London City Airport, is tightly controlled when it comes to aircraft noise. Since the Airport was built, a noise management scheme has been in operation. Elements of this scheme include a restriction on the Airport's opening hours, noise limits on departing aircraft and a sound insulation scheme for properties close to the Airport runway. In addition there are restrictions on the total number of flights that are permitted. Under existing planning conditions, there is an upper limit of 73,000 annual Air Transport Movements (ATMs).

Aircraft operating at LCA are also required to follow specified routes that are designed away from the most populated areas around the Airport. At LCA these Noise Preferential Routes make use of the proximity of the River Thames and the Lower Lea River to the east and west respectively, to ensure a minimum number of people are affected by aircraft noise. Track keeping of aircraft on these routes is also monitored.

The further development of LCA also needs to consider matters such as local air quality, a topic that has been studied in the past.

Economic Regulation

The Airport is subject to economic regulation under the Airports Act 1986, which requires the Airport to hold permission from the Civil Aviation Authority to levy airport charges. The act requires airport operators to be non-discriminatory, non-predatory, and consult, with regard to pricing.

The Government imposes a tax on flights known as Air Passenger Duty. This currently ranges between £5 and £40 per departing passenger. Airlines are required to collect this and pay it directly to the Treasury. No portion of this is paid to the Airport and therefore it is not an income source to fund airport development.

Airlines must pay for the air traffic control services that allow them to fly through UK airspace. In the UK air traffic control services are provided by National Air Traffic Services (NATS).

3. London City Airport Today

Introduction

This chapter describes London City Airport as it is today. It explains the type and scale of our business, the layout of the site and the nature of the facilities today.

The Airport opened in 1987 and was built and operated by the construction company Mowlem until 1995, when it was bought by its current owner, Irish financier, Dermot Desmond.

The Airport from the outset, due to its unique location, was designed to serve a niche business market. It is a popular airport for European and domestic business travellers because of its ease of access and simplicity of use, being fast, efficient and friendly.

3.1 Business Today

London City Airport is a city centre airport located in the Royal Docks, six miles east of the City of London, Europe's major financial district, and just two miles east of Canary Wharf, London's new business centre located in the Docklands. It is just half a mile from ExCeL London, the Exhibition and Conference Centre.

The Airport was connected in December 2005 to London's public transport rail system via its own Docklands Light Railway (DLR) station, which links directly into the Airport terminal building. The Airport is also easily accessible by road, located a mile from the A13, three miles from the North Circular (A406) and 15 miles from the M25. The Docklands Highway network links the Airport to Canary Wharf, Tower Hill and the centre of London.

According to CAA data (2003), 59% of passengers are travelling for business reasons. Leisure travellers make up the remaining 41% of passengers using LCA. Much domestic leisure travel is for passengers visiting friends and relatives. Tailored city or skiing breaks to London and European destinations are increasingly popular particularly with the growing local residential population. It is possible to travel to long haul destinations worldwide with airlines that operate from LCA by connecting with flights at European hub airports such as Paris, Amsterdam and Frankfurt.

A dedicated corporate aviation facility, London City Airport Jet Centre, has been developed in recent years. This sector of

aviation concerns the operation of aircraft by individual companies in conducting their business and therefore not for public hire. It also includes business charter services where an individual or company can hire the services of an aircraft operator for their own private business. The principal drivers of corporate aviation are speed, convenience and discretion. Corporate aviation complements the scheduled aviation business at LCA because it allows users to reach destinations not served by scheduled carriers or at different times to scheduled services.

London City Airport intends to continue to focus primarily on the business travel market due to the continuing growth of business and financial services in its immediate catchment area. However the demand for leisure travel is also expected to grow at a similar rate with the proportion of passengers travelling for leisure reasons likely to remain similar to today.

15 airlines currently operate from London City Airport, between them flying to 27 different UK and European destinations. Appendix I shows airlines and routes operating at London City Airport at March 2006.

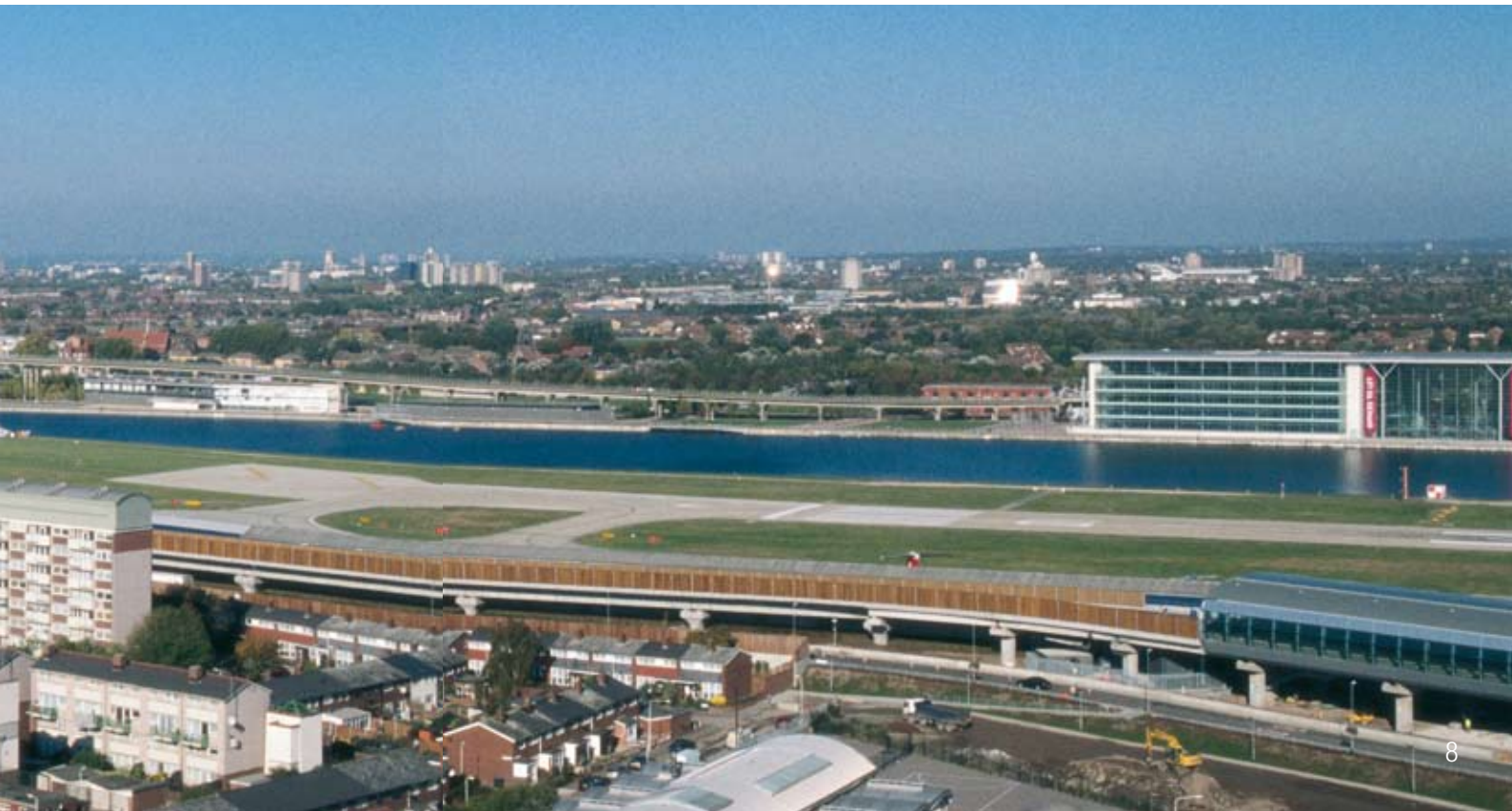
London City Airport handled 2 million passengers in 2005. Figure 1 shows the growth in passengers at the Airport over the past decade since 1995.

The top five destinations in 2005 were Edinburgh, Geneva, Zurich, Amsterdam and Frankfurt.

Drawing 1 shows current land use at London City Airport including the location of the runway, apron, main terminal, corporate aviation terminal and other operational buildings. It also shows the alignment of the DLR and the DLR London City Airport station; the land on which these sit does not belong to LCA. The total site is 111.5 acres (45 hectares).

3.2 Airside Facilities

These are the facilities located in the area where public access is restricted. The airfield, where aircraft take off and land, is the primary facility but it is supported by the apron area where aircraft park to embark and disembark passengers. Taxiway links connect the runway to the aircraft parking stands. The runway is



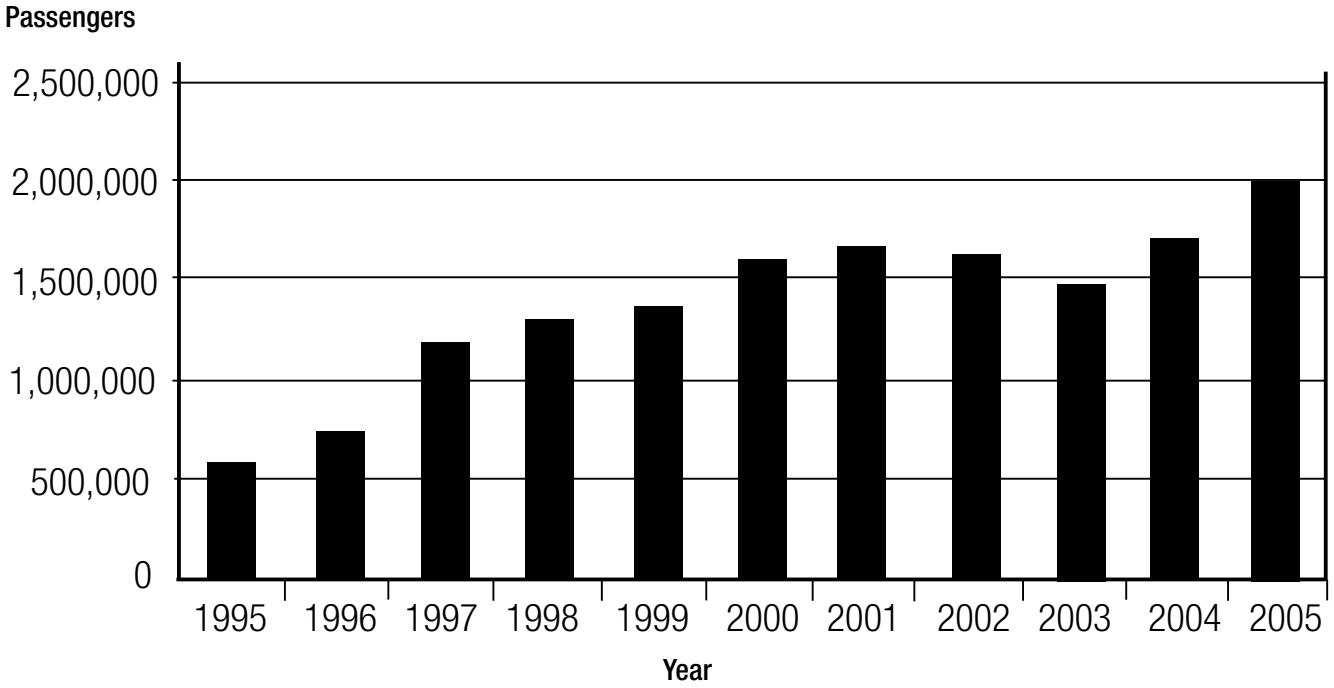
surrounded by water in the Royal Albert Dock and the King George V Dock.

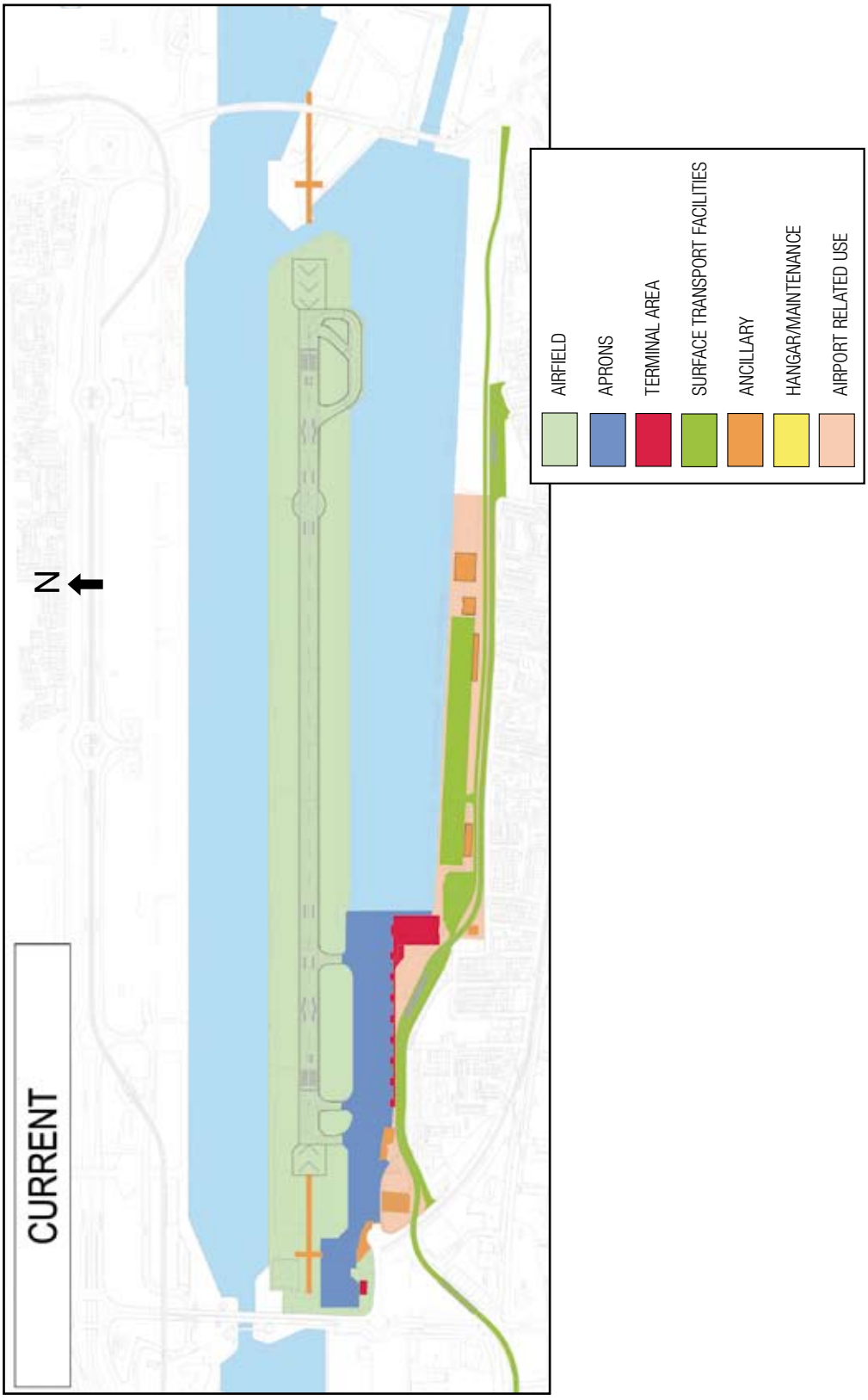
The airspace serving London City Airport is managed by National Air Traffic Services (NATS). Landings, take-offs and aircraft movements on the apron are controlled from the air traffic control tower which is located on the north-eastern corner of the terminal building. NATS also provides air traffic control services for all en-route civil aircraft in UK airspace.

London City Airport has one runway strip which is 1,199 metres in length and made of concrete. There is no parallel taxiway and aircraft arriving or departing have to 'back-track' on the runway to take-off / taxi to the apron. The runway is currently capable of handling aircraft up to the size of a BAe 146 Regional Jet. A holding point for three aircraft exists at the eastern end of the runway. This was built in 2003 and improves the efficiency of the runway, especially during peak hours.

In 2001, LCA was granted planning permission to build the holding point and up to 5 stands in the dock to the east of the terminal. The 5 stands have not yet been built. The timing of construction of these stands will be determined by market demand.

Figure 1 - Annual Passenger Throughput 1995-2005





Drawing 1 - Existing Land use at LCA - 2005

The Airport has 14 scheduled aircraft stands in total, 10 of which are served by a dedicated pier. The remaining stands are served by buses. All pier-served stands are 'self-manoeuvring' – pilots steer their aircraft onto stand from where they are directed by marshallers who turn the aircraft so that it is ready to taxi out for departure. The airside road runs adjacent to the pier and passengers are required to cross this in order to embark and disembark.

The airfield is surrounded by grass on which are located a variety of navigational and landing aids.

The Airport Fire Station is located at the western end of the airfield and part occupies a building previously used when the docks were operational. This facility is supported by a fire training ground on the north-western corner of the airfield. 35 staff are employed here and operate a three watch system.

Ground handling and minor aircraft maintenance facilities are accommodated in a building adjacent to the Fire Station. Aircraft maintenance consists of minor and on-stand maintenance.

A fuel storage facility is located at the western end of the airfield. Fuel is delivered by road tanker to the Fuel Storage Facility where it is stored, and then taken by bowser (fuel tanker) to the aircraft.

Located at the western end of the airfield is the London City Airport Jet Centre, a stand alone corporate aviation facility consisting of VIP lounges, parking for up to 14 aircraft, immigration, customs and crew facilities. Staff provide such services as flight planning and weather briefings They also organise slot requests, ground handling arrangements, jet brokerage, aircraft cleaning, catering, maintenance, refuelling, aircraft and baggage handling. The Jet Centre has its own road access.

3.3 Passenger Terminal Facilities

The terminal was opened in 1987 and includes check-in facilities, ticket desks, security, a departure lounge, a departure and arrival pier, departure gate areas, domestic and international baggage reclaim, immigration and customs, shops, a business centre and catering outlets.

The terminal was built to cater for 1.2 mppa. The first floor departure lounge was re-configured and expanded in 1997 and in 2001 the terminal building was extended westwards to increase baggage reclaim capacity, enhance immigration facilities and provide accommodation for control authorities and handling agents.

The departure lounge is furnished to a high standard and seats approximately 326 people. A project is currently underway to re-configure this area to increase seating capacity by 30%. It will be completed during Spring 2006. Departure gate lounges, located on the ground floor, accommodate approximately 50 passengers each.

The compact nature of the Airport terminal together with a commitment to service quality, allows short check-in and boarding times in comparison with other airports. Equally, arriving passengers can take less than five minutes to get from their aircraft to the front of the terminal. The Airport has won many awards for its excellent services and facilities over the years including the Queen's Award for Export.

3.4 Surface Transport Facilities and Car Parks

The key components of LCA's surface access infrastructure are its DLR rail link and station, road link, bus pick-up and drop off areas, car parks, taxi rank, car hire facilities, valet parking and pedestrian and cycle facilities.

The DLR enters the Airport from the west and east, the station linked to the terminal via an enclosed walkway. Transport for London buses pick up and drop off outside

the terminal front. Ready cars for hire are available directly in front of the terminal. A taxi feeder rank is present in front of the terminal; the taxi rank extends eastwards along the perimeter of the site.

The DLR extends eastwards from the Airport terminal to its current final station on this part of the line: King George V. Engineering works are underway to further extend this line under the River Thames to Woolwich. This further extension is expected to be completed in early 2009.

There are four car parking areas within the Airport, two for passengers and two for staff. The business or short stay car park is located closest to the terminal building. 164 places are provided here in addition to 12 spaces for disabled parking. A further 18 spaces for the valet parking service are situated on a small piece of land opposite the terminal building. The main car park contains 611 spaces. Approximately 250 car park places are used by staff, who predominantly work shifts, are available at both the east and west ends of the Airport. The car parks are linked to the terminal building by a covered pedestrian walkway.

3.5 Other Facilities

An office building, City Aviation House, is located to the south east of the terminal building. This houses offices for the Airport company and a number of airlines and other concessions. Further business centre facilities are also located here.

In-flight catering is prepared in the King George V Building, located at the eastern end of the main car park. Freight handling is also undertaken in this building. The amount of freight passing through LCA is small and predominantly consists of courier and express deliveries. All cargo movements are via the holds of passenger aircraft. There are no cargo only flights. As the Airport is closed at night it is not attractive to airfreight customers who tend to operate overnight.

A further building at the western end of the site, a former dock warehouse, houses workshop facilities for facilities maintenance and motor transport functions. A stores facility for the Airport and other concessions are also located here.

Five hotels are located within half a mile of the Airport on the ExCel London exhibition site. A Travelodge hotel adjacent to the Airport, just south of the Jet Centre was completed in December 2005.

4. Passenger Demand Forecasts 2006 - 2030

Introduction

This chapter presents forecasts for scheduled and corporate air passengers and aircraft movements. People travel by air for three main reasons: for purposes of conducting business, for visiting friends and relatives or to reach a holiday destination. Growth in air travel is driven by a range of factors, including economic growth, the time savings that air travel offers over other modes of transport and the relative price of air travel.

London City Airport (LCA) from the outset, due to its unique location, was designed to serve a niche, primarily business, market. It is a popular airport for European and domestic business travellers because it is easily accessible and simple and quick to use. A sizeable proportion of passengers travel for leisure purposes, either to visit family and friends or to take city or skiing breaks to London and European destinations. The vast majority of passengers travel on scheduled services. There is very little seasonal variation to this traffic.

It is expected that London City Airport will maintain its bias towards business travel, remain a domestic and European airport only and be the starting or finishing point for most of its travellers' air journeys, as opposed to becoming a 'hub' airport which passengers use to connect onwards to other destinations. It is unlikely for two reasons that 'low fare' operators will offer services from LCA. 'Low fare' operators traditionally operate aircraft types that do not have the ability to meet the steep approach and short runway characteristics of LCA, nor do their business models allow for the relative expense of operating at LCA due to its proximity to central London.

Corporate aviation, the operation of aircraft by individual companies and not for public hire, is facilitated at London City Airport and meets the needs of business travellers in a more precise way by allowing individuals to choose their time of departure and to travel to destinations not served by scheduled carriers. Corporate aviation has grown considerably at LCA in recent years. It is anticipated that in years to come it will remain a relatively small proportion (about 15%) of the overall business at London City Airport.

4.1 Scheduled Air Passengers

The Aviation White Paper noted that the growth of passenger and aircraft movement traffic at London City Airport was not likely to be significantly affected by the provision of additional runway capacity elsewhere in London, i.e. that LCA has its own unique catchment area for the services it provides. The forecasts given for London City Airport in the South East Regional Airport Study (SERAS) documents that underpin the White Paper were constrained to the existing annual air transport movement (ATM) limit of 73,000 ATMs. This cap is a planning constraint rather than a finite physical capacity limit. The Department for Transport therefore assumed LCA to be capable of supporting up to 5 million passengers a year (mppa); our view is somewhat higher.

The passenger forecasts upon which this Airport Master Plan is based were set out in London City Airport's Statement of Intent, December 2004. These forecasts reflect the broad sentiment expressed by the Secretary of State for Transport, Alistair Darling, when he launched the Future of Air Transport consultation in July 2002 and stated that 'as a first step we need to do all we possibly can to make the most of existing capacity'.

Having considered the broader economic growth projections for East London contained in the Greater London Authority's London Plan[1], LCA prepared its own forecasts of passenger and air transport movement growth, taking into account the physical constraints imposed by its single runway, rather than existing agreed planning caps.

[1] A description of the London Plan can be found in Chapter 2

Figure 2 - Passenger Forecast & Assumptions

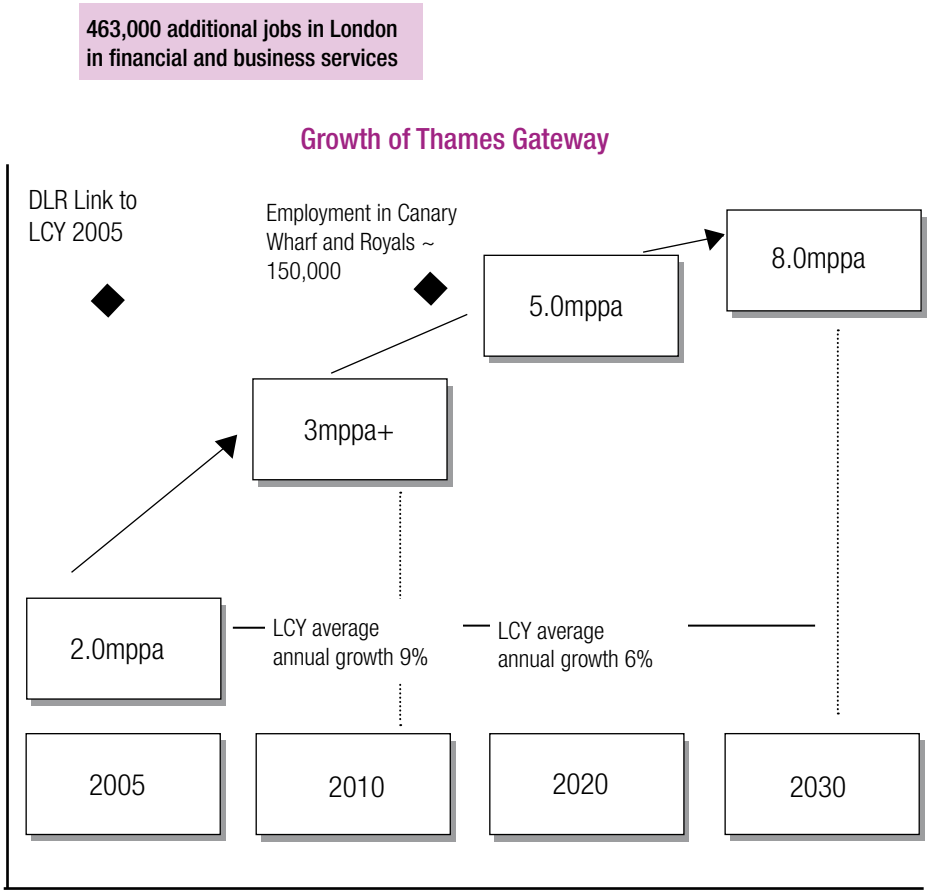


Table 1 - Passenger Forecast for LCA 2010-2030 in mppa

	2005 (actual)	2010	2015	2020	2025	2030
Passenger Forecast	1.99	3.0	3.5	5.0	6.3	8.0

The passenger forecast for London City Airport and key assumptions are shown in Figure 2.

Government forecasts for LCA, and projections based on growth in financial and business services suggest demand of 3.0 mppa by 2010. This corresponds to an average growth rate of 9% a year. However the demand for leisure travel is also expected to grow at a similar rate with the proportion of passengers travelling for leisure reasons likely to remain similar to today. Government forecast growth rates to the year 2020 for short-haul business and leisure market segments stated above have been taken into account in determining this forecast (source: DETR, 2000).

After 2010 growth could slow to around 6% per year. There are a number of possible reasons for this including the opening at Heathrow of Terminal 5, a second runway at Stansted and a Crossrail link to Heathrow.

Table 1 shows the forecast scheduled passenger numbers by 5-year intervals.

In general terms Table 1 shows that over the 10 year period 2005 – 2015, passenger numbers at LCA would double. Likewise there would be a further doubling of passenger throughput over the period 2015 – 2030.

Various factors were taken into consideration when determining the passenger forecast for London City Airport:

- Population Growth in London.
- Employment Growth in Finance and Business Services Sectors.

Population Growth in London

The London Plan predicts a population increase in London of 800,000[2] people between 2002 and 2016. This is equivalent to a city the size of Leeds.

2. A more recent forecast by GLA Economics, published in November 2005, suggests that London's population will grow by 1 million from 2001-2026

London's working age population is predicted to grow by 516,000 people over this time period. To meet the planned population growth of 800,000 people, the London Plan forecasts that the number of households in London will need to grow by 336,000 to 2016. This is equivalent to 22,400 additional households per year.

Table 2, taken from the London Plan summarises the spatial allocation of jobs and housing across London. This identifies East London as the recipient of almost a third of all London's housing provision until 2016 and an even greater proportion of London's jobs.

Employment Growth in Finance and Business Services Sectors

Projections suggest that total employment in London will increase by 636,000 jobs between 2001 and 2016 (Table 2). As Table 3 shows, the largest volume (69%) of the total increase in employment over this period will come from the Business Services sector (accountancy, law, management consultancy, corporate finance advice, telecommunications, advertising, marketing services and new media). Note: the individual sector totals exceed 636,000, the difference accounted for by taking into account job losses in declining sectors.

Table 2 - Minimum homes and jobs targets for London's sub-regions to 2016

Sub-Region	Housing Allocation	Proportion of Total (%)	Jobs Allocation	Proportion of Total (%)
Central London	140,000	30.5	239,000	37.5
East London	**142,000**	**31**	**249,000**	**39**
West London	60,000	13	86,000	13.5
North London	60,000	13	26,000	4
South London	57,000	12.5	36,000	6
TOTAL	Minimum of 459,000	100	Minimum of 636,000[3]	100

Source: The London Plan GLA 2004

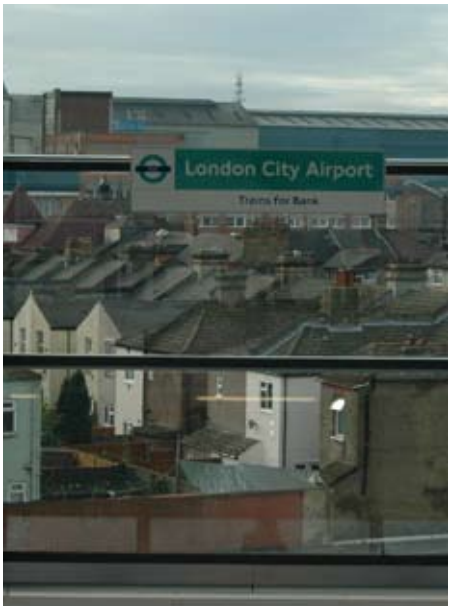


Table 3 - Employment Projections for Growth Sectors

Year / Sector	**Business Services**	Financial Services	Hotels & Restaurants	Health & Education	Other Services
2001	**1,152,667**	249,667	303,583	610,000	351,750
2006	**1,300,000**	260,000	350,000	627,000	415,000
2011	**1,445,000**	270,000	400,000	644,000	470,000
2016	**1,590,000**	275,000	445,000	660,000	530,000
Increase	**437,333**	25,333	141,417	50,000	178,250

Source GLA (Volterra Consultants) 2002

[3] GLA Economics (Nov 2005) suggests employment in London will increase by 970,000 between 2003-2026

London City Airport considers that its growth potential extends beyond 5 mppa. This is based on work undertaken on the relationship between passenger growth at LCA and both the growth in financial and business service employment and the growth of employment on the Canary Wharf Estate. Linear regression showed that there was a direct correlation between the actual number of passengers passing through London City Airport from 1997 to 2001 (inclusive) and the numbers of persons working in the business and financial services sector within London. The regression relationship was used to predict LCA passenger growth in future years using the Greater London Authority's forecast growth in business and financial services sector jobs in London. A similar approach was used in relation to recent and forecast growth in employment on the Canary Wharf estate.

The successful 2012 Olympic bid is a further reason why London City Airport is confident that annual growth rates will be strong in the earlier years of this plan. LCA, being located just two miles from the main Games sites, is ideally placed to play a key role in the transport provision for competitors, officials and spectators during the Games themselves but also in the years running up to 2012 when vast amounts of planning and building work must take place.

4.2 Scheduled Aircraft Movements

Generally speaking the ultimate capacity of an airport is determined by its runway. The length of a runway determines the size and range of aircraft that can operate from an airport. The runway at LCA is not currently used to its full potential capacity; this Master Plan describes how it would be possible to make better use of the *existing* runway.

The location of London City Airport in the Royals area of the Docklands surrounded by water, adjacent to two road bridges and the River Thames means that it would be uneconomic and impractical to provide another runway. Most importantly there would not be sufficient airspace, due to the tall buildings at Canary Wharf, to allow a second runway to operate. The location and height of buildings at Canary Wharf is also the reason why there would be no benefit to the Airport of lengthening the runway.

In 2005, London City Airport handled 71,000 aircraft movements from its runway, 61,000 of which were scheduled Air Transport Movements (ATM)[4]. LCA believes that the theoretical capacity of its runway, operating for the equivalent of about 14 hours a day, 5 full and 2 half days a week, would be in the order of 215,000 aircraft movements per year. Today's activity therefore represents approximately 33% of theoretical annual runway capacity. On this basis there is ample runway capacity at the Airport to meet foreseeable future demand.

To meet and accommodate the passenger demand figures detailed above, the number of scheduled ATMs operated per year is forecast to be around 100,000 movements by 2015 rising to around 143,000 in 2030. This is placed into context by comparing actual scheduled ATMs in 2005. Figure 3 and Table 4 show

Table 4 - Scheduled Air Transport Movements (ATM) to 2030

	2005	2015	Growth (2005-2015)	2030	Growth (2015-2030)
ATMs	61,000	100,000	64%	143,000	43%

[4] An ATM is an air transport movement by a civil aircraft engaged in the transport of passengers, cargo or mail on commercial terms

Figure 3 - Indexed growth of Passengers and ATMs (2005 = 100)

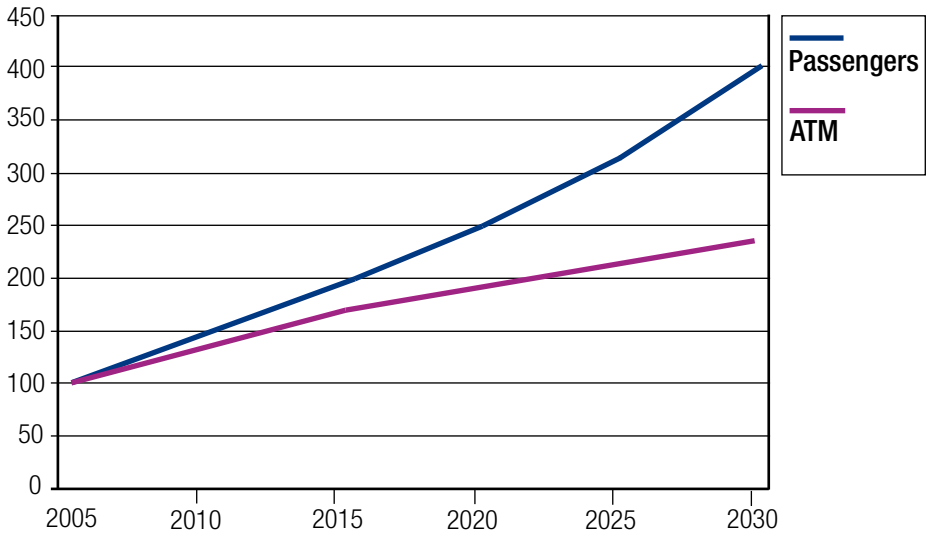


Table 5 - Scheduled Aircraft Parking Stands to 2030

Year	Million Passengers per Year	Scheduled Aircraft Stands
2005	2	14
2015	3.5	19
2030	8	25

that the growth in air transport movements to 2015 and 2030 will be less that the growth in passenger numbers over the same period (shown in Table 1).

It is possible to transport more passengers because there is expected to be an upwards trend in the average passenger seating capacity of aircraft operating at LCA. This does not mean that there will be a change to larger aircraft types from those operating today, but instead there will be a general phasing out of smaller aircraft types in favour of more movements of regional jet aircraft. This ATM forecast reflects the prediction that the average aircraft size for scheduled services at LCA will increase from around 60 seats in 2005 to around 66 seats by 2015 and 82 seats by 2030.

Together with the upward trend in average aircraft size, these forecasts also predict that a higher proportion of the seats on each flight will be occupied (known as the load factor). The average load factor in 2005 was 54%. This forecast assumes growth in load factors to 59% in 2015 and 68% in 2030.

4.3 Scheduled Aircraft Parking Stands

Table 5 summarises the forecast demand for aircraft parking stands associated with the scheduled passenger forecasts and assumptions about average aircraft size and load factors found in Appendix II.

4.4 Corporate Aviation

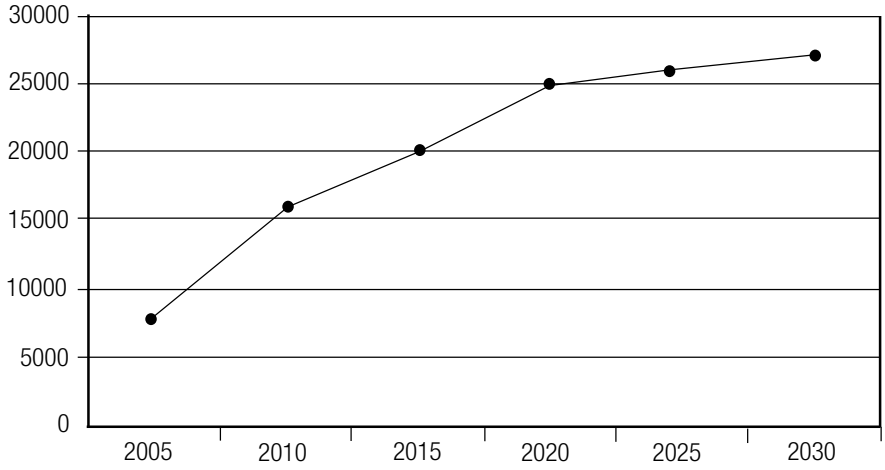
One of the documents published by the Government when it launched the Aviation White Paper consultation process in July 2002 was a study on the demand for business aviation services in the South East. The study acknowledges that this sector of the market has to date largely relied on ability to access slots at the major airports in the South East (particularly Heathrow and Gatwick and increasingly Luton and Stansted). The trend for corporate aviation to be pushed out of the major airports, in favour of using the slots for more valuable commercial traffic, is unlikely to be reversed resulting in the prediction that there will be a substantial shortfall in capacity for corporate aviation in the South East.

Government forecasts (SERAS supporting study 'Business Aviation in the South East Part 3: Future Capacity for Business Aviation' May 2002, Table 1) predict corporate aviation growth rates of between 0% and 3%. London City Airport has experienced significantly higher growth rates than this, albeit starting from a very low base, over the past 5 years and predicts further rapid early corporate aviation growth rates,

Table 6 - Corporate Aviation Movements for London City Airport

Scenario	2005 (act.)	2010	2015	2020	2025	2030
LCA Forecast	9,578	16,000	20,000	25,000	26,300	27,600

Figure 4 - Forecast Corporate Aviation Movements at London City Airport 2005-2030



slowing in the longer term, to give a long term forecast as shown in Table 6.

It should be noted that corporate aviation is traditionally measured in terms of number of aircraft movements rather than passenger numbers because the volume of passengers carried is small. The average number of corporate aviation passengers carried per aircraft movement at London City Airport is between 2.0 and 2.5. It is expected that this ratio will remain fairly constant in future years.

Corporate Aircraft Parking

The number of aeroplanes that can park on the apron area dedicated for the handling of corporate aviation can vary considerably because corporate aircraft types differ in size. In 2005 the number of aeroplanes parked on the Jet Centre apron when it was fully occupied ranged from 10 to 14 aircraft. To ensure the efficient use of the apron space aircraft are parked to maximise the use of space while at the same time ensuring that the needs and requirements of passengers are satisfied.

The growth in demand for corporate aviation services is provided for by extra apron and terminal space as outlined in plans in Chapter 5. It is not possible for the reasons stated above to quantify the number of stands for corporate aircraft into the future. It is likely however that the area of apron (currently Stands 11 – 14) to the immediate west of the current passenger pier in future years would be used to handle corporate aircraft operations.

4.5 Characteristics of Future Demand and Operating Hours

It is not anticipated that the operating hours of LCA will significantly change in the future. London City Airport has no plans to operate at night. Similarly LCA does not envisage a change to the 24 hour closure period currently operating at weekends. The increasing volume of passengers will be accommodated within approximately the same hours as today by increasing the proportion of traffic handled in off peak periods.

The average hourly passenger loads are expected to increase at a relatively higher rate during off-peak hours than in the peak hours. This will arise from the increased frequencies on the major routes providing more mid-day travel options for business travellers, together with an increasing development of the leisure market. In addition it is anticipated that the average aircraft size will increase relatively less during these peak periods.

5. Land Use at London City Airport in 2015 and 2030

Introduction

This chapter describes the phases of physical development planned for the London City Airport (LCA) site. It is designed to be read in conjunction with Drawings 2, 3 and 4. The phases detailed below cover a period of 25 years, depending upon commercial demand for the Airport. A computer animation with accompanying text and commentary in the form of a DVD also supports this written document.

The drawings show the following:

- Drawing 2: Phase 1 – Indicative land uses to allow LCA to accommodate up to 3.5 million passengers per annum (mppa) by around 2015.
- Drawing 3: Phase 2 – Indicative land uses to allow LCA to accommodate around 6 mppa between 2015 and 2025.
- Drawing 4: Phase 3 – Indicative land uses to allow LCA to accommodate around 8 mppa by 2030.

A plan of current land use at London City Airport in 2006, Drawing 1, can be found in Chapter 3: London City Airport Today.

For the most part the airport development described here can be accommodated on land currently owned by London City Airport or one of its sister companies. Necessary planning permission would be sought for each element of development together with detailed environmental assessments.

Proposed development outlined in this chapter is matched with growth in capacity, as a result of passenger demand. If demand for air services from LCA grows faster than predicted in Chapter 4 then it may be necessary to bring forward some of the expansion plans. Similarly if there was a slow down in the rate of traffic growth, developments would be deferred until the financial case for further expansion could be advanced. This factor, together with advancements in technology, is likely to mean that the precise location and configuration of capacity enhancements may be subject to change.

5.1 PHASE 1 Up to 2015

It is expected that developments occurring in Phase 1 would allow the Airport to accommodate up to 3.5mppa. These passenger throughputs are expected to be achieved around the year 2015. Phase 1 developments are shown in Green on accompanying DVD computer animation.

Apron

It is envisaged that a further scheduled aircraft parking apron could be provided to the east of the terminal building by constructing a platform over the King George V Dock. Engineering feasibility studies were conducted in 2000 and planning permission for this extension was granted in 2001. It is expected that in this phase of development such a structure would be capable of parking up to five aircraft.

It is envisaged that the airside roadway on the main apron could move northwards so that it is sited to the rear of the aircraft parking stands. This change of location of the airside road allows a change in operating procedures such that aircraft park 'nose-in' and face the terminal building. This improves safety and passenger handling as passengers no longer have to cross a roadway to access their aircraft or the terminal building. As a consequence it would be possible to realign the apron at this western end allowing more aircraft parking space to be provided.

At the Jet Centre at the western end of the site, further aircraft parking space could be provided to the east of the facility, by the relocation of old buildings.

Terminal

In conjunction with the development of the eastern apron, it is envisaged that the main terminal building would be also extended eastwards (a 'finger' extension) comprising a wide pier structure containing integral passenger lounges to service the aircraft stands. This pier structure would also act as a sound screen for nearby residential properties.

There is space to extend the existing arrival and departure pier structure to provide an additional gate room facility, Gate Room 10. To address further capacity constraints and passenger congestion experienced primarily in the departure lounge, a western extension to the main terminal building could be created on land, triangular in shape, isolated by the DLR railway line and DLR station.

It is envisaged that the Jet Centre building at the western end of the airfield could approximately double in size from that existing in 2006 by expansion to the western side of the building.

Surface Access

The expansion of the Jet Centre building could increase demand for further car parking on the landside; however a passenger drop-off lane created parallel to Hartmann Road, could reduce the need for this.

During this phase of development, work currently underway to extend the DLR from King George V under the Thames to Woolwich will be completed. It is expected that this extension to Woolwich will be completed in early 2009.

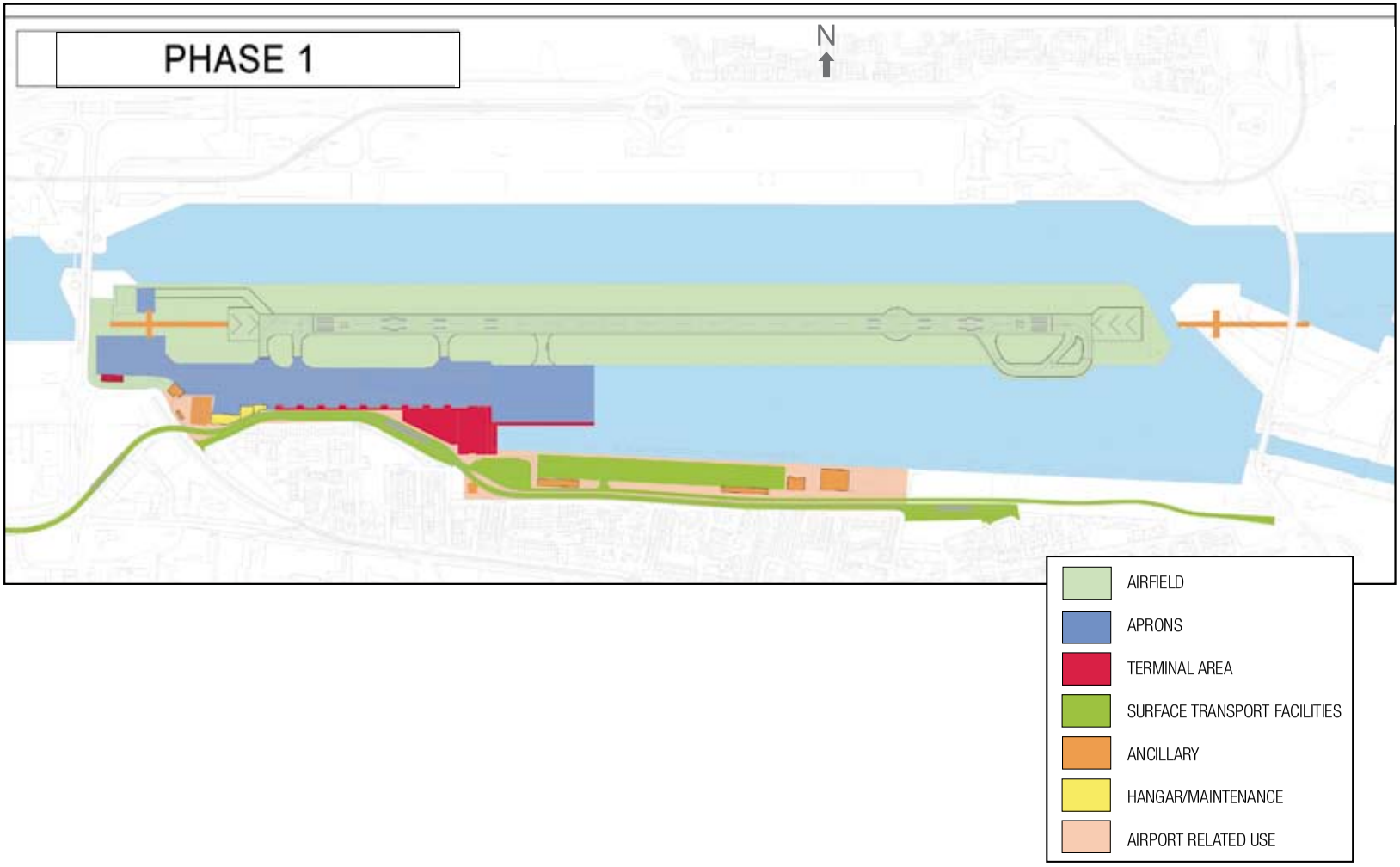
Ancillary (Support) Facilities

The Transco gas valve situated next to the Jet Centre building at the western end of the site could be moved to create an additional aircraft parking area. The vehicle checkpoint (VCP) which is a demountable building designed for relocation, could move south-eastwards from its current position to make way for further expansion to the Jet Centre.

It is anticipated that the location of the fuel storage facility remains as currently. However during this phase of development, hydrant fuelling to individual aircraft stands could be introduced. A hydrant fuelling system would reduce the need for fuel bowser vehicles trips on the apron.

The existing fire and rescue service is housed in an old building previously used to support dock activities. In future a new, purpose-built fire station could be provided in an area to the west of the current location.

Drawing 2 - Indicative Land Uses 2005-2015



Hangar / Maintenance

The building to the west of the pier structure, currently known as the 'Ledger' building and housing aircraft ground handling services and airline engineering functions, could be removed and replaced by a purpose-built building to the immediate west of the pier extension. It is envisaged that space for equipment storage would be provided underneath. Adjoining the new Ground Handling Services facility, building(s) to accommodate engineering and corporate aircraft maintenance facilities could be provided.

It is envisaged that an aircraft hangar could be built at the western end of the site. It is expected that such a hangar would be used for overnight aircraft maintenance and would be of a size to accommodate one BAe-146 aircraft or two smaller corporate aircraft. The development of aircraft maintenance at LCA would increase the demand for skilled employment in this field.

Other Development

The King George V Trust has plans to create a new water-ski club and ski tow course in King George V Dock.

5.2 PHASE 2 Between 2015 and 2025

It is envisaged that Phase 2 of the Master Plan would take the capacity of the Airport up to around 6 mppa. Developments in Phase 2 are shown in Red on accompanying DVD computer animation.

Apron

Five further scheduled aircraft parking stands could be built over the King George V Dock to increase aircraft handling capacity. Access to the runway from aircraft stands could be improved by the construction of a taxi-lane running the length of runway to join with the Runway 28 Hold Point.

Aircraft parking could also be provided in an area to the north of the runway's approach lighting at its western end. Termed 'North Apron', this could be created following the relocation of the Fire Training Ground in the previous phase.

Extra apron space to the north of the hangar extension (see Hangar/Maintenance section below) could be made available following the relocation of the fuel farm (see Ancillary Facilities section below).

Terminal

To meet increasing passenger demand the main terminal building could be further extended on its eastern side by building over the dock between the current dock edge and the pier. The wide pier structure could be further extended eastwards to serve additional aircraft parking stands (as described above) and act as a sound barrier.

During Phase 2 it is envisaged that a further extension to the eastern end of the Jet Centre building could occur to handle increasing demand for executive aircraft operations.

Surface Access

To support improvements in capacity elsewhere it would also be necessary to extend the terminal vehicle drop-off and pick up area eastwards over the current business car park. This would necessitate the provision of a multi-storey car park, up to approximately seven storeys high, that could extend along approximately half the length of car park as it exists today. The 'drop-off' lane serving the Jet Centre building, constructed during Phase 1, could be extended.

Ancillary (Support) Facilities

The office facilities provided in City Aviation House could be expanded by building an extension on either or both the eastern and western ends of the existing building. A dedicated facilities management centre could be built on the eastern side of the multi-storey car park. Car hire facilities could either be provided for within the multi-storey car park or relocate to an off airport location.

Albert Island, located east of the runway is an area of land currently not under LCA

control. Since most of this area is within the Public Safety Zone (PSZ) of the Airport, general non-airport development is restricted. It is possible therefore that the Fire Training facility could be relocated during this phase from the west end of the airfield to this Island. A swing bridge could be constructed to provide controlled access to/from the airfield for fire and rescue service use. A combined heat and power plant could also be provided to serve both the Airport and neighbouring developments.

It is envisaged that the fuel farm would be removed completely from its current west end location to the eastern end of the Airport site or perhaps relocated off-site entirely. With the phased introduction of hydrant fuelling, a pipe feed from a small barge-supplied terminal located on Albert Island could replace the fuel dispensing facility and fuel storage farm at the western end of the site. This would have the advantage of reducing night time fuel vehicle movements.

Hangar / Maintenance

The relocation of the fuel farm would make it possible to extend the aircraft hangar facility westwards (over the old fuel farm location), making available extra apron space to the north of the hangar extension.

Airport Related or Mixed Use Development

Vacant land at the eastern end of the site currently on long-term lease to the Airport Group could be developed for either airport related uses (should demand dictate) or non-aviation related medium density mixed-use development as part of associated planning agreements. Social housing could be provided on land to the south of King George V DLR station and north of Newland Street.

The DLR will have been extended from King George V under the Thames to Woolwich providing good access to the development site from south of the River and onwards into the City.

5.3 PHASE 3 By approximately 2030

The final phase of the Master Plan would see the Airport growing to accommodate 8 mppa by around 2030 and would entail the construction of additional aircraft stands together with the re-modelling of the original terminal building. Developments in Phase 3 are shown in yellow on accompanying DVD computer animation.

Apron

A further area of apron and pier could be built to accommodate up to five scheduled aircraft stands. This apron area would join the parallel taxi-lane built in the previous phase for access to the Runway 28 Hold.

The construction of a terminal extension (see below) would create an area that could be converted into aircraft parking stands which would then be aligned with those built over the dock. This development would allow for larger-sized aircraft to use stands 1-4.

Terminal

The terminal could be further extended eastwards along the southern portion of the apron previously built over the dock. Such an extension would absorb the deep pier structure.

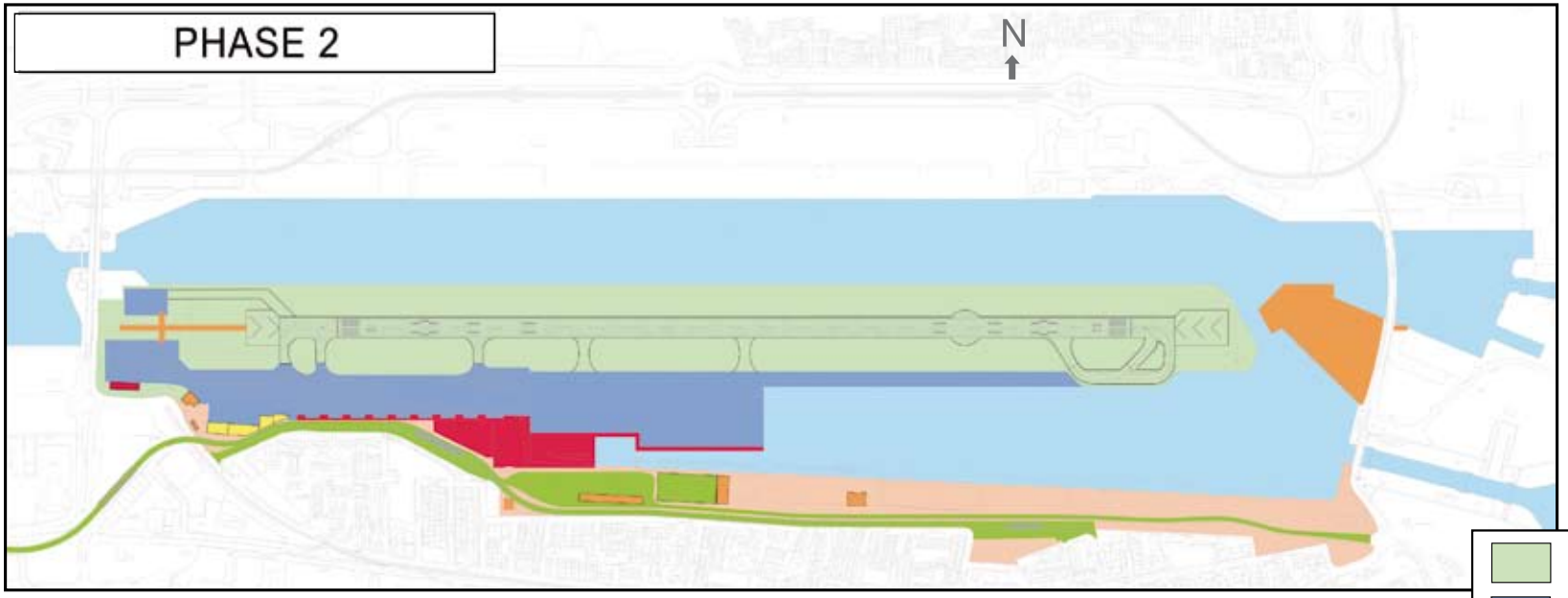
The construction of such an extension would allow the temporary closure of the original terminal so that the northern half of this old terminal could be removed along with the gate structures for gates 1 – 3. This re-modelling work to the terminal building, which by this time would be about 40 years old, could allow the terminal to be split into distinct areas for arriving and departing passengers. Such work would also require the removal of the Air Traffic Control tower from its current location. A replacement tower could be built on the north-eastern corner of the newly realigned terminal.

Surface Access

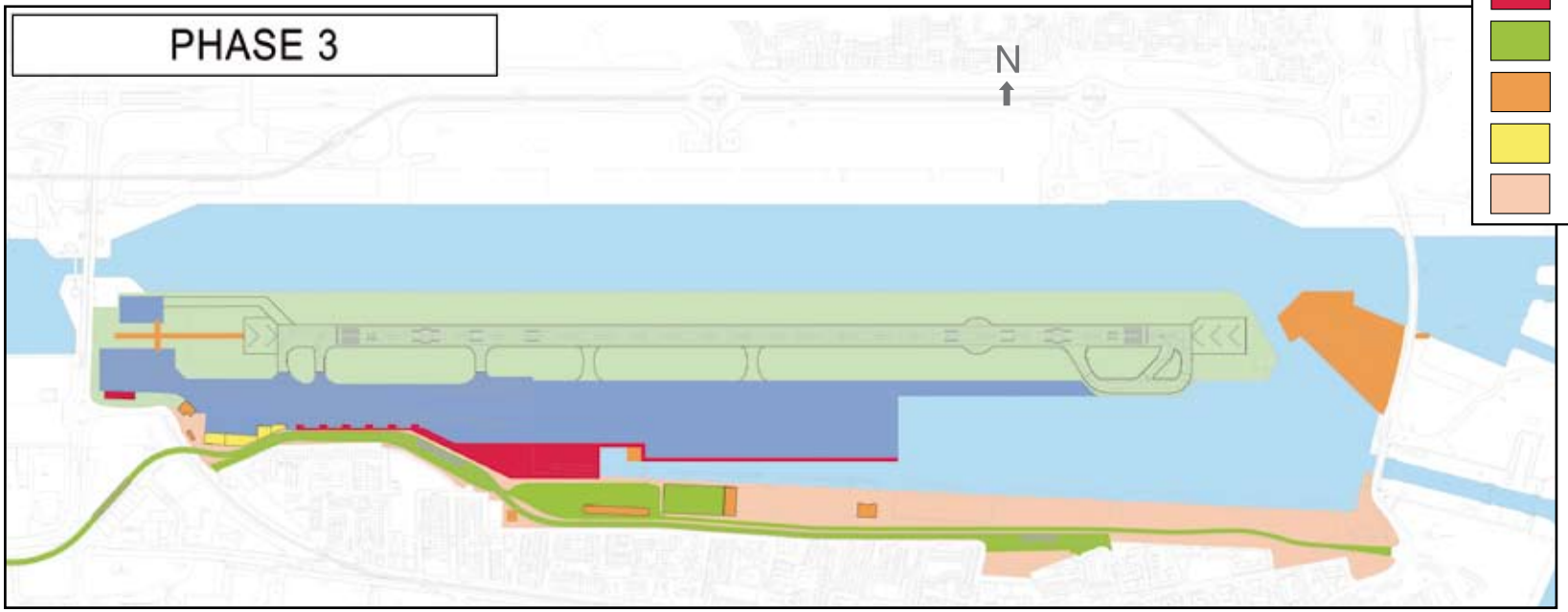
With the increase in terminal capacity, it would be necessary to modify and extend the terminal drop-off zone and associated public transport facilities eastwards.

Different areas to cater specifically for arriving and departing passengers could mirror the activities occurring within the terminal building.

Drawing 3 - Indicative Land Uses 2015-2025



Drawing 4 - Indicative Land Uses 2025-2030



AIRFIELD
APRONS
TERMINAL AREA
SURFACE TRANSPORT FACILITIES
ANCILLARY
HANGAR/MAINTENANCE
AIRPORT RELATED USE

6. Impacts of Future Growth Environmental

Introduction

There is a balance to be struck when weighing up the economic and social benefits of the growth of aviation against the environmental impacts. London City Airport (LCA) has an agreement with the London Borough of Newham under Section 106 of the Town and Country Planning Act 1990 regarding the identification, management and mitigation of environmental impacts.

The London Borough of Newham Unitary Development Plan (Policy T28) recognises London City Airport as "…. a major strategic asset to the Borough and to London as a World City, linking business centres in the West End, City, Docklands, East London and elsewhere in the Thames Gateway with a wide range of European business destinations. It is an incentive to further development in the Royal Docks and is an important direct and indirect generator of employment. The Council's policy towards London City Airport is one of support and encouragement in recognition of its strategic and economic importance to the Borough and the sub-region."

In the context of this statement, the London Borough of Newham has made it clear that it will consider any future development plans for the Airport, so long as it can be demonstrated that such development would not result in unacceptable impacts on the local environment (Policy T29).

This chapter considers the environmental impacts of the London City Airport's operation today and the potential impacts in the future. Two future years, 2015 and 2030, have been selected as points in time to evaluate these impacts. In order to simulate activity at LCA for these two future years, it is necessary to make some forecasts and assumptions regarding:

- Numbers of passengers travelling through the Airport.
- Types of aircraft that will be in operation.
- 'Mix' or the proportion of each aircraft type.

Passenger demand forecasts are presented in Chapter 4. Assumptions regarding aircraft types and mix can be found in Appendix II. It should be noted that the precise nature and scale of London City Airport's environmental impacts in 2030, as required by the Government, is extremely hard to predict. Although not accounted for in the assessments that were undertaken, it is highly likely that improved aircraft engine technology will help to reduce noise and emissions further than findings here suggest.

This chapter looks in detail at the following issues:

- Air Noise
- Airport Ground Noise
- Road Access Traffic Noise
- Air Quality
- Visual Impact and Land Use
- Water Quality
- Other Environmental Impacts
- Future Environmental Controls

6.1 Air Noise

This section:

- Describes noise control measures currently in place at London City Airport.
- Presents current and future noise contour maps for 2015 and 2030.
- Describes measures that would ensure that the community continues to be protected from any moderate or significant effects of noise.

Predictions far into the future need to be treated with some caution but provide an indication of the expected noise impacts arising from the proposals described in Chapter 5.

A noise barometer can be found in Appendix III to place in context some of the noise levels discussed here against the noise levels encountered in everyday life.

Air Noise Control Today

The term 'air noise' refers to noise from aircraft that are airborne or on an airport runway during take-off or landing. Since its inception in the 1980's, LCA has strived to operate in a manner that ensures noise emissions cause minimal impact on the community. This has been achieved by a combination of physical noise control measures and operational controls or restrictions.

- **Physical noise control measures**
  The Airport terminal building and pier were designed specifically to protect those dwellings that are located to the south of the Airport against noise. They form a continuous barrier against the ground noise of aircraft taxiing and manoeuvring on the apron, as well as protecting against the noise of aircraft departure rolls and landings on the runway.

  London City Airport operates a sound proofing scheme. To take account of the close proximity of dwellings to the Airport, an unusually low noise limit of eligibility has been adopted of 57 dB $L_{Aeq,16h}$[1] arising from airborne aircraft. Schools that fall into this noise contour have also received sound insulation treatment. The limit of eligibility for sound proofing at other UK airports is typically 63 dB $L_{Aeq,16h}$.

- **Operational controls or restrictions**
  A significant factor controlling noise emissions at LCA is the requirement for all landing aircraft to approach at a glide slope of 5.5 degrees. The normal approach angle adopted at most UK and international airports is 3 degrees. The effect of this approach angle is to expose a smaller area or 'footprint' to noise.

  Noise preferential routes (i.e. take-off paths) have also been developed to minimise the noise impact on local communities by ensuring that departing aircraft fly along corridors over those areas that are least populated as far as is practicable.

  Noise abatement procedures are also in place to ensure that aircraft climb as quickly as possible on departure and where appropriate minimum use of reverse thrust is adopted on landing. Ground noise-control procedures are also in place to restrict the use of aircraft auxiliary power units (APU) and encourage the use of fixed ground power supplied by the Airport.

- **Noise Control by Management**
  LCA monitors the way airlines and aircraft types operate through a noise monitoring and flight-track keeping system. This records the levels of noise generated by departing and arriving aircraft as well as their departure and arrival tracks.

  Another feature in place at LCA is a unique system of noise categorisation. This ensures that no aircraft above a certain departure noise level (94.5 PNdB[2]) can operate at the Airport.

  Aircraft that operate at or below this level are placed into noise categories between A and E with category A aircraft being noisier than those in the lower categories and category E being the lowest noise category. These categories are then applied a noise factor, with those in category A having a noise factor greater than one and those in the lower categories having a noise factor less than one.

  The noise factor is a multiplying factor to the actual number of air transport movements allowed at the Airport, and is used to obtain the number of 'factored movements' . By using this system of Noise Categorisation the

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[1] Noise is measured using the standard decibel scale (dBA). A series of aircraft noise events can be averaged over any given period of time using the equivalent continuous sound level (Leq). The dBA values used here mirror those used in the Government's Aviation White Paper.
[2] As measured at a point on the ground 2000m from start of aircraft departure roll along the extended runway centreline and 300m sideline.

Airport is encouraged to carefully consider the mix of aircraft types using the aerodrome by the noise levels they produce, in order to achieve the maximum number of allowed air transport movements whilst controlling the overall noise emissions to the environment.

London City Airport is closed at night and for a 24 hour period at the week-end thus giving local communities extended periods of time when no flights operate.

6.2 Noise Contours

The total air noise to which local communities are exposed over a given period depends on the noise emitted by individual aircraft and the total number of aircraft movements (arrivals and departures) in that period. An overall measure of air noise exposure can be depicted on a noise map which shows noise contours[3] .

London City Airport, under the terms of its agreement with the London Borough of Newham, produces a map showing air noise contours on an annual basis. This work is undertaken on behalf of LCA by Bickerdike Allen Partners. The contours illustrate the general noise levels around the Airport and assist in monitoring any changes from year to year. The contours are also used as a basis for determining eligibility for soundproofing.

Government Guidance (PPG 24 "Planning and Noise") and the Aviation White Paper state that:

- Daytime airborne aircraft noise should be taken into account when it exceeds 57 dB$L_{Aeq,16h.}$ This level is judged to be the level of onset of low community annoyance.
- A noise level of 63 dB $L_{Aeq,16h}$ is considered moderately annoying for the community. This is the level at which the Government expects airport operators to offer acoustic insulation. (Note, LCA offers acoustic insulation at the lower level of 57 dB $L_{Aeq, 16h}$)
- A level of 69 dB $L_{Aeq,16h}$ is considered as high community annoyance. The Government expects airport operators to assist households, subjected to these levels of noise, with the costs of relocating.

Further details of this Guidance can be found in Appendix IV.

To address the impacts of future growth, airport operators will be expected to offer to purchase any properties suffering from *both* a high level of noise (69 dB $L_{Aeq,16h}$ or more) *and* a large perceptible increase in noise (3 dBA L_{eq} or more).

Bickerdike Allen Partners was commissioned to provide an indication of the expected noise impacts in 2015 and 2030 compared with today (2005) arising from proposals described in Chapter 5 of this Master Plan. The Federal Aviation Authority's Integrated Noise Model (INM), used extensively around the world, was used to prepare the contours.

To produce noise contour predictions for 2015 and 2030 forecasts have been made of the likely number of aircraft movements for these years together with an assumption of the likely future mix of different aircraft types (see Appendix II).

Current Situation (2005)
Figure 5 shows aircraft noise contours for 2005. It can be seen that the contour representing high levels of annoyance, 69 dB $L_{Aeq,16h}$, is completely contained within the Airport site and associated dock area and does not encompass any residential locations in the area.

London City Airport receives a very small number of complaints per year that relate to noise and flight paths. The nature of operating at LCA means that the impact of

[3] Noise contours connect points that have the same average noise exposure. The contours are generated using computer models, based on the known characteristics of aircraft noise generation and attenuation, and calibrated from noise measurement monitors on the ground.

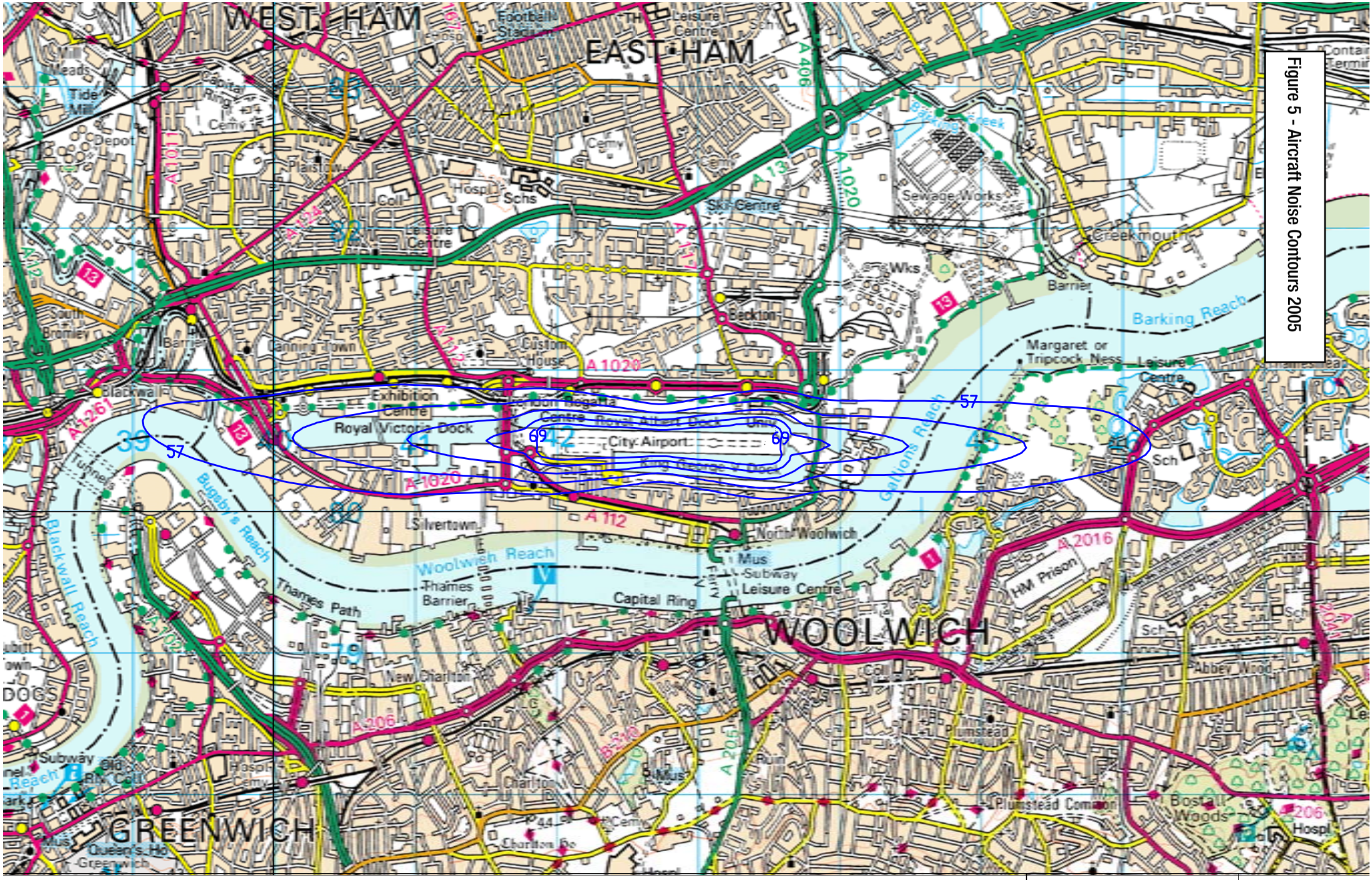


Figure 5 - Aircraft Noise Contours 2005

Drawing Title

LONDON CITY AIRPORT

DAYTIME AIRBORNE AIRCRAFT NOISE CONTOURS

2005 $L_{Aeq,16h}$ Contours - Forecast

(Based on Summer Period Movements)

KEY:

2005 Forecast, 57 dB to 69 dB, 3 dB contours

Scale at A3 : 1:25,000

Table 7 - Comparison of Noise Complaints Received by Other Airports in 2004

Airport	Total Aircraft Movements	Number of Complaints	Percentage Complaints per Aircraft Movement
Birmingham	120,839	471	0.39%
East Midlands	89,068	2069	2.33%
Liverpool	85,393	199	0.23%
Luton	94,379	534	0.57%
Manchester	224,700	1600	0.71%
Newcastle	77,721	155	0.20%
London City Airport	**61,029**	**24**	**0.04%**

Aircraft movement data obtained from CAA and complaint statistics from relevant Airport Consultative Committees.

aircraft noise experienced on the ground is kept to a minimum. The contours shown in Figure 5 demonstrate that areas exposed to the highest levels of noise are largely uninhabited.

In a twelve-month period from 2004 to 2005 the Airport received 24 complaints relating to noise and flight paths. This statistic is placed in context in the Table 7 which shows that there is less than one complaint per two thousand aircraft movements.

Year 2015

The forecast contours for 2015, which represent a 64% increase in flights compared with 2005, are shown in Figure 6 and are similar in shape to those for 2005 but slightly bigger in size. No change in flight routes is assumed. The contour representing high levels of annoyance in 2015, 69 dB $L_{Aeq,16h}$, is completely contained within the Airport site and dock areas with no properties located within it.

In the future, aircraft of similar low noise characteristics to those in use today are expected to operate but with increased climb performance. This will help to reduce the noise impact arising from increased activity.

Year 2030

The forecast contours for 2030 are shown in Figure 7. They reflect growth in the number of aircraft movements by approximately a further 40% over the 2015 scenario.

The contour representing high levels of annoyance in 2030, 69 dB $L_{Aeq,16h}$, again lies mainly within the Airport site and dock areas. However approximately 28 properties to the south of the Airport are contained within it. Many of these properties are protected to a large extent from the noise of departing and arriving aircraft by the terminal building, terminal pier and the DLR. This factor is not taken into account in the contour predictions and the actual impact is therefore likely to be much less than forecast at these dwellings. London City Airport will monitor noise levels in this area and agree with the London Borough of Newham what action should be taken if levels do reach or exceed 69 dB $L_{Aeq,16h.}$

The departure routes assumed are those currently in place, but it is likely that based on current airspace control and aircraft navigation technology, these routes may have insufficient capacity to accommodate forecast traffic levels in 2030. Further work will be undertaken on this with National Air Traffic Services and the Civil Aviation Authority who are responsible for use and changes to UK airspace.

The Aviation White Paper expects airports to determine areas or locations, where as a result of an increase in aircraft movements in the future, exposure to noise is significantly worse for residents.

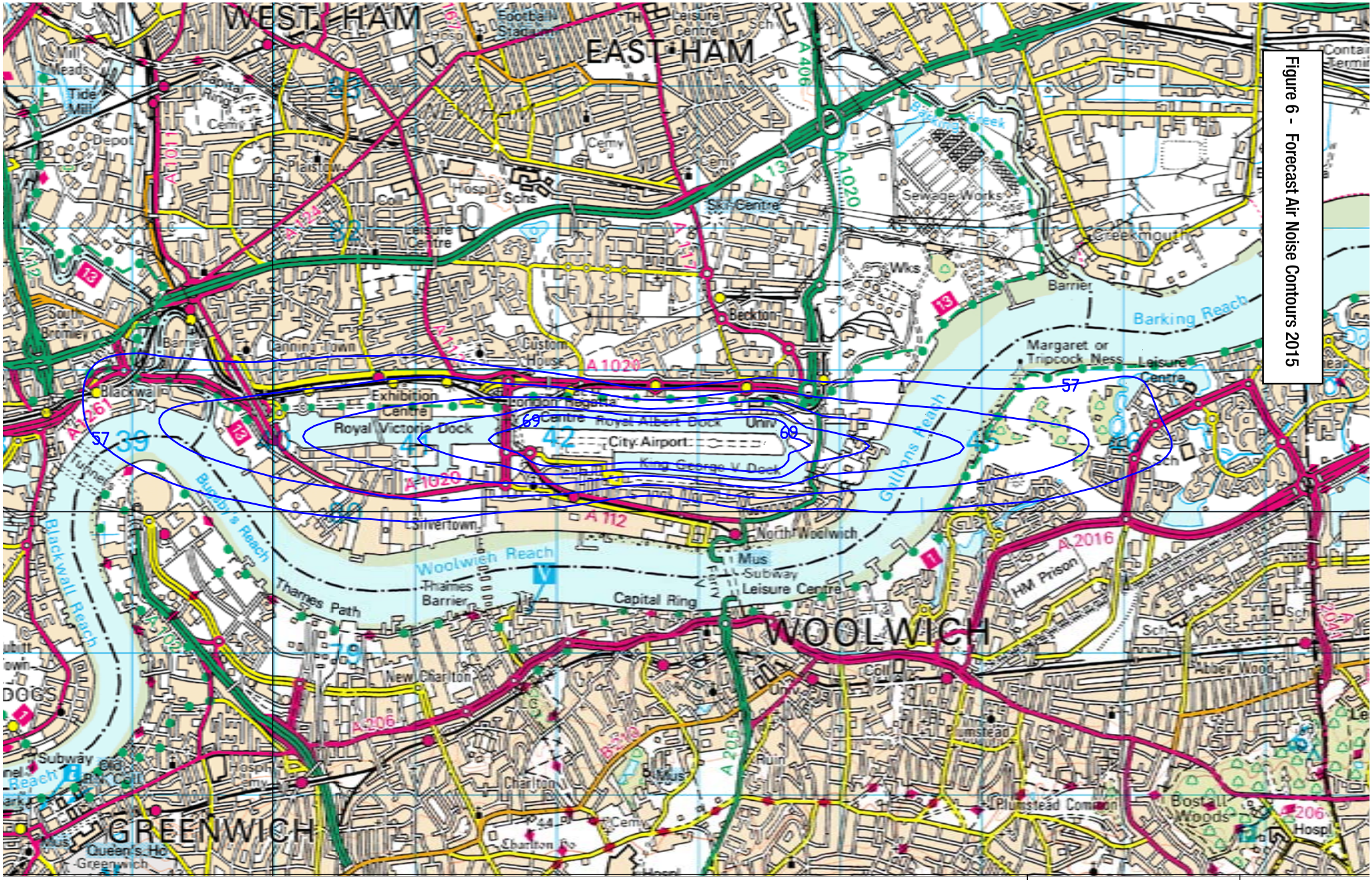


Figure 6 - Forecast Air Noise Contours 2015

Drawing Title

LONDON CITY AIRPORT

DAYTIME AIRBORNE AIRCRAFT NOISE CONTOURS

2015 $L_{Aeq,16h}$ Contours - Forecast

(Based on Summer Period Movements)

KEY:

2015 Forecast, 57 dB to 69 dB, 3 dB contours

Scale at A3 : 1:25,000

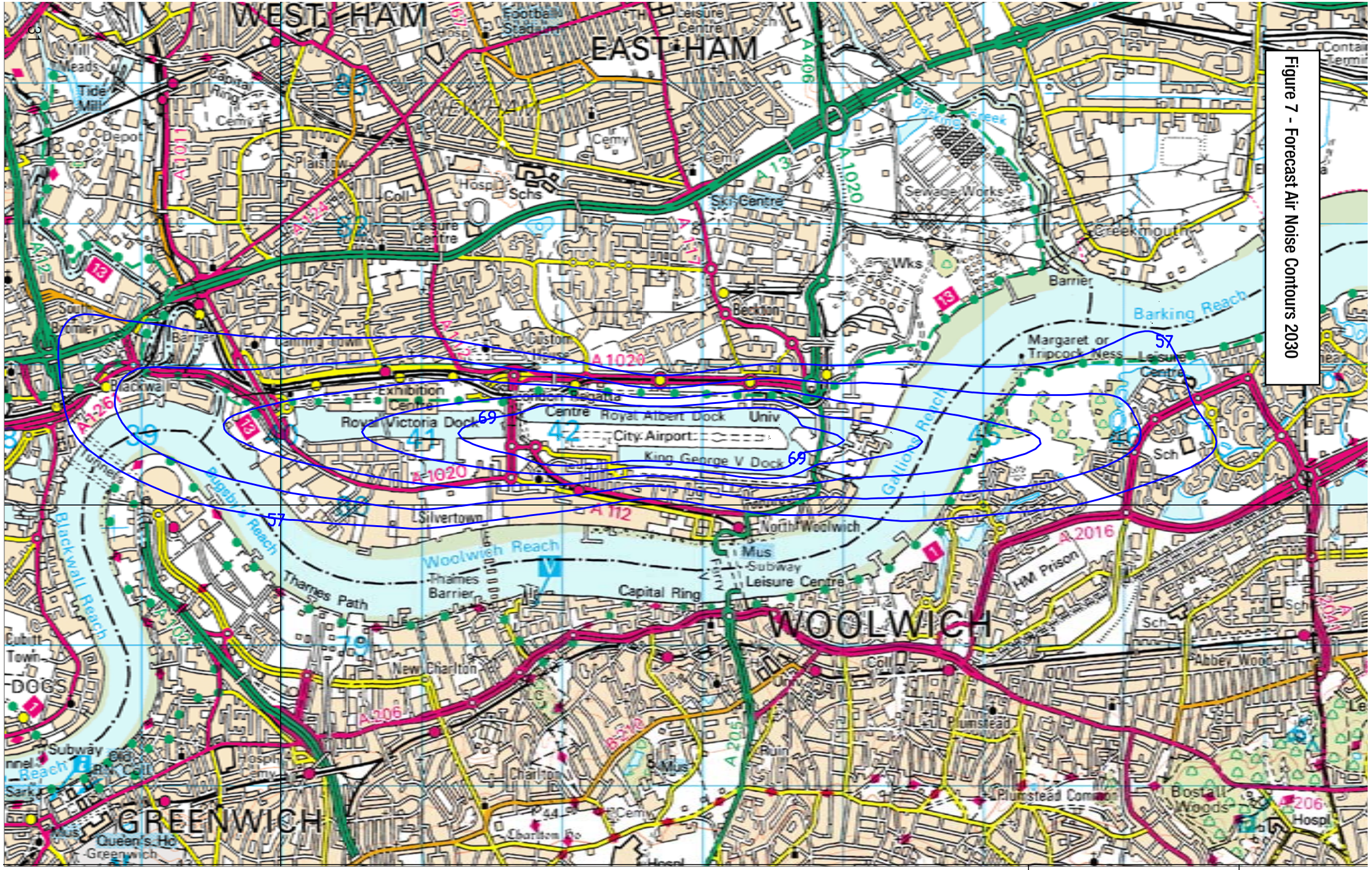


Figure 7 - Forecast Air Noise Contours 2030

Drawing Title

LONDON CITY AIRPORT

DAYTIME AIRBORNE AIRCRAFT NOISE CONTOURS

2030 $L_{Aeq,16h}$ Contours - Forecast

(Based on Summer Period Movements)

KEY:

2030 Forecast, 57 dB to 69 dB, 3 dB contours

Scale at A3 : 1:25,000

Table 8 - Subjective Importance of Changes in Noise Level

Change in Level ($dBL_{Aeq,16h}$)	Subjective Impression	Impact
0 to 2	Imperceptible change	None
3 to 5	Perceptible change	Marginal
6 to 9	Noticeable	Significant

Table 9 - Cumulative Increases in Noise Exposure Levels at Locations around London City Airport in 2015 and 2030 compared with 2005

Location	2005	2015(1)	2030(2)
Western end of Royal Victoria Dock	60 dB $L_{Aeq,16h}$	+3 dB $L_{Aeq,16h}$	+1 dB $L_{Aeq,16h}$
Custom House north-west of LCA)	54 dB $L_{Aeq,16h}$	+4 dB $L_{Aeq,16h}$	+2 dB $L_{Aeq,16h}$
Silvertown (south-west of LCA)	54 dB $L_{Aeq,16h}$	+4 dB $L_{Aeq,16h}$	+2 dB $L_{Aeq,16h}$

(1) Change re: 2005
(2) Change re 2015

Government guidance PPG24 advises that a change of 3dB $L_{Aeq,16h}$ is the minimum perceptible under normal conditions. Table 8 below expresses the relationship between change in noise level and subjective impression:

A number of locations around the Airport have been assessed and the increase in noise exposure levels over 2005, are summarised in Table 9.

The increase in noise at a location is generally likely to be at most just perceptible, with no significant impact expected. The only exception relates to a few properties to the north west of the Airport in Custom House and to the south west in Silvertown. Properties that would subsequently be exposed to noise levels in excess of 57 dB $L_{Aeq,16h}$ would be eligible for sound insulation as under the existing scheme.

Noise Mitigation

London City Airport proposes a variety of mitigation measures to ensure that air noise is adequately controlled to within the projected forecasts in future years. These will include maintaining many of the successful measures that are in place today, such as:

- No night time flights.
- Continued operation and enhancement of the Noise Management Scheme.
- Restriction of aircraft types operating at the Airport (i.e. only aircraft that adhere to the categories set out in the Noise Categorisation System as agreed with the London Borough of Newham).
- Continued operation of a Noise Monitoring and Flight Track Keeping System.
- Encouraging aircraft operators to adopt quiet operating procedures and to observe published noise abatement procedures.
- Maintaining Preferred Noise Routes
- Maintaining an Approach Glide Slope of 5.5 degrees for all aircraft.
- Maintaining a Sound Insulation Grant Scheme using the current stringent eligibility criterion trigger level of 57 dB $L_{Aeq,16h}$ for airborne aircraft noise

- Maintaining a public noise complaint handling service.
- Maintaining an Airport Consultative Committee.
- Purchase offer for any properties that are exposed to 69 dB $L_{Aeq,16h}$ or higher air noise levels.

London City Airport will continue to operate its present policies for protecting the environment from the effects of air noise and will seek to improve its policy in light of any new quieter operational techniques to ensure that the development to 2015 and beyond is achieved with the minimal practicable noise impact. LCA will seek to encourage the use of quieter aircraft types through charges it imposes on airline operators. The Civil Aviation Bill is currently passing through parliament. This will widen the power of airport operators to levy financial penalties on airlines that breach noise abatement requirements. It will also allow airports to charge airlines to reflect local emissions from aircraft.

For properties that have previously been treated under the Airport's Sound Insulation Grant Scheme that in future years fall within the 63dB $L_{Aeq,16h}$ contour, LCA would ensure that a further survey was carried out to make certain that all previously fitted insulation and ventilation is functioning to the designed standard. In the event that it is found not to be, remedial sound insulation works would be offered, at the Airport's expense.

6.3 Airport Ground Noise

Noise generated other than by aircraft in flight or taking off or landing is termed ground noise. The main sources of airport ground noise are:

- Taxiing and manoeuvring aircraft between the runway and aircraft stands.
- Aircraft Auxiliary Power Units (APU) on aircraft for supplying electrical power and for air conditioning the aircraft cabin.
- Testing (ground running) of aircraft engines.
- Ground equipment such as Mobile Ground Power Units (MGPU) which provide power supplies to aircraft on stand.

The most dominant contributor to the noise climate in the residential areas surrounding the Airport is road traffic and, to a lesser extent, industrial activity. The arrival of the Docklands Light Railway along the southern perimeter of the Airport also contributes to the ambient, or background noise environment. Airport ground noise is heard in the context of these other off-airport noise sources.

Airport Ground Noise Today

Airport ground noise is audible for locations close to the Airport boundary although many properties to the south of the Airport are currently shielded by the barrier formed by the Airport terminal and pier structure.

The use of APUs and aircraft taxiing contribute most to ground noise. Although the occasional occurrence of engine testing following aircraft maintenance can generate higher noise levels than taxiing it is of comparatively limited duration.

London City Airport has developed and implemented measures to ensure that ground operations are carried out as quietly as practicable to minimise impact and these include:

- Encouraging the minimum use of reverse engine thrust techniques on aircraft landing, consistent with safety constraints.
- Restricting engine testing to designated areas except in an emergency
- Maintaining a noise limit for controlling the level of aircraft engine running on the ground for testing and maintenance purposes.
- Limiting engine test and maintenance activities to those associated with engine rectification, rather than routine testing.
- Limiting the use of APUs to no more than 10 minutes prior to departure and 10 minutes after landing.

Currently, ground noise is controlled to acceptable levels by the above measures as demonstrated by the low number of noise complaints received (shown in Table 7).

Ground Noise in the Future
Growth in activity at LCA is expected to increase ground noise in the future. The degree of increase will be related to the mix of future aircraft types and numbers of flights and also to the degree to which future buildings and structures act as a noise shield to local housing.

Any expansion of aircraft stands would be accompanied by the construction of a noise fence, additional pier structures or terminal facilities. These would extend the existing terminal and pier buildings to form a continuous unbroken noise barrier thereby increasing the level of protection to properties to the south of the Airport. Any extension of the Jet Centre and construction of a hangar building would enhance the shielding given to properties at the west end of the Airport.

Predictions were undertaken to determine, at a number of places around the Airport, the expected change in ground noise in the future. Results showed there would be an increase in noise levels at a number of locations of:

- up to 1 dB $L_{Aeq,16h}$ by 2015
- between 1 dB $L_{Aeq,16h}$ and 2 dB $L_{Aeq,16h}$ by 2030.

Only changes of 3 dB $L_{Aeq,16h}$ or more are deemed to be perceptible and therefore the impact is considered to be negligible. Changes are likely to be small and gradual because in the future the percentage of turbofan aircraft is likely to rise while the proportion of turboprop aircraft is likely to reduce. Turbofan aircraft tend to be quieter when taxiing and manoeuvring on the ground.

6.4 Road Access Traffic Noise

Growth of London City Airport would result in additional road traffic movements to the Airport site. The surface access study undertaken for this Master Plan, and detailed in Chapter 7 provides traffic flow predictions for the local and strategic road networks for 2015 and 2030. These estimated figures for the worst case scenario, have been used to predict the increase in road traffic noise levels as a result of further growth of LCA.

Local Road Network Traffic Noise
The predictions from the surface access study show that LCA generated road traffic in 2030 will give rise to an imperceptible change of less than 1 dB $L_{Aeq,16h}$ in road traffic noise levels with negligible impact to the area.

The only roads where a perceptible increase in road traffic noise is expected in the future are those that serve the Airport directly, namely Hartmann Road and Connaught Road. Hartmann Road has recently been re-routed to facilitate the construction of the DLR. Use of this road would increase in future years and give rise to a change in noise level of 2.1 dB $L_{Aeq,16h}$ and 4.6 dB $L_{Aeq,16h}$ in 2015 and 2030 respectively but impact would be marginal since noise mitigation measures would be deployed to adequately protect the nearby properties in Camel Road, Drew Road and Newland Street. There would also be an increase in traffic along Connaught Road; however this would give rise to a barely perceptible change in noise level with little impact.

Strategic Road Network Traffic Noise
Predictions show that LCA related traffic along the strategic road network would give rise to an imperceptible change of less than 1 dB $L_{Aeq,16h}$ in road traffic noise levels with negligible impact.

6.5 Air Quality

Background to Air Quality

The quality of the air around us is affected by the emission of chemicals and particles into the atmosphere. Emissions occur as a result of human activity, predominantly the result of the combustion of fossil fuels, as well as from natural sources.

In order to protect public health the Government has, in its UK National Air Quality Strategy (NAQS), set objectives for a number of air pollutants. The objectives are based on the principle that they should help provide the best practicable protection to human health and the environment. The pollutants which present the greatest challenge in the UK are Nitrogen Dioxide (NO_2) and Fine Particulate Matter. Road traffic is the largest single contributor in the UK of both these pollutants although other sources, for example power stations and industrial processes, also produce these pollutants.

London City Airport is unusual among airports because of its city centre location surrounded by a busy road network feeding central London and its proximity to residential housing on its southern side. These factors mean it is important to consider air quality in some detail and to set this against the background air quality of the local area. London City Airport appointed consultants David Shillito Associates, who specialise in air quality, to advise of potential changes to air quality resulting from further growth of LCA.

All airports produce an effect on the air quality in the surrounding area depending on the type and scale of their operations and the distance from the Airport.

Pollutants emitted from airports generally arise from the combustion emissions associated with:

- Road traffic generated by the Airport. This in the past has been the most significant source.
- Emissions from aircraft, arriving and departing from the runway, taxi ways and at the aircraft stands outside the Terminal.
- Airport facilities, including space heating, which are very minor sources.

Three types of pollutants are of concern in these emissions:

- Nitrogen Dioxide (NO_2) formed from the oxidation of Nitric Oxide (NO).
- Fine Particulate Matter. Currently the NAQS objective is based on PM_{10} (particulate matter less than 10 microns), but in the future $PM_{2.5}$ may become of equal or even more importance.
- The mixture of hydrocarbon vapours that have the distinctive smell of aero- engines – 'airport smell' which does not affect health but is of importance to local residents.

The Environment Act 1995 made local authorities responsible for managing air quality within their own areas within the framework and objectives of the NAQS. Local authorities are required to formally assess possible sources of air quality impacts according to set procedures and, where there is a risk of exceeding the objectives ensure action is taken to secure reductions and improve air quality.

Detailed guidance on local air quality management has been published by the Department for the Environment Food and Rural Affairs (DEFRA) in 'Local Air Quality Management Technical Guidance LAQM. TG(03) (2003)'. (This can be downloaded from the DEFRA web site www.defra.gov.uk).

This Guidance sets out the procedure and methods for air quality review and assessment against the objectives. It sets out criteria to determine where detailed assessment is required and deals with both road traffic and aircraft movements.

6.6 Road Traffic Emissions

Air quality is influenced by road traffic emissions of both NO_2 and PM_{10}. Concentrations of NO_2 are at their highest at the kerbside and the objective of 40 micrograms/m^3 is exceeded at many of London's busiest roads. Similarly, PM_{10} concentrations are greatest at the kerbside due to road dust and smoke from diesel engines. Concentrations tend to reduce away from the busy roads so annual objectives for PM_{10} are rarely exceeded away from roads.

The London Borough of Newham in its air quality assessments has undertaken modelling studies of NO_2 and PM_{10}. These show that the main influence on air quality in the Docklands area is road traffic. As a result, Newham Council's 'Air Quality & Assessment Supplementary Report', November 2001, proposed an air quality management area adjacent to the A406, North Woolwich Road, Connaught Bridge, Royal Albert Way and Royal Docks Road. London City Airport lies outside this proposed air quality management area.

London City Airport makes a contribution to the traffic on these roads through the modes of transport used by passengers and staff working at the Airport and this is discussed in Chapter 7. One of the objectives of London City Airport's Surface Access Strategy (www.lcacc.org) is to reduce reliance on private cars to access the Airport and thereby reduce vehicle emissions.

Up to 2005 airport passenger transport was dominated by the use of taxis and buses. Earlier assessments on air quality focussed on effects of the flow of taxis, or black cabs, primarily to/from the Canary Wharf area or the City of London. There was a particular concern over the emissions produced by the queue of taxis waiting for customers within the Airport. On cold winter days taxi drivers leave their engines running while waiting in the queue, to keep their cabs warm. This issue has been resolved while accommodating the DLR line, by the construction of a dividing wall. Vehicle emissions from the Airport access road, Hartmann Road, were of importance because of proximity to properties in Camel Road at the western end of the residential area to the south of the Airport.

The opening of the Docklands Light Railway link direct to the Airport terminal in late 2005, made a major change to surface access. The DLR is not a significant direct emitter of NO_2 or PM_{10}.

The potential growth of road traffic generated by the Airport (discussed in Chapter 7) has been developed from predictions on the use of public transport, including the DLR. The Surface Access Impact Assessment considered three scenarios for two time frames, 2015 and 2030:

- 75% use of public transport with 28% of passengers using the DLR
- 80% use of public transport with 40% of passengers using the DLR
- 85% use of public transport and 55% of passengers using the DLR

The analysis showed that by 2015 a number of road links will have reached or exceeded capacity around the Airport. For the purposes of the air quality impact assessment it has been assumed that Airport related traffic will not be constrained by the limitations of the access roads and junctions.

The surface access study made estimates of the distribution of traffic on the local and strategic road network for the three public transport mode scenarios. The increase in road traffic generated by airport growth for 2015 and 2030 over the 2005 level is shown in Table 10.

Growth in airport road traffic relative to 2005 on these roads is dependent on the use of the DLR. By 2015, airport road traffic is unlikely to have grown by more than 8% over 2005 on the Connaught

Table 10 - Growth in Airport Road Traffic relative to 2005

Public Transport Mode	Connaught Bridge	North Woolwich Road	Silvertown Way
Year 2015			
75 %	8 %	6.7 %	6.5 %
80 %	4.7 %	3.9 %	3.8 %
85 %	1.0 %	0.8 %	0.8 %
Year 2030			
75 %	24 %	20.4 %	19.8 %
80 %	17.8 %	15.4 %	14.9 %
85 %	11.1 %	9.5 %	9.2 %

Bridge. It can be inferred that associated vehicle emissions are also unlikely to grow more than 8%, ignoring the likely improvements in engine performance that can be expected. The effect on roadside concentrations of NO_2 and PM_{10} will be influenced by other factors but is unlikely to be increased in proportion and is thought to be acceptable.

By 2030 predictions of the road traffic growth become more uncertain. Table 10 shows that in the worst case, for the Connaught Bridge, the growth in airport traffic is predicted to be equivalent to that of the background, or non-airport related traffic. In all other cases airport related traffic will not grow as fast as traffic from other uses of the network. The changes in the vehicle exhaust emissions on roads of London in 2030 are not predicable. While roadside concentrations of NO_2 and PM_{10} must be expected to increase, it is considered that the contribution made by further passenger growth at the Airport will be unlikely to cause air quality standards to be exceeded.

6.7 Aircraft Emissions

Current aircraft engines produce oxides of nitrogen (NO_x), a mixture of nitric oxide NO and some nitrogen dioxide NO_2. Little PM_{10} is produced from engines as technological developments have lessened smoke production. NO_x emission data are publicly available for commercial aircraft engines but data for PM_{10} emissions have not been published.

The DEFRA LAQM TG (03) Guidance recognises that the scale of the air quality impacts of aircraft emissions at airports can be related to the scale of operations in terms of annual passenger throughput. The thresholds to determine when detailed assessment is required are as follows:

- For NO_2 detailed assessment is required where the predicted total equivalent passenger throughput in 2005 is more than 5 mppa (Box 6.2 in the Guidance).
- For PM_{10} detailed assessment is required where the predicted total equivalent passenger throughput in 2005 is more than 10 mppa (Box 8.4 in the Guidance).

As London City Airport is not expected to reach 5 mppa, the NO_2 threshold value, until approximately 2020, detailed assessment is not required at this stage. Similarly, there is no need to make a detailed assessment for PM_{10}.

In looking to the future over the next 25 years, any growth at London City Airport is likely to be accommodated through changes to the types of aircraft operating from the Airport and average aircraft sizes. Change will also occur by way of advances in aircraft engine technology.

In recent years the most frequent aircraft types using London City Airport have been the smaller turboprops such as the Fokker 50 but there has been an increasing use by airlines of larger jet aircraft types such as the BAe146. Such change is expected to continue with the introduction of new, more energy efficient aircraft like the Embraer 170/190. Changes in aircraft size and technology will have an effect on emission rates. As larger aircraft require more energy to take-off and climb away from the Airport the emissions associated with the Airport could also be expected to increase.

Changes in aircraft types however are likely to result in a change in the distribution or the pattern of the emissions over the area of the Airport. NO_x emissions are likely to be transferred away from the terminal buildings and taxi ways where they are present today, to the runway and flight paths. The emissions 'footprint' is likely to alter from one that is fairly circular today to one more oblong in shape that follows the alignment of the east-west runway.

The reason for this is that on take-off more powerful engines will ensure greater dispersion of pollutants away from residential housing areas to the Public Safety Zone (PSZ) areas located at each end of the runway. These are areas where development is severely restricted and

therefore few people are present. The improvements in technology are likely to ensure that the environmental concentration of pollutants will remain largely unchanged and acceptable.

6.8 Future Air Quality Assessment

Despite the lack of a formal Local Air Quality Management requirement, London City Airport has adopted a strategy for full air quality assessment to ensure and demonstrate that any future growth of the Airport can be accomplished without producing unacceptable air quality impacts.

It has been proven that air quality assessment methods using computer models to simulate future conditions have significant limitations. There are many uncertainties connected to the amount and composition of aircraft emissions and their dispersal as well as difficulties in predicting future road traffic flows. London City Airport has therefore adopted a strategy based on direct measurements and monitoring rather than predictive modelling. A measurement strategy will do a number of things:

- monitor local background air quality.
- monitor the effects of road traffic and surface access.
- investigate changes in aircraft types and dispersion patterns around the Airport.

The strategy comprises a three part monitoring programme which is planned to be returning data in summer 2006:

1. To measure the background air quality in the local area, a continuous air quality monitoring station for NO_2 and PM_{10}, is being installed on the roof of City Aviation House located on the Airport site. This will be operational from spring 2006.

2. To examine the spatial distribution of NO_2 a year long programme of diffusion tube monitoring in an array around the Airport and nearby housing is planned to start during the summer of 2006.

3. The effects of individual aircraft types will be examined by a short term, high resolution NO_2 monitoring programme downwind from each end of the runway. This programme will start during the summer of 2006.

It is intended that this programme will run and operate in combination with the London Borough of Newham's monitoring programmes in the area. The information collected will complement the information collected by the Borough and should add to the knowledge about air quality in the area. The results of full air quality assessment of predicted developments would become available long before the DEFRA criterion of 5 mppa is reached.

6.9 Air Quality Impact on the Local Community

Experience has shown that the main air quality aspect of interest to local residents is 'airport smell'. This smell is a characteristic of airports throughout the world and originates from the special fuels used in gas turbine aero-engines. Although most people would not describe the smell as unpleasant, to local residents frequent exposure could be unwelcome and unnecessary. Excessive emissions have caused complaints in the past, but very few in comparison to the number of aircraft movements.

Since the earliest days of the operation of London City Airport odour generation has been controlled by operational management procedures limiting the unnecessary running of aircraft engines. LCA requires all aircraft to shut down all engines and not to keep them idling when on the stands.

This has been made possible by the provision of Fixed Electrical Ground Power (FEGP) or mobile ground power to all aircraft stands on the apron. It is recognised that the use of an aircraft's auxiliary power unit (APU) is sometimes necessary to carry out essential functions during the turnaround of an aircraft. However, all airlines are charged for the use of FEGP, irrespective of whether they choose to use it or not. This removes the excuse of airline operators that they are saving costs by not using the airport FEGP facilities. The use of APUs will continue to be strictly monitored and further work will be undertaken to investigate how their use can be reduced further.

London City Airport is currently investigating ways to minimise the potential risks associated with blast from jet engines on the apron and beyond. One possible solution being considered is the use of a line of deflectors, structures that would also have the effect of reducing odour. Particularly in light wind conditions, when complaints of airport smell have occurred most, airport smells would be better dispersed by being deflected upwards.

6.10 Changes and Mitigating Measures Resulting from any Expansion

Any expansion of LCA would occur mostly as an eastward extension of the apron to provide additional aircraft stands, as detailed in Chapter 5. On this new apron, aircraft would probably manoeuvre onto stands 'nose-first', keeping the engines directed away from the nearest local housing. The distance between engines and the nearest residential house would be about 130 meters, about 3 times the distance at present. Aircraft would probably be pushed back onto the apron before the aircraft engines are started, further increasing the separation distance.

Furthermore a suitable noise barrier would be erected on the south side of an eastern extension to the pier. This would provide protection against aircraft noise and also assist with the dispersion of any emissions and odour.

The proposal to relocate the Airport's fuel farm away from its current location at the western end of the Airport will reduce the potential for local residents to be exposed from any odours emitted from this facility. It will also eliminate the need for fuel deliveries to be made during the night.

David Shillito Associates has concluded that proposed changes in operating methods, together with mitigation measures, will reduce the risk of exposure to airport odour to the closest houses in Camel Road without significantly increasing exposure to other houses in the area.

6.11 Wake Turbulence

London City Airport has not experienced incidents of 'wake turbulence', effects that have caused complaints at some other airports. All aircraft develop rotating vortices at their wing tips. These can even be seen on F1 racing cars. With some aircraft, in some conditions flying in certain configurations, these vortices can drift on wind and come to ground causing noticeable effects. In a few cases even damage to buildings can occur. However, the main hazards from wake turbulence are the possible effects in the air on other aircraft. This is an important issue and, from the viewpoint of operational safety, monitoring for the occurrence of any possible incidents on the ground continues to be important to the environmental programme.

6.12 Conclusions on Air Quality

- The next 25 years at London City Airport will produce changes in air quality impacts, with change in the balance between the effects produced by emissions from aircraft and those of road traffic on the Docklands road network.

- Road traffic: On the main Docklands road network the largest effect that is likely to be produced by 2015 is an 8% increase in road traffic on the Connaught Bridge. Vehicle emissions are also unlikely to grow more than 8% by 2015 and the impact on roadside concentrations of NO_2 and PM_{10} will not be increased to the same extent and will remain acceptable. In the worst case scenario by 2030, airport related road traffic could grow by 24% compared to 2005. Changes in vehicle exhaust emissions and other associated effects make the prediction of changes in roadside pollutant concentrations uncertain. However it is considered unlikely that air quality standards will be breached as a result of growth in airport passenger traffic to 2030.

- Aircraft: In the past the contribution to local air quality made by aircraft emissions was small. The future expansion in aircraft movements, combined with the changes in aircraft and their engines, will increase NO_x emissions mainly at the runway and Public Safety Zones away from residential areas; environmental concentrations of NO_2, are not expected to increase.

- Air quality monitoring programme: although not a formal requirement London City Airport has adopted an air quality monitoring programme to enable the full prediction of the impacts that expansion may bring and demonstrate its acceptability.

6.13 Visual Impact and Land Use

Visual Impact and Land Use are topics that will be considered in detail at the time of a planning application. The general comments below relate to the most significant physical developments proposed in Chapter 5, namely:

- Terminal and pier expansion
- Apron construction

In preparing this Master Plan, research was conducted on the views of local people (reported separately in Chapter 8). Amongst the many positive aspects mentioned by interviewees of having an airport located in the area was the confidence that it gave, because of its operations, of very tall buildings remaining absent. The lack of such buildings was felt to contribute to a feeling of space.

Visual Impact

The proposed terminal and pier building structures will have a limited visual impact on the most local residential community to the Airport due to the screening effect of the DLR. These buildings will be relatively more significant when viewed from distant points such as the Royals Business Park, University of East London campus and the Connaught and Sir Steven Redgrave Bridges; however they may be seen as adding character and interest to the landscape of the area. Since the apron would be built at or close to dock level its visual impact will only be noticeable from high viewing points.

Land Use

The principal land use impact of the proposals presented in Chapter 5 is the development of a permanent structure over an area of the existing King George V Dock. The development would represent a net reduction of approximately 17% of open water within the Royal Docks. The main users of the King George V Dock are a Water Skiing club and a Jet Ski club. The area available for the Jet Ski club would remain essentially unaltered. The King George V Trust has plans to create a permanent water ski tow facility. The proposed development of LCA has taken this planned scheme into account and will not require it to be modified significantly or abandoned.

LCA is also conscious of the visual amenity of the water in the Royal Docks. As such it continues to review the need for, and amount of, any further construction (beyond that already approved) in the dock – and maximising what can be accommodated on the Airport land to the south of the King George V Dock. In any event such maximisation would appear to materially lower the cost of any construction when compared with the expense of building in the water.

Developments beyond the Airport boundary have the potential to impact on aircraft operations at the Airport. To ensure that this is avoided, plans for development in the surrounding area are referred by the local planning authority to the Airport prior to granting of planning permission, for assessment as to their potential affects on

aircraft safety. This process is known as safeguarding. The safeguarding process requires airports to protect the airspace through which aircraft fly, by preventing or restricting the penetration of 'surfaces' created to ensure the continued safe operation of the Airport. The location and nature of these surfaces are related to the existence of the Airport and are not expected to be impacted by the volume of operations anticipated within this Master Plan.

It is likely that the growth of LCA will have an impact on the Public Safety Zones (PSZ), areas at either end of the runway where planning restrictions are made by the local planning authority on the use of land to protect from the risk of an aircraft accident. The size and location of the PSZ is determined by the Department for Transport on a risk assessment basis from an examination of up to date accident data. As a result of increasing activity at LCA, the PSZ might be expected to increase in size. At the same time, improving aircraft performance and safety will tend to reduce its dimensions. Whilst not a specific issue required to be addressed in the Master Plan, LCA recognises the sensitivity of the PSZ. Following the publication of the final Master Plan LCA will discuss with the Department for Transport the work necessary to evaluate future PSZs.

6.14 Water Quality

The impact of this Master plan on surrounding water quality has not been considered in detail. However the guiding principles that have been applied to all previous developments at the Airport will continue to be applied as appropriate for each individual development. In particular it should be noted that the planning process that each development will be subject to, will ensure that the appropriate controls are in place.

The Airport's activities have the potential to affect the quality of the water in the docks that surround it. In particular, de-icing of both aircraft and runway is necessary during the winter, and herbicides and pesticides are used to manage the habitat to ensure the safety of aircraft operations. To prevent this, the Airport drainage system is designed with a comprehensive arrangement of interceptors all of which pass through a main switching pit/interceptor that enables the flows to be diverted to a dedicated foul sewer in the event of a major spillage or incident. This system also provides a facility to temporarily hold any spillage of contaminants pending removal off-site by an authorised contractor.

6.15 Other Environmental Impacts

The key environmental impacts of the further development of London City Airport are deemed to be noise and air quality together with surface access implications and the corresponding impacts on local and wider transport infrastructure. Other environmental impacts could be considered to be those on:

- flora, fauna and geology
- architectural and historic heritage
- archaeological features

It has been considered inappropriate to consider these environmental impacts in any depth at this master planning stage. Work was undertaken in these areas in 2002 when an Environmental Impact Statement was prepared in connection with a planning application to build the Runway 28 Hold Point. Impact assessment work in these areas would be undertaken in line with any planning applications that result as a consequence of this Master Plan if required by the London Borough of Newham.

London City Airport will continue to work hard to maintain positive working relationships with local communities, passengers, airlines, staff and other authorities to seek wherever possible, to minimise the impacts of its operations.

6.16 Future Environmental Controls

The Airport's activity is currently controlled by a series of limits on the numbers of aircraft movements. At present the annual limit on movements is 73,000 ATMs. This Master Plan looks forward over the next 25 years, during which time aircraft environmental impacts can be expected to reduce. Whilst the impact forecasts in this plan are based on current technology it is not possible to reliably predict the environmental performance improvements of new generations of aircraft.

The Airport, therefore, will work with the planning authorities to develop a control regime that is based on environmental impacts rather than numeric movement limits. The benefit of such a regime would be to maximise the development of the Airport whilst ensuring that the impacts on local residents remain acceptable.

7. Impacts of Future Growth Surface Access

Introduction

Airports, by the nature of their business, require good quality, well integrated surface access links to ensure that passengers can make easy and reliable connections and employees are in place to handle passengers and aircraft, and provide other travel services. The scale of activity at London City Airport (LCA) impacts on the demand for road and rail travel to and from the Airport.

LCA shares the Government's objective of increasing the number of passengers who travel to and from airports by public transport in order to help reduce road congestion and air pollution. LCA recognises that surface access issues are a key factor when considering the further growth of an airport. The aim of this chapter is to outline existing surface access infrastructure, capacity, and utilisation and consider the impacts on that infrastructure of further growth of LCA.

All airports in England and Wales with more than 1,000 passenger air transport movements a year are required to set up and lead an Airport Transport Forum and prepare an Airport Surface Access Strategy. The strategy, which typically looks five years ahead, sets out targets for decreasing the proportion of journeys to airports by car and increasing the proportion by public transport, for both air passengers and airport staff. London City Airport's current Surface Access Strategy, February 2005 (www.lcacc.org/atf), which was developed with members of the Airport Transport Forum, has two main targets:

- To increase the proportion of passengers using public transport (i.e. DLR, train, bus, taxi, coach) to access the airport to 77% or more.
- To reduce the proportion of employees travelling to and from the airport by car alone, to 55% or less.

This document is presently being revised to take account of the commencement of Docklands Light Railway (DLR) link to the Airport which opened in December 2005. The updated strategy is expected to be published by Autumn 2006 on the London City Airport Consultative Committee website (www.lcacc.org).

7.1 Existing Surface Access Infrastructure

Access by Light Rail

The DLR system connects Bank and Tower Gateway in central London with London City Airport, Beckton, Stratford and Lewisham in east and south London. The extension of the DLR line from Canning Town to North Woolwich (served by King George V station) via London City Airport was completed in December 2005. The Airport is served by its own station which is linked directly into the terminal building. Two-car trains operate every 7-10 minutes with a journey time to Bank in the City of London of 22 minutes and to Canning Town station, for interchange onto the Jubilee Line, Silverlink Metro and bus services, of 6 minutes. Trains run from London City Airport between 05.30 and 00.20 hours.

Access by Bus

Two Transport for London bus services currently operate directly to the Airport:

- the 473 operates from Stratford to North Woolwich in both directions with operating hours from LCA of 04.40 to 01.00.
- the 474 operates from Canning Town to Manor Park via Beckton in both directions, with operating hours from LCA of 04.15 to 00.50.

Access by Rail

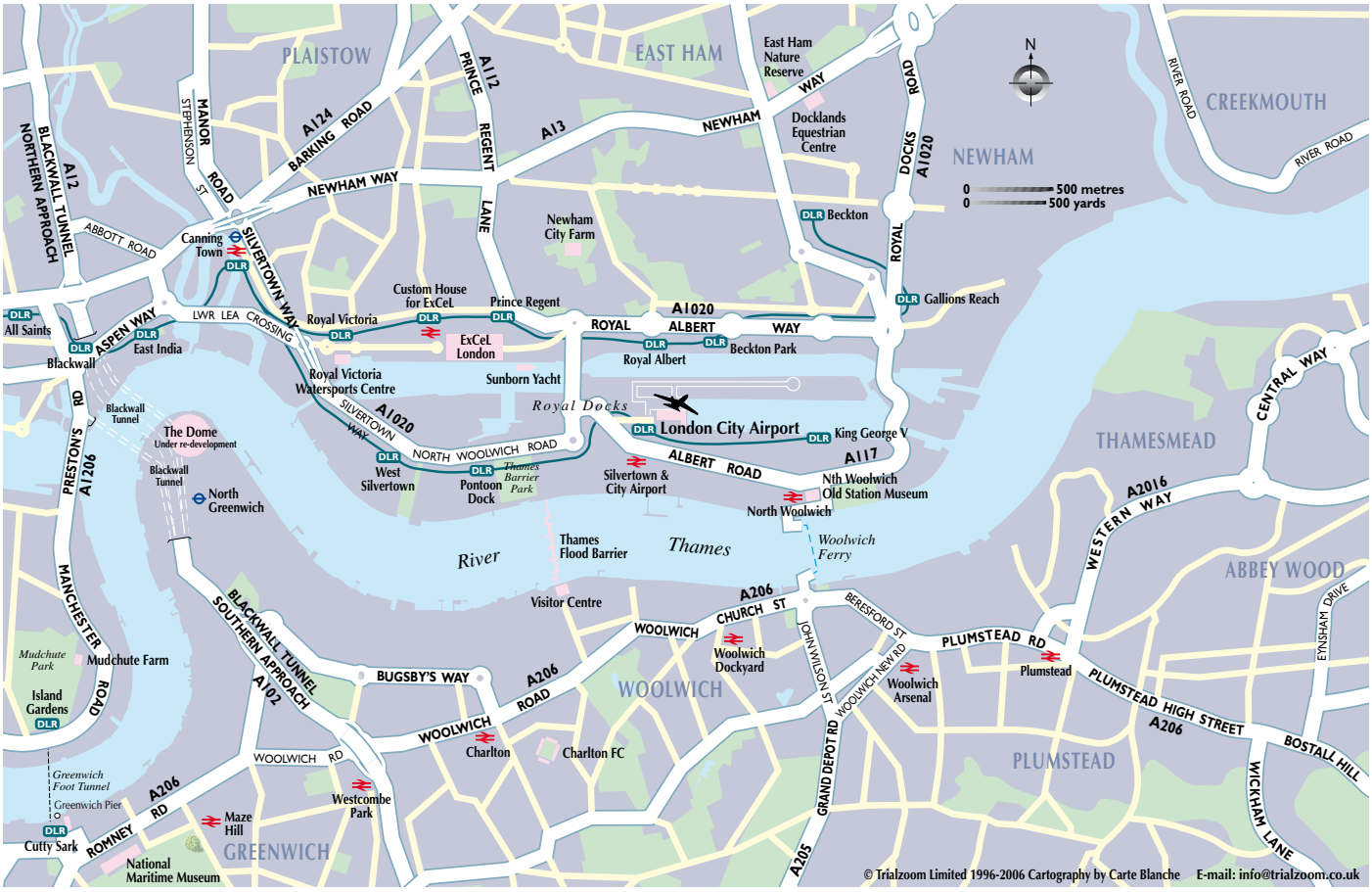
The Silverlink Metro service links North Woolwich with Richmond to the west of London via north London serving stations such as Highbury & Islington, Camden and West Hampstead twice an hour. The nearest station to LCA is Silvertown although transfers to the Airport terminal are simpler and usually quicker if passengers alight at Canning Town and change onto the DLR. Trains depart Silvertown between 06.10 and 22.40 hours.

Access by Road

The main trunk roads providing access to the Airport from the north are the east-west A13 and the A406 North Circular that connects with the M11 and M25 motorways. The Airport is just a mile from the A13 (Prince Regent's Lane junction), three miles from the A406 and 15 miles from the M25. Over the past few years, large sections of the A13 have been substantially upgraded and expanded. In particular the 10 mile stretch between Canning Town in Newham and Wennington near the junction with the M25, has been widened to three lanes in each direction. Grade separation at junctions with key north-south routes has relieved congestion at those junctions.

The A102(M) trunk road crosses the Thames north-south via the Blackwall Tunnel approximately three miles from LCA. Used intensively at peak periods, this is the nearest road river crossing point to the Airport. The Docklands Highways encompass a number of different road networks. The Highway runs eastwards from Tower Hill to Canary Wharf via the Limehouse Link. Aspen Way and the Lower Lea Crossing link the Blackwall Tunnel and the Isle of Dogs with the Royals. From the Lower Lea Crossing the Airport is accessed from the west via a four-lane single carriageway (Silvertown Way and North Woolwich Road). The Royal Albert Way is a two-lane dual carriageway that links the Airport, via the Connaught Bridge to the A1020 and the A406/A13 intersection, just three miles north-east of the Airport. Albert Road links the Airport with Woolwich and the Woolwich Ferry river crossing. The Airport is connected to Connaught Bridge via Connaught Road and the Airport's own access road, Hartmann Road.

Figure 8 - Main Road Network surrounding London City Airport



Car parking

There are four car parking areas within the Airport, two for passengers and two for staff. The business or short stay car park is located closest to the terminal building; the main car park adjacent to this. A staff parking area is located at the eastern end of the main passenger car park and a further facility is provided at the western end of the site close to the Jet Centre terminal.

7.2 Modal Split

Research undertaken by the Civil Aviation Authority (CAA) in 2003, prior to the opening of the DLR extension to the Airport, showed that passengers used the following methods of accessing the Airport:

Table 11 - Passenger Modal Split (2003)

Mode of Transport	Percentage
Taxi	45
Airport shuttle bus	28
Car (lift)	12
Car (parked)	10
Transport for London bus	3
Rental car	1
Other	1
Total by Public Transport	76

The Airport for many years operated shuttle bus services to/from Liverpool Street in the City of London, Canary Wharf, and Canning Town (for connections at the nearest Underground station). Following the opening of the Docklands Light Railway service which provides a direct service to Bank and Canning Town these bus services have now ceased. Early signs indicate that between 30 and 40 % of passengers use the DLR.

The introduction of DLR to LCA greatly increases public transport access to the Airport and provides an opportunity to reduce traffic on the local road network. The introduction of the DLR led to the withdrawal of shuttle bus services which removed approximately 116,000 bus trips from the road network per year. Early indications also suggest that there has been a material reduction to taxi usage but data on this is not yet available.

Approximately 64% of employees drive to work, 33% travel to work on public transport with the remaining 3% either travelling by motorbike, cycling or walking. Approximately 77% of staff work shifts, the majority working early and late shifts with early morning start times falling between 04.30 and 05.30 hours and late finishing times usually falling between 21.00 and 22.30 hours. A small proportion of staff work night shifts.

7.3 Introduction to Transport Study

London City Airport commissioned Atkins to review the future surface access requirements for passengers and employees in light of proposed developments described in Chapter 5 and to assess the likely impact of these demands on the local transport network in the years 2015 and 2030. The purpose of the study was to maintain a strategic perspective of surface access requirements rather than focus on more localised issues.

Approach

The starting point for the Transport Study was the need to fully understand the current situation as the basis for forecasting the likely impact of future growth.

- The flight profile for LCA has a distinct morning peak in flight arrivals and departures between 08:00-09:00 hours; average daily passenger throughput during this hour in 2005 was approximately 940 passengers. It is at this time that LCA puts the most demand on the transport network. The period between 08.00 and 09.00 hours is also the main weekday peak traffic hour on the wider road network around the Airport. The analysis undertaken therefore considered the impact of this Airport peak on roads around

LCA between 08:00-09:00 hours.

- The majority of employees work one of two shift patterns (05:30 to 13:00 hours and 13:00 to 21:30 hours) and therefore travel outside the morning peak. As such, the impact of employee travel in the morning peak is minimal.

It was also necessary to understand traffic flows and public transport use in the area surrounding the Airport.

Local and regional planning authorities across the UK monitor the use of transport networks and will make forecasts regarding future demand to ensure the adequate provision of transport links and facilities into the future. The capacity of existing roads and rail links and future proposals for new roads or rail services in an area is typically assessed.

Transport for London is responsible for London's transport system and is tasked with implementing the Mayor's transport strategy and managing transport services across the Capital. To assist in this task, Transport for London uses transport models. These models, which use computer programmes, are designed to simulate or represent flows and patterns of movement of passengers and vehicles in an area. Transport models mimic how people choose which travel modes and routes to take as conditions change over time. They can be used to forecast the likely demand on transport infrastructure arising from, but not exclusively, growth in the economy and future residential and employment developments. The impact of the further development of an airport on the surrounding area can be assessed alongside demand pressures coming from growth elsewhere; the latter demand is termed 'background demand'.

The most relevant and useful transport model for East London is the Thames Gateway Bridge Model. This, as the name suggests, is the model that has been developed to investigate the impact of the proposed Thames Gateway Bridge (TGB), a river crossing proposed between Beckton and Thamesmead and approximately half a mile from LCA. The TGB is currently the subject of a Public Inquiry and therefore full access to the outputs of this model was not granted to LCA. The Transport Study has therefore been undertaken without detailed information relating to the nature of background traffic growth post 2020. An informed assessment of likely impacts in 2030 has therefore been made using an approximation of traffic growth rates.

The provision of new transport infrastructure in the area surrounding the Airport in future years is likely to alter mode of travel chosen and routes taken. Some elements of emerging transport infrastructure are more developed and certain than others. For the purposes of the Transport Study a conservative approach has been adopted as to the delivery of schemes such as Crossrail. Only those schemes which are either under construction (e.g. DLR extension to Woolwich) or where statutory processes have been completed and funding secured have been included in the modelling work.

7.4 Scenarios for 2015 and 2030

It is not possible to know today the mode split of travel to and from the Airport (i.e. by passengers, employees, deliveries and visitors) in 2015 and 2030. The Transport Study therefore assessed a number of different scenarios for overall travel to and from the Airport:

- 75% public transport mode split (28% DLR, 44% taxi and 3% bus);
- 80% public transport mode split (40% DLR, 37% taxi and 3% bus);
- 85% public transport mode split (55% DLR, 27% taxi and 3% bus).

These scenarios show a difference in the relative attractiveness of public transport compared to private car-based modes. These scenarios were chosen in order to test, in the case of the first scenario, a situation where the proportion of road based trips remains relatively high, and to test a scenario where DLR use is high (third scenario). Estimates were made of

the distribution of traffic on the local and strategic road network for these three scenarios. Estimates were also made of the volumes of passengers travelling on the DLR for each of the scenarios. For the purposes of the simulation it was assumed that car parking facilities will always be available; in practice, car park demand will be managed through pricing. LCA will be careful to ensure that car park tariffs are not set at a level such that users park in local residential streets instead, although a residents' parking scheme in local roads could address this.

The results of the CAA 2003 survey, undertaken before the DLR link to the Airport was completed showed that 77% of passengers access LCA by public transport. London City Airport therefore expects that an 85% or higher public transport mode share split is likely to be achieved by 2015. In part this will be encouraged by the certainty of public transport journey times from central London over a road based trip which is likely to suffer from increasing road congestion. It is likely however that there will always be a proportion of passengers who will choose to drive and park at the Airport. This is partly because some passengers will continue to start or finish their journeys in London and South East, where public transport options are not so attractive. Travelling by car is often the only means of accessing the Airport for disabled passengers or those travelling with a lot of luggage.

It is more difficult to increase the public transport mode share of Airport employees because around 77% of them are shift workers and need to access the Airport for early and late shift times. Increasing the hours of public transport operation, especially in the early morning (i.e. DLR and local bus services to start at 04:30 hours and thus allow employees to arrive at the Airport for a 05:30 start), would further improve the accessibility of the Airport. LCA will continue to explore with TfL how this might be achieved.

7.5 The Impact on Surface Access Infrastructure in 2015 and 2030

DLR

Results from the study show that in 2015 under the 80% public transport scenario, where 40% of passengers are forecast to use the DLR, 670 passengers will travel on the service (300 to the Airport and 370 from the Airport) during the peak hour of 08.00 – 09.00. These passengers will be easily accommodated on the Woolwich branch of the network, which is scheduled for completion in 2009 and brings with it increased train frequencies. LCA is projected to represent 9-10% of overall demand between the Airport and Canning Town in 2015. By 2030 the morning peak hour passenger demand is projected to rise to 1,210 passengers (540 passengers to the Airport and 670 passengers from the Airport). This level of demand would be within the capacity of a three-car DLR service operating at 15 trains per hour. Such a service is already planned for other parts of the DLR network and is likely to be required before 2030 due to increased background demand. Demand from the Airport is predicted to remain at about 9% of overall passenger volume.

In 2015 under the 85% public transport scenario, where 55% of passengers use the DLR, it is predicted that around 880 passengers would use the DLR during the peak hour. This is within the capacity of the Woolwich branch of the network and the Airport would absorb 16% of overall capacity. By 2030, airport demand is projected to be approximately 1,600 passengers in the morning peak hour (890 inbound and 710 outbound). Again this level of passenger demand could be accommodated on the Woolwich branch of the network when the service is upgraded to accommodate demand arising from the further development and regeneration of east London.

Road Network

Figure 9 shows the Airport in relation to the immediate local road network.

Table 12 shows London City Airport's contribution to traffic on surrounding roads

Figure 9 - Local Roads in the Vicinity of London City Airport

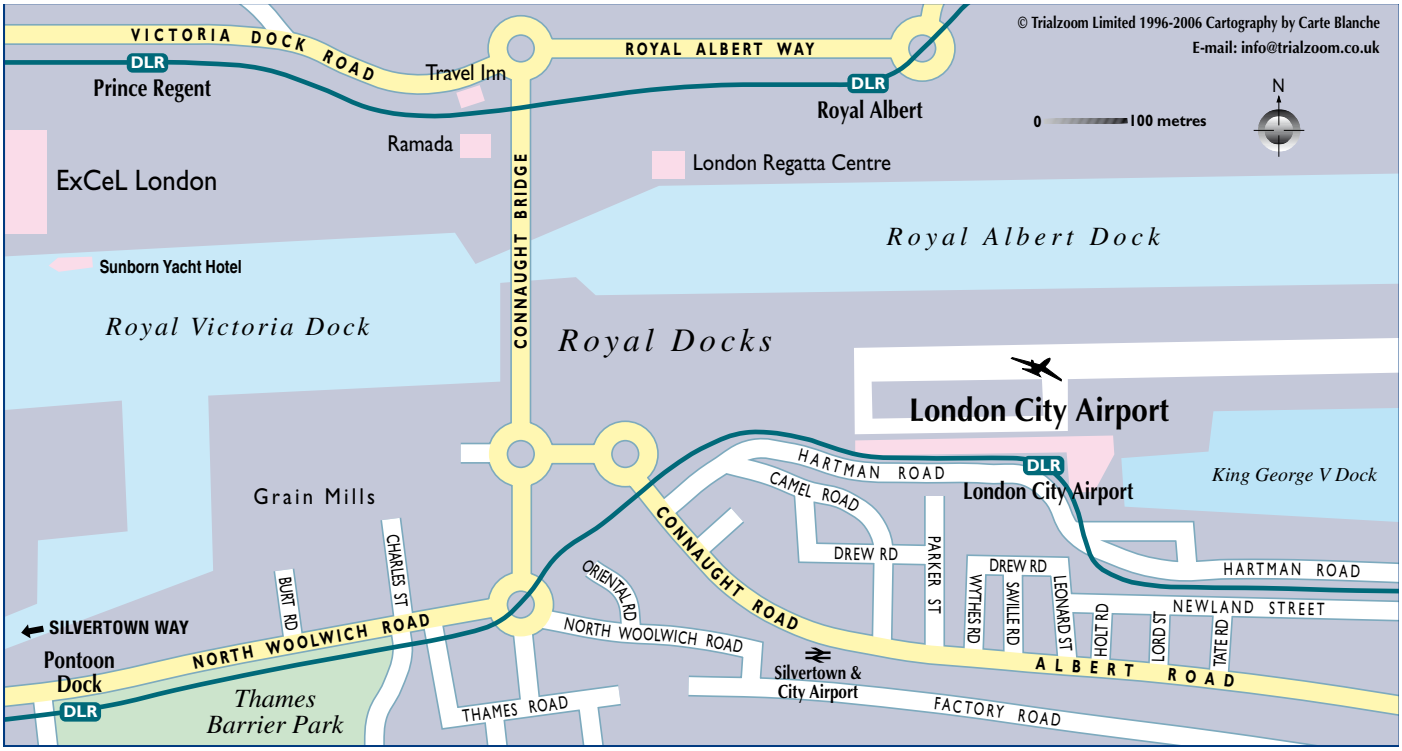


Table 12 - Proportion of Traffic that London City Airport contributes to Local Roads and Respective Total Road Capacities 80% Public Transport Mode Split

	Hartmann Road		Connaught Road		Connaught Bridge	
	LCA proportion	% total capacity	LCA proportion	% total capacity	LCA proportion	% total capacity
2005	96%	63%	28%	92%	12%	59%
2015	96%	87%	33%	108%	15%	66%
2030	96%	154%	44%	145%	21%	81%
	Albert Road		**North Woolwich Road**		**Silvertown Way**	
	LCA proportion	% total capacity	LCA proportion	% total capacity	LCA proportion	% total capacity
2005	6%	48%	11%	54%	10%	56%
2015	7%	55%	13%	61%	12%	64%
2030	11%	65%	19%	75%	18%	78%

currently (2005), in 2015 and 2030. Average figures for the mid 80% public transport mode split scenario are represented. The table also shows the total capacity at which various roads operate. The point at which traffic engineers consider a road to be at maximum operational capacity is at 85% of the theoretical maximum.

It can be seen from Table 12 that by 2015 Hartmann Road will be used to operational capacity and Connaught Road will be operating beyond its theoretical capacity. Such a situation translates to congestion and delays on the ground. It is not in the Airport's interest to let this situation arise. The Airport will therefore further consider the nature of local widening and junction improvements that will increase the capacity of the affected roads. Uncertain journey times in the future are likely to increasingly encourage passengers to switch from car based modes to public transport. Table 13 shows the impact on local roads if an 85% public transport mode split was achieved. It can be seen that by 2015 Hartmann Road still has sufficient operating capacity. It is likely however even in this scenario that changes would be necessary to increase the capacity of Connaught Road.

The effect of traffic on the strategic road network, i.e. roads a further distance than those listed in Table 13, is predicted to be small. Traffic volumes on the Blackwall Tunnel will continue to be over-capacity but the proportion travelling to/from the Airport in 2015 will be around 5%, rising to 8% by 2030. Similarly certain sections of the A406 North Circular will be approaching or at capacity due to background growth and the Airport's contribution will be small.

7.6 Conclusions on Surface Access

Docklands Light Railway

The growth of LCA to 3.5 mppa in 2015 and 8 mppa in 2030 is unlikely to be constrained by the capacity of the DLR service to the Airport. This is because background demand arising from other developments in surrounding areas will necessitate increased service frequencies and a three-car (as opposed to a two-car) operation at these increased frequencies long before 2030 . Demand arising from LCA, even in the high DLR use scenario, will be accommodated by these capacity enhancements.

Table 13 - Proportion of Traffic that London City Airport contributes to Local Roads and Respective Total Road Capacities 85% Public Transport Mode Split

	Hartmann Road		Connaught Road		Connaught Bridge	
	LCA proportion	% total capacity	LCA proportion	% total capacity	LCA proportion	% total capacity
2005	96%	63%	28%	92%	12%	59%
2015	96%	67%	27%	101%	12%	64%
2030	96%	119%	37%	131%	18%	77%
	Albert Road		**North Woolwich Road**		**Silvertown Way**	
	LCA proportion	% total capacity	LCA proportion	% total capacity	LCA proportion	% total capacity
2005	6%	48%	11%	54%	10%	56%
2015	6%	55%	10%	59%	10%	62%
2030	9%	63%	15%	71%	14%	74%

Local Roads

By 2015 a number of road links around the Airport will be nearing or exceeding capacity. On the local road network background traffic growth is forecast to cause the Airport Roundabout, Hartmann Road Roundabout, and Connaught Road to exceed operational capacity although this situation may self-regulate, i.e. people will opt to use the DLR in order to avoid congestion. The situation on these roads will deteriorate further by 2030. Monitoring, further investigations and subsequent action, such as traffic management, local widening and junction improvements, will be needed to increase capacity at these locations.

Strategic Road Network

By 2015 forecast growth in background traffic on the strategic road network will be approaching capacity on the A406 North Circular in both directions, with Blackwall Tunnel under even greater pressure. By 2030, the increase in background traffic will cause these road links to operate beyond their theoretical capacity. However the contribution of airport generated traffic on the wider road network is minimal. Measures to address these problems will be needed at a London-wide level and could include capacity improvements or a range of policy measures to reduce travel by car.

Staff Travel

London City Airport is committed to a policy of maximising the proportion of passengers and staff accessing the Airport by public transport in general and DLR in particular. It is likely to remain challenging to reduce significantly the proportion of staff using a car to access LCA unless the hours of operation of the London Underground and the DLR are extended to fully accommodate shift working start and finish times. LCA is committed to working with TfL to address this issue. LCA will look to provide personalised travel options for individual staff to increase awareness of public transport options. It will also consider the provision of season ticket loans to make public transport a more attractive option.

The Transport Study has been undertaken using the data available. The considerable growth and development planned for the Thames Gateway area will have a substantial impact on the economies of London and the rest of the South-East. The longer term impact of the scale and location of the growth, and to a lesser extent the awarding of the 2012 Olympics to London, is currently under investigation by TfL. The ongoing Thames Gateway Bridge Public Inquiry has severely restricted access to the transport models operated by TfL and a more qualitative based assessment has been undertaken. As such, there will be a larger degree of uncertainty towards the year 2030 and the conclusions in this report will need to be reviewed as new information becomes available.

8. Impacts of Future Growth
Economic and Social Benefits

Introduction

Aviation is a successful sector of the UK economy generating and supporting a large number of jobs either directly at airports or indirectly through facilitating tourism and encouraging foreign investment and international trade. Aviation links make the UK an attractive place to live and do business and encourage skilled individuals to locate in the UK and contribute to a successful, vibrant economy.

Airports have two major economic impacts: as a source of employment and via the income their activities generate in the economy. Airports also act as magnets and catalysts by encouraging and facilitating other types of activities in their locale as well as enhancing business efficiency and productivity by providing easy access to suppliers and customers.

The benefits of an airport can also be social and cultural, for example airports satisfy people's needs or desires to travel, bringing together different nationalities, encouraging interactions and broadening understanding between different cultures. Aviation services provide essential cultural links to the UK's growing ethnic minority populations. Airports, through employment, training, wealth creation and air travel encourage social progress allowing people to expand their horizons, opportunities and expectations.

In order to understand London City Airport's importance and contribution to the economic and social well-being of the area, LCA appointed York Aviation and the University of East London (UeL), London East Research Institute in February 2005 to undertake a detailed Economic and Social Impact Assessment of the Airport.

The objective of this work was to examine the impact of London City Airport on the regeneration of the Docklands area and to project how further growth of LCA could contribute socially and economically to the regeneration of the wider Thames Gateway area.

A summary of the main findings from this study are presented under the following sub headings:

- Employment
- Income Generation
- Contribution of the Airport to the wider economy
- Social & Cultural Importance including social acceptability

Where analysis has been undertaken the passenger forecasts set out in Chapter 4 have been used. Estimates made for the employment and income impact of LCA are based on a survey of on-site employers undertaken in July 2005 and cover a 'Core Study Area'[1] i.e. the local area that could be expected to experience the greatest direct economic impact from the Airport. Using data collected in 2005, employment and income generation forecasts have been made for two future years: 2015 and 2030.

The work by UeL sought to gain an understanding of the views of local residents to the presence of an airport close to them. The main findings act as a 'measure of the acceptability' of the Airport and its operations.

8.1 Employment (direct local contribution of LCA)

The approach used to estimate the economic impact of London City Airport is based on the four categories of effect set out in Table 14.

Current and forecast levels for the three different types of employment are shown in Table 15. These forecasts for years 2015 and 2030 were made using present day estimates and by assuming that there will be an increase in productivity of 2% per annum due to continued downward pressure on airline and airport costs and from technological improvements.

[1] Core Study Area encompasses the following local boroughs: Newham, Tower Hamlets, Hackney, Waltham Forest, Redbridge, Lewisham, Southwark, Havering, Greenwich, Bexley, Barking & Dagenham

Table 14 - Framework of Employment Impact Analysis (Source: York Aviation)

Impact Category	Definition	Examples
Direct On-Site Employment	Employment and income wholly or largely related to the operation of LCA and generated within the airport operational area	Airport operator, airlines, handling agents, control authorities, concessions, freight agents, flight caterers, car parking, aircraft servicing, fuel storage
Direct Off-Site Employment	Employment and income wholly or largely related to the operation of LCA and generated within an approximate 20-minute drive-time of the airport	Airlines, freight agents, flight caterers, hotels, car parking
Indirect Employment	Employment and income generated in the chain of suppliers of goods and services to the direct activities	Utilities, retailing, advertising, cleaning, food, construction
Induced Employment	Employment and income generated by the spending of incomes earned in the direct and indirect activities	Retailing, restaurants and entertainment

Table 15 - Employment Forecasts to 2030 if London City Airport grew to 8 mppa

Year	Direct	Indirect	Induced	Total
2004	1,101	208	136	1,445
2015	2,009	380	248	2,637
2030	3,143	609	398	4,150

In 2004, 66% of employees were found to live in the Core Study Area. The local recruitment policy of the Airport is proving successful since nearly one third of the employees were found to live in Newham.

8.2 Income Generation

The estimates for the income impact of London City Airport have been gained from collating salary, expenditure and profit information for the year 2004 in order to provide a 'benchmark' against which projections for the years 2015 and 2030 can be assessed.

A few points worth noting about the figures gained for 2004 are:

- The salary income for residents of Newham alone was estimated to have been around £7.2 million.
- The salary income for residents of the total local Core Study Area was around £15.8 million.
- Companies at London City Airport spent over £19.6 million on goods and services in Newham alone.
- The Core Study Area benefited from £22.4 million of expenditure on goods and services from firms at London City Airport.

The forecasts in Table 16 show the income impact of direct, indirect and induced employment and assume that London City Airport grows to 8 mppa.

The figures presented in Table 16 only show the impact arising in the Core Study Area. However, the importance of the indirect and induced employment generated by the Airport in the wider economy was also found to be significant. This results in part from the fact that many management and operational functions for companies working from London City

Airport are undertaken well away from the site, thereby spreading the value of the business. An example of this is the significance of LCA for the network of Belgian airline, VLM. Their crew and maintenance bases are located in Antwerp and elsewhere but LCA acts as the main hub on its network. Operations at LCA, hence, help to sustain employment over a much wider area than we consider in this study.

If London City Airport did not grow to 8 mppa

Two other scenarios for future impact of the Airport were tested:

1. If the Airport only grew to 5 mppa by 2030 as forecast in the Aviation White Paper

2. If the Airport only grew to 3.5 mppa by 2030 being constrained by existing air traffic movement limits and with no increase in aircraft and passenger handling capacity beyond that which already has planning permission in 2006.

Conclusions

- Employee numbers are likely to continue to rise through to 2030, although not in direct proportion to passenger traffic growth, as a result of efficiency gains over time (e.g. from continued downward pressure on airline and airport costs and from technological improvements).
- Job numbers in 25 years, i.e. in 2030 would only increase by 25% if the Airport was constrained in its development.

Table 16 - Income Impact (£million) in Core Study Area of LCA growing to 8 mppa

Year	Direct	Indirect	Induced	Total
2004	£32 m	£7 m	£4.5 m	£43.5 m
2015	£72.7 m	£15.7 m	£10.2 m	£98.6 m
2030	£156.8 m	£33.8 m	£22.1 m	£212.7 m

Table 17 - Employment & Income Impact if Growth at LCA is Constrained

Scenario	Total Jobs in Core Study Area 2015	Total Jobs in Core Study Area 2030	Total Income in Core Study Area 2015	Total Income in Core Sutdy Area 2030
Airport grew to 8 mppa by 2030	2,637	4,150	£98.6 m	£212.7 m
Airport grew to 5 mppa by 2030	2,082	2,594	£77.8 m	£132.9 m
Airport grew to 3.5 mppa by 2030	1,735	1,815	£64.8 m	£93.7 m

8.3 Contribution of London City Airport to the Wider Economy

The economic importance of airports stems not only from the fact that they are major generators of economic prosperity, but also because they can act as catalysts for a wide range of other economic and social activities. This catalytic impact can operate in a number of different ways, but it is generally not possible to quantify such impact in the same way that direct benefits can be measured.

The Airport continues to be an important factor in local regeneration, business development, transport and tourism infrastructure and its impact is felt beyond its immediate catchment. These are discussed briefly.

Local Regeneration & Inward Investment

London City Airport's historical role in the regeneration of Docklands is often cited but the specific links had not been fully investigated prior to the work undertaken by York Aviation. The London Docklands Development Corporation, established in 1981, fostered the development of LCA, seeing it as an eye-catching project and a critical element of the transport infrastructure provided to stimulate redevelopment of the Docklands area. The concept was to replace the 'global gateway' role of the original docks with a new modern air service gateway and so improve the accessibility of the area and encourage development. The Airport is credited today as a 'flagship' project in the Royal Docks that changed perceptions and gave potential developers and tenants confidence to invest in key developments such as Canary Wharf. Areas such as the Isle

of Dogs were no longer perceived as the eastern frontier of growth. The general thrust of development has been eastwards from the edge of the City of London and the Airport has played a significant role as the frontier of expansion moved into the Royals and beyond.

A specific recent example of the role of the Airport in facilitating development has been ExCeL London (Exhibition Centre for London) which opened in 2000 with the aspiration to become London's premier exhibition and conference venue. ExCeL London now hosts nine out of the top ten trade shows in London, such as World Travel Market, shows that bring large numbers of visitors to Newham. It also hosts consumer shows such as the International Boat Show and, from summer 2006, will host the Motor Show. ExCeL London will be a major venue for the 2012 Olympics and is expected to host the boxing, judo, table-tennis, taekwondo, weightlifting and wrestling events. It is doubtful if the developers of ExCeL London would have had the confidence to invest had the Airport not already been in place in the Royal Docks.

Gateway to London, the inward investment promotion arm of the Thames Gateway Partnership, considers the existence of LCA vital in efforts to attract new investment to the area, and suggests that they would be 80% less successful in attracting new office developments if London City Airport did not exist.

Think London, which is the official foreign direct investment agency for London providing advice to international business considering locating and expanding in London, stated that LCA had been a significant factor in the recent decision of a particular financial services company to move to Canary Wharf. It believes that LCA is an important consideration in the decision making process of a number of other companies who are considering locating in East London. Think London also viewed the opening of the DLR extension to the Airport as a very important element in companies' decision making processes, and as such also added considerable value.

Canary Wharf Management Company, owner, developer and promoter of much of the land and office space at Canary Wharf, considers proximity to LCA as the second most important selling point to prospective new international tenants, after good London wide surface access links.

Other planned developments in the Royals include Silvertown Quays and the new London Aquarium. The London Development Agency, when interviewed by York Aviation, credited LCA with having a contributory role to the infrastructure that creates a critical mass of development in the area.

The Royal Docks Partnership, which represents key landowners and developers in the Royal Docks area, considers it important that the Royals establish a sense of place and identity, differentiating itself from Canary Wharf, if it is to succeed in attracting new businesses. The Airport is viewed as having the potential to make a significant contribution to this sense of place.

The regeneration agenda in Newham also encompasses job creation and initiatives designed to encourage people to live locally as part of the Sustainable Communities agenda. The Airport generates a demand for a wide range of skills from high skilled, managerial and flight crew positions to jobs requiring more basic skills in support services. The Airport provides technical and personal development training to encourage internal promotion and career progression. LCA has worked hard to ensure that job opportunities are made available for local people and prides itself that a high proportion of employees live locally, a policy that will continue into the future.

It is generally appreciated that without London City Airport the costs to business and to residents in terms of access to air travel would have been substantially greater. This has obvious implications for the productivity of business enterprises and their decisions to locate in the area.

Importance to Business
York Aviation consulted a number of businesses in the area about the importance of the Airport to them. Virtually all businesses noted the convenience of having the Airport close by, particularly for day return business trips, although none of them said that the Airport, and the connections it offers, was their key business driver.

Findings from the Canary Wharf Employee Travel Survey 2005 (source: Steer Davies Gleave) show that LCA is second to Heathrow as the most frequently used airport for business travellers starting their journeys at Canary Wharf with 34% of trips. (43% of trips are made from Heathrow, 13% from Gatwick and less than 10% from other airports). This mirrors results published by the Corporation of London in their 2002 report 'Aviation Services for the City of London' showing that LCA is the second most important airport, after Heathrow, for business travellers starting their journey in the City of London.

York Aviation has developed a method of assessing the importance of different airports to the global 'connectedness' of an area, known as 'value connectivity'. This method, used in previous studies, allows an assessment to be made of the impact of expansion of air services to the connectedness of an area.

The connectivity index is based on:

- available scheduled air services of an airport
- frequency of these services
- 'score' given to each city in the world according to the 'World City' attributes they exhibit.[2]

After Heathrow, London City Airport adds most to the connectedness today of both Central London and the Thames Gateway London boroughs than any other London airport. The connectivity added by LCA, if it grows as forecasts suggest, will more than double in importance over the period to 2030. This will be valuable in maintaining London's competitiveness as a 'World City', particularly in the run up to the Olympics in 2012 and until an additional runway can be delivered at Heathrow or Gatwick.

Improvements to Public Transport Infrastructure & Services
The existence of the Airport in the Royal Docks has acted as a catalyst for the provision of improved transport links, notably the DLR extension. York Aviation found that the potential passenger levels generated by the Airport were the key driver for the provision of the DLR extension from Canning Town to the Airport, accounting for 50% of expected patronage on the line thereby making such a service viable by contributing to revenue targets. This line has greatly improved accessibility for local residents in Silvertown and North Woolwich, an area previously very much reliant on bus services.

The Airport has also been a factor contributing to an improvement in local bus services and increased frequencies; services that not only aid passengers and airport staff, but which are also used by local residents. London City Airport was also a relevant factor in the decision to route Crossrail north of the river from Canary Wharf, through the Royal Docks and onwards, rather than the previously proposed southerly route.

Importance to Tourism
Analysis shows that London City Airport is used by both inbound business and leisure travellers who enjoy the attractions of London and contribute to the increasingly important tourism economy of the capital. Many passengers though are destined for the Cities of London and Westminster rather than remaining in East London and visiting its many attractions.

A fundamental part of the London Development Agency's Tourism Strategy for East London is to encourage a greater proportion of visitors to stay in Docklands.

[2] Developed by the Globalisation and World Cities Network (GaWC) at Loughborough University.

LCA has recently set up a new company called Via, (www.vialondoncityairport.com), to develop an inbound tour operation focussing on East London. The aim is to increase awareness of the East London 'tourism product' and the role of the airport as a gateway. A key target is to promote East London as a place to stay throughout London City Airport's route network, starting with other UK cities.

The Future Importance of LCA to the Local & Regional Economy

York Aviation investigated how the growth of London City Airport is linked with the growth of population and employment in surrounding boroughs to establish how important further growth of LCA will be in achieving the growth expectations for East London and the Thames Gateway as identified in the London Plan[3] , growth targets for the East London region to 2016[4] of:

- 142,000 additional homes (1997-2016).
- 270,000 population growth (1997-2016).
- 223,000 jobs in office based employment (2001-2016).

These additional residents and employees will need and demand convenient access to air services. The business and financial services sectors are the principal users of business related air services, accounting for over 30% of demand nationally.[5]

York Aviation examined the relationship between growth in passenger traffic at the Airport since it opened and growth in employment in the business and financial services sectors in four adjacent local boroughs. Using this relationship, they estimated the extent to which growth in employment in these sectors, as projected in the London Plan, could drive growth in demand at the Airport. On this basis, passenger demand wanting to use London City Airport could reach up to 11.2 mppa by 2030 (see Table 18).

This analysis suggests, that if LCA is unable to meet demand arising from this growth, at least from within local boroughs, businesses there would be faced with higher costs with regard to access to short haul air travel than they do at present.

York Aviation examined the implications of LCA not being able to expand sufficiently to meet the demand arising from growth in population and employment in the neighbouring boroughs by measuring the additional journey time costs imposed on displaced air travellers.

If growth of the Airport is curtailed there will be increased surface journey times for displaced passengers to reach alternative airports such that by 2030:

Table 18 - Underlying Passenger Market Potential for London City Airport based on Growth in Key Sector Employment to 2030 (source: York Aviation)

2010	3.2 mppa
2015	4.3 mppa
2020	5.9 mppa
2025	8.2 mppa
2030	11.2 mppa

[3] A description of the London Plan can be found in Chapter 2
[4] The London Plan, GLA February 2004, Table 3A.1
[5] UK Air Freight Study, MDS Transmodal, DETR

- If growth is curtailed to 5 mppa York Aviation estimated the time costs, of these extra journeys for business travellers to be £131 million per annum.
- If growth of the Airport is curtailed to 3.5 mppa York Aviation estimates the time costs of these extra journeys for business travellers to be £197 million per annum

The effect of these additional time costs on business productivity may impact on the attractiveness to business of locating in new development areas, particularly those in the Royal Docks and eastwards. Faced with higher travel time costs, some businesses may choose not to locate in the area and others might even relocate to areas closer to other airports or indeed other countries.

In addition to costs relating to reduced business productivity, there would also be associated environmental dis-benefits. If LCA does not expand to meet demand, displaced passengers from the East London region would be required to travel longer distances by road or rail to access air services from alternative airports. Such journeys would have negative environmental impacts connected to congestion and road traffic emissions.

York Aviation predicts that any inability of the Airport to expand to meet demand, at least in line with the figures presented in this Master Plan, could have adverse implications for achieving the high employment growth rates. They conclude that constraining the growth of London City Airport could have implications regarding the achievable pace and scale of development in the Thames Gateway London area, at least on the margin.

8.4 The Social and Cultural Importance of London City Airport

As outlined earlier, some of the broad benefits of an airport are the social and cultural ones, such as facilitating cultural, sport and educational exchanges and encouraging interactions between friends and families. Other social benefits associated with London City Airport's operation are also to be found in communities surrounding the Airport via the wealth of relationships that have evolved since it opened in 1987. Relationships developed with people, organisations and groups such as local residents, schools, colleges,
charities, hospitals, sporting clubs, art societies, local businesses and social enterprises, and of course local borough councils. We encourage communities to take an active interest in our operation and aim to reach out and support local projects and initiatives, while at the same time developing our business.

The Airport has developed and implemented a comprehensive Community Relations Programme. This focuses primarily on local education and employment initiatives with an emphasis on local schools and colleges located in Newham and immediately surrounding boroughs. LCA believes that it must invest in the children today who will be the workforce of tomorrow. The Airport endeavours to employ local people as much as possible. It is only fair that local people, who may experience some of the negative impacts of the airport's operation, are given the opportunity to benefit from positive employment opportunities that result.

Airport staff are actively involved in a wide variety of initiatives with schools and colleges to raise awareness, improve skills and promote employment opportunities. In particular London City Airport Ltd and some of the other companies based on the Airport site are involved in the following initiatives:

- Reading volunteer scheme with primary school children.
- Mentoring young people.
- Year round work experience programme for over 16's.
- Undertaking workshops on applying for jobs and providing mock job interviews.
- Assisting teenagers with a real life business challenge.

- Supporting the teaching of modern languages through providing practice in role-play exercises.
- Educational airport tours including activity worksheets.
- Creation of the London City Airport specific careers advice publication: 'Options'.
- A bursary scheme with Newham Sixth Form College allowing students from disadvantaged backgrounds to study for a degree.

Other voluntary work undertaken by staff at LCA includes providing business advice to a wide range of local organisations, trusts and charities. Work is also undertaken in the local community on environmental projects. Furthermore, once a year on a Saturday afternoon the Airport opens its doors and puts on a family fun day with the aim of raising money for local charities attracting some 10,000 local people.

It also appears that LCA has had a positive impact in the local area due the fact that the police force for the Airport is based in a police station located in North Woolwich. The police travel between this police station and the Airport and will deal with any local policing incidents that come to their attention during transit. The police have stated at a public meeting that there were signs that the increased police presence in the area had had an impact in reducing crime locally. York Aviation was not able to obtain statistical data though to confirm this.

Social Acceptability

In developing this Master Plan, London City Airport believed that it was important to understand local residents' views of the airport. London East Research Institute, based at the University of East London (UeL), was asked to carry out a survey to investigate this. Interviews and focus groups were also carried out to supplement the information collected. The aim was to capture some of the issues involving everyday experiences of the Airport by local[6] people together with their views on how well the Airport integrates into the area.

UeL's overall findings suggested that local perceptions of LCA are generally positive. Some of the key findings from this work were as follows:

- 25% of local residents surveyed had flown to/from LCA and 59% cited other reasons for having visited the Airport.
- LCA is reported to be a good neighbour by 56% of respondents and overall only 8% suggest that the Airport is a bad neighbour.
- For the 8% who suggested that LCA is a bad neighbour, just over half (54%) stated that noise is the major contributing factor leading them to say this as it is a specific, immediate and present problem for them.
- 70% of respondents reported at least one positive reason for liking the Airport, improved local transport links being the most popular reported benefit. The Airport is credited as being a mini transport hub for the locality. The DLR extension was viewed as opening up the area, including the Airport itself in a useful way, linking the community to a broader network of transport links and to new commuter routes and new employment opportunities.
- 60% of respondents believe that LCA will be an asset to the area in the future with only 6% imagining it will be seen as a disadvantage.
- Some respondents felt that one of the benefits of living close to the Airport was the absence, by necessity, of tall enclosing buildings, which like the river, serves to create a feeling of space.
- All the interviewees thought that LCA had attracted or helped to attract other businesses into the area; most notably the hotel industry which also provides local employment opportunities. The bars in the hotels were welcomed as providing a place for local people to meet and socialise.

UeL's Other Findings

London City Airport, in tandem with the increasing economic prosperity of the area, makes a significant contribution to increasing the financial status of its employees as their careers progress, which leads to decisions to move to areas considered more desirable than Newham.

The Airport is viewed by locals as being highly proactive in engaging with the local community through its charitable activities, its support for local educational and business projects and its Fun Days and is held up as an example of an organisation that makes a significant contribution to the regeneration of East London.

There is a widespread acceptance that LCA will continue to develop and expand in the future, although strong opinions are held about how the expansion should be managed, in terms of continuing the successful policy of strict adherence to environmental limitations and in terms of proactively maximising potential economic benefits for the local community.

Also detected was a certain level of indifference amongst the local community which UeL cautioned should not lead to complacency. Although the LCA is seen as an asset by the majority of people, 15.6% of locals anticipate that future expansion of the Airport may cause problems.

[6] The research team selected the respondent addresses from 360 degrees of and from distances up to a mile from the Airport. Approximately 300 addresses were from within half a mile of the Airport and 200 from between half and one mile. The survey was undertaken in the first three weeks of April 2005.

9. Public Consultation
What do you think?

Introduction

This Master Plan recognises that the further growth of London City Airport will have impacts, both positive and negative on local communities, and be of interest to other stakeholders. We would like to receive views on the plan from any stakeholder including staff, local residents and the Airport Consultative Committee.

The Master Plan is an opportunity for LCA to explain its thinking and communicate its outline plans for development over the next 25 years such that other organisations can take account of the Airport's aspirations when considering their own investment decisions and future plans. This Master Plan is not an application for planning permission for development. The Government has stated that the purpose of airport master plans is to inform, and be informed by, the regional and local planning processes. This Master Plan is not a statutory document.

London City Airport has communicated the imminent publication of this Master Plan through various public exhibitions presentations and meetings. Other meetings are scheduled and a small exhibition will be held in the terminal building. Details of public events will be published on www.londoncityairport.com/masterplan.If you require any further information on this Master Plan or wish to discuss any of the issues please contact the Business Development Department on 020 7646 0530 or by email to: masterplan@londoncityairport.com.

Questions

London City Airport welcomes any comments that you have on the content of this Master Plan by 31 May 2006. We have suggested a number of questions below to which we would like to receive responses. All comments received will be considered at the end of the consultation period.

Chapter 2
Statutory & Regulatory Context

1. Do you believe this to be a fair summary of the statutory and regulatory context for an airport Master Plan? Has anything been omitted?

Chapter 3
London City Airport Today

2. Do you agree that this description represents an accurate summary of London City Airport today? If not, why not?

Chapter 4
Passenger Demand Forecasts 2006 - 2030

3. London City Airport considers that growth in air travel at LCA will be driven by economic growth and the disproportionate growth in population and employment forecast for East London. Do you agree with this view? If not, what factors do you think will stimulate growth at LCA?

4. Do you have any comments to make on our forecasts for future traffic growth?

Chapter 5
Land Use at London City Airport in 2015 and 2030

5. Do you agree with London City Airport's strategy for using land that is currently in its ownership? If not, why?

6. Do you agree with creating more aircraft parking space by the building of a platform over King George V Dock? If not, what alternative plans would you propose which would allow the Airport to grow in line with national policy as outlined in the White Paper?

7. Do you agree that, subject to permissions, land on Albert Island should be used for airport related activities?

8. Are there any other facilities that you think should be developed at London City Airport? If yes, please list and give your reasons.

Chapter 6
Impact of Future Growth Environment

9. London City Airport has addressed a number of key environmental issues in this chapter. Are there any other issues that you think we should be assessing at this stage? If so, what are these?

10. London City Airport has outlined a number of mitigation measures it takes to reduce and manage some of the environmental impacts of its operation. Do you believe these are effective and if not, what more could be done?

Chapter 7
Impact of Future Growth
Surface Access

11. Do you agree with the approach taken in the Transport Study for assessing the potential impact on roads an public transport of further growth of LCA?

Chapter 8
Impact of Future Growth
Economic & Social

12. Do you agree with the principal economic and social benefits of London City Airport as outlined here?

13. Are there any other benefits to the growth of London City Airport that you do not think we have addressed?

14. Which of these benefits do you regard as most important?

Other Issues

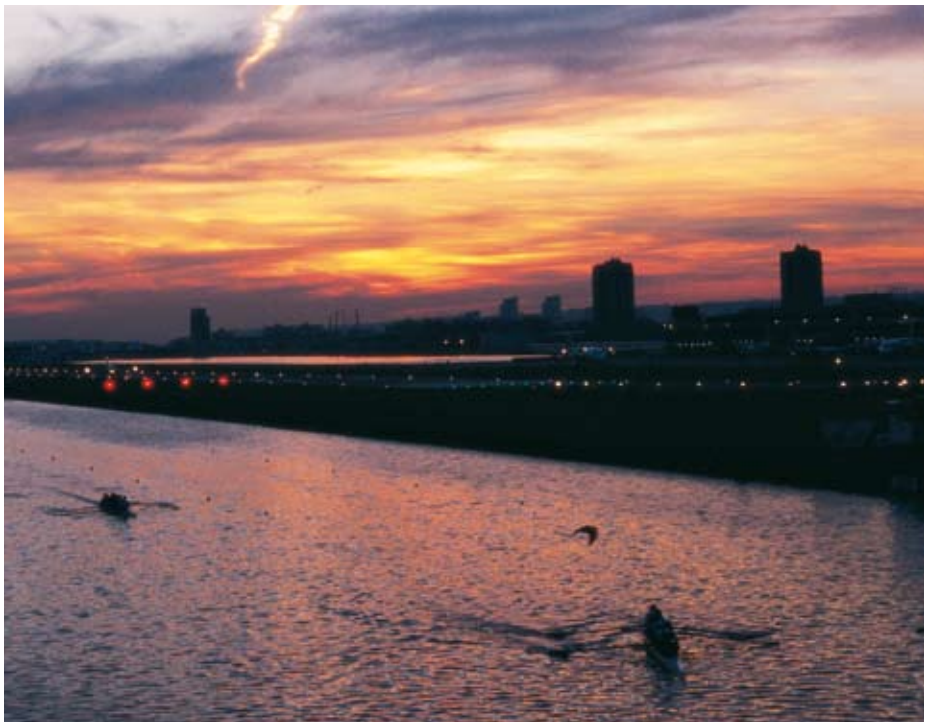
15. Are there any topics that are not set out in this Master Plan that you feel merit further consideration prior to the production and publication of a final Master Plan later this year?

Evaluating Your Responses

Following the consultation period London City Airport will consider all the views expressed and comments received and where possible, reflect these in the final Master Plan.

London City Airport aims to publish the final Master Plan during the summer of 2006. The Master Plan will be reviewed every five years to ensure it is relevant and appropriate to any changing conditions and circumstances. It is expected that any future development at LCA will be considered via individual planning applications. These will be brought forward as and when demand warrants each development, and when the environmental and business cases can be justified.

Thank you for taking the time to consider London City Airport's Master Plan.



10. Appendices

Appendix I

Airlines and Destinations

The table below shows the airlines and destinations presently served from London City Airport. Details of the airline schedules can be found on London City Airport's website LondonCityAirport.com.

Airline	Destination(s)	Airline	Destination(s)
Air France	Dublin Paris (Orly) Paris (CDG)	**British Airways**	Edinburgh Frankfurt Milan (from 2 May)
Cirrus (branded Lufthansa)	Munich	**Cityjet (branded Air France)**	Dublin
Darwin	Berne Lugano	**EuroManx**	Isle of Man
Eastern Airways	Newcastle	**KLM**	Amsterdam
Lufthansa	Frankfurt Düsseldorf Stuttgart	**Luxair**	Luxembourg
OLT	Bremen	**SAS**	Copenhagen Stockholm
Scot Airways	Dundee Edinburgh	**Swiss**	Basel Geneva Zürich
VLM	Antwerp Brussels Jersey Liverpool Luxembourg Manchester Rotterdam Amsterdam Isle of Man		

Appendix II

Assumptions for Impact Assessment Studies

The following forecast data and assumptions relating to typical aircraft types have been used in the various impact assessment studies that have been undertaken to inform this Master Plan.

Forecast Annual Air Transport (ATM) and Corporate Aviation Movements

	2005 (act)	2015	2030
Annual ATM (scheduled)	61,000	100,000	143,000
Corporate aviation movements	9,600	20,000	27,600
Total	70,600	120,000	170,600

Possible Typical Aircraft Types Operating at LCA in 2015 and 2030 compared with 2005

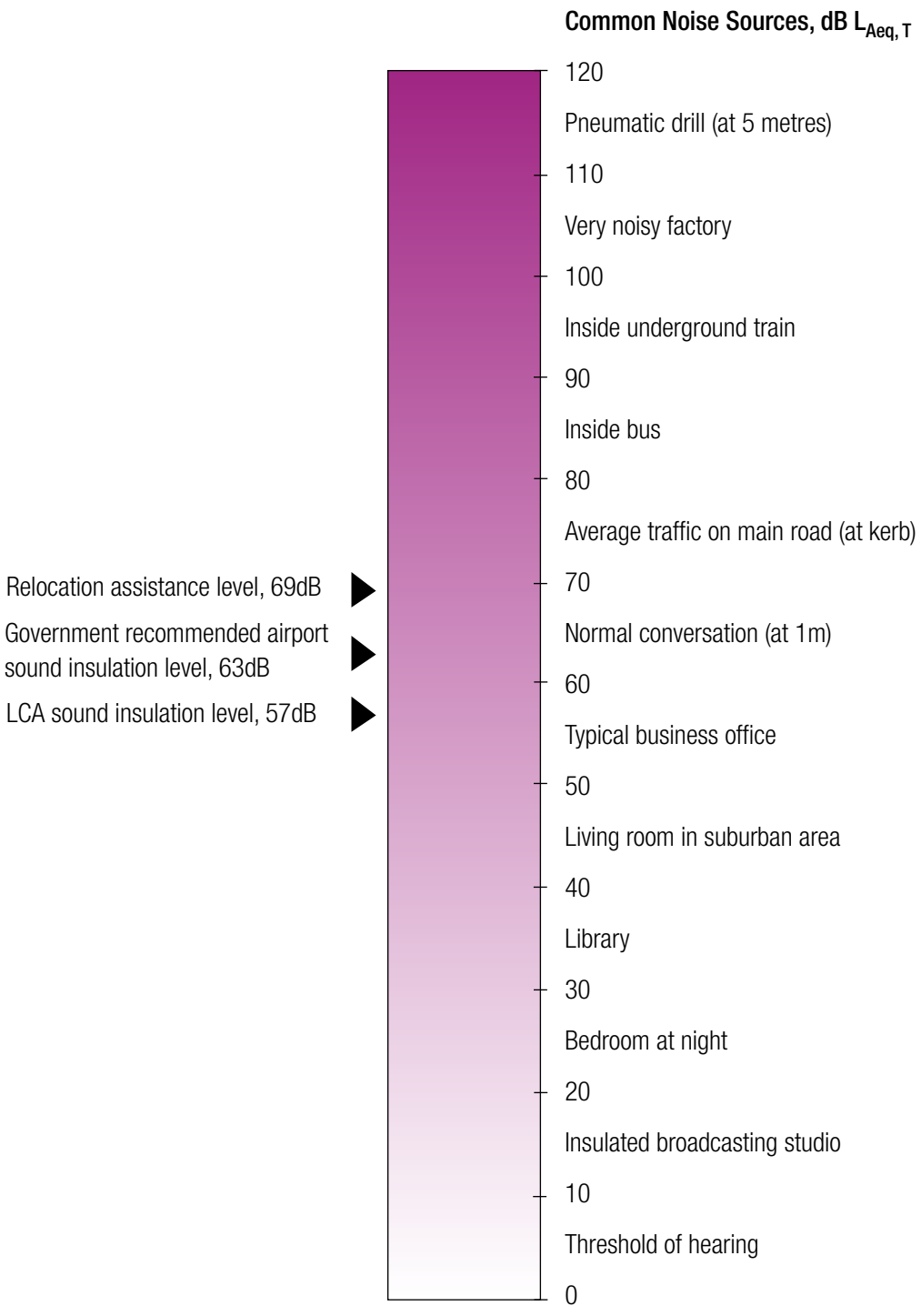
Aircraft Size (seats)	2005 (act)	2015	2030
Corporate	Citation Excel	Citation Excel	Citation Excel
31-50	Dornier 328	Embraer 135	Embraer 135
51-70	Fokker 50	Bombardier Q400	Bombardier Q400
71-90	BAe RJ 85	Embraer 170	Embraer 170
91 '+'	BAe RJ 100	Airbus 318	Airbus 318

Forecast Scheduled Annual Aircraft Type Mix 2015 and 2030 compared with actual mix in 2005

Aircraft Size (seats)	2005 (act)	2015	2030
up to 49	20%	**10%**	0
50-70	50%	**30%**	28%
71-90	3%	**35%**	50%
91 '+'	27%	**25%**	22%

Appendix III

Noise Barometer



Appendix IV

Extract from Planning Policy Guidance 24 Guidance with regard to Airborne Aircraft Noise (Daytime)

$L_{Aeq,16h}$ dB	**Guidance/Experience with regard to airborne aircraft noise (daytime)**
< 57	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level. PPG 24 Category A
57 - 66	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise. PPG 24 Category B
66 - 72	Planning permission for housing should not normally be granted. Where it is considered that planning permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise. PPG 24 Category C
> 72	Planning permission for housing should normally be refused. PPG 24 Category D

Note: $L_{Aeq,16h}$ – Equivalent continuous sound level. This is a notional steady sound level which would cause the same A-weighted sound energy to be received as that due to the actual and possibly fluctuating sound from 07.00 to 23.00 (day-time).

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