

OUR VISION

Glasgow Airport Draft Master Plan 2011



The Consultation

The launch of this draft Master Plan will be followed by a 12 week public consultation. Following the close of the public consultation, Glasgow Airport will commission independent consultants to carefully consider responses and produce a report detailing the Airport's response to the issues raised. This report will be incorporated into the final Master Plan. The final version of the Master Plan will be published by the end of 2011.

If you would like to take part in the consultation, you can do so by writing to:

Ross Nimmo
Planning & Development Manager
Glasgow Airport
St Andrew's Drive
Paisley PA3 2SW

Or email: glasgowmasterplan@baa.com

A series of public drop-in sessions will also be held at Glasgow Airport and in the surrounding communities. A complete list of public events can be found at www.glasgowairport.com/masterplan

Further copies of this Master Plan can be obtained by writing to the above address, emailing glasgowmasterplan@baa.com or at www.glasgowairport.com/masterplan

The public consultation will close on Tuesday 3 May 2011.

Foreword

Glasgow Airport is proud to be one of the UK's leading regional airports, which for 45 years has been an international gateway that has underpinned Scotland's position as a world class tourist destination, a centre of excellence in science, engineering and finance and a great place to live.

Scotland welcomes around 15 million UK and overseas visitors every year, generating some £4bn for the economy and supporting more than 200,000 jobs. Glasgow Airport - and aviation more generally - plays a vital role in the success of our tourism industry, and our national economy.

A study commissioned by Scottish Enterprise, Glasgow City Council, Renfrewshire Council and Glasgow Airport confirms the airport's status as an asset of strategic national importance, providing employment for more than 7,300 people across Scotland and generating nearly £200 million annually for the economy, more than any other airport in Scotland.

However, this contribution cannot be taken for granted. Glasgow faces tough competition from the UK, Europe and elsewhere. To compete, we must invest for the future by improving and upgrading our terminal facilities, building new aircraft stands to accommodate the next generation of aircraft and improving public transport links.

We are working hard to make air travel more convenient, attract new international air links and provide better facilities for passengers to relax and enjoy their journeys. But there is more to do, and the final version of this Master Plan will set out our ambitions over the next 30 years, providing a framework to guide the development of Glasgow Airport between now and 2040.

This is a plan that will continue to improve Glasgow Airport. Moreover, as the plan is delivered it will enhance the already significant economic contribution the airport makes across Glasgow and Scotland.

A successful airport is good for tourism, good for the economy and good for the country. But with success comes responsibility. As someone who grew up in Linwood, I know that Glasgow Airport brings many benefits to the area, not least in terms of employment and tourism. I am also proud of the role we play as a community airport, supporting local projects which improve the environment, promote wellbeing and foster community spirit.

However I fully recognise that the success of our airport can have an impact on our neighbours. We must and we will work hard to address concerns such as aircraft noise and climate

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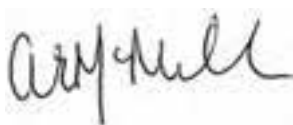
change. This draft Master Plan therefore sets out how we think we can develop the airport in a sustainable and responsible manner.

But developing and operating Glasgow Airport in a truly sustainable and responsible manner means working in partnership.

In parallel with the launch of this draft Master Plan, we will be undertaking a major public consultation to find out what local residents, business and politicians think about the future of Glasgow Airport.

It is an important debate, and there may be opposing views. However, we want to hear from everyone who has an interest in the future development of the airport and I would urge you to participate.

We can only achieve our ambitions if we work together.



Amanda McMillan
Managing Director



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Glasgow International Airport

BAAN



Executive Summary

Our vision for Glasgow Airport is to be Scotland's leading business and leisure gateway by developing a strong and lasting route network and delivering a memorable experience. This draft master plan sets out a clear strategy for future airport development aligned to this vision.

The airport is an asset of strategic national importance, providing employment for more than 7,300 people across Scotland and generating nearly £200 million annually for the economy, more than any other airport in Scotland. As the airport grows, so too will the substantial contribution it makes to Scotland's economic success. By developing the route network, Scotland's position as a world class tourist destination, an attractive business location and a great place to live will be strengthened.

Context

Our draft Master Plan follows the recommendations set out in the 2003 Government White Paper, The Future of Aviation, and updates the existing 2006 Glasgow Airport Master Plan. After a challenging period for the aviation industry, both BAA and the Department for Transport forecast that demand for air travel will recover and grow. It is therefore important that we plan responsibly for future growth and engage with neighbours, Local Authorities and Government to set out the future development of the airport.

Today's Airport

Glasgow Airport handled 7.2 million passengers in 2009. We have approximately 30 airlines flying to around 90 destinations with a high percentage of business use (29%) and strong long haul international connectivity to both Asia and North America.

The airport directly supports nearly 4,500 jobs through 117 companies based at the airport, over 7,300 jobs across Scotland as a whole. The airport is currently the largest private sector employer in Renfrewshire and will continue to be an important economic centre as it develops over the period. Glasgow also makes the largest contribution of any airport to Scotland's economy, generating nearly £200 million in 2009.

In this updated plan we have used the timeframe up to 2020, and from 2020 to 2040, to provide an indication of the development required to meet forecast demand.

The Forecasts

The forecast passenger numbers in 2020 are 10.04 million passengers and 16.39 million in 2040. These figures are derived from econometric models produced by BAA which are similar to independent forecasts prepared by the Department for

Transport. Analysis of passenger numbers over the previous 20 years shows an underlying growth of 2.7% per annum. Future forecasts predict an underlying growth of 2.6% per annum.

Based on current levels of employment and the predicted passenger growth forecasts, direct on-airport employment is expected to grow to 5,600 jobs by 2020 and 7,200 jobs by 2040.

Land Use to 2020

Up to 2020, development of the airport will focus on making best use of current facilities and alterations to existing infrastructure to meet capacity requirements. It is unlikely that we will need to develop outwith the current land under our ownership to facilitate this.

The corridor of the cancelled Glasgow Airport Rail Link will be safeguarded in accordance with the requirements of the GARL Act.

Land Use to 2040

Beyond 2020 it is more difficult to pin point specific developments but it is likely that more substantial alterations to the Terminal Building and additional aircraft stands will be required. When considering development to 2040 we envisage only limited requirement for additional land out with our existing boundary, and do not forecast a requirement for land which hasn't already been identified in the Renfrewshire Local Plan in terms of land use.

At the end of the period reviewed - nearing 2040 - the existing single runway approaches capacity limits. Therefore there will be a need to evaluate means of increasing runway capacity or reviewing options for a second runway, consequently this plan details both possibilities.

Surface Access

Convenient and reliable access by a range of transport modes is of fundamental importance to the operation and ultimate success of any airport. The present situation, where the airport is wholly reliant on the trunk road network requires review. Glasgow Airport is committed to working with the relevant

planning authorities, national transport agencies and transport providers, to develop a range of convenient, attractive and sustainable options for people to travel to and from the airport. It is considered that a fast, reliable and direct link between the city and the airport is required in the short to medium term.

Sustainable Development

With successful growth of the airport, and the wider economic benefits that this brings, comes responsibility. The draft Master Plan outlines Glasgow Airport's on-going work to manage and mitigate the effects of noise and emissions associated with the airport and our commitment to support social and economic regeneration in the surrounding communities.

We welcome the incorporation of aviation emissions into the European Union Emissions Trading Scheme from 2012 and at a local level Glasgow Airport is committed to reducing energy use across the campus. We will investigate the feasibility of developing renewable energy technologies to meet our energy requirements.

Summary

The Master Plan review process has highlighted that Glasgow Airport is well placed to accommodate the predicted growth in passenger numbers within its existing footprint. It is only towards the end of the period reviewed that further consideration will need to be given to the appropriateness of a second runway and the corresponding land requirements. The process has also confirmed the economic importance of the airport and afforded the opportunity for the airport to consider how that growth is delivered sustainably.

1. Introduction

Background to the Master Plan

Glasgow Airport's first Master Plan^[1] was published in 2006 following the largest public consultation exercise in the airport's history. Since 2006 the Master Plan has proved to be an invaluable document to many of the airport's stakeholders, providing concise information on the operation and development of the airport and the strict regulatory regime under which all airports operate in the UK.

As set out in the 2006 Master Plan, Glasgow Airport Limited has invested over £60 million on developing and improving the airport over the past four years at no cost to the taxpayer. Examples include:

- £31 million terminal extension, including consolidated security facility;
- £4 million of public transport, security and customer experience enhancements in the forecourt area; and
- £20 million improving airfield facilities such as approach lights, taxiways and aprons.

Glasgow Airport's first Master Plan was prepared in response to the requirements of the 2003 White Paper, *The Future of Air Transport*^[2], which provides a strategic framework for the development of airport capacity in the UK up to 2030. The White Paper required certain airport operators, including Glasgow Airport, to produce master plans to reflect the content of the White Paper and explain how they proposed to take forward the development of airport facilities. UK Government policy on aviation continues to be based on the White Paper.

The *Future of Air Transport Progress Report*^[3] was published in December 2006. The report provides an update of progress against the White Paper strategy. It recognises that the importance of aviation to the economy is increasing due to global integration, rising disposable income, increasing number of foreign visitors and residents and the UK's role as an international hub.

With regard to environmental issues, the Progress Report notes the on-going development of an EU Emissions Trading Scheme (EU ETS) which has now been introduced and will include aviation emissions from 2012. It also notes the establishment of the aviation industry's Sustainable Aviation Initiative (of which Glasgow Airport is a member) which seeks to improve the environmental performance of the aviation industry. Glasgow Airport's installation of a noise and tracking system to monitor noise limit infringements was specifically highlighted as good practice.

“This draft Master Plan updates the 2006 Master Plan and sets out a vision for Glasgow Airport to become Scotland's leading business and leisure gateway by delivering memorable experiences.”

The guidance issued by the Department of Transport in 2004^[4] on the content of airport master plans recommended that master plans should be reviewed every five years and the short to medium term period (up to 2015) should be considered in a greater level of detail, with the longer term period (up to 2030) being more indicative. This draft Master Plan follows these principles, but will look out to 2020 as the short to medium term and 2040 as the longer term time horizon.

Publication of this draft Master Plan will launch a 12 week consultation period for neighbouring communities, public authorities and others to consider the Master Plan and provide feedback. The consultation will be carried out in accordance with the *Guidance on the Preparation of Airport Master Plans* and the principles of the Scottish Government's *Planning Advice Note 3/2010: Community Engagement*^[5]. All feedback received will be independently analysed and as in the previous Master Plan, the final document will be amended to reflect that feedback where appropriate. It is anticipated that the finalised Master Plan will be published by the end of 2011.

In common with the previous Master Plan, the updated version is not a statutory planning document. However, Government has directed that planning and transport authorities must take account of airport master plans and the provisions of the White Paper in their guidance, strategies and decisions.

Objectives of the Master Plan

This draft Master Plan updates the 2006 Master Plan and sets out a vision for Glasgow Airport to:

“Become Scotland's leading business and leisure gateway by developing a strong and lasting route network and delivering a memorable experience.”

The objectives of the Master Plan are informed by the airport vision, Government policy and Glasgow Airport's commitment to working in partnership to grow the airport in a sustainable and responsible manner. In doing so, the specific objectives of the Master Plan are to:

[1] Glasgow Airport Master Plan, Glasgow Airport Limited, 2006. [2] CM6046 *The Future of Air Transport*, Department for Transport, 2003. [3] CM6977 *The Future of Air Transport Progress Report*, Department for Transport, 2006. [4] *Guidance on the Preparation of Airport Master Plans*, Department for Transport, 2004. [5] *Planning Advice Note 3/2010: Community Engagement*, Scottish Government, 2010.

- provide a basis for engagement and informed discussion with our customers, neighbours and partners;
- positively influence planning, transport and economic development policies and decisions by establishing a shared vision for the development of the airport;
- develop a framework to maximise economic and social benefits provided by the airport whilst managing environmental effects;
- set out the prospects for air traffic growth and an indication of the airport infrastructure required to handle this growth at 2020 and 2040;
- identify the areas of land currently outside the Airport's ownership which will be required to enable the airport to grow and accommodate the forecast increase in passenger numbers; and
- highlight the strategic transport improvements - including public transport - needed to support the growth of the airport and surrounding area.

It is right that this Master Plan sets out how Glasgow Airport is expected to grow in the medium and long term to provide a basis for engagement and informed discussion with our customers, neighbours and partners. It is hoped that the Master Plan will also inform the timely provision of supporting infrastructure by others.

It should be noted however that the timescales referred to in the Master Plan for airport growth and supporting infrastructure are based on current passenger forecasts. Therefore, if passenger numbers grow faster than expected, development may be required sooner. Equally, if numbers grow slower than expected, development may not be required until later.

2. Glasgow Airport Today

Introduction

Glasgow Airport is located 1 mile north of Paisley and around 8 miles west of Glasgow city centre. The 'natural' boundaries of the site are formed by the Black Cart Water to the north, the White Cart Water to the east and the M8 Motorway to the south and west. Within these boundaries the airport covers some 340 hectares. Drawing 1 shows the current layout and pattern of land uses at the airport.

The constant movement of thousands of people and a multitude of activities going on at any one time mean that large airports are often more akin to small towns than transport hubs. Glasgow Airport is no different, with its own fire service, chaplaincy, supermarket, police station and roads system. This chapter provides a description of facilities at Glasgow Airport and an overview of traffic characteristics.

History of the Airport

The airport was opened by Her Majesty the Queen in May 1966. It was developed on the site of the former HMS Sanderling naval air base to replace the smaller Renfrew Airport as the principal airport for the city of Glasgow and west central Scotland. The original airport was designed by notable architect Sir Basil Spence. In visiting the airport just before the official opening, Sir Basil commented:

“On our first visit to Abbotsinch we were fortunate that it was a beautiful day and the view down the runway to the hills beyond revealed one of the great attractions of the site which is almost unique in this country, and even

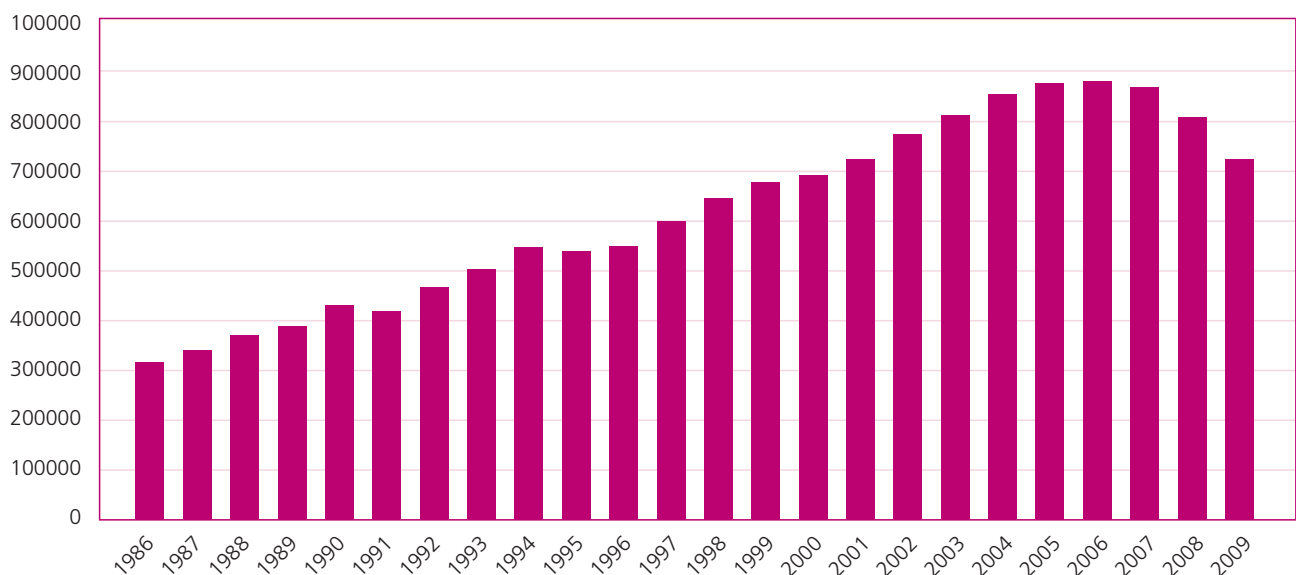
abroad, where airports are normally situated on uninteresting flat land. This presented the opportunity for a design which helped the traveller to feel the adventure of flying from this particular airport.”

Since 1966 the airport has grown to accommodate increasing passenger numbers. The terminal was extended in the late 1980s with the addition of a new front facade and main check-in hall and in 1994 with the opening of the international pier. More recently, 2008 saw the opening of a £31 million terminal extension. This two storey development created a consolidated security search area on the first floor to replace the three separate security areas which were previously in operation, together with additional retail and catering space.

Passenger operations are focussed around the main terminal located on Caledonia Way. Cargo and maintenance uses have developed to the east around Campsie Drive and some maintenance and other ancillary uses are located to the west around St Andrew's Crescent.

Since the transition from the public British Airports Authority to the private BAA plc (now BAA Limited) in 1987, Glasgow Airport has grown from handling around 3.4 million passengers a year to over 7 million passengers a year in 2009. Figure 1 illustrates passenger growth since 1986.

Figure 1: Annual passenger figures since privatisation



Runway + Taxiway System

Runway 05/23 is 2,658m in length and is the only operational runway at Glasgow Airport following the closure of the much less used and shorter Runway 09/27. Runway 05/23 is equipped with a Category III instrument landing system (ILS). It lies in a south-west/north-east direction and is oriented into the prevailing wind. It can currently handle any aircraft up to and including the Boeing 747 and 777. The main runway is complemented by a parallel taxiway system and can accommodate up to 32 take offs or landings per hour. Up to 36 take offs or landings per hour can be sustained for shorter periods of time.

There is potential to increase the hourly capacity of Runway 05/23 up to approximately 45 movements per hour by developing enhancements to the runway and taxiway systems.

Aircraft Aprons + Parking Stands

Glasgow Airport currently has up to 44 passenger aircraft parking stands depending on the configuration used (see Table 1). The airport also has 3 stands which are predominantly used by cargo aircraft. Of the passenger stands, six can accommodate larger aircraft such as the Boeing 747-400.

Up to 40 stands are 'contact', which means they are located immediately adjacent to the terminal piers. The remaining stands are remote from the terminal and passengers are coached to and from aircraft parked on these.

Passenger Terminal Facilities

The main terminal is the focus of passenger facilities at Glasgow Airport. The T2 facility adjacent to the main terminal was developed in 2004 to provide additional passenger check-in and baggage handling capacity during peak periods. In addition to the recent £31 million terminal extension, the main terminal has undergone significant internal alterations since 2006 in response to evolving security requirements and to improve passenger facilities. All departing passengers now utilise a consolidated security search area which is more efficient and delivers quicker processing times and shorter queues.

A range of retail, catering and leisure outlets are provided in the departures area for all passengers after security (airside). These facilities have become more important to both passengers

and airport operators. Passengers now expect airports to offer the same range and standard of retail and leisure facilities found in the best shopping centres and, with airport operators under pressure to maintain lower landing charges, income derived from these uses can be reinvested in the airport without raising landing charges. There are also a number of retail and catering outlets before security (landside) which are often used by waiting friends and relatives, as well as arriving and departing passengers.

Three piers connect the main terminal with the aprons and aircraft parking stands. The three piers serve international traffic to the west, domestic traffic in the centre and low-cost traffic in the east pier, which caters for a mixture of domestic and international traffic (with international passengers transferred to and from aircraft on the east pier by coach).

International departure and arrival facilities are located at the west of the main terminal, with domestic and Common Travel Area (Ireland, Isle of Man, Channel Isles) facilities located at the east. Together, the main terminal and T2 provide a total of 63 check-in desks with 100% hold baggage screening systems and 19 self-service check-in kiosks. There are also two self-service check-in kiosks in car park 2. There are three domestic and four international baggage reclaim belts.

The terrorist attack on Glasgow Airport in June 2007 led to wide-ranging changes regarding vehicle access to airports throughout the world. At Glasgow itself, the airport was fully operational 24 hours after the attack with temporary access arrangements in place. These temporary access arrangements were improved in the months following the attack by re-locating pick up and drop off facilities into the ground floor of car park 2. However, passengers continued to experience congestion and delays as a result of the disruption. In June 2010, the airport completed a £4 million project to improve passenger pick up and drop off facilities, reduce congestion and vehicle emissions and enhance the passenger experience. These improvements have resulted in less congestion on the airport roads whilst achieving higher priority for public transport services in front of the main terminal and improving security.

Table 1: Glasgow Airport Aircraft Stands

	Small	Medium	Large	Jumbo	TOTAL
Stands (min*)	4	16	12	6	38
Stands (max**)	8	20	14	2	44
Cargo Stands	1	2	0	0	3

* Assumes use of the 'C' centreline on multi use stands ** Assumes use of 'L' and 'R' centrelines on multi use stands

Table 2: Car Parking at Glasgow Airport

	No. of Spaces
Short Stay	3,490
Long Stay	2,700
Staff	1,494

Car Parking

There are four public car parking areas within the airport, offering a total of 6,190 spaces. There are 1,494 staff car parking spaces on the airport campus, 680 of which are located within the Viaduct car park located between St. Andrew's Drive and Sanderling Road. The remaining spaces are attached to the various offices and ancillary service buildings located around the airport campus. Table 2 shows the number of parking spaces by type.

Cargo and Mail

Glasgow Airport has a busy cargo facility which occupies an area of approximately 2.5 hectares at Campsie Drive. The area comprises a mixture of cargo units and logistics warehousing and is served by a dedicated cargo apron. Glasgow's cargo business is made up of two elements: cargo flown on passenger services (also known as belly-hold); and cargo flown on dedicated cargo flights. The airport is also an important base for trucked cargo with freight operators using it as a hub to access other major freight airports such as Heathrow and Stansted by road.

In the 12 months to the end of 2009, approximately 2,700 tonnes of air cargo were handled through Glasgow Airport. This represents a reduction of around 26% on the previous year and reflects a general downturn in the air cargo market. The majority of dedicated cargo flights are currently small turboprop aircraft going to Paris and Stansted. Most air cargo from Glasgow is transported as belly-hold. The main routes for belly-hold cargo are Newark, Heathrow and Dubai. Belly-hold cargo often contributes to making international passenger routes more viable than would otherwise be the case.

Aircraft Maintenance

There are currently two aircraft maintenance bases at Glasgow Airport occupying a total land area of approximately 3.2 hectares. British Airways occupy the largest hangar, located on Campsie Drive. This hangar is the principle base for the maintenance of the airline's fleet of Boeing 737 aircraft and employs over 200 highly skilled aircraft engineers. A new 2,300m² hangar was developed for Loganair in 2001 to provide aircraft maintenance facilities adjacent to the airline's head office.

Air Traffic Control + Airspace

The air traffic control tower was originally built in the late 1940s and was substantially upgraded in the early 1960s and again in the 1980's. Located on an island site between the main runway and apron area, the 15-metre high structure provides clear and uninterrupted views across the airfield.

The airport has invested in new and improved air traffic control systems to enhance the safety and efficiency of air traffic movements around the airport. These include a £1 million Surface Movement Radar, Primary Surveillance Radar and a new taxiway lighting system.

Airspace directly surrounding Glasgow Airport is managed on behalf of the airport by National Air Traffic Services Limited (NATS). Outside of this zone airspace is managed by NATS En Route Limited (NERL) from the Scottish Air Traffic Control Centre at Prestwick. A number of standard departure and arrival routes which avoid populated areas have been established to manage air traffic using the airport.

Although the airspace surrounding Glasgow, Edinburgh and Prestwick airports is relatively small and densely utilised, there is sufficient separation (i.e. space between the airports and their departure and arrival routes), to ensure that operations at one airport do not affect the others.

Ancillary Facilities

A number of ancillary facilities are also required to support the operation of the airport. Such uses usually have a locational need to be within or in close proximity to the airport boundary, either for operational, regulatory or efficiency reasons. Some of the key ancillary facilities at Glasgow Airport include:

- **airport fire station** - Glasgow Airport has its own airport fire service which employs 68 staff and is operational 24 hours a day. The fire station is located airside adjacent to the airfield. The airport's fire training ground is located in the north western part of the airport, adjacent to Barnsford Road;

- **fuel farm** - The fuel farm covers an area of approximately 1.5 hectares. There are a total of seven surface level tanks with a combined capacity of approximately 3.5 million litres for the storage of Jet A1 aviation fuel. On-site accommodation includes offices, training and staff welfare facilities. Fuel is delivered by road tanker to the fuel farm and then by bowser to the aircraft;
- **car-hire facilities** - These include terminal facilities (desks within domestic arrivals), ready return areas (parking spaces and modular kiosks, where passengers pick up and drop off hire cars) and back-up areas (incorporating vehicle wash and fuelling areas and office accommodation); and
- **hotels** - There are three hotels located on the airport campus, and a further two immediately to the south within the Glasgow Airport Business Park. The largest of the on-airport hotels is the Holiday Inn, situated opposite the main terminal, which provides 300 rooms and several function/meeting rooms. The Express by Holiday Inn and the Travel Inn provide a further 141 and 101 rooms respectively.

Other ancillary airport facilities include:

- general / business aviation area;
- in-flight catering units;
- aircraft sanitation unit;
- motor transport facilities;
- engineering workshops and snow base;
- contractors compounds;
- office accommodation;
- police station;
- taxi feeder rank;
- petrol filling station;
- nursery; and
- flying clubs.

Traffic Characteristics

Glasgow Airport primarily serves the city of Glasgow and the west of Scotland. The 2009 survey of airport passengers undertaken by the Civil Aviation Authority (CAA) showed that around 70% of passengers originate from within the Glasgow City Region*. Glasgow is the largest city region in Scotland and one of the largest in the UK with a population of over 1.75 million^[6]. The airport's wider catchment extends to the whole of Scotland and the north of England, with population of around 3.76 million within a two hour travel time by road and 2.2 million by rail in 2002^[7].

Glasgow Airport is one of the UK's leading regional airports. It has approximately 30 airlines flying to around 90 destinations. The airport served 7.2 million passengers in 2009, with 47% of passengers travelling on international services and 53%

travelling on domestic services (primarily to and from the London airports). UK nationals (88%) dominate passenger traffic at Glasgow, with foreign passengers making up 12%.

It is also noteworthy that around 29% of passengers were travelling on business. Across all the airports surveyed by the CAA in 2009, business passengers accounted for only 23% of travellers. Glasgow has a higher proportion of business users than many other UK airports, including Gatwick (15%), Luton (18%), Stansted (16%), Manchester (17%), Newcastle (20%) and Prestwick (8%). This highlights the importance of the airport to the business community and therefore the economy of the west of Scotland.

The airport is home to a mix of low cost, charter and full service airlines, which in 2009 represented approximately 40%, 20% and 40% of the market respectively. It serves a number of European destinations, including Dublin, Paris, Berlin, Copenhagen, Amsterdam, Barcelona and Reykjavik. The airport is Scotland's principal long haul gateway, with Toronto, Vancouver, New York, Philadelphia and Dubai, among its network of long haul destinations. The airport also has a significant domestic role as the hub for the Highlands and Islands and is one of only seven UK airports to retain Heathrow links.

Glasgow Airport has faced a number of challenges since the publication of the 2006 Master Plan, including the global recession which has had a significant impact on demand for air travel. At Glasgow, passenger numbers have fallen from a high of 8.8 million in 2006 to around 7.2 million in 2009. This trend is mirrored at many other UK airports, including Manchester, Prestwick, Stansted, Belfast International, Newcastle and Cardiff. More recently, the impact of volcanic ash from the volcanic eruption in Iceland caused major disruption throughout Europe.

The decline in discretionary leisure travel has resulted in the collapse of a number of UK based charter airlines and travel operators. Many of them - like flyglobespan, Zoom and XL Airways - had a significant presence at Glasgow Airport. A number of other factors such as reduced demand for domestic travel, consolidation of the charter market and increased competition from other airports have also impacted upon passenger numbers at Glasgow.

The International Air Transport Association described 2009 as 'the worst year the industry has seen,' with global demand down 3.5%. However, while there are signs of a recovery in the demand, 2010 brought further challenges for the industry, with extreme winter weather, industrial action and volcanic ash causing widespread disruption across the UK and Europe, and severely damaging the recovery in passenger demand.

*The Glasgow City Region includes North Lanarkshire, South Lanarkshire, Inverclyde, Renfrewshire, East Renfrewshire, West Dunbartonshire, East Dunbartonshire and the city of Glasgow. [6] Glasgow and the Clyde Valley Strategic Development Plan Main Issues Report, GCVSDPA, 2010. [7] The Future Development of Air Transport in the United Kingdom: Scotland, Department for Transport, 2002.

Nonetheless, analysis of passenger numbers over the past 20 years from 1989 shows average annual growth of 2.7% per year and the aviation sector has tended to rebound after periods of recession.

Table 1 shows passenger numbers (split by international and domestic), Passenger Air Transport Movements (PATMs) and average passenger load per passenger aircraft between 1999 and 2009.

The 2006 master plan noted significant growth in international traffic of 4.1% per year from 1995 to 2005. As can be seen

“Analysis of passenger numbers over the past 20 years from 1989 shows average annual growth of 2.7% per year.”

from Table 3, international traffic at Glasgow has suffered from the effects of the recession and the loss of a number of airlines such as flyglobespan, Zoom and XL Airways. Domestic traffic has also suffered. Despite the overall drop in international traffic, long-haul traffic numbers have remained upbeat, with the Emirates Dubai route performing particularly well.

Table 3: Historical Passenger Air Traffic Data (1999-2009)

	Annual Domestic Passengers (millions)	Annual International Passengers (millions)	Annual Total Passengers (millions)	Annual PAT Ms	Average Flight Load (Passengers)
1999	3.41	3.35	6.76	85,600	79
2000	3.41	3.51	6.92	87,620	79
2001	3.80	3.45	7.25	91,260	79
2002	4.18	3.60	7.77	87,190	89
2003	4.48	3.64	8.12	87,460	93
2004	4.63	3.93	8.56	91,508	94
2005	4.62	4.16	8.78	95,952	92
2006	4.59	4.24	8.83	96,128	92
2007	4.60	4.13	8.73	93,029	94
2008	4.19	3.94	8.14	86,098	95
2009	3.79	3.42	7.22	73,564	98

Figure 2: Monthly Passenger Distribution in 2009

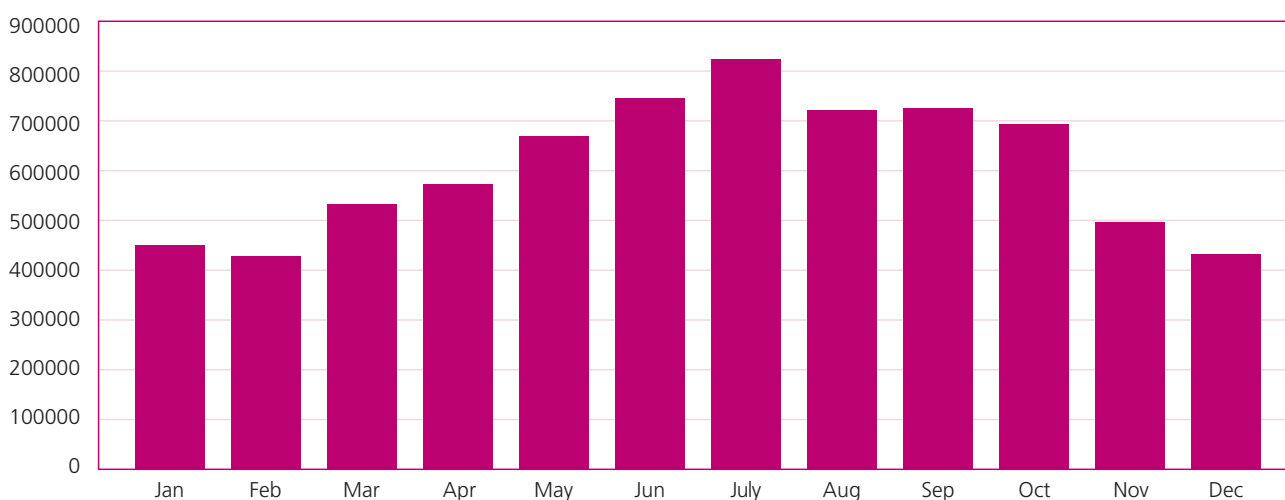
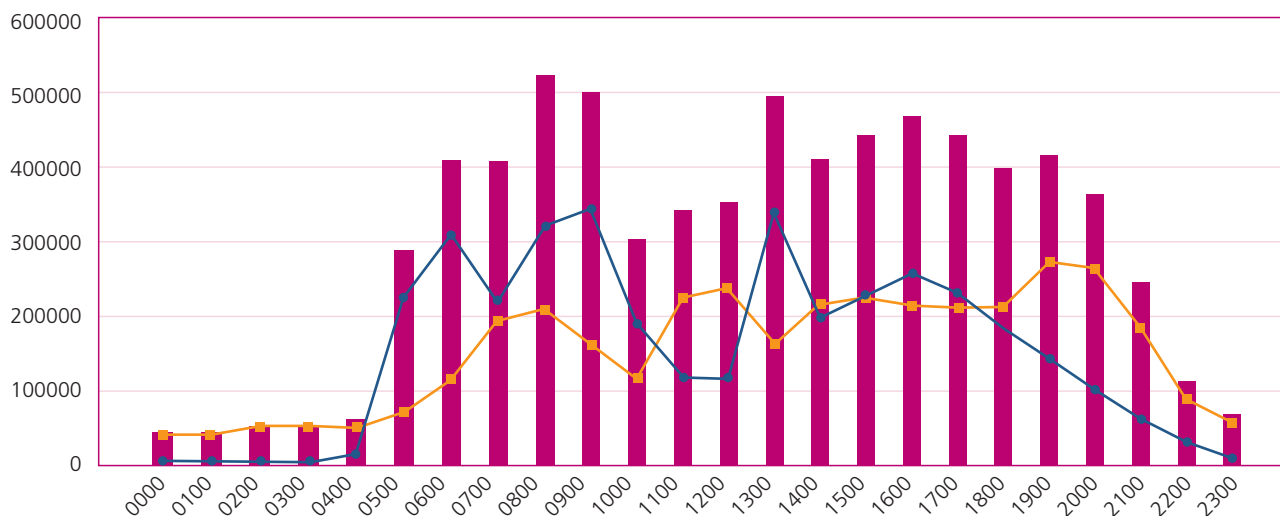


Figure 3: Hourly passenger distribution in 2009



Passenger demand is greater throughout the summer months as leisure demand increases particularly during the school holidays in June, July and August (see Figure 2). The Easter and October school holidays also generate a significant amount of demand for package holidays and short breaks. A large proportion of the airlines at Glasgow operate on a year round basis with mixed frequencies. However, the seasonal variation which is apparent at most airports is more pronounced at Glasgow due to the high number of leisure charter flights during the summer.

The daily demand profile highlights that Fridays and Saturdays tend to be the busier days during peak months. This is due to a combination of business and leisure demand on Fridays and large numbers of charter flights operating on Saturdays.

Figure 3 outlines total passenger demand by hour in 2009 and shows that the periods between 8am and 9am and 1pm and 2pm are the busiest times at Glasgow Airport.

The peak of departing aircraft at the beginning of the day (blue line) and arriving aircraft at the end of the day (orange line) is a product of Glasgow being an overnight base for many airlines. The other peaks during the day reflect a busy short-haul, domestic route network and the preferred mid-day operating time period for long-haul airlines.

The profile shown in Figure 3 demonstrates that there is scope to accommodate additional demand outside of the peak periods. Long-haul routes, increased frequencies and international based aircraft could in theory take advantage of this capacity. In reality however, demand is likely to remain concentrated in peak periods as airlines seek to maximise the utilisation of aircraft.

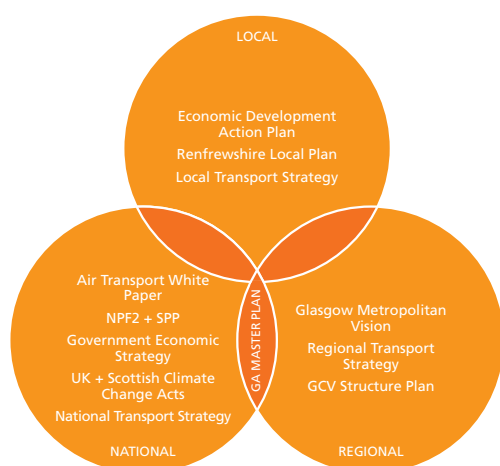


3. Policy + Legislation Context

Introduction

Glasgow Airport operates within a framework of policy and legislation which regulates the operation and development of airports. Key topics include transport, planning, economic development, the environment, airport design and future airport growth. These are summarised in Figure 4 and considered in further detail below. However, there are functional and legal limits to Glasgow Airport's activities as an airport owner and operator. For example, responsibility for airspace policy and air traffic control respectively lies with the UK Government, the Civil Aviation Authority (CAA) and National Air Traffic Services Ltd (NATS).

Figure 4: Summary of Policy and Legislation Framework



Various local, national and international authorities have responsibility for different topics, and this chapter sets out relevant policy and legislation and how it relates to the airport. Environmental policies and legislation relevant to the airport are explored in chapter 6.

Aviation Policy

The Airports Act 1986 established a framework for private ownership of airports in the UK and provides specific controls on the use and operation of airports. The status of Glasgow Airport Limited as a relevant airport operator and Glasgow Airport as a relevant airport is conferred by Section 57 of that Act.

The Future of Air Transport White Paper, published in 2003, provides a strategic framework for the development of airport capacity in the UK up to 2030. Whilst aviation is a matter reserved to Westminster, the (then) Scottish Executive worked in collaboration with the Department for Transport to prepare the Scottish elements of the White Paper. The White Paper seeks to achieve a balanced approach to airport growth and in terms of Scotland it states that:

“Overall, the forecasts show demand for air travel increasing from around 20 million passengers per annum (mppa) today to close to 50mppa by 2030. A sizeable proportion of this demand is expected to arise at airports in the Central Belt.”

The main conclusions of the White Paper in respect of Glasgow Airport are:

- land to be reserved for a possible second runway through revision of the Renfrewshire Local Plan;
- prior to the construction of any second runway, land outside the current airport boundary should be safeguarded to allow full use of the existing runway;
- substantial development of terminal and airside facilities;
- work with relevant planning authorities to limit any increase in the size of the 57 decibel contour area;
- prepare proposals for enhancing the transport corridors serving the airport in conjunction with Strathclyde Partnership for Transport (SPT) and local authorities; and
- make provision for new and displaced maintenance, repair and overhaul facilities.

Other policy documents such as those in planning and transport are required to reflect The Future of Transport White Paper and Glasgow Airport engages with a range of national, regional and local statutory authorities to ensure that airport issues are taken account of in relevant guidance, strategies and decisions. In this way, the airport and its partners can ensure that the future sustainable development of the airport is safeguarded and that the airport is able to optimise its contribution to the social and economic prosperity of the country.

The May 2010 general election resulted in a coalition between the Conservatives and Liberal Democrats forming the UK Government. The Coalition has announced the cancellation of the proposed runways at Heathrow and Stansted, of which the 3rd runway at Heathrow in particular represented a key element of the White Paper strategy for supporting airport growth. The Coalition has also announced the creation of a South East Airports Task Force and an intention to publish a policy statement on aviation in 2011. It is unclear at the time of writing what, if any, the implications may be for Glasgow Airport or Scotland.

Airport Design Criteria

The UK, as a signatory to the 1944 Chicago Convention, is required to operate its airports in accordance with specific internationally agreed criteria. Responsibility for ensuring compliance with these criteria resides with the Civil Aviation Authority (CAA) in the UK. The Air Navigation Order 2000 requires that flights in the UK for the public transport of passengers, or for the purposes of flying instruction, take place at a licensed aerodrome, a government aerodrome or at an aerodrome managed by the CAA. Glasgow is a licensed aerodrome. To obtain and retain this licence, Glasgow must satisfy and continually adhere to CAA standards. These standards are contained within the CAA publication CAP168, and are subject to on-going revision to reflect changes such as the introduction of new aircraft. A major audit of Glasgow was successfully completed in 2010.

Aerodrome Safeguarding and Public Safety Zones

Glasgow Airport is situated at the centre of a series of obstacle limitation surfaces which define maximum acceptable heights for buildings and other structures, such as telecommunications masts and wind turbines. The protection of these surfaces is undertaken as part of the Aerodrome Safeguarding process. This is undertaken on Glasgow's behalf by the BAA Safeguarding team based at Heathrow, in consultation with Glasgow Airport's Planning team. Local Planning Authorities are issued with safeguarding maps which enable them to identify those planning applications on which the airport must be consulted.

Government targets for renewable energy generation have resulted in a large number of proposals for on-shore wind farms being brought forward in the last few years. Glasgow Airport supports Government objectives to increase the amount of energy generated by renewable sources, but this must be achieved without compromising the safe and efficient operation of aircraft and airports, and the economic and social benefits these bring.

Wind turbines can be a cause for concern both in terms of the physical obstruction to air navigation (i.e. the height of the structures) and more significantly, their visibility to radar and the potential confusion this can cause. Furthermore, poorly located wind farms can reduce airspace capacity and result in additional fuel burn as aircraft take longer routes around them.

BAA Safeguarding has recently participated in a study led by the Scottish Government which investigated how technical solutions could be developed to allow certain wind farm developments with radar issues to proceed. BAA Safeguarding and Glasgow Airport will continue to work proactively with Government, Air Traffic Control providers and developers in this area.

Chapter 12 of the Air Transport White Paper specified that the Aerodrome Safeguarding process should also be used to

protect land outside the existing airport boundary needed for future expansion against incompatible development.

Safeguarding issues related to the possible development of a new runway at Glasgow Airport are addressed in Chapter 7.

The risk of air accidents occurring within, or in close proximity to airports, is the subject of Government policy, which defines Public Safety Zones (PSZs) extending outward from the ends of a runway. PSZs identify areas where the risk of an aircraft accident, while extremely low, may be such as to merit restrictions on the use of land. The Department for Transport (DfT) are responsible for PSZ policy and Local Planning Authorities are responsible for ensuring PSZ policy is adhered to.

The current PSZs were calculated in 1999 and formally adopted in 2002. The basic policy objective is that there should be no increase in the number of people living, working or congregating in PSZs and that, over time, the number should be reduced as far as circumstances allow.

Land Use Planning

National Planning Policy

Planning in Scotland is a devolved matter overseen by the Scottish Government. The second National Planning Framework (NPF2) was laid before Parliament in June 2009. NPF2 sets out the strategic national development priorities to guide the country's development up to 2030 and is intended to support the Scottish Government's central purpose of achieving sustainable economic growth.

The key aims of NPF2 are:

- to contribute to a wealthier and fairer Scotland by supporting sustainable economic growth and improved competitiveness and connectivity;
- to promote a greener Scotland by contributing to the achievement of climate change targets and protecting and enhancing the quality of the natural and built environments;
- to help build safer, stronger and healthier communities, by promoting improved opportunities and a better quality of life; and
- to contribute to a smarter Scotland by supporting the development of the knowledge economy.

The main difference between NPF2 and the first National Planning Framework is that NPF2 is a statutory document which is subject to Parliamentary scrutiny. Furthermore, it designates 'national developments' which are considered essential to Scotland's long-term development. Designation as a national development does not remove the need for planning permission. It does however establish the acceptance of the principle of development, leaving the assessment process to consider issues of detail such as design and environmental impact.

While the main purpose of NPF2 is to provide over-arching co-ordination of policies with a spatial or land use dimension, it is also intended to inform the investment priorities of public agencies. Planning Authorities must take NPF2 into account when preparing development plans and determining planning applications.

Glasgow Airport has been designated as a national development (within Strategic Airport Enhancements) in recognition of its key economic importance as an international gateway. Elements covered by the designation include:

- the Glasgow Airport Rail Link (GARL);
- improvements to terminal facilities;
- changes in operational area; and
- additional maintenance hangars, and aircraft stands and taxiing facilities.

NPF2 highlights a number of key challenges the country must address. With regard to air transport, paragraph 23 states:

“While the expansion of direct air links has dramatically improved Scotland’s international connectivity in recent years, air travel is making a growing contribution to greenhouse gas emissions. A key issue over the next 25 years will be how to maintain and enhance this connectivity, with all the economic and other benefits that this will bring, while tackling the challenge of climate change.”

This statement highlights the importance of ensuring that the growth of Glasgow Airport is achieved in a sustainable and responsible manner.

Strengthening links with the rest of the world and the role this plays in supporting the economy is one of the main themes in NPF2 and paragraph 113 states:

“Economic success will depend on good connections with the rest of the United Kingdom and global markets. Scotland’s position on the Atlantic seaboard makes it particularly important to respond to the changing geography of Europe and the development of European markets. We also need to strengthen links with North America and the growing economies of Asia.”

The Framework also recognises that adequate investment in infrastructure is vital to the competitiveness of the country. Paragraph 58 states:

“To ensure that Scotland is a good place to do business and an attractive tourism destination, we need to promote high quality environments and good transport interchange facilities at our air, rail and sea gateways.”

The Framework provides details of transport infrastructure which was committed to at the time of publishing. This includes the M74 and M80 which are both under construction and the GARL project which the Scottish Government has decided not to proceed with. In reflecting the position of the White Paper on supporting the growth of Glasgow Airport, paragraph 116 highlights that:

“In promoting enhancements at our airports, the Scottish Government is placing emphasis on measures which improve surface access by public transport.”

The consolidated Scottish Planning Policy (SPP) was published in February 2010 and supersedes the previous range of topic based Scottish Planning Policies and National Planning Policy Guidelines. SPP is the statement of the Scottish Government’s policy on nationally important land use planning issues.

Airports are considered under the heading of transport and the SPP recognises the importance of airports as economic generators and transport nodes. It also highlights the role of airports in supporting wider economic growth and a significant number of jobs.

Planning authorities and airport operators are encouraged to work together to address the airport master plan and other related planning and transport issues. Other relevant issues to address include:

- public safety zone safeguarding;
- surface access; and
- airport related on and off site development such as transport interchanges, offices, hotels, car parking, warehousing etc.

Regional Planning Policy

Regional planning policy is provided by the Glasgow and the Clyde Valley Structure Plan (herein referred to as the Structure Plan) which was approved in 2000, with four alterations being subsequently approved. The Second Alteration, which was approved in the Spring of 2004, is concerned with the strategic role of Glasgow Airport and it recognises the key role which the airport has to play not only in Glasgow and the Clyde Valley, but also the whole of Scotland.

The airport is located within the ‘Corridor of Growth’, which is one of the three strategic themes within the Structure Plan. In promoting the Corridor of Growth as one of the key themes, the Structure plan seeks amongst other things to

- enhance the key centres of business, education and commerce within the Corridor;
- improve public transport access along, across and into the Corridor;

- complete the road and rail network serving the corridor; and
- safeguard and expand the international transport terminals within the Corridor.

Joint Policy Commitment 1B confirms Glasgow Airport's position as a strategic priority and supports safeguarding and expansion of the airport. Strategic Policy 5 promotes the role of the airport in supporting the economic competitiveness of the metropolitan area. Strategic Policies 1 and 4 note the commitment to GARL and promote the upgrading of the M8 motorway between junctions 26 (Hillington) and 29 (St James).

Following the changes to the planning system effected by the Planning etc (Scotland) Act 2006, the new Glasgow and the Clyde Valley Strategic Development Plan (SDP) is being prepared to replace the Structure Plan. The Main Issues Report which informs the SDP and precedes the proposed plan was published in September 2010. Glasgow Airport has been consulted during the preparation of the Main Issues Report and will continue to work with the SDP team to inform the new plan.

Local Planning Policy

Local planning policy is provided by the Renfrewshire Local Plan which was adopted in March 2006. Strategic Policy 3: Promotion of Economic Competitiveness makes reference to the expansion of Glasgow Airport and the accompanying paragraph provides support for further airport related development.

Policy Airport 1 is concerned with the operational uses at the airport. The policy supports operational uses and the decanting of non-operational uses within this area. Land safeguarded for airport expansion around Netherton Farm is designated under Airport 1 and Green Belt policies. Policy Airport 2 encompasses the remainder of the airport campus where development associated with the functioning of the airport is supported. Policies Airport 3 and Airport 4 provide details of Public Safety Zones and Airport Safeguarding areas.

The Local Plan Update Report was published in November 2007 to assess progress since the adoption of the Local Plan. The update report re-emphasises support for allowing the airport to expand to its full potential and notes the Second Alteration to the Structure Plan in this regard. Looking forward to the preparation of a new Local Development Plan to replace the 2006 Local Plan, the update report highlights the requirement to safeguard land for the long-term development of the airport and the on-going need to improve the M8 between Junctions 26 and 29.

Renfrewshire Council is set to prepare a new Local Development Plan as part of the changes to the planning system. The Council has established a timetable for preparing the new plan and Glasgow Airport will be actively involved in the process.

“Our priority is to ensure that our region is well connected to the global marketplace and to ensure that our region’s people can move easily... Key to the delivery of this will be projects such as the development of Glasgow Airport...”

Development Management

All major airports in Scotland have certain permitted development rights under the provisions of Part 14 of the Town and Country Planning (General Permitted Development) (Scotland) Order 1992, as amended. This means that some types of development undertaken by BAA Glasgow (or its agents) on operational land can proceed following the submission of a prior notification, rather than a planning application, to the Planning Authority.

Developments such as the construction or extension of a runway, hotels and development on non-operational land are not permitted development. Operational land is defined in the Town and Country Planning (Scotland) Act 1997 as land owned by the airport authority which is used for the purpose of carrying out the airport's undertaking.

Economic Development

Chapter 5 provides more detail on the economic impact of the aviation industry and Glasgow Airport specifically, but in a wider sense the Airport has a significant role to play in supporting a number of economic development policy objectives. The key documents and policies in this area are summarised below.

Glasgow and the Clyde Valley Community Planning Partnership launched a 10 year vision for the development of the Metropolitan Glasgow region in 2003:

“We want the Glasgow City Region to be one of the most dynamic, economically competitive and socially cohesive city regions in Europe. A City Region which prospers and, through effective public and private sector partnership working at all levels, includes all of its people in its success. A place of quality where people choose to live.”

The vision was updated in 2008 to provide a refreshed set of priorities to guide how to achieve the vision. The Transport Infrastructure priority states:

“Our priority is to ensure that our region is well connected to the global marketplace and to ensure that our region’s people can move easily... Key to the delivery of this will be projects such as the development of Glasgow Airport...”

To guide how the country can achieve sustainable economic growth, the Government's Economic Strategy was published in 2007 and, in relation to the important role of an efficient transport system noted:

"An efficient transport system is one of the key enablers for enhancing productivity and delivering faster, more sustainable growth. Enhancing transport infrastructure and services can open up new markets, increase access to employment and help to build a critical mass of businesses that drive up competitiveness and growth."

Renfrewshire's Economic Development Action Plan sets out how Renfrewshire Council intend to develop the economy of the area over the period from 2009 up to 2011. The action plan emphasises the role of Glasgow Airport as Renfrewshire's largest private sector employer and the importance of the connectivity it provides. The sustainable development of the airport is considered to present an opportunity for considerable economic growth and the Council is committed to working in partnership with the airport operator to maximise economic benefits.

Glasgow's Economic Development Strategy establishes a shared vision for the economic development of the city up to 2016. It seeks to create a world-class city and outlines a number of priorities and themes to achieve this. The Strategy's latest Action Plan sets out the priorities for delivery up to 2013. The need to protect and improve direct access to Glasgow by air, sea and surface is included under the theme of 'International Positioning'.

Transport

The National Transport Strategy (NTS) priority is to promote sustainable economic growth assisted through an efficient and effective national transport network. To achieve this, the NTS sets out a series of strategic priorities and outcomes. There are three key outcomes:

- improve journey times and connections;
- reduce emissions; and
- improve quality, accessibility and affordability.

The following paragraphs outline how the NTS will support Glasgow Airport:

"The NTS supports the conclusions of the Government White Paper, The Future of Air Transport regarding enhancing capacity for Glasgow Airport. By improving connections to the global markets and meeting the needs of Scottish businesses, the NTS recognises the importance of ensuring a viable long term air network. This is needed to support Scottish businesses and maximise access to the tourist market.

A key priority of the NTS is improving links with the rest of Great Britain and on to global markets. To achieve this, the NTS supports the improvement of road connections that link up to Scotland's airports; including Glasgow Airport.

The success of the NTS will be monitored through various means. In terms of enhancing global connections this will be assessed through passenger numbers travelling through ports and airports."

The Regional Transport Strategy (RTS) was approved by the Scottish Government in June 2008 and sets out a vision for the west of Scotland's transport infrastructure up to 2015. That vision is to create a world class transport system that will stimulate economic growth and contribute to improving quality of life.

To achieve this, 17 strategic priorities are identified that aim to produce four key outcomes:

- improved connectivity;
- reduce emissions;
- access for all; and
- attractive, seamless, reliable travel.

These outcomes are linked to the strategic objectives of the RTS. Of these, the most relevant is the important relationship between economy, transport and land use planning. The RTS seeks to support land use planning strategies, regeneration and development by integrating transport provision.

The Renfrewshire Local Transport Strategy sets out Renfrewshire Council's vision for transport over a 10 to 20 year period. The vision is to promote healthy lives by promoting sustainable travel for Renfrewshire's residents, workers and visitors. The LTS sets its key objectives as follows:

- regenerate the local economy wherever possible;
- extend opportunities for all;
- ensure a healthy and sustainable environment;
- improve community safety and security, both real and perceived, and increase connectivity between settlements and services; and
- encourage integration of services and an integrated approach by public bodies whilst achieving best value.

The LTS highlights the issue of road capacity constraints on the M8 between junctions 26 and 29.



4. Forecast Demand

Introduction

This chapter presents various forecasts for the short to medium term - 2020 - and the longer term - 2040. They have been prepared by BAA's Forecasting & Statistics Department to provide a basis from which to plan for future investment and development at Glasgow Airport. The central growth case forms the basis of this Master Plan. It is important to emphasise that if traffic growth is stronger than predicted, development may need to be accelerated to meet demand, while if traffic grows more slowly than predicted, development may inevitably occur at a later date.

BAA has calculated the figures using a standard air traffic forecasting model which incorporates various indicators. These include growth in UK and world Gross Domestic Product (GDP), the outlook for regional Gross Value Added (GVA), based on their historic relationships with UK GDP and Scottish GVA, the prospects for international trade, future trends in air fares, the degree of market maturity and the possible effects of rail and telecommunications competition. It is assumed that growth in air travel demand is driven mainly by economic growth and changes in the price of travel. Chapter 2 outlined some of the issues, including the effects on economic growth of the recession, that have resulted in passenger numbers declining at Glasgow from a high of 8.8 million in 2006. The turn of events since 2006 illustrates how factors outwith the control of Glasgow Airport can affect air passenger demand. However, as Figure 5 demonstrates, experience of previous setbacks suggests that demand will recover.

The forecasting model splits future passenger demand by geographical market, country of residence (whether Scottish, rest of UK or non-UK), and travel purpose (business/leisure, transfer/non-transfer). Informed by historic relationships and expectations about future trends, BAA takes a view on the sensitivity of each passenger segment to changes in the main factors influencing demand for air travel over the forecasting period. The extent to which Glasgow has a share of Scottish lowlands air traffic (split between Glasgow, Edinburgh and Prestwick airports) also affects individual airport forecasts.

Combining BAA's view on the future trends of these key influencing factors with its judgment on the relationship between each of them and the growth in demand for air travel in each market segment, BAA produces a projection of potential passenger demand for air travel.

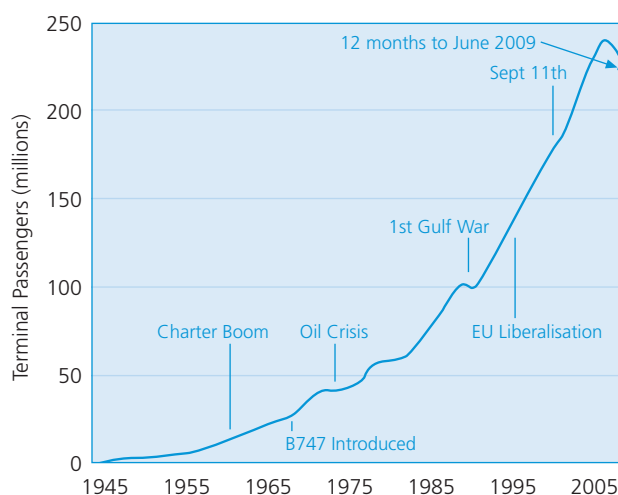
An important area of judgment is the expected course of oil prices. Over the last couple of years we have seen a record increase in oil prices (to over \$130 a barrel) followed by a

sharp decrease (to approximately \$40 a barrel), and a subsequent recovery to the current level of approximately \$80 a barrel. Looking forward, it has been assumed that oil prices will be lower (in today's prices) than the record high levels for the next decade or so, followed by a period of further moderate increase.

The forecasts incorporate an assumption of the effect on prices resulting from the recent increase in Air Passenger Duty and the inclusion of aviation in the European Union Emissions Trading Scheme from 2012. Forecasts for domestic passenger demand also reflect some competition from rail, although the potential impact of high speed rail on this sector has not been taken into account due to the uncertainties of this being delivered between Glasgow and England within the Master Plan time period.

The DfT also undertakes forecasting for certain UK airports, including Glasgow, and published updated forecasts of air passenger demand in 2009^[8]. These predict 11 million passengers per annum (mppa) in 2015 and 15mppa in 2030 (central case). Unconstrained air travel demand at UK airports is forecast to grow strongly under the central case, from 241 mppa in 2007 to 465mppa in 2030 (within the range 415-500mppa). Interestingly, the 'Maximum Use' scenario which assumed that additional runways would be developed at Heathrow and Stansted suggests demand could still be limited to 405mppa in 2030. The current UK Coalition Government position of not supporting additional runway capacity at Heathrow or Stansted has not been modelled by the DfT.

Figure 5: Growth in UK air passenger numbers 1945-2009, Aviation Trends, Q2 2008, CAA



[8] UK Air Passenger Demand and CO₂ Forecasts, Department for Transport, 2009.

Table 4: Annual Passenger Forecasts

Year	Low	Central	High
2009 (actual)		7.22	
2020	8.79	10.04	10.21
2040	12.55	16.39	19.17
Average Growth	1.8%	2.6%	3.2%

Table 5: Annual Passenger Air Transport Movement Forecasts

	2009 Actual	2020	2040
PATMs	73,600	94,500	134,000

Table 6: Peak Hour Runway Movement Forecasts

	2009 Actual	2020	2040
Peak Hour PATMs	25	31	43
Peak Hour ATMs	32	36	48

The following BAA forecasts are considered in more detail:

- annual passenger forecasts;
- annual passenger air transport movement forecasts;
- peak hour runway movement forecasts;
- peak passenger aircraft stand demand forecasts;
- air cargo and mail forecasts; and
- peak car parking demand forecasts.

Annual Passenger Forecasts

The current BAA forecast illustrated in Table 4 is more conservative than the DfT forecast. This is likely to reflect the fact that the Glasgow Airport forecasts were prepared more recently and would therefore take account of issues such as the collapse of flyglobespan.

Average annual passenger growth at Glasgow Airport from 1989 to 2009 was 2.7%. The central case model delivers average annual growth of approximately 2.7% up to 2020 and around 2.4% between 2021 and 2040.

Annual Passenger Air Transport Movement Forecasts

Passenger aircraft movements are known as Passenger Air Transport Movements (PATMs) and effectively represent arriving and departing commercial aircraft with paying customers on board. Table 5 shows forecast PATMs for 2020 and 2040. These have been calculated by applying aircraft average loads to the passenger forecasts. Average loads have been divided into domestic, EU, and other international. Historic data in each category has demonstrated steadily increasing loads, and this is expected to continue during the forecast period.

“Average annual passenger growth at Glasgow Airport from 1989 to 2009 was 2.7%. The central case model delivers average annual growth of approximately 2.7% up to 2020 and around 2.4% between 2021 and 2040.”

By 2040, the average load for Glasgow as a whole is predicted to be 122 (up from 98 in 2009).

Peak Hour Runway Movement Forecasts

Peak hour runway movements have been forecast using a trend approach based on current and historic peak movement data. The 2040 figures have also been cross-checked with other UK airports handling similar traffic volumes. Table 6 sets out forecast peak hour runway movements for Passenger Air Transport Movements (PATMs) and total Air Transport Movements (ATMs), which include cargo, general aviation and positioning flights.

As discussed in chapter 2, Glasgow's runway can handle up to 36 movements per hour during peak periods. The forecasts shown in Table 6 demonstrate that beyond 2020, the existing runway and taxiway system will need to be enhanced. Current analysis confirms that various measures - such as the development of a full parallel taxiway and additional Rapid Exit Taxiways (RETs) and Rapid Access Taxiways (RATs) - can be implemented to increase the peak hour capacity of Runway 05/23 up to approximately 45 movements per hour.

In the context of forecast peak demand of 48 ATMs per hour by 2040, this highlights a future need to evaluate requirements and options for other means of increasing runway capacity and/or a second runway.

Outline details of a parallel runway arrangement at Glasgow were developed by the 2003 White Paper and 2006 Master Plan. The 2006 Master Plan envisaged the need to investigate requirements for a second runway, and/or other capacity enhancements would not occur until around 2030. This need has been delayed to around 2040 based on current forecasts.

Peak Passenger Aircraft Stand Demand Forecasts

Stand forecasts were prepared by establishing utilisation trends for each size of aircraft, load factors, the likely future traffic mix (between international/domestic, long-haul/short-haul) and any known aircraft orders for airlines currently using Glasgow. Peak stand demand tends to occur overnight due to the large number of aircraft based at Glasgow. High demand is also experienced during the morning and evening peaks. The growth in international traffic can also result in increased demand for stands as international flights (particularly long-haul) spend longer on the ground for re-fuelling etc. In contrast, low cost carriers often have very quick turn around times and may only use a stand for 20 minutes.

In line with market trends, it has been assumed that the number of larger aircraft using Glasgow will increase over time as airlines replace older models, such as the Boeing 757 and Boeing 767, with newer models such as the Airbus A350 and Boeing 787. The current forecasts do not envisage very large or 'super jumbo' aircraft, such as the Airbus A380 or Boeing 747-800, to use Glasgow with any regularity up to 2040. However, when developing new facilities, design requirements to accommodate these aircraft will be adhered to where possible in order to avoid constraining future operations

Table 7 shows that Glasgow Airport currently has sufficient aircraft parking capacity, with peak demand for 33 aircraft and between 38 and 44 stands available. However, a detailed study of forecast stand demand and utilisation suggests that additional capacity will be required by 2020.

Air Cargo and Mail Forecasts

Glasgow Airport handled approximately 2,700 metric tonnes of air cargo and mail in 2009. This represents a significant decrease from the 9,632 tonnes handled in 2005 at the time of the previous master plan. A number of factors have contributed to this decrease, including the collapse of flyglobespan and Zoom (who both carried large amounts of belly-hold cargo), a decrease in the Scottish export market as a result of electronic equipment manufacturing (primarily PCs and printers) re-locating elsewhere as well as a general downturn in the air cargo market.

Cargo and mail forecasts have been calculated using Cargo Air Transport Movement (CATM) forecasts and PATM forecasts. Looking more closely, dedicated domestic cargo flights have been falling recently whilst international cargo flights have been increasing moderately. This leads to a slight increase in CATMs going forward (though less than 1,000 movements per year by 2040).

The forecasts assume that small turboprops will continue to make up the majority of freight movements, and that on average, 1.5 tonnes of cargo will be carried on each CATM by 2040. The majority of cargo at Glasgow is transported as belly-hold on passenger flights. Going forward, this has been forecast to increase largely due to upgrades of existing aircraft types to larger aircraft which can hold more cargo.

Table 7: Peak Passenger Aircraft Stand Demand

	Small	Medium	Large	Jumbo	TOTAL
2009 (actual)	6	16	9	2	33
2020	4	23	7	6	39
2040	2	30	4	15	50

Table 8: Air Cargo and Mail Forecasts (tonnes)

	Air Cargo and Mail
2009 (actual)	2,700
2020	6,500
2040	11,800

Table 9: Public Car Parking Forecasts

	Short Stay	Long Stay
2009 (actual)	3,490	15,500
2020	4,800	17,900
2040	7,800	27,100

Peak Car Parking Demand Forecasts

Table 9 shows peak car parking demand for long and short stay car parks. The long stay figures include an estimate of peak demand for off-airport car parks not operated by Glasgow Airport (currently around 13,000 spaces).

It is important to highlight two particular points in relation to public car parking provision. Firstly, in order to maximise the efficiencies (in terms of both land and transport), short stay car parking is best developed in a multi-storey format close to the airport terminal. These are planned to accommodate growth over a number of years such that capacity needs to be provided slightly ahead of demand.

Secondly, much of the anticipated growth in long stay parking capacity will continue to be provided by third party off-airport operators. However, as a significant volume of this capacity is provided on sites with temporary planning approvals (typically 3 - 5 years), Glasgow Airport will continue to play an important role in providing a secure, high quality supply of long stay car parking within the airport campus to support the airport's operation and growth.

These forecasts have been developed from an analysis of trends in how passengers access Glasgow Airport. However, the figures may change if viable public transport options were to be developed.



5. The Economic + Social Impact of Glasgow Airport

Introduction

Choosing our Future: Scotland's Sustainable Development Strategy^[9] states that:

"Economic growth is our top priority - but not at any cost. We must recognise that economic growth and the protection of our world for the future go hand in hand. The challenge is to make economic growth sustainable, breaking the link with environmental damage."

This paragraph encapsulates Glasgow Airport's philosophy for the sustainable operation and development of the airport. It also provides the context for Glasgow Airport, the wider aviation sector, Government and others to work together in order to maximise the benefits and minimise the disadvantages of airport growth. An integral part of this approach means identifying and understanding both the benefits and disadvantages associated with developing the airport.

This chapter provides details relating to the economic and social impact of Glasgow Airport and aviation in general. Chapter 6 considers the current environmental effects associated with the airport and mitigation measures in place and the way in which the airport intends to mitigate and manage environmental effects associated with future airport growth.

The Economic + Social Impact of Glasgow Airport

In early 2010, Glasgow Airport in partnership with Scottish Enterprise, Renfrewshire Council and Glasgow City Council commissioned industry experts York Aviation to produce an Economic Impact Assessment^[10] of the airport. The study confirmed the airport's status as Renfrewshire's largest private sector employer, supporting nearly 4,500 jobs directly through 117 companies based at the airport and over 7,300 jobs in Scotland as a whole. Over 50% of the on-airport workforce comes from the Renfrewshire area.

Glasgow also makes the largest contribution of any airport to Scotland's economy, generating nearly £200 million in 2009. Of this, £155 million flows directly into the Glasgow City Region. Based on current levels of employment and passenger growth forecasts, direct on-airport employment is anticipated to increase to 5,600 jobs by 2020 and 7,200 by 2040.

Looking at the global aviation sector, a study conducted by Oxford Economics on behalf of the Air Transport Action Group

"The study confirmed the airport's status as Renfrewshire's largest private sector employer, supporting nearly 4,500 jobs directly through 117 companies based at the airport and over 7,300 jobs in Scotland as a whole."

(ATAG) found that the sector accounts for 31.9 million jobs around the world and has an economic impact estimated at \$3.6 billion, which is equivalent to 7.5% of the world's economy. From a social perspective, the ATAG study found that:

- aviation broadens people's leisure and cultural experiences via wide choice/affordable access to destinations across the globe;
- improves living standards and alleviates poverty through tourism;
- often serves as the only means of transportation to remote areas promoting social inclusion; and
- contributes to sustainable development by:
 - facilitating tourism and trade;
 - generating economic growth;
 - creating jobs; and
 - increasing tax revenues.

At the UK level, a study undertaken on behalf of the Airport Operators Association(AOA)^[11] highlighted that the aviation sector generated £18.4 billion, or 1.5% of the UK economy. The sector also supports 234,000 jobs across the UK.

Supporting Scotland's Economy

Scotland's geographic location on the periphery of Europe means that air links are vital to the country's global competitiveness. As the economy develops towards more knowledge based sectors and the country continues to promote itself as an attractive tourist and inward investment destination, the ability of people and goods to travel quickly and efficiently grows ever more important. This was recognised by the 2003 Air Transport White Paper and more recently the second National Planning Framework.

[9] Choosing our Future: Scotland's Sustainable Development Strategy, Scottish Executive, 2005. [10] Glasgow International Airport Economic Impact Assessment, York Aviation, 2010. [11] What is the Contribution of Aviation to the UK Economy?, Oxera Consulting, 2009.

The Glasgow City Region is one of the best performing inward investment locations in the UK, representing 53% of all inward investment projects in Scotland alone between 2004 and 2008. Furthermore, analysis undertaken by DTZ in 2008^[12] identified that:

“From just over 200 areas across the UK, Edinburgh, Glasgow and Aberdeen appear in the top ten. The top three Scottish cities are beaten only by areas in London and the South East of England and are well ahead of city regions like Manchester, Leeds, Birmingham and Bristol.

Taken together, Edinburgh and Glasgow are only second to Westminster in terms of the number of decision making operations. These operations account for just over 2,000 jobs and around three quarters of these are in Glasgow City Centre.”

The airport is also at the centre of an economic zone with a number of business and industrial parks containing global companies such as Rolls Royce, Diageo and Doosan Babcock. The York Aviation study found that many of these companies choose to locate in close proximity to the airport due the accessibility it provides.

The York Aviation study emphasised that key sectors such as tourism, financial services, engineering, life sciences, energy and creative and cultural industries are also heavily reliant on the connectivity provided by Glasgow Airport.

Tourism in particular represents a significant and growing sector. In Glasgow, the establishment of the City Marketing and Convention Bureau has resulted in the city becoming the UK's premier conference venue by number of conference delegates and the attraction of a number of high profile events such as the MOBO awards.

The city is also hosting the 2014 Commonwealth Games. The Games are expected to bring 6,500 athletes and officials from 71 countries to Glasgow and the airport will play a crucial role in the efficient transportation of athletes, officials and spectators.

In terms of leisure tourism, 15 million tourists took overnight trips to Scotland in 2009, generating £4 billion for the Scottish economy. Tourism accounts for almost 9% of all employment in Scotland, with more than 208,000 jobs supported by the industry. In the same year, the Glasgow & Clyde Valley area attracted almost four million overnight visitors, contributing almost £850 million for the regional economy. Tourism is also a major employer in the Glasgow City Region, accounting for around 12% of total employment.^[13]

The UK remains the main market for the area and accounted for over 2.1 million tourist trips in 2009 and around £469 million of consumer expenditure. Around 30% of these trips were domestic tourists from Scotland, while visitors from England made up around 60% of trips. However, the area also attracted around almost 800,000 overseas visitors, with an associated spend of around £222 million. Good air links are clearly important to the success of tourism, with overseas visitors in particular relying on air travel to visit Scotland. The York Aviation study noted that around 20% of UK visitors and 88% of overseas visitors arrived by air.

Raising our Profile

Both the Glasgow City Region and Scotland compete at a global level for jobs, investment and visitors. Being competitive means achieving an international profile and enabling people to travel to get to Scotland easily.

Organisations such as Scottish Development International, VisitScotland and the Glasgow City Marketing Bureau are all focused on this task, and the unparalleled accessibility provided by air routes is a key part of the package. Glasgow Airport will continue to work in partnership with these agencies and others to grow Glasgow's route network and stimulate inward investment and tourism.

Sharing Our Success

Local community groups and good causes have benefited from thousands of pounds worth of funding from the BAA community fund over the years. However, the airport went further in 2010 by establishing an independent board to oversee the distribution of an enlarged 'Flightpath Fund'. The value of the fund has been increased to £150,000 in 2010. Future allocations will be reviewed annually.

Membership of the funding body is drawn from community representatives from Renfrewshire, West Dunbartonshire, East Dunbartonshire and Glasgow - giving local people a greater say in how Glasgow Airport's community fund is spent. Examples of projects benefitting from the Flightpath Fund include:

- **1st Renfrew Boys Brigade** received £150 towards an outdoor activity camp;
- conservation charity **BTCV** has received £5,000 in support of an environmental project with Kersland Primary in Paisley;
- **Clydebank Bowling Club's** junior section received £600 to cover the cost of new junior bowls; and
- **Clydebank Special Needs Forum** received £4200 to cover the cost of employing extra support staff for their Saturday morning drama project.

[12] Unpublished Report DTZ, 2008. [13] Tourism in Western Scotland 2009, VisitScotland.

Capital Investment

Since 2006, more than £60 million has been invested in developing and improving Glasgow Airport to create an airport of which Glasgow and Scotland can be proud. This is an on-going process which is being undertaken at no cost to the taxpayer. It is anticipated that over £200 million will be invested over the next 10 years to build on these improvements.

Tax

In 2007/08, aviation contributed about £4.8 billion to the UK Exchequer. This is set to rise with the recent increase in Air Passenger Duty (APD). The 2008 DfT Emissions Cost Assessment demonstrates that Air Passenger Duty more than covers the aviation industry's external costs of CO₂ emissions. However, Glasgow Airport maintains that APD is a blunt instrument that does not create incentives to improve environmental performance and may ultimately damage tourism and undermine Scotland's competitiveness. We will therefore seek to work with the UK and Scottish Governments* to review this tax, particularly in the context of the inclusion of aviation in the EU Emissions Trading Scheme (EU ETS) from 2012.

Locally, Glasgow Airport pays nearly £3.7 million every year in business rates to Renfrewshire Council and over £2.5 million to Strathclyde Police. These amounts are over and above the airport's liabilities for all roads, lighting and waste management within the airport boundary.

*The Calman Commission proposed to devolve responsibility for raising APD to the Scottish Parliament.



6. Sustainable Development + the Environment

Introduction

Environmental effects associated with activities at Glasgow Airport can be considered at the local level (which includes air quality, noise, water quality and traffic levels), and the global level (climate change and greenhouse gas emissions). This chapter considers the current environmental effects associated with the airport, as well as current and future measures intended to mitigate and manage environmental effects.

Global Environment

At the global level, the need to reduce emissions and tackle climate change is a challenge in which we all have a part to play. Glasgow Airport is committed to fulfilling its role in meeting this challenge. Government at the Scottish and UK levels has established a framework to drive this agenda and this chapter sets out how Glasgow Airport can strike the required balance between managing the environmental effects of aviation and continuing to underpin Scotland's sustainable economic growth agenda.

The agreement of the Kyoto Protocol in 1997 raised public awareness of climate change and established national targets for the reduction of greenhouse gas emissions. As a group, BAA has argued for a number of years for international aviation emissions to be incorporated within the Kyoto framework. At a European level, the Stern Report^[14] recommended that aviation emissions should be included in the EU ETS. This scheme effectively sets a cap on carbon emissions and acts as an incentive for airlines and aircraft manufacturers to develop and operate more efficient aircraft. Glasgow Airport has long argued for this development and therefore welcomes the forthcoming incorporation of aviation emissions into the EU ETS in 2012.

The Intergovernmental Panel on Climate Change estimates aviation's total impact to be around 3.5% of the total human contribution to climate change. It is estimated that this could increase to 5% by 2050, although scenarios range between 3.5% and 15%. At a UK level, the DfT estimates that UK aviation comprised around 6.4% of the UK's total CO₂ emissions (37.5 million tonnes of CO₂). Current DfT forecasts indicate that this could increase to around 60 million tonnes of CO₂ by 2050.

The Carbon Account for Transport^[15] published by the Scottish Government monitors progress towards the National Transport Strategy objective of reducing transport emissions. It confirms that road transport is by far the largest source of transport emissions, contributing 69.6% of all Scottish transport emissions. Aviation in contrast comprised 12% of Scotland's transport emissions. Shipping accounted for 14.2% of Scotland's transport emissions. The Carbon Account for Transport does note that aviation has been the fastest growing sector between 1990 and 2007, albeit the only sector where emissions are disproportionately lower than in the UK as a whole. They have also reduced by 1.7% between 2006 and 2007.

The UK Climate Change Act was passed into law in 2008. The Act sets out a long-term, legally binding framework of targets to reduce UK greenhouse gas emissions by 26% by 2020 and 80% by 2050. The Climate Change (Scotland) Act 2009 received Royal Assent in August 2009. The Act is a key commitment of the Scottish Government, and is one of the most ambitious pieces of environmental legislation, in many ways putting Scotland at the forefront of tackling global climate change. The Scottish Government believe that reducing greenhouse gas emissions and making the transition to a low carbon economy will help create a more successful country. The legislation introduces a number of targets, including:

- reducing Scotland's greenhouse gas emissions by at least 80% by 2050;
- reducing greenhouse gas emissions by at least 42% by 2020;
- establish a framework of annual targets; and
- include emissions from international aviation and international shipping.

Glasgow Airport recognises that demand for air transport is forecast to grow both at Glasgow and nationally and this will lead to growth in aviation's carbon emissions. As part of the BAA Group, Glasgow Airport is a signatory to the UK aviation industry's sustainable aviation strategy. 'Sustainable Aviation' sets out the industry's vision for a sustainable future through a series of eight goals and 34 commitments, relating to economic, environmental and social aspects of aviation. Specifically, these include:

- limiting climate change impact by improving fuel efficiency and CO₂ emissions by 50% per seat kilometre by 2020 compared with 2000 levels;

[14] Stern Review on the Economics of Climate Change, HM Treasury, 2006. [15] Carbon Account for Transport No.2: 2010 Edition, Scottish Government, 2010.

- improving air quality by reducing nitrogen oxide (NOx) emissions by 80% over the same period; and
- establishing a common system for the reporting of total CO₂ emissions and fleet fuel efficiency by the end of 2005, and pressing for aviation's inclusion in the EU ETS at the earliest possible date.

Fuel efficiency has a significant role to play, with aircraft fuel efficiency having already improved by some 70% over the last 40 years. A recent trial highlighted the potential benefits of more efficient operations across airport, airline and air navigation partners. Every factor within the journey of a British Airways flight from Edinburgh to Heathrow - from pushback from the stand and taxiing to an optimised flight profile and Continuous Descent Approach - was calibrated to achieve minimal emissions and delay. The flight is understood to have saved up to a quarter tonne of fuel, equating to nearly one tonne of CO₂. In terms of sustainable alternatives to fossil fuels, a recent Progress Paper^[16] from Sustainable Aviation states that several successful demonstration flights have been undertaken using bio fuels.

Emissions arise from three distinct sources which Glasgow Airport has varying degrees of control over:

- aircraft operations;
- the use of energy in airport buildings; and
- surface transportation.

Aircraft Operations

Aircraft operations are primarily influenced by airlines, air navigation service providers and aircraft manufacturers. Glasgow Airport will therefore continue to work with aviation sector partners through Sustainable Aviation and Glasgow's Airline Operators Committee to support the development of more efficient technologies and operational procedures. Practical measures such as Continuous Descent Approaches and the Aircraft on the Ground CO₂ Reduction Programme have already been adopted where possible.

The European Commission enacted legislation during 2008 that means that arriving and departing EU flights will be part of the EU ETS from 2012. Emissions trading means that the aviation sector will have to improve aircraft and operational efficiencies or purchase additional permits from companies who are reducing emissions. At a group level, BAA views action at a European level as an interim step towards integration in the global climate policy framework and we are working through our global trade association (ACI-World) to discuss the principles and practicalities of emissions trading for aviation at an international level.

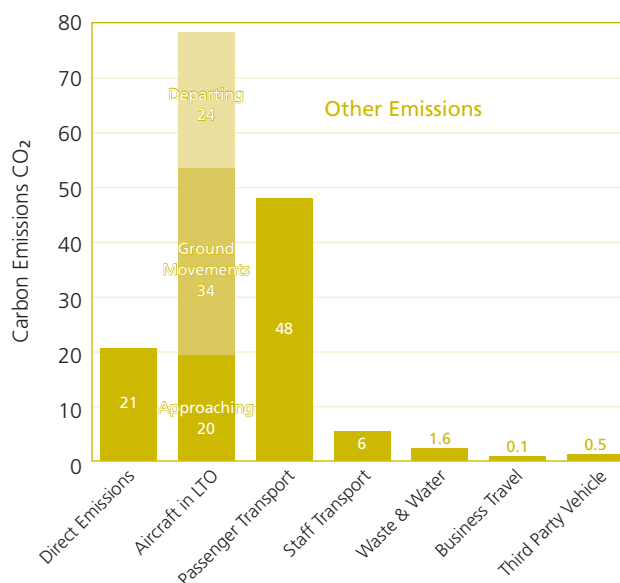
The Use of Energy at Airport Buildings

Demand for energy from the airport terminal and surrounding campus is the main source of emissions over which Glasgow Airport has direct control. A study was undertaken using energy demand data from 2008 to establish the airport's carbon footprint^[17]. Glasgow Airport's carbon footprint has been developed to be comprehensive and holistic and consistent with best practice. We therefore calculate not only emissions we directly control but also airport related emissions which are controlled by others and which we seek to guide and influence. These include for example, emissions from all passenger and staff journeys to the airport, emissions from fuel used in third party operational vehicles and emissions associated with aircraft landing and taking off at the airport up to a height of 3,000ft. Figure 6 summarises the breakdown of emissions in 2009.

In order to reduce emissions directly attributable to the airport, a programme of energy efficiency measures has been implemented. This has resulted in a 3.7% reduction in electricity consumption against targets.

Going forward, Glasgow Airport will be participating in the Carbon Reduction Commitment Energy Efficiency Scheme (CRCEES) which will establish an incentive to make buildings more energy efficient. The airport will also investigate the merits of participating in the Airport Carbon Accreditation scheme which provides a recognised framework for carbon management and independent verification.

Figure 6: Breakdown of Glasgow Airport's 2009 Carbon Footprint



[16] Sustainable Alternative Fuels Progress Paper, Sustainable Aviation, 2010. [17] Glasgow Airport Limited 2009 Carbon Footprint, Entec, 2010

Surface Transportation

Figure 6 demonstrates the relatively significant contribution of passenger transport emissions. Chapter 9 sets out how Glasgow Airport will work with transport partners to improve accessibility to the airport, particularly by public transport. Such improvements will play an important role in reducing transport related emissions and enabling the airport to grow in a sustainable manner.

Local Environment

Noise

Noise associated with airports is often described as 'air noise' and 'ground noise'. Air noise refers to noise from aircraft in flight or on an airport runway during take-off or after landing. NATS is responsible for air traffic control in the UK, including Glasgow Airport, and noise preferential routes have been established for arriving and departing aircraft. Glasgow Airport will work with NATS to review the operation and impact of these routes.

Noise generated other than by aircraft in flight or taking-off or landing is known as 'ground noise'. The main sources of ground noise are:

- aircraft taxiing between runways and stands - this includes all holding, engine start-up and shut-down procedures during taxiing;
- auxiliary Power Units (APUs) on aircraft for air conditioning the aircraft cabin while it is on stand, for supplying electrical power and other aircraft services and for engine start-up;
- ground running of aircraft engines during maintenance and testing;
- mobile ground equipment such as ground power units providing power supplies to parked aircraft;
- road vehicles, both those on the airfield and travelling to and from the airport; and
- construction activities.

Glasgow Airport understands that airport related noise can be an issue for neighbouring communities. The airport has therefore developed a package of measures designed to minimise and mitigate against aircraft noise. The Glasgow Airport Noise Action Plan^[18] sets out a number of actions to manage and, where possible, reduce the impact of noise from aircraft at Glasgow Airport. The Noise Action Plan focuses on five key themes:

- demonstrate our continuing commitment to managing aircraft noise impacts associated with Glasgow Airport's operations through the use of:

- the quietest fleet practicable;
- the quietest practicable aircraft operations, balanced against NOx and CO₂ emissions; and
- effective and credible noise mitigation schemes.
- engage with our communities affected by aircraft noise and better understand their concerns and priorities;
- influence planning policy to minimise the number of noise sensitive properties around our airports;
- organise ourselves to continue to efficiently and effectively manage aircraft noise; and
- build on our extensive understanding of aircraft noise to further inform our priorities, strategies and targets.

The total amount of air noise which local communities may experience around an airport depends predominately on the noise emitted by individual aircraft and the total number of aircraft movements in that period. A standard way of illustrating air noise exposure is the use of noise contours. Updated noise contours have been prepared by the CAA for this Master Plan, detailing existing contours (Drawing 2), indicative contours for 2020 (Drawing 3) and indicative contours for both single (Drawing 4) and twin (Drawing 5) parallel runway scenarios for 2040. As stipulated in the planning permission granted for the major expansion of Glasgow Airport in 1987, the airport remains fully committed to ensuring the total noise energy emitted around the airport is no greater than in 1987.

Specific measures in place to manage noise issues associated with the airport include a noise mitigation scheme for noise sensitive buildings within the 63 decibel contour area and a home owner relocation scheme for owners within the 69 decibel contour area. Following the public consultation exercise carried out between November 2009 and January 2010, the airport will also be introducing a noise insulation scheme for residential properties within the 66 decibel contour area in 2011.

Glasgow Airport also adopts strict DfT day and night-time noise restrictions, which are legally required at larger airports such as Heathrow, but which have been adopted on a voluntary basis by Glasgow Airport. Noisier aircraft (referred to as 'Chapter 2 aircraft') have been banned for a number of years from landing at Glasgow and differential landing charges encourage airlines to operate quieter aircraft types. Indeed, Glasgow was the first airport to ban Chapter 2 aircraft (along with Edinburgh) before it was rolled out across Europe.

[18] Glasgow Airport Noise Action Plan, Glasgow Airport Limited, 2008.

Glasgow's Noise and Track Keeping system enables noise to be continuously monitored and accurately pin-points the position and height of arriving and departing aircraft, in line with International Civil Aviation Organization (ICAO) standards. If any aircraft breaches agreed noise limits, they would be fined, with the fines being allocated to the airport's community fund. Members of the public can register any noise queries or complaints via a dedicated, freephone 24 hour noise action line (0800 013 2429). The noise action line is monitored and all calls are investigated using the noise and track keeping system. The airport will continue to support and operate the Noise and Track Keeping System and Noise Action Line in accordance with best practice.

As well as introducing initiatives to manage the current noise environment, the airport will continue to monitor planning applications for development within or near the flightpath to identify potentially inappropriate development or highlight the requirement for suitable noise insulation.

Air Quality

The quality of air is affected by chemicals and particles emitted into the atmosphere as a result of human activity. Certain types of emission are of concern in the context of potential health impacts, for example fine particulate matter (PM10) and nitrogen dioxide (NO₂). However, airports represent a complex source of air pollutants, consisting of many individual mobile and stationary sources. The pollutants emitted from airports fall into three principal categories and relate to aircraft operations, road vehicles and miscellaneous activities such as boilers.

The largest single contributor to ambient concentrations of these pollutants is currently road traffic. Homes, workplaces and other buildings also produce emissions either locally (e.g. gas boilers) or elsewhere (electricity generation from fossil fuels). In order to protect public health and comply with EU directives, the Government has set objectives for air quality in the UK National Air Quality Strategy (NAQS). The strategy is based on ensuring that concentrations of certain pollutants do not exceed specified levels in the outdoor air.

While aircraft noise is arguably the primary issue for people living close to airports, airport-related air emissions coming from aircraft engines and vehicles travelling to and from the airport can also give rise to public concern. Consideration of local air quality against NAQS objectives, which was carried out by the Government prior to the publication of the 2003 White Paper, indicated that the expansion of Glasgow Airport would not compromise air quality standards for NO₂ or PM10 in the period up to 2015 and beyond.

Glasgow Airport also undertakes air quality monitoring surveys at various locations around the airport campus. The results of the most recent survey showed that the concentrations of NO₂ at the majority of sites around the airport were comparable with or lower than equivalent monitoring sites in Glasgow city centre. Further surveys will be undertaken on a regular basis, the results of which will be shared with Renfrewshire Council and other key stakeholders. The airport will also develop a new Air Quality Management Strategy to ensure a coherent, robust and transparent approach to air quality management is followed.

Water Quality + Flooding

Glasgow Airport discharges surface water run-off into the adjacent Black and White Cart Waters. Such discharges require the permission of the Scottish Environment Protection Agency (SEPA). The previous licensing regime is in the process of being replaced by the Water Environment (Controlled Activities) (Scotland) Regulations 2005, as part of the transposition of the European Water Framework Directive (WFD) into Scottish law. The WFD establishes a legal framework for the protection, improvement and sustainable use of the water environment by requiring member states to prevent deterioration of water bodies and reduce pollution.

The Black Cart Water rises from Castle Semple Loch in west Renfrewshire and flows to the north of the airport perimeter. The White Cart Water passes to the east of the airport perimeter rising from the hills bordering East Renfrewshire and South Lanarkshire. It flows through parts of East Renfrewshire, south Glasgow and Paisley, draining a catchment area of approximately 250km². It is our belief that both river catchments are under significant flow management and water quality pressures arising from numerous activities, including those of the airport.

There are a number of airport activities which have the potential to cause pollution of local water courses if not properly managed, including:

- de-icing of aircraft and airside areas;
- vehicle and aircraft washing;
- aircraft and vehicle maintenance;
- run-off from construction sites;
- aircraft refuelling;
- waste and cargo handling; and
- fire training activities.

In order to manage the risk of pollution arising from the above activities, the airport maintains a multi-layered assurance and inspection system. This includes regular inspection and independent auditing of equipment and processes. The airport also regularly monitors surface water quality and has constructed a number of interceptors which detect and prevent pollution from entering the surrounding watercourses.

More recently, the airport has installed state of the art equipment to monitor the effects of de-icing activities and will undertake to model what effect such activities have on surrounding watercourses. The airport will continue to work with SEPA to manage water quality issues in accordance with statutory requirements and best practice. In considering any requirements for surface water treatment, the airport will also consider flooding issues to ensure co-ordination in these matters.

In terms of flooding, the airport commissioned flood risk assessment of both the Black and White Cart Waters as part of the 2006 Master Plan preparation. These studies indicated that development outside the current airport boundary could be at risk of flooding. In bringing forward development for such proposals, the airport will liaise with SEPA, Scottish Water, Renfrewshire Council and other relevant authorities to identify the potential impact and mitigation measures available to enable developments to proceed. Where feasible, the airport will seek to incorporate the principles of Sustainable Urban Drainage Systems into new developments.

Biodiversity

The current airport site and surrounding area contains some sites of biodiversity interest. Within the Airport's ownership, Paisley Moss is a unique Local Nature Reserve located adjacent to the south western end of the main runway. The airport plays an active role in the management of the Reserve along with Renfrewshire Council, the Scottish Ornithologists Club and other stakeholders. An updated Management Plan for the Reserve has been prepared and the airport is committed to working with its partners to implement the Management Plan to protect and promote the Reserve. Part of this commitment will include upgrading the walking and cycling path through the Reserve during 2011. Walkinshaw Brickworks is designated as a Site of Importance for Nature Conservation (SINC) in the Renfrewshire Local Plan and is noted for its botanical importance in the local context of the airport and in the regional context of the Lowland Clyde Valley.

To the north of the existing airport boundary, there is a Special Protection Area (SPA) which includes a 3km stretch of the Black Cart Water on land to either side of that river. This area was designated due to the presence of wintering Icelandic Whooper Swans. The area between the SPA and the northern boundary of the airport is designated as a SINC. The presence of Whooper Swans in close proximity to the airfield does raise

a specific concern and the airport has been in discussion with SNH and Renfrewshire Council to identify ways of minimising the risk of bird strike occurring. The Airport believes that measures must be taken within the context of CAA and wildlife protection objectives and will continue to work with SNH, the CAA and Renfrewshire Council to that end.

Waste Management

Waste is generated from a number of sources at Glasgow Airport, including aircraft, catering outlets, offices, shops (packaging), construction activity and from vehicle and aircraft maintenance. Around 90% of waste at the airport is generated by companies and passengers using the airport, with BAA generating around 10%. Such sources generate seven categories of waste, the handling and disposal of which is covered by extensive legislation:

- inert (soils, hardcore, concrete, glass etc);
- general non-putrescible (plastic, paper, cardboard etc);
- scrap metal;
- end of life vehicles;
- electrical and electronic equipment;
- general putrescible (food waste, vegetable matter, trees and bushes etc); and
- hazardous waste, including lamps, fluorescent tubes, used oils, flammable liquids and batteries.

In addition to meeting legal requirements, Glasgow Airport's strategy for waste is based on the Government's sustainable waste management strategy, 'A Way with Waste', and its three core principles:

- Best Practicable Environmental Option (BPEO) - the option which provides the most benefit/least damage to the environment as a whole, at acceptable cost, in the long and short-term;
- the waste hierarchy - reduce, reuse, recover (recycle, compost or energy recovery), dispose; and
- the proximity principle - the disposal of waste should be as near to its place of production as possible.

The strategy covers a number of aspects including:

- measurement of waste tonnage;
- waste management infrastructure;
- communication to improve performance;
- supply chain;
- a construction waste strategy; and
- reporting.

Glasgow Airport is committed to reducing the amount of waste sent to landfill sites from the airport's operation.

From 2005 to 2009, the airport has almost nearly halved the amount of waste generated, from approximately 3,400 tonnes to approximately 1,600 tonnes. In addition, the percentage of waste recycled has increased to just over 60%. The airport will continue to work with companies and business partners to decrease the amount of waste generated and increase the amount of waste recycled. The airport will also investigate other ways of managing waste - such as anaerobic digestion - which could also contribute to the airport's energy requirements.

Heritage

Three Scheduled Monuments are located within a five kilometre radius of Glasgow Airport:

- the site of All Hallows Church, near the A8 road, Inchinnan;
- two cross slabs and a cross shaft at Inchinnan Parish Church, Inchinnan; and
- Barochan Cross within Paisley Abbey, Paisley.

The airport is not considered to have any impact on the latter of these two sites. The site of All Hallows Church does contain a number of lighting masts associated with Glasgow's high intensity approach light system which guides arriving and departing aircraft. Recent works to upgrade this system required close consultation with Renfrewshire Council and Historic Scotland and archaeological consultants oversaw the works.

Future Mitigation + Management of Environmental Effects

Glasgow Airport has adopted a comprehensive approach to the on-going management and mitigation of environmental effects associated with airport operations. However it is also vital that the airport constantly reviews this approach to ensure effectiveness and alignment with best practice. We will therefore continue to engage with our neighbours and partners in this regard and publish an annual Corporate Responsibility report detailing our performance across environmental areas.

Global Environment

At a group level, BAA sees the incorporation of aviation into the EU ETS as an interim step towards the development of a global emissions trading scheme. Glasgow Airport will liaise with BAA group, Sustainable Aviation and the world airport trade association (ACI-World) to discuss the principles and practicalities of emissions trading for aviation at an international level.

The inclusion of Glasgow Airport in the Carbon Reduction Commitment Energy Efficiency Scheme (CRCEES) will be an on-going incentive to reducing energy use at the airport. New development in particular provides an opportunity to build in energy efficiency and sustainable design and the airport is committed to promoting this. In addition, the airport will investigate the feasibility of developing renewable energy technologies, both off and on-site, to meet energy requirements.

“Glasgow Airport is committed to reducing the amount of waste sent to landfill sites from the airport's operation. From 2005 to 2009 the airport has nearly halved the amount of waste generated...”

As noted above, surface transportation also plays a significant role in generating emissions. Chapter 9 sets out the Airport's strategic position on managing surface transportation as the airport grows.

Noise

In terms of ground noise, indicative development proposals up to 2020 are contained within the existing boundary of the airport and are therefore not expected to change the noise environment significantly. Beyond 2020, any significant development where an Environmental Impact Assessment is required will be accompanied by a noise assessment where appropriate.

Building on the progress that has already been made - modern aircraft are 74% quieter than those in the 1960s - the airport will work through Sustainable Aviation to encourage airlines, aircraft manufacturers and air navigation service providers to continue advances in technology and operational protocols which reduce noise emissions from aircraft. The airport will also continue to review its Noise Strategy on a regular basis and publish our performance on noise issues.

Other Environmental Issues

Other environmental issues will be considered in detail at the appropriate time as development requirements indicate.

7. Airport Development to 2020

Introduction

Current forecasts predict that Glasgow Airport will be handling between 8.79 and 10.21 million passengers a year by 2020. This chapter provides details of the likely development requirements needed to accommodate the central case forecast of 10.04 million passengers a year. Development requirements up to 2020 can all be undertaken on land currently owned by Glasgow Airport. Drawing 6 shows the indicative layout and extent of airport development at 2020.

Any development will take place incrementally, to ensure as far as possible that additional capacity closely matches passenger demand. It must be re-emphasised that timescales referred to in the Master Plan for airport growth and supporting infrastructure are based on current passenger forecasts.

Therefore, if passenger numbers grow faster than expected, development may be required sooner. Equally, if numbers grow slower than expected, development may not be required until later. The exact nature and timing of the developments outlined in this chapter and chapter 8 will always be subject to detailed financial and environmental evaluation. Consequently, the precise location and configuration of capacity enhancements may change.

General Development Principles

The dynamic nature of the aviation sector and changing needs of passengers and airlines mean that the specific form and location of the developments anticipated below are subject to modification. However, a number of general development principles have been established to guide and inform new development as follows:

- the first phase of additional aircraft stands will be developed to the west of the existing international pier;
- design standards for Code F aircraft, for example the Airbus A380, will be adhered to where possible and appropriate;
- new and/or re-located cargo and maintenance facilities will be located in the consolidated cargo and maintenance zone north of Campsie Drive and west of Abbotsinch Road;
- new developments will be located so as to minimise vehicle movements where possible;
- the design of new buildings will follow best practice guidance for energy conservation and sustainable construction and be of appropriate architectural quality;
- hard and soft landscaping will be maintained and enhanced (within the scope of aerodrome safeguarding criteria) to reflect the status of the airport as a key international gateway; and
- the corridor of the cancelled Glasgow Airport Rail Link will be safeguarded in accordance with the requirements of the GARL Act.

Runway + Taxiway System

Rapid access and exit taxiways may have to be constructed towards the end of the period to 2020 in order to meet forecast peak runway movements. The normal operation of Runway 05/23 will be maintained while these enhancements are constructed.

Aircraft Aprons

Current forecasts for peak stand demand in 2020 differ quite considerably from the 2006 master plan due to a number of reasons. These include increasing load factors, the rise of Low Cost Carriers who maximise stand utilisation by loading and unloading aircraft very quickly and the delay of passenger growth anticipated by the 2006 Master Plan.

Current forecast peak stand demand for 2020 is 39 stands. This would require the construction of one additional stand, as all of the available jumbo and multi-use stands are forecast to be occupied by jumbo sized aircraft. However, detailed analysis of stand utilisation at Glasgow Airport has identified that many existing stands are too small to handle newer and larger aircraft. Furthermore, the current designation and use of two out of three piers for domestic flights results in many international aircraft having to be towed from different parts of the airport to the international pier, or international passengers having to be coached from aircraft to the terminal.

This situation could impact upon the efficiency of the airport and the passenger experience. Accordingly, options have been identified to enable more flexible use of the central pier between international and domestic flights. These are however limited by operational and regulatory requirements. Taken with the forecast increase in demand for larger aircraft for long-haul and international routes, it is considered that the provision of new stands should continue the principle of developing flexible use jumbo sized stands to the west of the existing international pier. It is not envisaged that current demand forecasts merit the development of an additional international pier in this area prior to 2020.

Passenger Terminal Facilities

The opening of a major terminal extension in 2008 has provided a consolidated and enlarged security search area, additional retail, catering and passenger circulation space and a new domestic arrivals area. Consequently it is anticipated that the existing terminal infrastructure has sufficient capacity to accommodate passenger growth up to 2020. Other recent developments have resulted in a larger departures area with improved retail and catering facilities, a new executive lounge and an additional baggage reclaim belt for international flights.

While building extensions are not considered necessary in the period up to 2020, the standards achieved by the new terminal

extension have highlighted the need and opportunity to upgrade and refurbish other parts of the main terminal to provide a more efficient and attractive facility which meets the expectations of passengers and airlines. Projects will include re-developing the landside foodcourt and upgrading and re-modelling the airside retail area and international departures lounge. Some capacity enhancements may also be required to check-in, baggage processing and boarding gates.

Car Parking

Additional multi-storey capacity for short stay car parking will be required before 2020 and will need to be located in close proximity to the main terminal. This may require the re-location of the existing airport administration offices.

Analysis of long stay parking has indicated that current on-airport supply exceeds peak demand very slightly, however it is expected to outstrip on-airport supply around 2013. This being the case, Glasgow Airport would seek to provide additional long stay car parking, most likely by extending the existing long-stay car park located adjacent to Abbotsinch Road. The majority of long stay car parking will continue to be provided by third party off-airport operators.

Cargo and Mail

While growth in cargo is expected to be facilitated by new direct international services, new cargo developments will be undertaken only as a result of specific requests from cargo operators. Detailed plans would be prepared and brought forward should demand arise. As a general development principle, the airport is seeking to consolidate cargo and maintenance facilities to the north of the existing cargo area on Campsie Drive. Consolidating such uses in this area presents a significant opportunity to safeguard other areas for passenger terminal and apron development and create a purpose built cargo/maintenance cluster with excellent links to the taxiway and runway system. The airport will seek to work with Scottish Enterprise, Renfrewshire Council and others to undertake an air freight development strategy to better understand opportunities in this market.

Aircraft Maintenance

Known demand exists for one additional aircraft maintenance facility. A site within the aforementioned cargo and maintenance zone is accordingly being investigated with a view to developing in this location. There is also an opportunity to develop a new hangar in the cargo and maintenance zone to facilitate terminal and aircraft parking stand developments.

Air Traffic Control + Airspace

Airspace directly surrounding Glasgow Airport is managed on behalf of the airport by National Air Traffic Services Limited (NATS). Outside of this zone, airspace is managed by NATS En Route Limited (NERL) from the new Scottish Air Traffic Control

Centre at Prestwick. Glasgow Airport has assumed that the capacity of the Scottish and UK airspace will grow to accommodate the forecast growth in air traffic. The CAA has recently published a draft Future Air Strategy and the airport is keen to be fully involved in all future discussions on airspace capacity provision.

Ancillary Facilities

Many of the ancillary facilities noted in chapter 2 will need to expand in line with the forecast growth in passenger numbers. Where possible, and taking cognisance of the general development principles established by this Master Plan, existing facilities will be extended to provide the additional capacity. Where this is not possible, or the site is required for other purposes, facilities may need to be re-located. Drawing 6 indicates areas suitable for ancillary uses.

As the airport develops, it is very important that the vast majority of ancillary facilities continue to be provided within the airport campus in close proximity to the operational areas for two key reasons:

- if support facilities and services are located remotely from the airport, a considerable number of additional road journeys would need to be made to service the operational facilities. This would add unnecessarily to road congestion and to CO₂ emissions; and
- the additional vehicles, staff and time allowances required to undertake remote servicing would add significantly to the operational costs of the businesses providing support services to the airport.

Glasgow Airport's market research has shown that demand currently exists for additional hotel accommodation at the airport. The provision of adequate hotel capacity on the airport campus is an essential component of any major airport for passengers and air crew staying overnight, delayed flights, business meetings and conferences. Such uses mean that off-airport hotel provision is inconvenient and results in unnecessary road journeys. Therefore, Glasgow Airport will work in partnership with appropriate developers and Renfrewshire Council to deliver a new hotel before 2020.

A planning application is currently being determined by Renfrewshire Council for the construction of a helicopter search and rescue base to the north of the declassified cross runway adjacent to Walkinshaw Road. The proposed development is part of an initiative to transfer search and rescue services, currently undertaken by the Royal Navy out of HMS Gannet, to the Soteria consortium (made up of CHC Helicopters, Thales and RBS) and construct a new purpose built helicopter base at Glasgow Airport. Subject to the necessary Government and planning approvals, the new base is expected to be operational in 2014.

8. Airport Development to 2040

Introduction

This chapter considers the longer term development requirements for Glasgow Airport to grow and meet air travel demand up to 2040. Current forecasts estimate that Glasgow will handle between 12.55 and 19.17 million passengers a year by 2040. The DfT Guidelines on the preparation of airport master plans recognise that planning for airport growth over such a period of time presents challenges and acknowledges that:

“Proposals which will come to fruition so far in the future are likely to bring with them considerable uncertainties and that consequently there is likely to be little value in working them up in any great detail.”

The central growth case of 16.39 million passengers per year has therefore been used for planning purposes to provide a broad indication of the layout and extent of the airport at 2040. As highlighted above in chapter 4, forecasts for peak hour runway movements suggest that there will be a need to evaluate requirements and options for other means of increasing runway capacity and/or a second runway around 2040.

Accordingly, two indicative drawings have been prepared to illustrate single runway operation (Drawing 7) and twin parallel runway operation (Drawing 8).

General Development Principles

As described in chapter 7, the dynamic nature of the aviation sector and changing needs of passengers and airlines mean that the specific form and location of development can be subject to change. This is even more so the case when attempting to plan for the longer term out to 2040. However, in addition to the 2020 development principles, a number of general development principles have been established to guide and inform the longer term growth of the airport as follows:

- the development and operation of the existing runway and taxiway system will be optimised to achieve maximum capacity within operational and safety constraints prior to the construction of any new runway;
- the re-development of the east pier and aprons to provide additional aircraft parking stands will occur after the completion of the westward expansion of aircraft parking stands and related facilities; and
- new and/or re-located cargo, maintenance and ancillary facilities will be located in the consolidated cargo and maintenance zone north of Campsie Drive and west of Abbotsinch Road and in an area of farmland not currently owned by the airport known as Netherton Farm. Thereafter, any additional ancillary facilities will be located in land owned by the airport to the west of Barnsford Road known as Walkinshaw Brickworks.

Single Runway Operation

Runways + Taxiways

Drawing 7 shows the indicative layout and extent of Glasgow Airport with a single runway in 2040. This layout is in accordance with the broad conclusion of the White Paper. In order to cope with forecast demand for peak hour runway use, additional rapid access and exit taxiways will need to be constructed, as will additional sections of parallel taxiway in order to provide a full parallel taxiway system.

A single runway operation scenario requires approximately 52 hectares of land not currently owned by the airport at Netherton Farm (located to the east of the current boundary between the airport and the White Cart Water) to be acquired. This land is required for a number of reasons:

- to realign the eastern section of taxiway alpha in order to comply with aircraft separation distances and enable additional ‘hold points’ to be created. This will contribute to optimising the capacity of the runway and taxiway system;
- to enable the re-location and development of new cargo, maintenance and ancillary facilities; and
- to facilitate the re-alignment of Abbotsinch Road as a consequence of the above.

Abbotsinch Road is an adopted public road providing a route between the airport, Renfrew, Inchinnan and Paisley. At the appropriate time, Glasgow Airport will liaise with Renfrewshire Council and other partners to undertake a master planning exercise to identify suitable options for the re-alignment of Abbotsinch Road, together with details of layout, phasing, landscape treatment and other such matters. Development of this nature at Netherton Farm is likely to require a full planning application and environmental impact assessment. Again, the airport will work with Renfrewshire Council and other partners throughout this process.

Aircraft Aprons

Forecast peak stand demand for 2040 identifies the need for a total of 50 aircraft parking stands. Providing additional aircraft parking stands to the west and allowing for the development of a second international pier is considered to achieve sufficient stand capacity up to around 2025. Thereafter, additional aircraft stands will be provided towards the east, adjacent to the current airport boundary with Abbotsinch Road. As noted above, this will require the existing cargo, maintenance and ancillary uses around Campsie Drive to be re-located.

The forecasts show an increasing requirement for jumbo and medium sized stands. This reflects the continued expectation for Glasgow Airport to be serving more international

destinations in the future, particularly the long haul destinations where Glasgow has consistently performed well. It also reflects the general trend of airlines replacing smaller less efficient aircraft with larger and more efficient aircraft.

Passenger Terminal Facilities

Under a single main runway layout, further extensions and improvements will be required to the terminal to accommodate the 16.39 million passengers a year which Glasgow Airport is forecast to be handling by 2040. As noted above, this is likely to include a second international pier around 2025. It is envisaged that the existing east pier will be demolished and replaced by a new longer pier on a different alignment to provide pier service to a greater number of larger aircraft stands than is currently the case. The terminal building itself will also require to be extended to provide additional check-in, baggage, departure lounge and passenger circulation facilities. This is likely to be achieved by expanding to the east (currently T2), the south (currently the inner forecourt) and the west (currently international arrivals/service yards).

Cargo + Mail

Cargo and mail facility requirements do not change as a result of a single or twin runway operation. As noted in chapter 7, cargo developments will only be undertaken in response to specific requests from cargo operators. However, the displacement of existing cargo facilities required by the aforementioned re-development of Campsie Drive presents a significant opportunity to consolidate cargo uses at Netherton Farm and provide purpose built facilities with excellent links to the runway and taxiway system.

Aircraft Maintenance

Aircraft maintenance facility requirements do not change as a result of single or twin parallel runway operation. While there is no quantifiable demand for additional maintenance facilities in the longer term, the White Paper recommends that provision is made for maintenance facilities to support the establishment of a 'centre of excellence' for aircraft maintenance, repair and overhaul (MRO) activities. Land at Netherton Farm has therefore been identified as a suitable location for a cargo and maintenance development zone.

Air Traffic Control + Airspace

As noted above in chapter 6, airspace directly surrounding Glasgow Airport is managed on behalf of the airport by National Air Traffic Services Limited (NATS). Outside of this zone, airspace is managed by NATS En Route Limited (NERL). Glasgow Airport has assumed that the capacity of the airspace managed by NERL will grow to accommodate the forecast growth in air traffic.

However, as the need and options for growth in runway capacity (and possibly a new runway) become clearer, more detailed analysis and modelling work will require to be

undertaken in conjunction with NATS to understand what airspace changes, if any, will be needed. Where an airspace change proposal is identified then the CAA airspace change process would need to be undertaken. This process engages stakeholder organisations in consultation including, among others, local authorities, environmental groups, airport consultative committees and resident organisations. Glasgow Airport will support the CAA in undertaking any airspace change process.

Ancillary Facilities

The demand for ancillary facilities is inextricably linked to passenger and cargo volumes. Therefore, as passenger numbers increase to the forecast 16.39 million passenger per year in 2040, a significant amount of land will be required for ancillary uses to support the growth and operation of the airport.

Under a single runway layout, approximately 25 hectares of land currently within Glasgow Airport's ownership and located to the west of Barnsford Road (Walkinshaw Brickworks), has been designated for ancillary facilities. Under a twin parallel runway layout, additional land will need to be acquired for ancillary uses towards the Black Cart Water. This scenario would also require the re-alignment of Barnsford Road.

Twin Parallel Runway Operation

Runways + Taxiways

The White Paper notes that:

“There does not at this stage seem to be a clear case for an additional runway at Glasgow International Airport.”

Glasgow Airport acknowledges the airport's charter and long-haul services carry large numbers of passengers per flight making it easier to handle a higher passenger throughput than an airport where short-haul domestic or European services dominate. However, the current peak hour runway forecasts suggest that, towards the end of the period to 2040, there may be a need to evaluate requirements and options for other means of increasing runway capacity and/or a second runway. As discussed above, it is currently considered that the capacity of Glasgow's runway could be increased to around 45 movements per hour with the construction of RATs, RETs, a full parallel taxiway and operational improvements.

In the event that operational or technical improvements cannot increase the runway capacity beyond this level, it is considered sensible to continue to indicate how a second close parallel runway could be developed. Should such a level of demand materialise, and subject to the prevailing environmental and commercial sustainability considerations, Glasgow Airport is committed to delivering a second runway.

Preliminary work indicates that a new runway of approximately 1800 - 2000 metres in length could be located to the north of Runway 05/23 and would require approximately 50 hectares of land not currently owned by Glasgow Airport to be acquired.

As the potential need for any second runway is very much a longer term issue, it is considered impractical and of little value to develop detailed plans relating to runway design and alignment at this time. This is primarily because the planning and operation of a future runway is dependent on a number of complex and interrelated factors and many of these cannot be predicted with any certainty so far ahead of construction. For this reason, we have simply replicated the indicative position of a new runway as shown in the White Paper.

The 2006 Master Plan deviated from the suggested White Paper airport boundary for a twin runway airport layout in that Glasgow Airport contended that in this scenario airport land ownership should extend fully to its natural boundaries (i.e. up to the edge of the Black Cart Water, White Cart Water and M8 motorway). This stance was primarily driven by the arbitrary regularity of the White Paper boundaries rendering the small areas of land left outside the airport virtually unusable. The Airport's position on this issue remains the same, with the acquisition of land around the north and west of the current boundary (Walkinshaw Brickworks) also considered to present an opportunity to re-align Barnsford Road, provide a service corridor and create a strategic landscape buffer. The Airport will engage with Renfrewshire Council at the appropriate time to progress the development of this area.

Aircraft Aprons

Under a twin parallel runway layout, the apron development strategy is as outlined above, where aircraft stands would continue to be provided incrementally in a north-easterly direction towards the proposed cargo and maintenance zone at Nethererton Farm.

Passenger Terminal Facilities

The 2006 Master Plan suggested that a second passenger terminal may be needed to accommodate the 20.2 million passengers the airport was forecast to handle in 2030 if a second runway was developed. The current central case passenger forecasts now estimate that the airport will need capacity to handle 16.39 million passengers a year by 2040. The terminal, pier and apron enhancements indicated above would provide sufficient capacity for this number of passengers. The second terminal has therefore been removed, although if passenger growth accelerated, the principle of locating a new terminal to the east of the existing terminal remains valid.

Future Runway Safeguarding + Public Safety Zones

Chapter 3 alluded to 'The Safeguarding of Aerodromes' process as it relates to Glasgow's existing operation. There is a separate

need to consider the manner in which the possibility of developing a second parallel runway at Glasgow should also be 'safeguarded' - a requirement which could potentially lead to the refusal of planning permission for:

- proposals for development that are incompatible with 'safeguarding of aerodromes' criteria specified in relation to the location of the second runway; and
- proposals for development on land within the area onto which the airport would be extended in the event of a second runway being permitted and built.

In the Outline 2006 Master Plan, Glasgow Airport set out a passive safeguarding policy in relation to proposals which might conflict with a second runway. Concerns were raised by stakeholders during the consultation period for the Outline Master Plan as to whether this would sufficiently protect the White Paper requirements. Specific comments were received from the DfT, the (then) Scottish Executive and some local authorities. Following a review of these comments, the Airport adopted a more proactive stance in the final 2006 Master Plan to safeguard future runway development as required by the White Paper.

The safeguarding map issued by Glasgow Airport to surrounding Local Planning Authorities and referred to in chapter 3 contains details of a potential second runway. Any proposals for development within land designated for a second runway will therefore be referred to Glasgow Airport under the aerodrome safeguarding process. The safeguarding map is reviewed on a regular basis and will be updated to reflect changes to the runway system or the construction of any new runway.

Each aerodrome safeguarding consultation is assessed on its merits. If the conclusion of the assessment differs between the existing and possible future runway system, and this would result in a formal objection or a requirement for particular conditions to be attached to the planning permission, the justification for this will be made clear. Where conflict arises, Glasgow Airport will work with the Local Planning Authority and developers where appropriate to explore the issues in more detail.

Some developments affecting land designated for a second runway and airport growth may not raise technical aerodrome safeguarding reasons. It may, for example, be possible to develop a new building provided its height was not such as to breach the runway's protected landing and take off surfaces. Certain airport operational and related uses may also be acceptable where they do not conflict with the provisions of the White Paper or development plan policies.

It is therefore important for Local Planning Authorities to ensure that development plans safeguard land to allow the airport to grow. Both the current Local Plan and Structure Plan

fulfil this requirement, and Glasgow Airport will engage in the preparation of new local and strategic development plans to ensure the requirements of the White Paper continue to be reflected.

To protect local homeowners and small businesses from the risk of blight if a second runway is built, Glasgow Airport launched two schemes in 2005. The Property Market Support Bond has been developed for the areas where land would be required for a second runway if it were to be built. The Bond guarantees that the airport would buy affected residential properties and small businesses at an unblighted market rate, if and when the airport announced that it intended to apply for planning permission for a new runway.

The Home Owner Support Scheme covers an area which would be close to an expanded airport boundary and which would be exposed to medium-to-high levels of noise from aircraft using the new runway (66 decibels, averaged over a 16 hour day). The scheme is to protect the value of eligible properties now and in the coming years. If and when the airport decides to apply for planning permission for a new runway, eligible property owners will be entitled to apply for an Option Agreement. This would commit the airport to purchasing the affected property at an unblighted market price once planning permission has been obtained and the airport has announced its intention to begin construction.



9. Surface Access + Transport

Introduction

Convenient and reliable access by a range of modes of transport is of fundamental importance to the operation and success of any airport. Glasgow Airport is no different in this respect, and is therefore committed to working with the relevant planning and transport authorities to develop a range of convenient, attractive and sustainable options for people to travel to and from the airport. However, good access is not only important from the airport perspective. As the numerous policy documents discussed in chapter 3 recognise, Glasgow Airport plays a key role in supporting the nation's economy and is an important source of employment. The ability of the airport to maintain and enhance this role is undoubtedly linked with the quality and performance of the surface access network which connects the airport with the rest of the country.

Research undertaken for the DfT^[19] states that:

“Respondents... generally regarded getting to and from airports as integral to their overall experience with a significant potential to affect satisfaction, mood and stress levels...”

The report goes on to suggest that:

“All other things being equal (i.e. availability and cost of flight permitting), most [passengers] said they preferred to use the airport that was easiest or more convenient for them to get to; often but not necessarily their nearest airport.”

Increasing environmental awareness and the need to reduce emissions from transport is also a key consideration for surface access. As a responsible operator it is important for Glasgow Airport and its partners to ensure that measures are being taken to manage traffic and promote environmentally sustainable transport choices.

The relationship between airport activity and the scale and patterns of demand for road, rail and other forms of transport is highly complex and influenced by a range of factors. These include journey time reliability, the purpose of travel (e.g. business/leisure) duration of travel and price. People travelling to and from the airport include passengers, airport/airline staff, people picking up or dropping off and those associated with cargo, maintenance and the airport's supply chain. Each of these groups can have differing and specific requirements for how they travel to and from the airport.

The Air Transport White Paper notes that the (then) Scottish Executive requested that Strathclyde Partnership for Transport

(SPT) develop plans for a rail link to the airport as part of a package of surface access improvements. The rail link was also included in the airport's designation as a National Development in NPF2. With the support of the White Paper, the 2006 airport Master Plan and NPF2, the rail link project was progressed by SPT and, latterly Transport Scotland. However, the Scottish Government has decided not to proceed with the GARL project. Whilst this situation is disappointing, Glasgow Airport continues to work proactively with Transport Scotland, SPT, Local Authorities and others to achieve a fast, reliable and direct link to the city centre. In light of the supportive policy framework and the key role the airport plays in supporting the nation's economy, the airport is hopeful that improvements to the transport network, including a fast, reliable and direct link can still be achieved.

Glasgow Airport Surface Access Strategy 2009 - 2013

The Airport Surface Access Strategy (ASAS) was published in March 2009 and sets out a number of targets and actions to improve access to the airport and increase the use of more environmentally sustainable modes of transport. In terms of how the Master Plan and ASAS relate to each other, the Master Plan establishes the long term strategic objectives for improving surface access while the ASAS provides a more detailed tactical response to meeting these objectives.

The key objective of the ASAS is:

“To seek to increasingly influence surface access journeys as the airport develops, and to support Government aims to increase public transport mode share.”

A number of targets and actions are set out by the ASAS to achieve the key objective, notably:

“To increase the overall public transport modal share from 11.2% to 15% by 2012.”

The ASAS was prepared by Glasgow Airport in consultation with members of the Airport Transport Forum (ATF). This body was established by the airport and is made up of transport related organisations such as bus operators, taxi companies, Transport Scotland and SPT. The purpose of the ATF is to promote, monitor and co-ordinate improvements to the airport's accessibility by public transport in particular.

Clearly the development of GARL was a key element of delivering the current ASAS. The Airport will therefore consult with the ATF on the need to prepare a revised ASAS once Government policy on an alternative strategy for strategic access to the airport is known.

[19] Understanding the Airport Passenger Experience, Independent Social Research, 2009.

Glasgow Airport Staff Travel Plan 2010 - 2014

One of the actions outlined in the ASAS required a staff travel plan to be prepared. Following the completion of a Staff Travel and Employment Survey to identify patterns of staff travel and attitudes towards changing travel behaviours, the Glasgow Airport Staff Travel Plan was published in February 2010. The stated aim of the Staff Travel Plan is:

“To promote cleaner, greener and often cheaper travel choices among all staff at the airport and reduce the number of single occupancy car journeys.”

The Staff Travel Plan sets targets to increase the number of staff walking to work from 2% to 4%, cycling from 1% to 2% and travelling on public transport from 8% to 12%. Sustainable travel choices for staff are promoted through the Staff Travel Plan, 'Glasgow Airport Commuter' website and various initiatives and events on an on-going basis.

Existing Strategic Transport Network

Glasgow Airport, Transport Scotland, SPT, Glasgow City Council and Renfrewshire Council jointly commissioned transport consultants MVA to undertake a study to identify the strategic transport network which serves Glasgow Airport. The study also assessed the current and future performance of the network. The study identified the following issues:

- a high level of dependence on cars and taxis for access to and from the airport;
- that the airport is currently heavily dependent upon the strategic road network for access by staff and passengers;
- that there is evidence of congestion, delays and reduced operational efficiency on key parts of the strategic network serving Glasgow Airport which are predicted to be exacerbated over time as demand increases; and
- that there is limited scope to encourage modal shift to public transport without measures to make buses and trains more attractive to prospective users.

Road

Glasgow Airport is directly connected to the M8 and the national motorway network via Junctions 28 and 29. Significant numbers of passengers also travel to the airport via the M8 from the M80 (Stirling and the north), M77 (Ayrshire and the south west) and M74 (Lanarkshire, the south of Scotland and the north of England). The A737 trunk road provides links to North Ayrshire and local access to Paisley, Renfrew and Inchinnan is via the A726.

The MVA report indicates that only 17% of traffic on the M8 in the vicinity of the airport is actually airport related. That equates to less than 1 vehicle in 5 and highlights the congestion impact of general traffic levels and traffic growth not associated with the airport.

In terms of the current performance of the road network serving the airport, the MVA study concludes that many sections suffer from significant and recurring congestion during peak periods, particularly the M8 between junction 26 and 29, the M77 and the M8 through the centre of Glasgow. The fact that Glasgow is one of the few major airports in the UK where passengers and staff have no choice but to access the airport by road exacerbates the potential impact of this situation.

Two projects are currently being constructed which will improve access to the airport by road. The M74 Completion is due to open in June 2011 and will provide direct motorway access between the airport, M8 and M74. This will greatly improve journey times and reliability to the airport from Lanarkshire, the south of Scotland and north of England.

The upgrade of the M80 will complete the motorway network between Glasgow and Stirling. Again, this is expected to improve journey times and reliability to the airport from parts of North Lanarkshire, Stirling and Central Scotland.

Over 250 buses depart from Glasgow Airport every day. The bus route network is as follows:

- **First 500 “Glasgow Shuttle”** Airport to city centre shuttle
- **Arriva 500** Airport to city centre shuttle
- **Arriva 800** Airport to Largs (via Johnstone, Beith and Kilbirnie)
- **Arriva 300** Paisley (incl. Gilmour St Station) to Clydebank via Glasgow Airport and Erskine
- **Arriva 66** Airport to Dykebar via Paisley (incl. Gilmour St Station)
- **First 747** Airport to city centre via Braehead Shopping Centre and the West End
- **Scottish City Link 915** Glasgow to Skye via Glasgow Airport, Loch Lomond, Glencoe and Fort William

Rail

As discussed above, the airport is not directly connected to the rail network. Paisley St James is the nearest railway station, however Paisley Gilmour Street is the main station interchange for people using rail to access the airport. Onward travel from Paisley Gilmour Street to the airport must be undertaken by bus or taxi.

Walking + Cycling

Accessing the airport on foot or by cycle is not feasible for the majority of airport users and staff due to the practicalities of carrying luggage, shift patterns or the distance between the airport and people's point of origin. A number of locally based staff (and a very small number of passengers) however do choose one of these modes of transport, using the network of footpaths and the airport cycle route.

Footpaths link the airport with Paisley via Inchinnan Road, Renfrew via Abbotsinch Road and Erskine via Barnsford Road. The airport cycle route, opened in 1999, also uses these routes and connects with National Cycle Network routes 7 and 75. A number of cycle parking facilities are located throughout the airport campus.

Existing Passenger Transport Characteristics

The results shown in Table 10 represent an increase in the percentage of passengers travelling by rail of 0.4% and a decrease in the percentage of passengers travelling by bus or coach of 1.2% (between 2005 and 2009). There is also a decrease in the percentage of passengers accessing the airport

by car, from 58% to 50.5%. The bus usage figures follow wider trends from the 2009 Scottish Government Household Survey Travel Diary^[20] results which show that over the past four years, the proportion of people in Scotland who travel by bus as their main mode of travel has declined from 11.2% to 8.6%. Nonetheless the decrease in bus usage is frustrating given the levels of investment the Airport and its partners have made in improving public transport facilities and services.

Table 10 shows how passengers chose to access Glasgow Airport in 2009. Table 11 details the areas of origin for departing passengers using Glasgow Airport in 2009.

Table 10: Passenger Modal Split (Source: 2009 CAA Passenger Survey.) *May not sum due to rounding.

Mode of Transport	Number of Passengers (%)*
Private Car	50.5
Taxi	26.5
Bus/Coach	9.8
Rental Car	3.9
Other/Unknown	8.7
Rail	0.5

Table 11: Origin of Departing Passengers (Source: 2009 CAA Passenger Survey.) *May not sum due to rounding.

Area	Number of Passengers (%)*
Glasgow	37
Renfrewshire	9.7
South Lanarkshire	7.3
North Lanarkshire	6.1
North Ayrshire	3.5
Argyll and Bute	3.5
South Ayrshire	3.2
East Dunbartonshire	2.8
City of Edinburgh	2.5
East Ayrshire	2.3
West Dunbartonshire	2.3
Fife	2.1
Stirling	2.0
Inverclyde	2.0
East Renfrewshire	1.8
Rest of Scotland	11.1
England	0.6

[20] Scottish Household Survey: Travel Diary Results 2009, Scottish Government, 2010.

Existing Staff Transport Characteristics

Table 12: Staff Modal Split (Source: 2009 Staff Travel Survey).

Mode of Transport	Number of Staff (%)*
Private Car (driver)	75
Bus/Coach (incl 1% work bus)	9
Private Car (passenger)	6
Taxi	5
Walk	2
Bicycle	1
Rail	0

Table 13: Origin of Glasgow Airport Staff (Source: 2009 Staff Travel Survey).

Area	Number of Staff (%)*
Renfrewshire	50.4
Glasgow	15.8
Inverclyde	4.9
East Renfrewshire	4.9
West Dunbartonshire	3.9
North Ayrshire	3.9
South Lanarkshire	3.8
North Lanarkshire	3.6
Other Regions	8.8

Surface Access Infrastructure 2020

Achieving modal shift to more sustainable forms of transport is a priority for Government. This policy is explicit across a number of policy documents including the second National Planning Framework, Scottish Planning Policy, the National Transport Strategy and others. In addition to this, the Future of Air Transport White Paper makes improving surface access - and sustainable modes of travel in particular - a pre-requisite for future airport growth to be supported.

Glasgow Airport recognises the importance of achieving modal shift and is committed to working with partners to develop and deliver improvements. Improving accessibility to the airport enhances its attractiveness to businesses and tourists alike, and ultimately therefore contributes to the success of Scotland's economy. However, it must be recognised that many passengers and staff will continue to choose to access the airport by car for a variety of reasons, and it is important that on and off-airport road infrastructure is improved and that a balanced, integrated approach is taken.

The aforementioned M74 and M80 projects will both be completed by the autumn of 2011. These projects will greatly

improve accessibility and will reduce journey times to the airport in off-peak periods. The M74 is expected to ameliorate peak period congestion on the M8 in the short term. This is however expected to be nullified in the medium to long term as traffic volumes grow and the MVA report indicates that the key congestion 'hotspots' on the M8 between junctions 26 and 29, M8 through the centre of Glasgow and the M77 will experience worsening congestion around 2020.

Considering the significant, recurring and worsening incidence of peak period congestion on the strategic road network that serves the airport, the drive to encourage people to choose more sustainable forms of transport, the role of the Glasgow Airport in underpinning the economy and the known importance of journey time reliability to air passengers, it is clear that improvements are required to bring the transport network up to standard.

Table 12 shows how staff chose to access Glasgow Airport in 2009. Table 13 illustrates where Glasgow Airport staff live and travel from. In Renfrewshire, there are significant concentrations of airport workers in Paisley, Erskine, Renfrew and Johnstone.

Historically, various options have been investigated to address this situation, including light rail, heavy rail and bus based schemes. The report undertaken by MVA on behalf of Glasgow Airport, Transport Scotland, Renfrewshire Council and Glasgow City Council has established what the existing transport network serving the airport is and how it operates. It is Glasgow Airport's position that this is the first stage in a process to deliver effective and affordable transport improvements. The next stage is to generate and evaluate options for addressing the above issues to identify such improvements.

More than a third of Glasgow Airport's passengers travelled from the City of Glasgow in 2009. On the basis that the city centre is a transport hub with links to the rest of Scotland, and given the important relationship between the airport and city centre for business, Glasgow Airport considers that a fast, reliable and direct link between the airport and city centre is required in the short to medium term for the airport and the city to reach their full potential. Glasgow Airport understands that GARL would have provided such a link. Therefore, the Airport will seek to work with Transport Scotland and others to identify how GARL or alternative schemes which deliver fast, reliable and direct city to airport transport can be taken forward. With Glasgow accounting for 59% of all rail passenger journeys within Scotland^[21] and the opportunity to build on the city's role as a rail hub, Glasgow Airport also believes that the Crossrail project offers the potential to greatly enhance cross city and cross country connectivity and is an important element for onward travel between the airport and the rest of the country.

In the meantime, the Airport will continue to work with Transport Scotland, transport operators, SPT and others to investigate short term improvements to the Paisley Gilmour Street Rail Station to airport bus link and increased priority for airport to city centre buses. The flagship city centre shuttle service will benefit from further investment in new vehicles in 2011 as First Glasgow take over the service.

The Fastlink project as currently envisaged does not extend to the airport. Glasgow Airport will work with SPT and others to understand what, if any, opportunities exist for Fastlink to improve airport accessibility.

The Main Issues Report^[22] for the new Strategic Development Plan notes the continuing need to improve the M8 between junctions 26 and 29, and accessibility to the airport in general. The Main Issues Report also highlights the commitment to upgrade the A8 to complete the motorway between Glasgow and Edinburgh. The Airport supports these projects and will liaise with partners where required to progress their implementation.

Modelling work undertaken on behalf of Glasgow Airport for the 2006 Master Plan and this Master Plan indicates that there are capacity issues on the eastbound M8 on-ramp at junction 28. This is partly caused by the design of the merge, the volume of traffic on the M8 at peak periods resulting in airport traffic finding it difficult to merge, the length of the slip road and the reduced width of the White Cart Viaduct. It is understood that this latter issue will be resolved by a Transport Scotland funded project due to commence in 2011. The Airport welcomes this development which is expected to resolve the confusing speed limits and lane width restrictions which have plagued this section of motorway for a number of years.

Glasgow Airport's traffic consultants have developed an option to improve junction 28 and the Airport will work with Transport Scotland to identify the most appropriate means of ensuring current and future traffic can access the motorway in a safe and efficient manner.

In terms of the internal airport road network, the investment of over £1.4 million in 2010 to improve traffic flow and passenger transport facilities has greatly reduced congestion around the airport. Traffic modelling indicates that the internal road network has sufficient capacity and only minor works may be required as passenger demand increases to 2020.

In line with the target to double the number of staff who walk or cycle to the airport, the airport cycle network will be upgraded and improved facilities developed to provide functional and attractive routes.

Surface Access Infrastructure 2040

Surface access infrastructure improvements will be required both on and off airport to accommodate 2040 forecast passenger demand. It is not possible at this stage to identify the exact improvements that will be required, however Glasgow Airport will continue to work with transport authorities and operators to ensure that improvements are delivered in a timely manner to support the sustainable growth of the airport. Indicative improvements to M8 access identified by the Air Transport White Paper are shown in Drawings 7 and 8.

[21] Scotland Route Utilisation Strategy Generation Two Draft for Consultation, Network Rail, 2010. [22] Glasgow and the Clyde Valley Strategic Development Plan: Main Issues Report, GCVSDPA, 2010.



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