# Epping Forest District Council

## North Weald Airfield

## Aviation Intensification Study


## Interim Report

**October 2010**

**Halcrow Group Limited**

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## Halcrow Group Limited

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# Epping Forest District Council

## North Weald Airfield
## Aviation Intensification Study
## Interim Report

## Contents Amendment Record

This report has been issued and amended as follows:

| Issue | Revision | Description | Date | Signed |
|---|---|---|---|---|
| 1 | 1 | Draft Interim Report | 14.10.10 | WRM |
| 1 | 2 | Interim Report | 25.10.10 | NK |

# Contents

# 1 Introduction

## 1.1 Background

Epping Forest District Council (EFDC) has commissioned the Halcrow Group to undertake an independent study to assess the potential for developing aviation activity at North Weald Aerodrome. The Council has owned the aerodrome since 1980, and has promoted its use as a mixed aviation, recreational and employment site.

The key objective of the study is to identify potential aviation market segments that might be targeted, and that would be viable in providing a positive financial return to EFDC. Any development proposals also have to balance potential economic benefits against environmental and community impacts.

This Interim Report outlines the work done and our initial findings and is based on stakeholder meetings and the data available to date.

## 1.2 Meetings and Discussions

The following meetings and discussions have been held or arranged with aviation tenants:

- North Weald Flying Services – met with Mr Alan Crouchman on 28th September 2010
- Mr Trevor Archer (S2T Aviation) representing the North Weald Airfield Users Group – initial telephone discussion on 29th September 2010, and met on 21st October 2010
- Mr David Young – met on 5th October 2010
- Weald Aviation (Mr Russell Smith, Mr Geoff Button, and Mr Andrew Vassallo) – met on 11th October 2010
- Mr Peter Teichman of the Hangar 11 Collection was contacted, but declined our request for a discussion/meeting.

All local residents groups identified by EFDC have been contacted:

- Representatives of Theydon Bois Action Group – met on 5th October 2010
- North Weald Parish Council, including District Councillors Anne Grigg and David Stallan – met on 21st October 2010
- Representatives of the Residents Associations of North Weald, Thornwood and Hastingwood – met on 21st October 2010
- Mr Arthur Moreton, North Weald Aviation Heritage – met on 21st October 2010
- Mr Howard Parkinson of Foskett, Marr, Gadsby & Head Solicitors[1] – met on 21st October 2010

There has also been initial telephone/e-mail correspondence, seeking clarification on our remit, with the Epping Residents Group, Waltham Abbey Residents Association, and the Corporation of London as administrators of Epping Forest.

Some preliminary responses arising from our discussions are set out in Section 6 of this report.

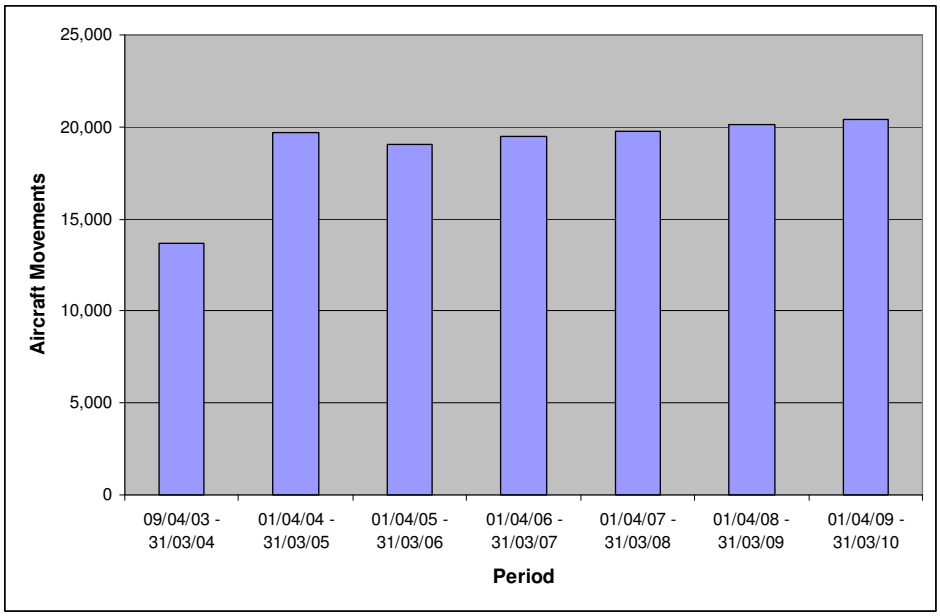
[1] Acts a legal representative for a number of clients based on North Weald Airfield, as well as a number of residents groups

# 2 Overview of North Weald Aerodrome

## 2.1 Aviation Activity

EFDC has supplied aircraft movement statistics for North Weald Airfield for the last 7 years, as summarised in Figure 2.1 below.

**Figure 2.1: North Weald Airfield - Aircraft Movements**




Source: Epping Forest District Council

We understand that there are a number of anomalies or inconsistencies in the records, and they have been adjusted to show the overall trend in aircraft movements at the airfield. In the period 2009/10, the aerodrome handled 20,382 movements, of which 59% (or 12,060) were allocated to the Squadron.

Figure 2.1 indicates that there has been modest growth in activity from 2005/06.

## 2.2 Airfield Infrastructure

The critical airfield infrastructure in any consideration of future development scenarios for North Weald is the two paved runways. The main Runway 02-20 orientated NNE/SSW which is 1,920m long and 45m wide[2].

The secondary runway is orientated 13-31 (NW/SE). Only a 650m portion of this original wartime runway is available for aircraft operations. The remaining eastern part is divided off by a security fence, and is used for driver training and event hardstanding.

We understand that the Scott Wilson pavement evaluation in 1998 is the most recent investigation of the condition and strength of the runways and the taxiway network.

That report noted the deterioration of the main runway subgrade and the relative thinness of rigid concrete pavement sections. Reflective cracking and patching was observed within the flexible construction areas which was considered indicative of '*significant distress'*. Scott Wilson concluded that the Pavement Classification Number (PCN)[3] of the main runway ranged from 6-10 depending on the section of runway and its construction. This conclusion had the significant proviso that these PCNs should be regarded as '*the maximum achievable PCN values from pavement materials when new, not the current PCN's which are often impractical to calculate'*.

The report further noted that the rate of deterioration was likely to increase with future use, and recommended bituminous overlays to achieve a PCN of 9.

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[2] Pooley's Flight Guide

[3] The Pavement Classification Number (PCN) is an International Civil Aviation Organisation (ICAO) standard used in combination with the Aircraft Classification (ACN) to indicate the strength of airfield pavements (runways, taxiways and apron). This helps to ensure that pavements are not subjected to excessive loading, thus prolonging the operational life.

Aircraft can safely operate on a pavement if their Aircraft Classification Number (ACN) is less than or equal to the pavement load bearing capacity or PCN. Indicative ACNs for range of small/ light business jets for flexible pavements with very low-quality subgrades are as follows:

- Cessna 550 Citation II 6
- Cessna 560 Citation V 7
- Bombardier Learjet 31A/35A/36A 6

Mid-size business jets, such as the Learjet 45 and Citation Excel, have ACNs of 7 and 9 respectively. Business turboprops such as the Beechcraft King Air B200 have ACNs of around 4.

Given over 10 years of use since the survey, and the aforementioned Scott Wilson caveat on PCN values for the main runway, they should be treated with some caution. It would be prudent to conclude that some strengthening work would be needed to ensure the future integrity of the airfield's pavements if traffic is increased significantly or if numbers of business-type aircraft are to be catered for.

## 2.3 Planning Framework

A review of national and local planning policy guidance has been undertaken to understand the planning context for North Weald Aerodrome. It is appreciated that this is an important and sensitive site in planning terms for EFDC, given its size and location.

EFDC is currently working on its Core Strategy, the key document of the new Local Development Framework (LDF). The preparation of, and consultation on, the Core Strategy will be used to make decisions about future locations for development. The Issues and Options consultation for the Core Strategy is expected to commence in Spring 2011. The Core Strategy will look at least 15 years beyond the date of its adoption, which would mean the period up to the mid 2020s.

At present, the Council uses a mixture of local planning policies, published in February 2008 as Combined Policies, which comprise:

- Adopted Local Plan 1998 – some of these policies were continued in 2007, but many others were replaced by new policies in the following document

- Adopted Local Plan Alterations 2006 – most of these policies were continued in 2009.

These policies support the development of the aerodrome site as a recreation and leisure centre and showground, covering activities such as airshows / displays, the Saturday markets, other events and enabling indoor sports facilities. The western part, closest to the M11, is promoted as a 'working airfield', covering aircraft parking and the provision of facilities to repair, service and store aircraft and helicopters.

Importantly, it is noted that:

'*To enable the airfield to function it should be self-financing, if at all possible. Existing uses will therefore be allowed to continue. This means that Hangar 2 (adjacent to the M11) will continue as a warehouse, if necessary, although air-related uses are preferred). It may be appropriate to permit further development on the airfield if its full potential is to be realised within its intended role.'*

The key policies relating to the aerodrome are as follows.

### Policy RST27

*The Council will:*

- *Continue to promote and enable the use and development of North Weald Airfield as a major multi-functional recreation and leisure centre and showground; and*
- *Promote and enable the use of the western part of the airfield as a working airfield*

The Council attaches great importance to amenity considerations, particularly noise, in dealing with planning applications for development on the airfield, or in its capacity as land-owner, leasing any sites or premises.

### Policy RST28

*The Council will protect the existing open character and historic interest of North Weald Airfield.*

EFDC wishes to protect as far as possible the airfield's historic interest and character as an important former WW2 RAF airfield, including its layout, buildings and structures. The Council also wishes to encourage the development of a limited aviation museum facility on the airfield.

### Policy RST29

*The Council may grant planning permission for further major buildings on North Weald Airfield within:*

- The south east corner; and
- The area adjacent to the M11 Motorway

*Provided that any such buildings:*

a) *Are necessary and appropriate for the development of the airfield either as a major multi-functional recreation and leisure centre or a working airfield; and*

b) *Would not create any air safety hazards; and*

c) *Would not lead to pressure for recreational or airfield-related uses on any other part of the airfield*

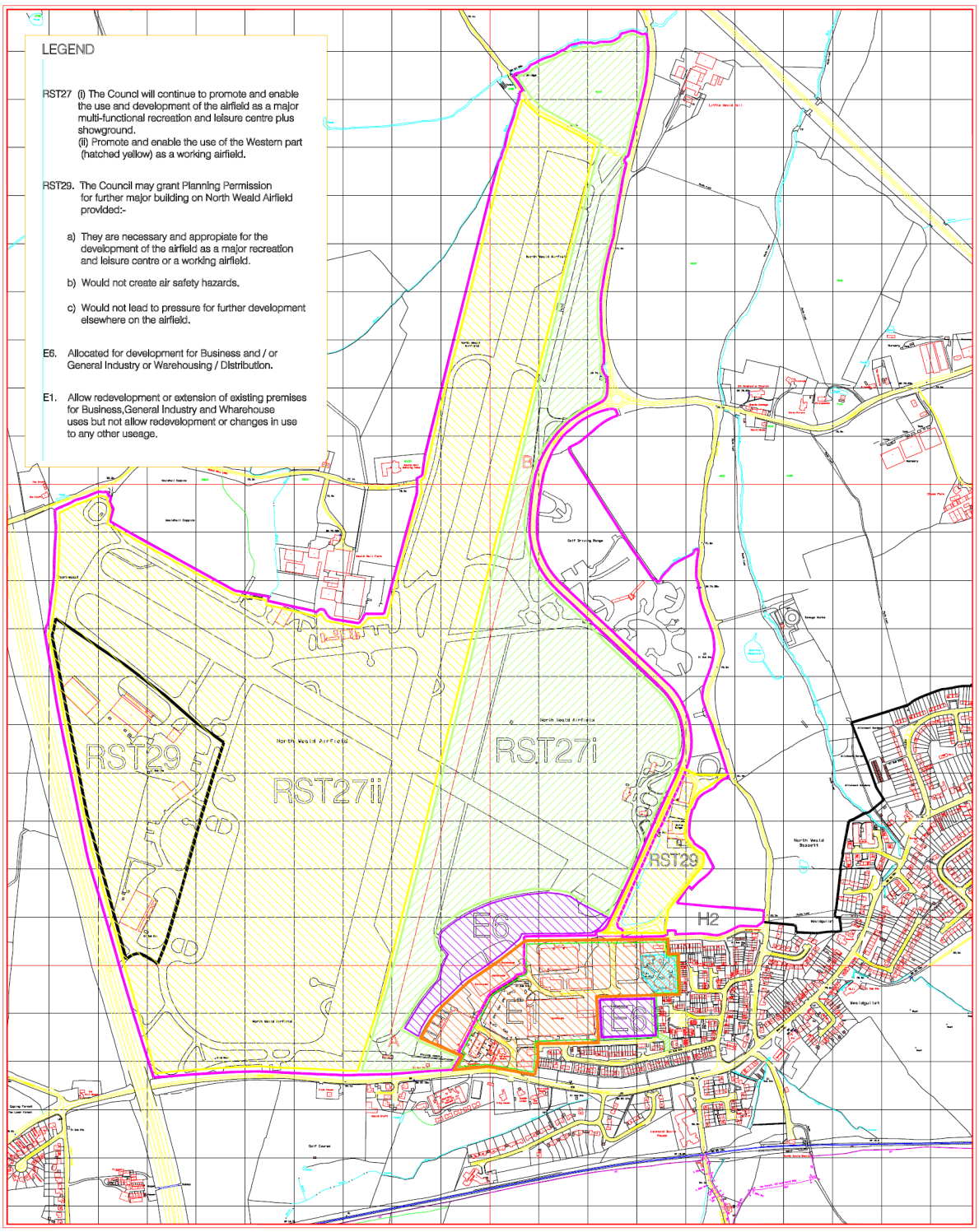
It is intended that any new buildings in the south east corner would be for indoor sports and leisure facilities, close to the existing gymnasium and shooting range, creating a corridor of recreational activities on the eastern edge of the airfield.

Any new buildings on the western side should either be for recreational use or directly aviation related.

New buildings will have to be:

- Of a scale in keeping with the character of the other large or original buildings in the vicinity
- In keeping with the open character of the airfield
- Have no adverse impact upon the historic interest of the airfield
- Have no adverse effect upon the character and appearance of the Green Belt; and
- Not prejudice the development of any of the intended functions of the airfield

## Figure 2.2: North Weald Airfield Planning Policies and Land Use




Source: Epping Forest District Council

## 2.4 Financial Returns

A major rationale for this study is to determine whether there is potential to increase the financial return to EFDC through increased aviation use. This will be considered further in subsequent reports but, for present purposes, we consider in outline the current financial results associated with operating North Weald Airfield.

Table 2.1 below gives a 10-year summary of costs and revenues. In 2009/10, as a percentage of total costs, the following comprise:

- Employee costs - 40.9%
- Premises costs - 27.7%
- Services & supplies - 20.5%

Employee costs cover permanent staff salaries and pension contributions, as well as the costs of casual staff. Premises costs comprise grounds, buildings and runways maintenance and other repair costs and utilities costs. Services and supplies costs comprise a range of equipment, uniforms, materials, stationery, marketing and insurance costs.

It can be seen that EFDC benefited from a net positive return over the period. In the last few years this has been in the range of £400,000 to £550,000, although returns have fallen from a peak of £1.1 million in 2002/03.

Although the overall result is relatively healthy, it is heavily reliant on revenues from one particular source, the Hughmark markets, which contributed £853,710 or almost two-thirds (64.4%) of income in 2009/10. Rents and casual rents from tenants amounted to £457,633 in 2009/10, or just over one-third of income (34.5%). Less than 0.5% of incomes were from major events.

**Table 2.1: North Weald Airfield - 10 Year Summary Accounts**

| Cost | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Employees | 216,556 | 231,628 | 218,908 | 261,953 | 280,997 | 311,319 | 333,431 | 342,003 | 371,059 | 357,356 |
| Premises | 193,636 | 211,740 | 257,179 | 180,790 | 163,024 | 167,393 | 181,048 | 282,507 | 260,255 | 242,170 |
| Transport | - | 8,452 | 10,561 | 8,559 | 9,685 | 12,750 | 17,771 | 17,799 | 15,119 | 16,601 |
| Supplies & Services | 17,891 | 40,702 | 65,534 | 50,495 | 50,576 | 50,885 | 75,941 | 58,408 | 64,911 | 66,063 |
| Third Party Payments | 22,873 | - | - | 400 | - | - | - | - | - | 988 |
| Support Services | 15,719 | 84,406 | 111,503 | 113,417 | 128,975 | 135,653 | 161,999 | 140,220 | 170,621 | 179,291 |
| Capital | 401,820 | 448,620 | 448,620 | 340,369 | 330,516 | 389,031 | 4,690 | 6,745 | 10,935 | 11,939 |
| **Total Expenditure** | **868,504** | **1,025,547** | **1,112,305** | **955,982** | **963,774** | **1,067,031** | **774,880** | **847,682** | **892,900** | **874,408** |
| **Total Income** | **1,326,806** | **1,607,726** | **2,224,610** | **1,911,965** | **1,927,548** | **1,381,418** | **1,240,964** | **1,389,393** | **1,299,463** | **1,326,669** |
| **Net Operating Profit/Loss** | **458,302** | **582,179** | **1,112,305** | **955,983** | **963,774** | **314,387** | **466,084** | **541,711** | **406,563** | **452,261** |

Source: Epping Forest District Council

# 3 Preliminary Aviation Market Analysis

## 3.1 Introduction

General Aviation (GA) is a term used to cover a broad range of aviation activities from all forms of recreational flying, private and commercial pilot training, aerial survey and other work, and air ambulance activities, through to the operation of transcontinental corporate jets.

The CAA in its 2006 Strategic Review of General Aviation in the UK[4] concluded that estimates of £1.4 billion direct economic contribution by GA[5] were reasonable. GA activity is also estimated to employ over 11,000 people in the UK. The business aviation sector, which has been growing strongly, makes up the majority of overall economic contribution. On this basis, GA represents around 8% of the economic contribution made by all UK commercial aviation.

There are more than one hundred air taxi operators in the UK, not only providing regular charter and ad hoc services for business travellers, but also overnight mail, business data transportation services and freight services.

Pilot training is perhaps the most strategically important aspect of the aviation industry, be it civilian or military. More than one hundred General Aviation pilot training schools and clubs are operating in Britain, producing some 2,500 new pilots each year. Many go on to obtain commercial pilot licences, graduating from the 'grass roots' level of club flying to the air taxi and airline industries. Several commercial pilot training schools are also in operation, attracting airline trainees from around the world.

The following sections consider the key characteristics of the main GA market segments.

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[4] Strategic Review of General Aviation in the UK, Civil Aviation Authority, 2006

[5] General Aviation Small Aerodrome Research Study, Terry Lober, UCL, 2006

### 3.1.1 Recreational Aviation and Air Sports

Air sports and recreational aviation are conducted by individuals on their own or through participation in non-profit organisations such as aero clubs or other bodies. This embraces a wide spectrum of activities, ranging from powered flying, ballooning and gliding, to micro-light flying, parachuting and paragliding.

Pilots in this sector fly aircraft owned by them individually or as a member of a group, or owned by flying clubs.

### 3.1.2 Aerial Work

Aerial work covers a wide range of specialised commercial activities such as aerial survey, agricultural flights, banner towing/advertising flights, environmental surveillance and enforcement, firefighting, traffic surveillance and so on.

A likely future development in this market segment is the development of civil Unmanned Aerial Vehicles (UAVs)as there is increasing interest by aerial work operators in exploiting this new technology.

### 3.1.3 Personal Air Transport

GA can be a useful mode of fast personal transport. In Europe, the combination of geography and wide availability of other means of public transport has meant that the use of GA for this purpose has been less developed compared to countries such as the US or Australia. However, with the expansion of the European internal market, the increasing congestion at major hub airports, together with new technologies, such as GPS and new types of Very Light Jet (VLJ) aircraft, it is possible that use of GA for personal transport will increase.

### 3.1.4 Aviation Training

Aviation training is at the core of GA, and is mostly a commercial activity undertaken by specialist flight schools for commercial pilots' licences, and flying clubs for private licences. GA is an important source of qualified pilots for airlines.

UK flying schools have seen commercial pressures from competition abroad, with a trend for students to train in countries with better weather or lower costs, such as Spain or the United States.

### 3.1.5 Business Aviation

A recent CAA report on UK Business Air Travel[6] states that there is no single best definition of business aviation, but rather it is commonly regarded as the 'use of any general aviation aircraft for a business purpose.' This includes both commercial and non-commercial operations and can be divided into three categories:

- Commercial – aircraft flown for ad hoc business purposes by an operator having a commercial operating certificate. These include air taxi and fractional operators
- Corporate – non-commercial operators in which a company owns and operates its own aircraft for the carriage of employees
- Owner operated – non-commercial operation for business purposes by an individual as owner of the aircraft.

Thus, companies ranging from individual entrepreneurs to major corporations use business aircraft. These include international companies with long-range intercontinental jets, manufacturing and service companies using smaller jets or turboprop aircraft, even owner flyers, using light twin- or singled-engined aircraft, who enjoy the convenience of flying their own aircraft.

Air taxi operations, typically involving the carriage of a few passengers or light goods for hire or reward, also come under the definition of business aviation. Fixed wing air taxi operators generally use twin piston-engined aircraft seating 6 – 10 passengers. Air taxi operations are classed as Public Transport.

These flights operate on an on-demand, charter basis, flying between points specified by the customer, often where no scheduled service is available. The charter market often involves the use of brokers to match the right aircraft and availability and price with customer needs. A number of corporate aircraft are not exclusively used for the firm's own business, but are also available for charter, to offset their operating costs.

[6] UK Business Air Travel: Travel Trends and Characteristics; Civil Aviation Authority, May 2009

Corporate aviation uses a range of more sophisticated aircraft, typically twin turboprop aircraft, business jets or helicopters, owned by the company to transport employees or clients.

There are a number of reasons for using business aircraft, but one of the principle ones is travel time savings for key personnel compared to using commercial airline services. These time savings result from four main factors:

- Departure and arrival times are organised around business need rather than airline schedules, with minimal idle times before and after a flight
- Use of smaller GA airports closer to the trip origin and destination than major commercial airports and with less traffic congestion
- Less en-route elapsed time than scheduled airlines because of less taxiing time, more direct routeing, flexible flight planning and avoidance of routeing via an airline connecting hub
- Significantly reduced ground time by avoiding airline passenger and baggage handling procedure, faster check-in and security procedures, and more convenient ground transport.

## 3.2 Trends in Business and General Aviation Traffic in the UK and South East

### 3.2.1 UK GA Trends

It is recognised by the CAA that one of the main difficulties in analysing trends in business and general aviation is the scarcity of basic data. Major airports and larger airfields report their GA movements to the CAA, but smaller aerodromes are reluctant to add to their workload beyond what is statutorily necessary. Therefore, although there are around 65 reporting airports in the UK[7], movement statistics do not give a totally comprehensive picture of GA activity.

[7] This includes the Isle of Man, and the Channel Islands of Alderney, Guernsey, and Jersey

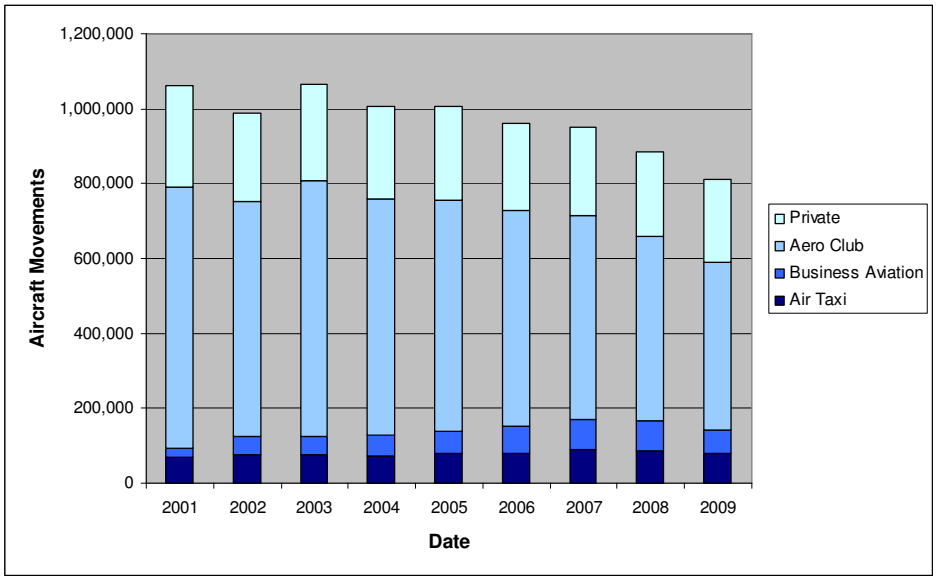
The CAA suggests that, from the limited evidence available for those airfields not included within the CAA data, movements from these aerodromes make up some three-quarters of all UK GA movements[8].

Business aviation also presents problems of definition, as the distinction between a business or a leisure flight can frequently be blurred, and it is often a matter of chance as to which description a flight will be assigned.

Past trends in business and general aviation activity have been reviewed by examining a range of available statistics, which give the best available indication of the broad trends in the UK and the South East of England.

The trends in GA aircraft movements between 2001 and 2009 at UK reporting airports are shown in Figure 3.1 below.

**Fig 3.1: GA Aircraft Movements at UK Reporting Airports 2001 - 09**




Source: CAA Annual Airport Statistics

The figure shows that overall GA aircraft movements at UK reporting airports have fallen 23.5% from 1.06 million movements in 2001 to 812,662 movements in 2009.

[8] Strategic Review of General Aviation in the UK, Civil Aviation Authority, 2006

One possible factor in this decline has been the increase in commercial air transport movements, particularly the development of low cost carriers at regional airports, which has adversely impacted on GA activity at reporting airports.

Part of this overall decline is due to the almost continual decrease year on year in aero club movements, which have fallen by almost 36% from 696,192 movements in 2001 to 447,269 movements in 2009. This may in part be due to the apparent decline in demand for Private Pilots Licences (PPLs). It appears that the amount of training performed in the UK has reduced from previous levels because of competition from flying schools located in countries with lower costs[9].

The number of private aircraft movements at UK reporting airports has also fallen 17.5% overall, from 270,966 movements in 2001 to 223,691 movements in 2009. This has been countered to some extent by the general overall growth in air taxi and, more particularly, business aviation operations.

Air taxi movements have grown almost 16%, from 68,035 in 2001 to 78,768 movements in 2009. The 2006 CAA GA Review suggested that the air taxi segment may be under pressure, although there was then no data to support it. It reported that industry consensus indicated that air taxi operators were being 'squeezed' by the development of low cost carriers at one end, and more sophisticated corporate charters at the other. However, CAA statistics do indicate a decline in air taxi movements for the years 2008 and 2009, from a peak of 91,209 in 2007. How much of this is due to the aforementioned 'squeezing' or to other factors, such as economic conditions, is not clear.

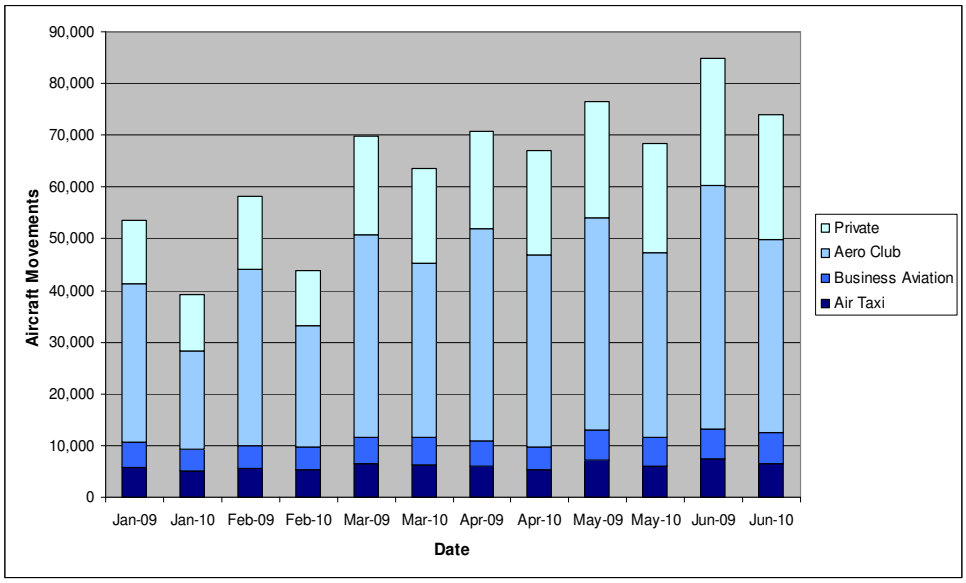
Business aviation activity has more than doubled from 27,080 aircraft movements in 2001 to 62,934 movements in 2009. Business travellers have been increasingly realising the value of time savings and convenience afforded by business aviation over scheduled airline alternatives. However, business aviation movements fell in 2008 and 2009, particularly so in the latter year, due to worsening economic conditions.

[9] Strategic Review of General Aviation in the UK, Civil Aviation Authority, 2006

CAA GA aircraft movement statistics for 2010 published to date cover the first 6 months of the year. These have been compared with figures for the same period last year, as shown in Figure 3.2, and summarised in Table 3.1.

The table shows that, across GA market segments, aircraft movement levels were lower for the first half of 2010 than in the same period of 2009.

**Fig 3.2: GA Aircraft Movements at UK Reporting Airports Jan - June 2010 vs 2009**




Source: CAA Annual Airport Statistics

**Table 3.1: GA Aircraft Movements at UK Reporting Airports H1 2010 vs 2009**

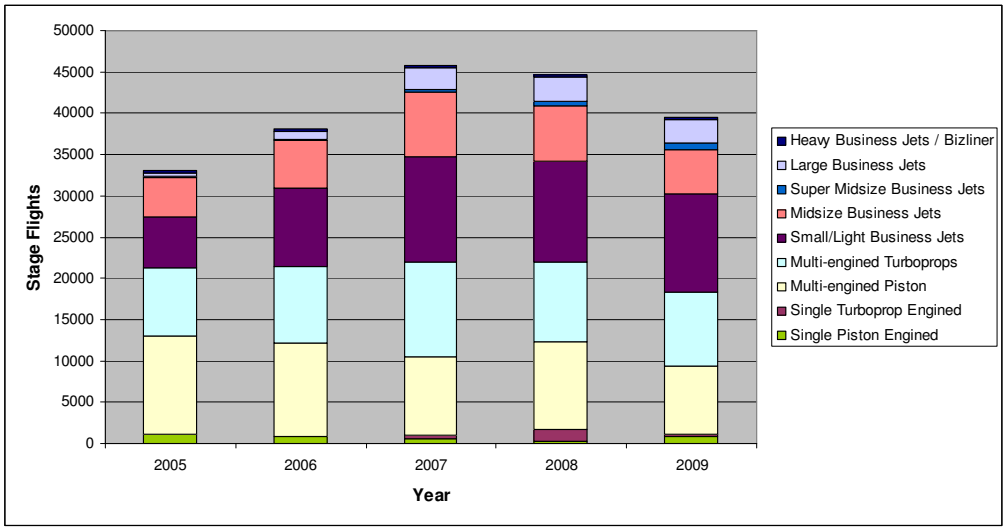
| Movements | H1 (Jan – Jun) 2010 | H1 (Jan – Jun) 2009 | % difference 2010 vs 2009 |
|---|---|---|---|
| Air Taxi | 34,370 | 38,337 | -10.4 |
| Business Aviation | 29,730 | 30,979 | - 4.0 |
| Aero Club | 186,518 | 233,134 | - 20.0 |
| Private | 105,596 | 111,392 | - 5.20 |
| Total GA | 356,214 | 413,842 | -13.9 |

Source: Analysis of CAA Monthly Airport Statistics

A further indication of air taxi activity can be derived from an analysis of CAA UK airline statistics on numbers of stage flights. These statistics have been adjusted to remove small regional commuter airliner types that would have been used on commercial air services, historic aircraft such as the DC-3/C-47 Dakota which would have been used primarily for pleasure flights, and helicopters. The majority of helicopter flights are related to the support of offshore oil and gas activity, rather than business aviation.

Figure 3.3 shows the total fixed wing air taxi stage flights for the period 2005 to 2009 by UK air taxi operators. The number of flights increased from 33,071 in 2005 to a peak of 45,882 flights in 2007, but then decreased in the following two years to 39,559 flights in 2009. This number of flights equates to 79,118 movements for that year.

**Fig 3.3: UK Air Taxi Operators – Stage Flights by Fixed Wing Aircraft**




Source: CAA Annual Airline Statistics

The CAA air taxi statistics also show the number of stage flights by individual aircraft type, which helps to draw a picture of the UK fleet and activity (see Appendix A). In 2009, the largest percentage (30.0%) of total stage flights (and hence movements) were by small/light business jets, such as the Bombardier Learjet 35/36, smaller Cessna Citations, and Hawker Beechcraft Premier 1A.

Other significant air taxi operations, in terms of stage flights, were undertaken in 2009 by:

- Multi-engined turboprops (primarily the Hawker Beechcraft King Air 200) - 22.7% of stage flights

- Multi-engined piston aircraft (e.g. Piper Navajo Chieftain and Piper Seneca)) - 20.9% of stage flights

The heavier and larger business jets represent a relatively small portion of air taxi activity.

This data also helps to inform our assessment on which aircraft types North Weald might be expected to handle.

### 3.2.2 GA Trends in South East England

Tables 3.2 to Table 3.5 overleaf review the trends in business and general aviation movements in the South East of England. As discussed above, available statistics are mostly restricted to CAA reporting airports, but in addition we have added data for Farnborough Airport published on its website. There are other licensed GA aerodromes in the region, such as Blackbushe, Denham, Elstree, Fairoaks and Redhill that do not publish such statistics.

Table 3.2 shows the trends in air taxi movements at airports in SE England. Regional trends follow the national picture, with air taxi movements increasing overall by 66.5% from 13,620 in 2001 to 22,677 in 2009. Both 2008 and 2009 saw a decline in movements from a peak of 28,361 in the year 2007.

Table 3.3 shows the trends in business aviation movements. These increased overall by 225.5% from 17,830 in 2001 to 58,044 in 2009. Both 2008 and 2009 saw a decline in movements from a peak of 75,285 in the year 2007.

Table 3.4 shows the trends in private aircraft movements. These decreased overall by 22.3% from 87,795 in 2001 to 68,223 in 2009.

Table 3.5 shows the trends in aero club movements. These have declined overall by 36.5% from 215,544 movements in 2001 to 136,805 in 2009.

**Table 3.2: Air Taxi Movements in SE England 2001 – 2009**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| **Major Airports** | | | | | | | | | |
| Gatwick | 1,813 | 1,755 | 1,139 | 1,435 | 1,318 | 1,688 | 1,499 | 1,482 | 1,313 |
| Heathrow | 541 | 839 | 1,309 | 1,655 | 1,488 | 1,642 | 1,309 | 973 | 918 |
| London City | 1,156 | 1,248 | 1,790 | 3,762 | 5,483 | 7,685 | 8,301 | 6,192 | 6,770 |
| Luton | 3,849 | 3,005 | 2,782 | 3,335 | 3,608 | 4,367 | 4,688 | 4,274 | 3,075 |
| Stansted | 2,252 | 2,689 | 3,095 | 2,114 | 1,833 | 1,881 | 1,994 | 1,712 | 1,480 |
| **Sub Total** | **9,611** | **9,536** | **10,115** | **12,301** | **13,730** | **17,263** | **17,791** | **14,633** | **13,556** |
| **Other Airports** | | | | | | | | | |
| Biggin Hill | 2,276 | 3,378 | 3301 | 4,260 | 3,858 | 5,654 | 8197 | 8511 | 6,014 |
| Cambridge | 60 | 56 | 60 | 57 | 93 | 123 | 39 | 16 | 77 |
| Farnborough | - | - | - | - | - | - | - | - | - |
| Kent International | 79 | 71 | 92 | 127 | 231 | 452 | 597 | 258 | 228 |
| Lydd | 66 | 86 | 149 | 82 | 30 | 153 | 163 | 172 | 132 |
| Oxford | - | - | - | - | - | - | - | - | 1,340 |
| Shoreham | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Southampton | 216 | 370 | 281 | 238 | 410 | 384 | 340 | 391 | 272 |
| Southend | 1,293 | 1,487 | 890 | 409 | 452 | 930 | 1234 | 1338 | 1,058 |
| **Sub Total** | **4,009** | **5,448** | **4,773** | **5,173** | **5,074** | **7,696** | **10,570** | **10,686** | **9,121** |
| **Total** | **13,620** | **14,984** | **14,888** | **17,474** | **18,804** | **24,959** | **28,361** | **25,319** | **22,677** |

Source: CAA Annual Airport Statistics, Farnborough Airport website

Note: Oxford only became a CAA reporting airport in 2009

## Table 3.3: Business Aviation Movements in SE England 2001 - 2009

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| **Major Airports** | | | | | | | | | |
| Gatwick | 342 | 805 | 747 | 937 | 894 | 614 | 475 | 541 | 361 |
| Heathrow | 1,091 | 1,767 | 1,291 | 1,474 | 1,386 | 1,523 | 1,634 | 1,935 | 2,407 |
| London City | 376 | 936 | 941 | 1,148 | 984 | 555 | 337 | 283 | 248 |
| Luton | 6,835 | 11,923 | 12,908 | 15,543 | 17,175 | 20,898 | 24,346 | 20,856 | 15,284 |
| Stansted | 4,386 | 6,994 | 6,182 | 6,348 | 6,485 | 7,017 | 7,269 | 7,060 | 4,819 |
| **Sub Total** | **13,030** | **22,425** | **22,069** | **25,450** | **26,924** | **30,607** | **34,061** | **30,675** | **23,119** |
| **Other Airports** | | | | | | | | | |
| Biggin Hill | 2,485 | 3,843 | 3,674 | 3,849 | 4,721 | 5,247 | 6,080 | 5,459 | 4,134 |
| Cambridge | 866 | 1,340 | 1,537 | 1,950 | 2,436 | 2,742 | 3,529 | 3,724 | 3,243 |
| Farnborough | - | 15,015 | 16,187 | 17,177 | 18,469 | 21,365 | 26,507 | 25,504 | 22,779 |
| Kent International | 32 | 77 | 214 | 175 | 132 | 68 | 64 | 51 | 46 |
| Lydd | 10 | 30 | 74 | 34 | 45 | 154 | 102 | 61 | 36 |
| Oxford | - | - | - | - | - | - | - | - | 1,229 |
| Shoreham | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Southampton | 1,337 | 2,279 | 2,463 | 2,546 | 2,240 | 2,715 | 3,014 | 2,617 | 2,214 |
| Southend | 26 | 0 | 200 | 1,305 | 1,333 | 1,328 | 1,928 | 1,477 | 1,244 |
| **Sub Total** | **4,800** | **22,584** | **24,349** | **27,036** | **29,376** | **33,619** | **41,224** | **38,893** | **34,925** |
| **Total** | **17,830** | **45,009** | **46,418** | **52,486** | **56,300** | **64,226** | **75,285** | **69,568** | **58,044** |

## Table 3.4: Private Aircraft Movements in SE England 2001 - 2009

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| **Major Airports** | | | | | | | | | |
| Gatwick | 510 | 41 | 87 | 87 | 40 | 31 | 19 | 17 | 56 |
| Heathrow | 910 | 135 | 123 | 95 | 96 | 61 | 89 | 57 | 61 |
| London City | 757 | 3 | 0 | 2 | 0 | 2 | 1 | 8 | 20 |
| Luton | 5,894 | 529 | 469 | 533 | 475 | 504 | 380 | 281 | 247 |
| Stansted | 3,787 | 873 | 719 | 712 | 824 | 874 | 994 | 1,005 | 709 |
| **Sub Total** | **11,858** | **1,581** | **1,398** | **1,429** | **1,435** | **1,472** | **1,483** | **1,368** | **1,093** |
| **Other Airports** | | | | | | | | | |
| Biggin Hill | 16,940 | 12,626 | 12,599 | 10,022 | 8,697 | 8,733 | 9,712 | 8,856 | 9,099 |
| Cambridge | 7,048 | 6,177 | 5,690 | 5,285 | 2,947 | 2,108 | 2,762 | 2,792 | 3,734 |
| Farnborough | - | - | - | - | - | - | - | - | - |
| Kent International | 5,536 | 4,857 | 5,097 | 3,895 | 4,025 | 3,591 | 4,305 | 3,874 | 4,294 |
| Lydd | 15,737 | 11,966 | 14,749 | 15,077 | 12,536 | 11,962 | 14,730 | 14,535 | 14,351 |
| Oxford | - | - | - | - | - | - | - | - | 8,572 |
| Shoreham | 14,124 | 14,226 | 16,724 | 13,528 | 15,916 | 16,039 | 15,541 | 16,167 | 17,033 |
| Southampton | 4,476 | 3,210 | 3,377 | 2,340 | 1,764 | 1,181 | 941 | 709 | 700 |
| Southend | 12,076 | 10,600 | 11,354 | 9,282 | 10,116 | 9,543 | 10,208 | 9,561 | 9,347 |
| **Sub Total** | **75,937** | **63,662** | **69,590** | **59,429** | **56,001** | **53,157** | **58,199** | **56,494** | **67,130** |
| **Total** | **87,795** | **65,243** | **70,988** | **60,858** | **57,436** | **54,629** | **59,682** | **57,862** | **68,223** |

Source: CAA Annual Airport Statistics, Farnborough Airport website

## Table 3.5: Aero Club Movements in SE England 2001 – 2009

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| **Major Airports** | | | | | | | | | |
| Gatwick | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Heathrow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| London City | 0 | 6 | 0 | 0 | 0 | 6 | 9 | 0 | 0 |
| Luton | 866 | 964 | 1,201 | 1,073 | 1,074 | 565 | 273 | 2 | 0 |
| Stansted | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| **Sub Total** | **866** | **970** | **1,201** | **1,073** | **1,074** | **572** | **282** | **2** | **0** |
| **Other Airports** | | | | | | | | | |
| Biggin Hill | 69,658 | 59,618 | 65,624 | 54,377 | 52,150 | 44,662 | 44,513 | 38,740 | 38,501 |
| Cambridge | 22,250 | 37,297 | 39,055 | 38,225 | 34,538 | 18,735 | 29,289 | 31,198 | 28,580 |
| Farnborough | - | - | 727 | 484 | 613 | 393 | 595 | 571 | 585 |
| Kent International | 17,218 | 13,551 | 16,305 | 14,051 | 10,359 | 8,729 | 10,318 | 9,296 | 9,602 |
| Lydd | 9,402 | 7,937 | 7,453 | 4,375 | 5,592 | 5,288 | 5,348 | 3,862 | 3,296 |
| Oxford | - | - | - | - | - | - | - | - | 236 |
| Shoreham | 58,996 | 53,885 | 57,376 | 51,725 | 51,620 | 49,316 | 50,378 | 40,810 | 40,841 |
| Southampton | 6,908 | 6,053 | 4,630 | 3,183 | 2,347 | 1,196 | 2 | 11 | 3 |
| Southend | 30,246 | 26,581 | 26,605 | 23,735 | 23,972 | 21,237 | 19,895 | 18,286 | 15,161 |
| **Sub Total** | **214,678** | **204,922** | **217,775** | **190,155** | **181,191** | **149,556** | **160,338** | **142,774** | **136,805** |
| **Total** | **215,544** | **205,892** | **218,976** | **191,228** | **182,265** | **150,128** | **160,620** | **142,776** | **136,805** |

Source: CAA Annual Airport Statistics, Farnborough Airport website

# 4 Airfield Facility Requirements

## 4.1 Introduction

The previous chapter highlighted the range and diversity of GA operations. It is therefore unsurprising that the various market segments have varied aerodrome facility requirements. These general requirements are reviewed in outline below, as they will serve to determine the likely current and future priorities for the development of North Weald.

## 4.2 Business / corporate aviation

User requirements follow particularly from the type of aircraft used. Business aircraft can be divided into two broad categories in terms of runway requirements:

| Aircraft type | Runway take-off distance requirements |
|---|---|
| Twin-engined propeller aircraft and Light jets | > 900m |
| Medium – Heavy Jets | > 1,600 m |

Take-off distances and wing spans for a range of fixed wing GA/business aircraft are shown in Appendix B. The take-off distances shown are indicative only, at aircraft maximum take-off weight, and in standardised conditions. In reality, factors such as actual aircraft operating weight, air temperature, wind conditions, runway characteristics, and pilot handling skills are likely to alter the actual take-off distance (or landing distance) required in each case.

Paved runways are preferred by the business user, particularly to avoid the problems associated with some grass runways in wet weather. As well as load-bearing problems, wet grass can increase the distance required to take-off and land. North Weald's paved runways should therefore be attractive to potential business users.

Turboprop business aircraft can generally be accommodated at airfields where the runway length is greater than 800m.

Business aviation aircraft often require access to commercial airways and instrument approach and guidance facilities, including the provision of runway lighting, which North Weald does not have.

Private and corporate aircraft do not have to operate from a licensed aerodrome and there is no legal requirement for aerodrome fire cover for them. However, from the point of view of general safety, including insurance considerations, most operators of business aircraft would prefer to operate from a licensed aerodrome.

Compared with other GA aircraft, business aircraft require relatively large areas for parking and hangarage.

A fixed base operator (FBO) providing comprehensive handling, fuelling and aircraft maintenance and repair is desirable if an airfield wishes to attract significant numbers of business aircraft. A small terminal would also be required, which could include a passenger lounge, flight planning/crew briefing and rest rooms and at least basic catering facilities.

The example of TAG's facility at Farnborough probably represents the upper end of the range of quality of facility which is seen in Europe.

*Farnborough Airport Terminal Building*

## 4.3 Private Flying

### 4.3.1 Twin Engined and Heavier Single Engined Aircraft

This section considers the general requirements of owners of twin-engined and heavier single-engined aircraft used for both business and recreation. This includes aircraft that are owned by companies and by private individuals.

Again, the runway requirements would be determined by the type of aircraft which would use the facility. A runway of 1000m would be adequate for most aircraft types in this category.

Parking and tie-down facilities are important to the private user, and the availability of hangarage and fuel is desirable. Above this basic level, facilities for maintenance and flight planning are desirable, but not essential in every case.

### 4.3.2 Light Aircraft

Here we consider the requirements of the owners of light aircraft, which are mainly used for recreational purposes.

A landing strip of around 400 – 500m is adequate for this type of aircraft. The availability of hangarage is an advantage and a source of fuel highly desirable.

# 5 Preliminary Aerodrome Licensing Considerations

## 5.1 Impact of Licensing on Airfield Activities

An important factor in determining the types of aviation activity that can be undertaken at airfields is whether an aerodrome has been granted a licence by the Civil Aviation Authority (CAA). Part 27 of the Air Navigation Order (ANO) sets out the types of aeronautical activity that require a licensed aerodrome.

Essentially, a commercial air transport passenger or public transport passenger flight (i.e. scheduled and chartered airline services, air taxis/executive charter, pleasure flights and so on) can only operate at a licensed aerodrome.

An amendment to the ANO in April 2010 (Amendment 1/2010), makes provision for flying training and testing for the grant of a pilot's licence or the inclusion of an aircraft rating, a night rating or a night qualification in a licence using aeroplanes under 2,730kg or helicopters/gyroplanes under 3,175kg from unlicensed aerodromes. Aircraft commanders and aerodrome operators must, however, be satisfied as to the adequacy of an unlicensed aerodrome for the purpose of such flying training and testing. The CAA recommends that adequate risk assessments are made and documented before training takes place.

Corporate aircraft do not hold an Air Operator Certificate (AOC) and they do not carry fare-paying passengers, so are not considered public transport flights.

Other uses such as aircraft maintenance/repair, aircraft sales and storage are not governed by aerodrome licensing considerations. They may however by covered by other CAA or European regulations on approved maintenance standards, as well as UK planning legislation.

With a view to assessing the development and commercial potential of North Weald, we will be considering its possible licensing, and therefore its ability to meet the standards set down by the CAA. These define the required physical characteristics of a licensed aerodrome.

## 5.2 Outline Obstacle Limitation Surfaces Assessment

Surrounding a licensed runway is a series of imaginary lateral, longitudinal and sloping planes and ground surfaces that should be kept free from obstacles; the Obstacle Limitation Surfaces (OLS). This is particularly important, as the operation of an aerodrome can be affected by either natural or man made obstructions inside or outside its boundary. Such obstacles could, for instance, restrict the take-off or landing distance available or the navigational aids that can be installed.

To assess the potential for North Weald to be licensed we have undertaken a preliminary assessment of the OLS for Runway 02-20.

The dimensions and characteristics of these surfaces are determined by an Aerodrome Reference Code[10] and also whether the runway to be used by aircraft using instrument or visual approach procedures. The characteristics and required dimensions for an instrument runway being more onerous than for a visual runway[11].

A particular consideration is that northern part of the aerodrome site is relatively narrow and constrained by the airfield boundary, and by objects and structures immediately adjacent.

The findings of our initial assessment indicate the following:

- An instrument runway with declared distances of more than 1200m would not appear to be feasible as the Runway Strip, a critical OLS surrounding a runway, would extend beyond the airfield boundary, and be infringed by sections of Merlin Way on the eastern side, and by Weald Hall Care Home, Weald Hall Farm, and by the former fighter blast pens and other structures

[10] The Aerodrome Reference Code is itself determined by the runway distances declared available and by aircraft wingspan/main landing gear span dimensions

[11] By the term visual runway, we mean a runway that is intended for the operation of aircraft using visual approach procedures, rather than instrument approaches. An instrument runway is one intended for the operation of aircraft using non-visual procedures like an Instrument Landing System (ILS), which provides at least directional guidance in azimuth adequate for a straight-in approach

adjacent to the Squadron to the west, as well as numerous trees and hedgerows.

- An instrument runway with declared distances of up to 1199m would appear to be relatively more practical as the runway strip could be accommodated within the airfield boundary. However, there are possible infringements of the other OLS that require further investigation. Potential infringements include hedgerow and trees on the north western boundary, and possibly the Weald Hall Care Home, parts of Weald Hall Farm, and blast pens, and any non aviation uses of the northern parallel taxiway (Runway 20 end).

- A visual runway with declared distances of around 1500m would appear to be possible as the runway strip could also be accommodated within the airfield boundary. Similar considerations to the above apply as to potential obstacles.

Runway strength considerations aside, longer runway declared distances potentially available with a licensed visual runway, would allow North Weald to handle a greater range of aircraft, including up to mid-size business jets such as the Hawker 750.

However, the greater operational reliability afforded by the availability of an ILS instrument approach would attractive to corporate aviation users, which would otherwise have to use or divert to other airfields in conditions of reduced visibility. If North Weald could be licensed with an 1199m instrument runway, it would be capable of handling a range of business turboprop and light jets, and possibly certain mid-size aircraft, such the Pilatus PC-12, Beechcraft King Air B200, Cessna Citation Encore.

A visual runway may be more suited to smaller scale air taxi operations, and aircraft maintenance activity.

## 5.3 Aeronautical Ground Lighting

In terms of attracting a wider spectrum of user types, the installation of runway and approach lighting at North Weald could be commercially advantageous. It would give the airfield the increased capability to handle aircraft, which would otherwise have to use or divert to other airfields when darkness falls or in reduced visibility. This is particularly the case if North Weald was to attract corporate aviation users, which rely heavily on the ability to land at a time of their choosing and to return to the airfield of original departure.

## 5.4 Rescue and Fire Fighting

It is mandatory that a licensed aerodrome provide a minimum Rescue and Fire Fighting Service (RFFS) appropriate to the use of the site. The level of RFFS has to be commensurate with the size of the aircraft using the aerodrome, and should be organised, equipped and trained to ensure rapid and effective deployment in the event of an accident or emergency.

The category of RFFS provision is determined by the overall length and maximum fuselage width of the largest aircraft expected to use the aerodrome regularly. This could range from Category 1 to cover for most piston singles and twins, small turboprops and very light jets, to Category 3 for larger business turboprops, light to mid-size business jets.

## 5.5 Navigational Aids

There is no specific requirement by the CAA linking the provision of navigational aids (navaids) to the licensing of aerodromes. The level of such aids that is desirable will be dependent on the type of operations attracted to the airfield.

A review of navaids at GA airfields around the UK indicates that many have a Non Directional Beacon (NDB) and Distance Measuring Equipment (DME).

In the longer term, the possible increasing use of the airfield by business aviation operators may require the installation of an Instrument Landing System (ILS). ILS tends to be found at airports with regular commercial airline services, or airports that handle larger business jets (e.g. Biggin Hill, Farnborough and Oxford).

Increasingly however, ground based navaids such as NDBs are being supplanted by the use of Global Positioning Systems (GPS) Consequently, the installation of new Non-Directional Beacons (NDB's) as navigational aids at airfields is becoming less common.

## 5.6 Next Steps

The next critical step will be a discussion with the CAA on the requirements for licensing and North Weald's potential to meet them. This will in turn influence our development strategy and investment requirements, and ultimately the business case for further development.

# 6 Preliminary Consultation Responses

From consultations held with aviation tenants to date, it would appear that most were in generally in favour of the potential development of the airfield for further aviation activity with varying degrees of enthusiasm. Discussion focussed on the possible attraction of corporate/business aviation activity, and the development of a dedicated FBO type facility.

Both North Weald Flying Services and Weald Aviation expressed interest in the potential development of a business aviation facility. The latter organisation has a joint venture agreement with land development company Land Securities, and the development of an aviation facility could form part of a larger mixed-use scheme.

Discussions with these two organisations also appear to support the need for licensing North Weald, citing insurance concerns from corporate aviation operators.

However, concerns were expressed by private owners that any future development plans should safeguard the interests of existing private / recreational users. In particular, there is strong feeling against the charging of landing fees for home-based aircraft.

This feeling is exacerbated by a general concern that the Airport Operations Team reportedly does not appear to coordinate visiting aircraft sufficiently, nor charge these non-resident aircraft landing, circuit, or parking fees. This observation needs to be discussed with the Airfield Manager.

Currently, it is understood that the majority of visiting aircraft movements are handled by the Squadron. Visitors may make a donation to the Squadron in the form of what the Squadron refers to as a temporary membership fee[12].

[12] It is understood that, under the runway licences granted to some tenants by EFDC, a maximum number of annual aircraft movements are associated with a particular tenant, and the lease payment to the Council covers these annual movements. Movements by visiting aircraft are assumed by the

More positively, it is felt that the aerodrome is satisfactorily maintained by EFDC.

As the project is still at a relatively early stage, discussions with residents and other local groups have taken the form of a briefing on the scope of our study. Concerns of a relatively general nature regarding possible aircraft types and numbers of movements, operating hours, noise, pollution and traffic congestion have been raised.

On the issue noise, flying training and increasing helicopter activity were not viewed favourably.

More specifically, clarification on the compatibility of the proposed nearby waste transfer site with aviation use was sought.

Overall, despite some concerns, local residents and North Weald Parish Council appeared generally in favour of attracting further aviation activity to safeguard the future retention of the airfield. The heritage of the site and the continuation of historic flying were seen as important.

The possibility of using the 2012 Olympics as an opportunity to 'showcase' the aviation potential of North Weald has also been suggested.

Over the next two weeks, we aim to conclude our initial consultations with local stakeholders, and to seek guidance from the CAA on the practicalities of aerodrome licensing, before completing the market assessment.

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Council to be connected to one of the tenants, and therefore come within these annual movement allocations.

# Appendix A: UK Air Taxi Activity – Stage Flights

## Table A.1: UK Air Taxi Activity – Number of Stage Flights by Aircraft Type

| Aircraft Type | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| **Single Piston Engined** | **1,069** | **844** | **525** | **286** | **808** |
| Cessna 172 Skyhawk | 324 | 193 | 137 | 163 | 120 |
| Cessna 180 Skywagon | 0 | 0 | 0 | 0 | 21 |
| Cessna 182 Skylane | 0 | 0 | 0 | 0 | 11 |
| Cessna 206 Stationair | 654 | 551 | 385 | 110 | 618 |
| Cirrus SR22 | 0 | 0 | 0 | 13 | 0 |
| Diamond DA 42 | 54 | 53 | 0 | 0 | 38 |
| Piper PA28 Cherokee Series/PA32 | 37 | 47 | 3 | 0 | 0 |
| **Single Turboprop Engined** | **0** | **0** | **423** | **1,415** | **276** |
| Cessna 208 Caravan I | 0 | 0 | 423 | 1,415 | 276 |
| **Multi-engined Piston** | **11,935** | **11,388** | **9,549** | **10,653** | **8,283** |
| Beechcraft Baron Model 55/58/58P | 141 | 132 | 214 | 53 | 20 |
| Cessna 310 | 852 | 573 | 0 | 0 | 0 |
| Cessna 340 | 39 | 45 | 27 | 0 | 0 |
| Cessna T303 Crusader | 0 | 0 | 0 | 0 | 113 |
| Cessna 401/402/411/421 | 807 | 947 | 55 | 293 | 29 |
| Cessna 404 Titan | 396 | 440 | 221 | 137 | 118 |
| Partenavia P68B/C | 385 | 390 | 265 | 518 | 453 |
| Piper PA23 Aztec/Apache | 450 | 207 | 294 | 511 | 117 |
| Piper PA31/P Navajo Chieftain | 4,745 | 6,015 | 6,211 | 7,304 | 6,475 |
| Piper PA34 Seneca II | 4,120 | 2,639 | 2,262 | 1,837 | 958 |
| **Multi-engined Turboprops** | **8,311** | **9,171** | **11,510** | **9,616** | **8,968** |
| Beechcraft King Air B90/C90/A | 0 | 0 | 19 | 0 | 0 |
| Beechcraft King Air E90 | 16 | 33 | 52 | 0 | 0 |
| Beech King Air 90 | 584 | 449 | 300 | 0 | 0 |
| Beechcraft King Air 200 | 5,501 | 6,713 | 8,960 | 8,036 | 8,149 |
| Beechcraft King Air 300 /350 | 0 | 26 | 108 | 173 | 122 |
| Fairchild SA-227 Metro III | 427 | 103 | 0 | 0 | 0 |
| Piper PA31T Cheyenne I/II | 35 | 9 | 52 | 168 | 250 |
| Piper PA42 Cheyenne III/IV | 0 | 0 | 0 | 132 | 369 |
| Reims-Cessna F406/Caravan II | 1,629 | 1,747 | 2,019 | 1,107 | 78 |
| Rockwell Turbo Commander 680T-690 | 119 | 91 | 0 | 0 | 0 |
| **Business Jets** | **11,756** | **16,629** | **23,815** | **22,757** | **21,224** |
| **Small/Light Jets** | **6,092** | **9,609** | **12,688** | **12,143** | **11,864** |
| Bombardier Learjet 35A/36A | 0 | 0 | 0 | 0 | 49 |
| Cessna 500 Citation I | 203 | 22 | 0 | 29 | 134 |
| Cessna 510 Mustang | 0 | 0 | 0 | 160 | 1,289 |
| Cessna 525 / 525 A Citationjet | 118 | 1,256 | 3,651 | 5,411 | 4,472 |
| Cessna 550 Citation II | 3,058 | 3,601 | 4,496 | 3,501 | 3,161 |
| Cessna 560 Citation V | 1,977 | 2,686 | 2,851 | 2,131 | 2,075 |
| Hawker Beechcraft Premier 1 | 736 | 2,044 | 1,690 | 911 | 684 |

## Table A.1: UK Air Taxi Activity – Number of Stage Flights by Aircraft Type (cont.)

| Aircraft Type | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| **Midsize Jets** | **4,841** | **5,725** | **7,923** | **6,771** | **5,366** |
| BAE 125 ( HS 125 ) | 1,574 | 1,456 | 2,270 | 1,510 | 432 |
| BAE 125-800 Series | 0 | 492 | 346 | 0 | 0 |
| BAE125-1000 | 0 | 0 | 0 | 0 | 59 |
| Bombardier Learjet 40/45 | 3,267 | 3,773 | 5,049 | 4,254 | 3,226 |
| Bombardier Learjet 60 | 0 | 4 | 185 | 307 | 273 |
| Cessna Citation 560 XL | 0 | 0 | 73 | 533 | 491 |
| Hawker 850 XP/ 900 XP | 0 | 0 | 0 | 167 | 885 |
| **Super Midsize Jets** | **45** | **49** | **228** | **614** | **804** |
| Cessna 680 Sovereign | 0 | 0 | 0 | 70 | 260 |
| Cessna 750 Citation X | 45 | 49 | 43 | 219 | 139 |
| Bombardier Challenger 300 | 0 | 0 | 185 | 325 | 405 |
| **Large Jets** | **464** | **961** | **2,682** | **2,864** | **2,786** |
| Bombardier Challenger 600 series | 177 | 293 | 1,810 | 1,533 | 709 |
| Bombardier Challenger 850 | 0 | 0 | 0 | 0 | 90 |
| Bombardier Global Express | 0 | 0 | 0 | 0 | 70 |
| Dassault 7X | 0 | 0 | 0 | 0 | 61 |
| Dassault Falcon 2000 | 0 | 0 | 5 | 62 | 89 |
| Dassault Falcon 900 | 8 | 0 | 0 | 3 | 104 |
| Dassault Falcon 900EX | 277 | 172 | 292 | 531 | 758 |
| Embraer Legacy 600 | 2 | 496 | 575 | 735 | 905 |
| **Heavy/ Bizliner** | **314** | **285** | **294** | **365** | **404** |
| Airbus A319 Corporate Jet | 124 | 97 | 127 | 120 | 85 |
| Boeing BBJ | 41 | 0 | 0 | 0 | 0 |
| Gulfstream IV | 148 | 188 | 167 | 245 | 224 |
| Gulfstream V | 1 | 0 | 0 | 0 | 0 |
| Gulfstream 500-550 | 0 | 0 | 0 | 0 | 95 |
| **Total** | **33,071** | **38,032** | **45,822** | **44,727** | **39,559** |

# Appendix B: Indicative Aircraft Performance for Selected GA Aircraft Types

## Table B.1: Indicative Aircraft Performance for Selected GA Aircraft Types

| Aircraft Model | Maximum Take-off Weight (kg) | Take-off Distance (m) | Landing Distance (m) | Max cruise speed (km/hr) | Indicative Max Range (km) | Wing Span (m) |
|---|---|---|---|---|---|---|
| **Twin Pistons** | | | | | | |
| Piper Seneca V | 2,155 | 520 | 664 | 365 | 1,533 | 11.90 |
| Beechcraft Baron G58 | 2,495 | 701 | 396 | 374 | 2,561 | 11.53 |
| **Single Turboprops** | | | | | | |
| Piper Meridian | 2,310 | 743 | 643 | 481 | 1,885 | 13.11 |
| Cessna Caravan | 3,629 | 626 | 504 | 344 | 1,726 | 15.90 |
| Pilatus PC-12 | 4,760 | 808 | 558 | 500 | 2,718 | 16.27 |
| EADS Socata TBM850 | 3,354 | 866 | 741 | 592 | 2,815 | 12.68 |
| **Twin Turboprops** | | | | | | |
| BN2T Turbine Islander | 3,175 | 381 | 338 | 315 | 1,349 | 14.9 |
| Beechcraft King Air C90GT | 4,581 | 729 | 717 | 500 | 1,900 | 15.32 |
| Beechcraft King Air B200 | 5,670 | 792 | 867 | 535 | 3,045 | 16.61 |
| Beechcraft King Air 350 | 6,804 | 1,006 | 821 | 578 | 2,758 | 17.65 |
| **Business Jets** | | | | | | |
| Cessna Citation Mustang | 3,921 | 948 | 729 | 630 | 2,130 | 13.16 |
| Cessna Citation CJ1+ | 4,853 | 994 | 789 | 720 | 2,408 | 14.30 |
| Cessna Citation CJ2+ | 5,669 | 1,024 | 908 | 774 | 2,989 | 15.19 |
| Cessna Citation CJ3 | 6,291 | 969 | 844 | 770 | 3,472 | 16.26 |
| Beechcraft Premier 1A | 5,670 | 1,156 | 968 | 841 | 2,519 | 13.56 |
| Hawker 400XP | 7,394 | 1,191 | 1,071 | 778 | 2,898 | 13.26 |
| Cessna Citation Encore+ | 7,634 | 1,073 | 844 | 793 | 3,297 | 16.69 |
| Cessna Citation XLS+ | 9,163 | 1,085 | 969 | 815 | 3,441 | 17.17 |
| Bombardier Learjet 60XR | 10,659 | 1,661 | 1,042 | 863 | 4,380 | 13.35 |
| Hawker 750 | 12,247 | 1,431 | 808 | 861 | 3,663 | 15.65 |
| Cessna Citation Sovereign | 13,744 | 1,109 | 808 | 848 | 5,273 | 19.24 |
| Bombardier Learjet 85 | 15,195 | 1,463 | 823 | 871 | 5,556 | 18.75 |
| Cessna Citation X | 16,375 | 1,567 | 1,036 | M0.92 | 5,686 | 19.48 |
| Challenger 300 | 17,622 | 1,466 | 792 | 870 | 5,741 | 19.46 |
| Bombardier Challanger 605 | 21,863 | 1,780 | 846 | 870 | 6,912 | 19.61 |
| Bombardier Global 5000 | 41,957 | 1,689 | 814 | 950 | 9,630 | 28.60 |

Airport Performance: at Maximum Take Off or Landing Weights, Sea Level, ISA

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