

**ANNUAL REPORT OF THE SECTION 106 PLANNING AGREEMENT
BETWEEN BIRMINGHAM AIRPORT LIMITED AND
SOLIHULL METROPOLITAN BOROUGH COUNCIL**

This report has been written to give an update of the operations at Birmingham Airport Limited (BAL) in relation to the Section 106 Planning Agreement between Solihull Metropolitan Borough Council (SMBC) and the Airport Company, Birmingham Airport Limited (BAL).

The noise and track keeping system (ANOMS) used at BAL provides the latest technology for tracking aircraft and monitoring noise levels. A remote terminal has been installed for the use of the Airport Monitoring Officer based at Solihull Metropolitan Borough Council.

This report will also give an update on airport developments that have taken place at the Airport during 2016

On-going monitoring has shown that the Airport Company continues to comply with its obligations in the Agreement.

Compiled by Beverley Hill, Airport Monitoring Officer, Solihull Metropolitan Borough Council

ACKNOWLEDGEMENTS

I would like to acknowledge the assistance provided by members of staff at BAL in compiling this report

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Glossary of Terms

Numbers in square brackets [] refer to references at the back of the report

Airport Company – Birmingham Airport Limited (BAL), operators of the aerodrome licence and legally bound by the Section 106 Agreement

ADM- Airport Duty Manager

AMO- Airport Monitoring Officer

airside - area of airport accessible only after proceeding through security checks, customs and passport control

annual limit - the yearly total of **ATMs** allowed during the night time period (2330 to 0600) (**exempt movements** are excluded)

ANOMS (Airport Noise & Operations Monitoring System) - aircraft noise and tracking monitoring system used by **Birmingham Airport**

apron - areas of airfield used for operations and for the temporary holding of stationary aircraft

ATF (Airport Transport Forum) - BAL led forum to aid the development of a sustainable transport strategy. Set up in accordance with the DEFRA white paper "Developing an integrated transport policy" [1]

ATM (Air Transport Movement) - a landing or take-off of an aircraft engaged in the transport of passengers, cargo or mail on commercial terms

AUN (Automatic Urban Network) - government approved air quality monitoring sites which form part of the National Air Quality Monitoring Network. Specific pollutants are monitored and the results are available on the government's web site [2]

ASAS-*Airport Surface Access Strategy*

AQMS -Air Quality Monitoring Station

BCC - Birmingham City Council

BAATL-Birmingham Airport Air Traffic Limited

BAL - Birmingham Airport Limited

BASAG-Birmingham Airport Surface Access Group

CAA- Civil Aviation Authority

CDA - Continuous Descent Approach

CSR- Corporate Social Responsibility

dB (decibel) - measure of sound that uses a logarithmic scale from 0 (threshold of hearing) to 140 (threshold of pain)

dB(A) (A-weighted decibel) - refinement of the decibel rating that matches more closely the way the human ear responds to different noise levels

DEFRA - Department for Environment and Rural Affairs

DfT - Department for Transport

EA - Environment Agency

EPAQS - Expert Panel on Air Quality Standards which reports to *Defra* and advises on health based targets for air pollutants

EPNdB (Effective Perceived Noise Decibel) - Allows not only for human sensitivity to different sound frequencies, but also takes account of the “perceived noisiness” of whistles, whines, etc. and the duration of a complete aircraft flyover.

exempt movements - *ATMs* may be exempt from night flying restrictions due to the following circumstances:

- aircraft diversions that have been brought about by changes in weather conditions at the original destination airport or an in-flight emergency
- aircraft on medical evacuation or mercy flights where there is danger to life or health, human or animal
- any take-off or landing in an emergency consistent with preventing danger to life or health
- delays to aircraft resulting from widespread and prolonged disruption to air traffic
- delays to aircraft that are likely to lead to serious congestion at the Airport or suffering to passengers or animals

FEGP-Fixed Electrical Ground Power

full aircraft engine ground running - engine running on the ground at 80 - 100% of engine power.

HS2 *High Speed Rail*

IATA - International Air Transport Association

LAeq - measure which averages out noise levels that fluctuate over a given time period, it is the average sound intensity expressed in **decibels**

LAeq(16 hour) - average sound intensity over a specified time period, e.g. daytime

landside -area of airport accessible to all visitors i.e. accessible before proceeding through security checks, customs and passport control

modal share -proportion of journeys to the airport by a particular type of transport (car, bus, train etc.) and by category of user (passenger, employee etc.)

morning shoulder period - 0600 to 0700 hours (0600 - 0800 on Sundays)

Multi-modal interchange - purpose-built area designed to allow easy exchange for passengers between different modes of transport e.g. bus, train, car

NADP Noise abatement departure procedure

NAQS (National Air Quality Strategy) - Government initiative aimed at controlling air pollution.

NEC - National Exhibition Centre, Birmingham

night period - for the purposes of the night flying policy, 2330 to 0600

NFP-Night Flying Policy

NMT -noise monitoring terminal. BAL has 7 fixed NMTs located in the local community and on the airfield.

noise contour - line on map connecting points where the same level of noise would be expected. The 2002 63dBA_{eq} contour has been used to decide which properties are eligible for inclusion in the **Sound Insulation Scheme**.

NPR (Noise Preferential Route) - NPRs cover the first 3000 feet altitude of the **Standard Instrument Departure (SID)** routes (note: this applies only to Departing flights)

NSSCN- North Solihull Strategic Cycle Network

passenger transport modal share - the proportion of journeys to the Airport by public transport (bus, coach, rail)

quota - the yearly limit on the total of **quota counts** for all **ATMs** at the Airport in the **night period**

quota count - the amount of the **quota** assigned to one take-off or landing by an aircraft, as detailed in the noise classification for that aircraft type (see table 8)

RNAV- a satellite based navigation system

SAG- Birmingham Airport Surface Access Group

S106 - A legally enforceable contract between SMBC and BAL [4]. The term Section 106 refers to a section of the Town and Country Planning Act 1990 [5]

SID (Standard Instrument Departure) - standard instructions that aircraft pilots are required to observe on take-off over a particular en-route navigational beacon, produced by the CAA and published in UK AIP

SIS – Sound Insulation Scheme

SMBC - Solihull Metropolitan Borough Council

SSSI - Site of Special Scientific Interest

start of roll - position of an aircraft just before its take-off run begins

TfWM- Transport for West Midlands.(was Centro)

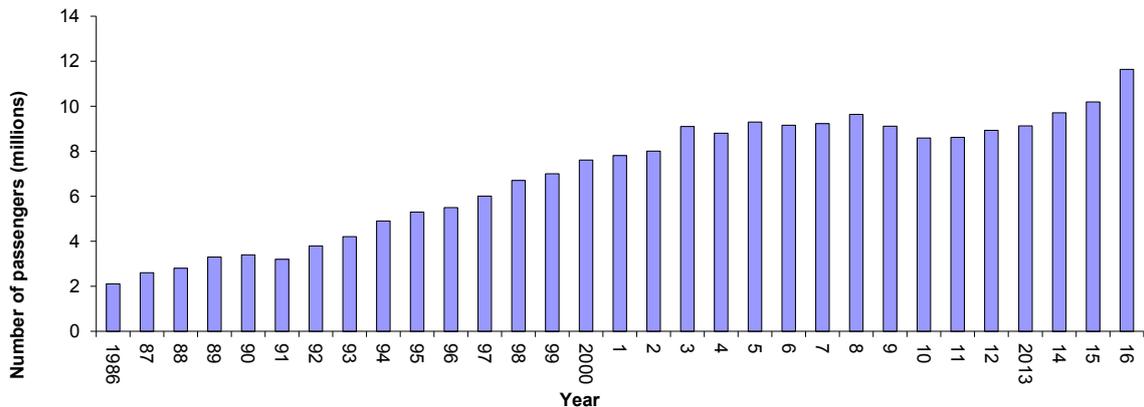
INTRODUCTION

This document, the 18th Annual Report of the Section 106 Planning Agreement, is laid out under the schedule headings as found in the Section 106 Agreement.

As far as practicable, the reporting period for this document has been aligned to the calendar year, with the report covering data for 2016. This enables comparison of environmental performance year on year. Figure 1 shows the growth in passenger numbers at the airport since 1986.

2016 had over 11.63 million passengers in 2016 which is the busiest year in the history of the Airport so far and shows an increase of 14.5% compared to 2015.

Figure 1. Passenger numbers at Birmingham Airport 1986-2016



AIRPORT MONITORING

The role of the Airport Monitoring Officer (AMO) is to audit all aspects of the Section 106 Agreement. With the new Section 106 Agreement certain aspects will be more closely monitored by other Departments within Solihull MBC and feedback given to the Airport Monitoring Officer. Aircraft tracking is carried out on the ANOMS unit based at Solihull Council and checks are carried out on the complaints system and engine ground runs. The AMO also attends consultation meetings and liaises with Birmingham Airport regarding the Community Trust Fund and carries out other work as and when required.

The AMO also acts as a point of contact for airport complaints, which are investigated in the context of the Section 106 Agreement. If the subject of the

complaint is found to be within the restrictions applied to airport operations by the S106 Agreement, no further action is taken, and the complainant is informed of the situation. However if the subject of the complaint is found to breach any of the Section 106 Agreement Schedules, the matter is taken up with the Airport Company.

In the first instance any environmental complaint relating to the Airport Company should be directed to the Sustainability Team at the Airport who can be contacted in the following ways:

- By calling the Environmental Helpline on 0121 767 7433.
- By visiting the noise section of Birmingham Airport website www.birminghamairport.co.uk or by using this direct link, www.birminghamairport.co.uk/community-complaint
- By writing to Sustainability Team, Diamond House, Birmingham Airport, B26 3QJ

In the event of continued dissatisfaction, the Airport Monitoring Officer should be contacted. For more information about the work of the AMO, the Section 106 Planning Agreement, general enquiries, or further help regarding a complaint, please contact Beverley Hill on 0121 704 6352 (Direct Line) or email beverleyhill@solihull.gov.uk

1. DECISION NOTICE

Schedule one of the Section 106 Agreement details the planned airport development and the conditions attached to the permission when it was granted by Solihull MBC.

The decision notice sets out the proposal for the runway extension and associated infrastructure and gives the conditions relating to the granting of the decision.

It is divided into 16 Schedules which set out the Obligations agreed between Solihull MBC and Birmingham Airport and which this report is based on.

2. LAND USE AND PLANNING

Improvements are to be made to car parks which will improve capacity and help the flow of traffic across the airport.

The Drop and Go facility will have additional entrance lanes and a new set down area . A new 30 minute free drop and go facility will become operational from April 2017 adjacent to car park 5 with a covered walkway that will also serve customers using the hire cars.

A new surface car park at the Elmdon Site will be operational by April 2017 and will provide 2000 spaces.

A project to upgrade the North baggage handling facility has been approved and will be completed in 2017. The upgraded facility will enable the Airport to increase baggage capability to 4000 bags per hour and improve baggage screening and check in. It will also double the number of self-service bag drop kiosks.

A temporary bussing shelter under the International Pier was completed in 2016 with a more permanent structure will be constructed in time for summer 2017.

The Air Traffic Control surface movement radar is due to be upgraded to give extra security and operational capacity.

BAL is preparing responses to the Local Plan for Solihull and North Warwickshire and on Highway England's 'road to growth' delivery plan.

Development of the airport master plan is continuing. A review of the existing master plan was delayed due to the outcome of the Davis Report and a new master plan will be completed in 2017. This will link up with other major plans in the area such as those Solihull MBC, HS2, Land Rover, Resorts World and the NEC.

DoT is consulting on rail services running in the InterCity West Coach franchise to determine what will be included in the franchise when the current one ends in April 2018. Birmingham Airport would like to see enhanced rail access to the Airport for benefits to the regional and national economy.

3. SURFACE TRANSPORT

The Airport Company published an Airport Surface Access Strategy in 2007 which was reviewed and updated in 2015. The Surface Access Strategy 2015-2020 is available at Birmingham Airport website. The strategy, together with the 'Airport Master Plan 'Towards 2030'', sets out a framework for the development of the surface access for the Airport and looks at all forms of transport used by both visitors to Birmingham Airport and staff with an emphasis on sustainable transport.

The Airport Master Plan is now 8 years old and work has started on a new Master Plan which will be open for consultation in 2017 . This will link up with other plans in the area such as Solihull MBC, HS2, Land Rover, Resorts World and the NEC.

Birmingham Airport also revised its Airport's Travel Plan in 2015. The plan includes a range of measures to influence passengers, employees and visitors accessing the Airport site. It focuses on all modes of travel and its main objective is to ensure that the Airport is accessible for all uses. Birmingham Airport will work to meet the modal share targets set out within the Section 106 agreement. Further details regarding the travel plan are outlined below.

Condition 1 of Schedule 3 states:

"The Airport Company shall use **all reasonable endeavours** to achieve a Public Transport Modal Share for passengers and employees respectively of 25% by 31st December 2012, of 31% by 31st December 2022 or 20.9 million passengers per annum whichever event occurs later and of 37% by 31st December 2030 or 27.2 million passengers per annum whichever event occurs later" This remains unchanged from the previous Section 106 Agreement and these figures are reported to Solihull MBC.

Modal Share

Condition 2 states that the Airport Company shall continue to monitor the number of trips for passengers and employees and the number of vehicle trips per passenger and supply details to Solihull MBC.

All passenger modal share figures are taken from the Civil Aviation Authority survey which covers a period of 12 months.

The Section 106 sets separate Public Transport Modal Share targets for passengers and employees. The Public Transport Mode Share now includes all modes other than private car and taxi.

The Public Transport Mode Share for passengers now includes those people arriving at the Airport on buses from off-site car parks and those passengers arriving on courtesy buses from hotels. Birmingham Airport has the highest public transport share of all regional airports in England.

Table 1 Passenger Mode Shares and Targets

Mode	2013 %	2014 %
Private	77.2	76.5
Public	22.2	22.7
Other	0.7	0.9
Terminating passengers (000's)	8,656	8,976

Table 2 Employee Mode Shares and 2012 Targets

Mode	2013 %	2016 Target %
Car	84.3	79
Train	8.1	10
Cycle	2.7	3
Car Share	2.2	4
Bus/Coach	1.6	3
Other	1.1	1

Surveys

Information on modal shares is obtained through a series of surveys carried out at the Airport over the year. This is done by the Civil Aviation Authority and the reports can be viewed on their website.

For employees, data is collected through the Annual Employment Survey and via individual organisations who are engaged with the Airport Travel Plan.

There is regular monitoring of road traffic on Airport Way and the number of vehicles entering the public and staff car parks.

Surface Access Group

Schedule 3 conditions of the Section 106 require an Employers Transport Forum and a Travel Plan Monitoring Group to be set up and to this end a new group has been formed, the Birmingham Airport Surface Access Group.(SAG)

This group formed in 2014 and is an amalgamation of four groups- Airport Transport Forum, Travel Plan Monitoring Group, Employers Transport Forum and Road Access Group.

The group is made up of representatives from passengers, visitors and employees and membership is based upon the conditions in the Section 106 Agreement and will be chaired by a representative from Birmingham Airport. The activities of the new group will be reported to the Airport Consultative Committee and Solihull MBC

The group has set out its aims and objectives and will be reviewed annually to ensure it remains relevant and effective.

The main objectives of the group are as follows:

- To implement the Airport's Surface Access Strategy and Travel Plan
- To propose and evaluate initiatives to ensure that passengers, visitors and staff can gain access to the Airport site safely, efficiently and sustainably
- To improve and encourage increased use of sustainable travel options thereby reducing dependence on private vehicles, especially single occupancy journeys
- To encourage on-site staff within their own organisations to use sustainable modes of transport and to evaluate and quantify their results
- Help achieve compliance with Section 106 requirements, including modal split targets.

- Propose projects requiring funding from car park levy.

Airport Travel Plan

The Airport travel plan aims to reduce the volume of car traffic generated by the Airport and meet the targets set out in the Airport Surface Access Strategy. The plan also aims to promote the use of public transport and sustainable transport.

There are over 140 organisations operating on site and work is on-going to engage with these companies to develop their own travel plans

Car Parking

Condition 20 of Schedule 3 states that the Airport Company shall provide future passenger and visitor car parking at a rate less than the proportional increase in passenger throughput so as to achieve a reduction in the ratio of car parking provision to total annual throughput. Car parking provision in Long Stay Car Park 1 will change over the coming year with the on-going alterations.

Condition 21 states that the Airport Company ‘shall provide future staff car parking at a rate less than the proportional increase in employment so as to achieve a reduction in the ratio of staff car parking provision to number of staff employed’. As a result of the bussing operation being bought in house the number of staff employed by Birmingham Airport Limited increased over the year.

Users of the Airport are encouraged to use public transport when accessing the Airport site. Off-site parking is specifically excluded from the Section 106 Planning Agreement. Table 3 shows how passenger parking provision has changed relative to passenger numbers over the period.

Table 3. Parking provision to passenger numbers 1995-2016

Year	Parking Spaces	Passenger Numbers (m)
1995	7010	5.33
1998	8195	6.70

2000	8195	7.60
2001	10603	7.80
2002	10626	8.00
2003	11060	9.10
2004	11855	8.80
2005	11855	9.40
2006	11480	9.15
2007	11586	9.23
2008	11124	9.63
2009	12816	9.11
2012	12697	8.9
2013	12062	9.1
2014	13381	9.7
2015	13381	10.19
2016	13255	11.63

The Schedule also contains conditions relating to establishing a car park levy. The levy is based on the number of vehicles using the car parks over a 12 month period. The Airport Company will pay an amount of money based on the number of cars using the car parks and also on staff car parking.

The Surface Access Group agreed that the funding from the Car Park Levy will be spent on all forms of sustainable transport as described by the National Policy Framework. This will encourage walking, cycling, car share and the use of electric vehicles along with public transport and will also be available for sustainable transport initiatives, infrastructure projects and other activities which contribute to the increase in the Public Transport Modal Share targets.

The money raised in 2016 by the levy was £183,095 and this was reported to Solihull MBC.

The funding has gone towards projects such as car share, web design, installation of new seating in bus shelters, provision of red route parking, production of staff travel plan, and other transport related projects along with professional advice in respect of HS2 and West Midlands Franchise consultation.

Other works

Work to replace the existing three lane road-over-rail bridge on the A45 (Coventry Road) near the M42 Junction 6 was completed in 2016. The new bridge doubles the width of the original bridge to accommodate four lanes of

traffic. It now provides a dedicated lane from the M42 to Birmingham Airport as well as a separate cycle lane and footway.

The £12m project was funded by the Department for Transport, Transport for West Midlands and Birmingham Airport.

The project is one of the first steps in improving a nationally important strategic location, known as UK Central (UKC). This area contributes over £2.5bn GDP to the economy and includes the NEC, Jaguar Land Rover and Birmingham Airport.

High Speed Rail

The HS2 Hybrid Bill was deposited in Parliament in November 2013, which sets out the Government's proposals to deliver a high speed rail link from London to Birmingham (known as Phase 1 of HS2). The proposals include new stations in Birmingham City Centre and on land to the east of the M42, NEC and Birmingham Airport. Passengers will connect to the airport using a rapid transit people mover but the provision of this will not be the responsibility of Birmingham Airport.

The HS2 Bill gained Royal Assent in February 2017 and construction will start in 2017. The line will help to increase capacity on the rail network, generate jobs and economic growth.

Phase 2 of the railway (Birmingham to Leeds and Manchester) will follow in 2033, with deposit in Parliament of its own Hybrid Bill expected in 2017. Further information on HS2 is available at <https://www.gov.uk/government/organisations/high-speed-two-limited>.

Sustainable Transport Information

The Airport Company are currently reviewing options to enhance public transport connectivity from areas such as Stratford upon Avon and the East Midlands region, as well as continuing to liaise with railway operators in respect of providing more early morning train services. Investigations are currently underway to improve pedestrian access to the Airport from BIA and surrounding car parks. A covered walkway leading to the Airport will be provided during Summer 2016.

Detailed information for passengers and staff on the availability of public transport options is available within accessible/visible points within the Airport. Talks are currently underway into the provision of an Airport travel centre/point.

Following the recommendations of the Airport Travel Plan (2016) the Airport Company have developed an internet based lift share service for all members of staff. The Airport Company have also entered into a joint lift share venture with the NEC, Resorts World and Birmingham Business Park to encourage sustainable travel options and reduce the number of single occupancy journeys to the area.

4. NOISE CONTROL

Noise Action Plan

The Noise Action Plan covers noise from arriving and departing aircraft and also noise from ground operations such as engine ground running.

Birmingham Airport has a number of mitigation measures in place to ensure that aircraft both on the ground and in the air operate in the quietest manner possible. Some of the Obligations under Schedule 4 of the Section 106 Planning Agreement are as follows:

- A Sound Insulation Scheme that is to be paid for and organised by the Airport Company for the benefit of residents living close to the airport. Birmingham Airport will make a budget of £200,000 available annually to the Scheme for the purpose of insulating eligible properties.
- The Airport Company shall maintain the use of the noise and track keeping equipment and provide the agreed data to Solihull MBC.
- To record noise and track keeping complaints and report these to Solihull MBC.
- To set a daytime noise limit of 90 dB(A) for departures
- To start a feasibility study into the provision of an engine ground running facility and submit the report to Solihull MBC

Each of these obligations is explained in more detail below.

Sound Insulation Scheme

Birmingham Airport has operated a Sound Insulation Scheme since 1978. The scheme provides sound-proof glazing to domestic properties in the areas most affected by aircraft noise. The scheme is open to over 7,600 properties in areas around the airport and over 90% of these properties have already benefited from the scheme with the installation of double glazing to reduce the impact of aircraft noise in their homes.

To be eligible for the scheme the property needs to be within the 2002 63 dBA noise contour. These contours are produced by the Civil Aviation Authority (CAA) using aircraft track and traffic movement data for Birmingham Airport and the scheme itself is administered by the Airport's Sustainability Team. A

map of the contours can be found in the appendices of this document and full details of the Scheme are available on the Birmingham Airport website.

The second phase of the Sound Insulation Scheme provided repeat grants to properties closest to the airport. These grants of up to £3000 are used as a one off opportunity for householders to improve the noise climate in their homes by installing High Specification Double Glazing. This special glazing helps to reduce the noise levels within the property and has a 'C' energy efficiency rating which helps to contain and conserve heat within the property

Over the past 30 years the Airport has invested over £12 million to insulate more than 7,000 properties with high specification double glazing, secondary glazing, ventilator units and loft insulation.

There were 16 properties which benefitted from the work in 2016 with a further 20 due to be completed by early 2017.

Noise and Track Keeping System

Birmingham Airport uses a sophisticated noise monitoring system called ANOMS–Airport Noise and Operating System. This integrates secondary radar data with noise data captured at 6 permanent noise monitors in the local community. There are 3 in the North of the Borough (Bucklands End, Shard End and Stechford) and three in the South of the Borough (Hampton in Arden, Catherine-de-Barnes and Eastcote) and one noise monitor on the airfield itself.

All complaints to Birmingham Airport are responded to within 5 working. Complaints are reported to Solihull MBC .

ANOMS allows its users to view all information relating to complaints including flights, noise and the location of complaints. Actual flight tracks can be viewed in 2 D and 3 D tracking and the height of the aircraft can be determined and the tracking of aircraft can then be printed out if required.

The Airport Monitoring Officer based at Solihull Council also has ANOMS on a dedicated terminal.

Engine Ground Running

Full Power Engine Ground Running

Engine ground running is an essential safety aspect of aircraft maintenance. Birmingham Airport is aware that it has a noise impact on local communities and as such engine ground noise generates specific complaints.

Full power engine ground runs are only permitted after an application form has been sent to and approved by the Airfield Duty Manager (ADM) who then notifies the Airport's Sustainability Team. The number of full power engine ground runs that are approved are reported to SMBC and other interested parties in the Sustainability report. These are also audited by the Airport Monitoring Officer.

Full power engine ground runs are currently only permitted at specific locations and are not allowed during the night time period (23:00 to 06:00).

Feasibility study into Engine Ground Running

In 2013 as part of the new Section 106 Agreement Birmingham Airport looked at undertaking a feasibility study into the siting of an Engine Ground Running Facility.

The study assessed the existing regime along with future activities and determined noise and air emission assessments of any potential locations.

The initial report concluded that Taxiway Echo is not sustainable in the longer term. It restricts aircraft to run into the wind, puts pressure on the taxiway system and raises issues with jet blast and ingestion of debris into the engine. It also reduces the ability for the airport to access and exit the runway and is not appropriate for wide bodied aircraft in the short term.

Six possible locations were outlined but two of these were ruled out at an early stage. The remaining four locations were trialled.- these were Echo, Foxtrot, Juliet and Tango. Noise monitoring and data from the trial along with any complaints received were assessed.

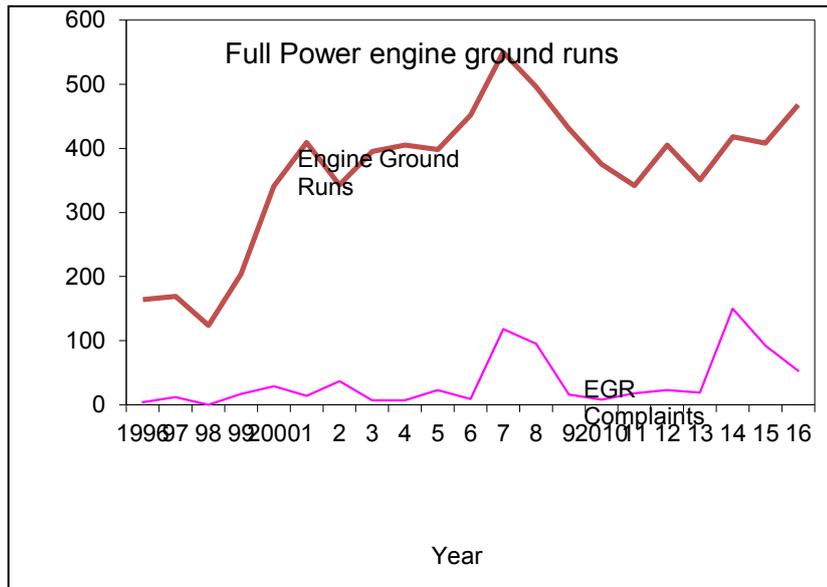
The data was examined in depth and a proposal put forward to Solihull MBC planning Committee in October 2016 which was approved.

Taxiway Echo is to remain a primary full power engine ground running location and Taxiway Juliet will become a primary location.. There will be no

full power engine ground running in any location during the night time period and restrictions apply to the morning shoulder period.

In the morning shoulder period (0600-0700), Birmingham Airport and Solihull MBC have agreed a noise-limiting scheme. They will be subject to a ground

Figure 2. Total number of Full power Engine Ground Runs 1996-2016



running noise limit, an average early morning shoulder exposure the equivalent of 79 Db Laeq (average 1 hour Laeq over a 3 month period) which should not be exceeded for Taxiway Echo, Juliet and Foxtrot.

Taxiway Foxtrot will be a secondary location with the same restrictions in the morning shoulder period.

Taxiway Tango will only be used for Full Power EGR between the hours of 0700 to 2000 and only when absolutely necessary and with approval from the airfield duty manager. Its usage will be reported to the Airport Consultative Committee.

Idle power aircraft engine ground running

In November 2009 SMBC Planning Committee approved Idle Engine Ground Running on all Aircraft Stands (with exception of the 80's stands) during the night period

Engine ground running in the morning shoulder period

All full power and idle engine ground runs occurring in the morning shoulder period are monitored by the Airport's Sustainability Team.

Since October 26 1999, the Airport Company has been operating under an obligation under the previous Section 106 Agreement to consider restrictions on engine ground running between 0600 and 0700. At that time it was felt that the airport's restrictions on ground running were sufficient. Following a noise monitoring exercise a year later, Solihull MBC's noise consultant recommended the introduction of a quarterly noise level limit, set at 79dB LA_{eq} calculated for a 1 hour period. Since this level was introduced it has not been exceeded.

There was a review of the engine ground running in the Morning Shoulder Period in 2009 and as specific complaints about this are rare it was decided that the current scheme should remain in place. This has been formally agreed by SMBC's Planning Committee.

As outlined above there have been changes to the location of full power engine ground running and there are restrictions during the morning shoulder period.

Daytime Noise limit

In 2013 Birmingham Airport reduced its daytime noise limit from 92 dB(A) to 90 dB(A) which was an obligation under the new Section 106 Agreement. This applies to **departing** aircraft only as measured at noise monitoring terminal (NMT) 1 or 2 which are located 6.5 km from the 'start of roll' (where an aircraft applies full thrust for the first time as it starts its take-off). NMT 1 is located at Bucklands End, Hodge Hill and NMT 2 is at Eastcote Lane, Barston.

Noise Action Plan

Birmingham Airport has updated the Noise Action Plan which sets out the company's noise programme to 2018. The Noise Action Plan covers noise from arriving and departing aircraft and also noise from ground operations such as engine ground running.

Noise contours

Noise contours are a measure of noise represented on the ground as a line represented by differing noise level bandings and these are used to determine local noise impacts. Birmingham Airport reviews its noise contours every two years and the last review was in 2016.

A revision of the noise contours has shown that the number of people exposed to aircraft noise has decreased over the years and the noise contours are decreasing.

Continuous Descent Approach

The Section 106 Agreement requires the Airport to have a Continuous Descent Approach (CDA) Policy and this is discussed further in Schedule 8 of this report.

In a CDA an aircraft descends towards the airport from its cruising height in a continuous, approach with minimum thrust – rather than via the conventional series of stepped descents. As there are no “levelling-off” procedures, which require the thrust to maintain level flight, less fuel is consumed. It also leads to reduced noise. Implementation of CDAs has been brought forward prior to the new requirement and monitoring has shown that in 2016 just over 95% of arriving aircraft implemented a Continuous Descent Approach.

Reduced Engine Taxi

Birmingham has already included the provision for reduced engine taxiing in the UK Air Pilot entry for the Airport, making it the first UK airport to do so. This leads to a reduction in ground noise and also reduces emissions and lowers the fuel consumption of the aircraft.

95% of fuel used by aircraft is in the air, the remainder being used when taxiing to and from the runway. One way to reduce this is by using a reduced number of engines to taxi and push the aircraft forward.

Noise concerns

Table 6 shows the number of noise concerns received by the Airport Company's Sustainability Team since the Section 106 Planning Agreement came into force in 1996. The Airport Company is required under Clause 9 of Schedule 4 to keep a record of all noise-related complaints and provide

written details to SMBC annually. The Airport Company goes beyond this obligation and records all complaints by type and number.

Table 4. Noise concerns at Birmingham Airport

Year	General Noise	Night	Ground Noise
1996	222	40	Not recorded separately
1997	256	75	Not recorded separately
1998	163	65	Not recorded separately
1999	179	87	22
2000	225	91	30
2001	145	74	14
2002	227	114	36
2003	280	162	7
2004	209	263	7
2005	232	100	23
2006	419	157	9
2007	978	80	118
2008	374	51	95
2009	223	73	16
2010	127	38	8
2011	150	41	18
2012	284	28	23
2013	224	24	19
2014	526	143	150
2015	1041	108	92
2016	605	8*	53

- Since February 2016 complaints regarding night noise are now included in general complaints

The Airport also has a portable noise monitor which can be left for extended periods at different locations. In 2016 the portable monitor was located in Barston to gain data from the temporary procedure for the Northbound turn.

The Airport Company's Sustainability Team produces an Annual Complaints Report, which seeks, as far as possible, to identify trends.

Community Benefits

The Airport Company has increased its funding of the Community Trust Fund, from £50,000 per annum to £75,000 per annum. The Trust Fund will continue to be topped up with all income from surcharges arising from any daytime and night time noise violations. Details of the fund are shown in Schedule 9.

Noise Abatement Departure Procedures

The Airport Company is required to review its Noise Abatement Procedures. There are two types of departure procedure that can be selected for noise abatement at Airports, involving different thrust and climb rate settings known as NADP1 and NADP2 and these only apply to jet aircraft. Each setting will have its own noise profile and impact on communities.

The Airport Company commissioned a noise modelling study to examine the impact of each procedure on communities surrounding the Airport.

Up to 1000 feet the aircraft operate in the same manner. At this point aircraft using NADP1 will keep the aircraft flaps open for longer giving a steeper lift with reduced thrust and reduced noise. For NADP2 the flaps are retracted at 1000 feet and aircraft continue to climb and are lower over affected communities. Aircraft are free to choose whichever procedure they wish but NADP2 is currently used by approximately 85% of departures and is the more fuel efficient of the two.

The procedures were discussed at a stakeholder meeting and the Airport agreed to approach an airline to discuss a possible trial to determine if there is a benefit of noise reduction to some communities affected .

A methodology is to be drafted by Birmingham Airport which will then be discussed and reviewed at a subsequent stakeholder meeting.

5. NIGHT FLYING

BAL is bound by the S106 to *"have and maintain a Night Flying Policy which restricts the use of the airport by aircraft taking off or landing during the Night Period and the Shoulder Periods"*.

The Night Flying Schedule, which has driven the creation of the Night Flying Policy (NFP), is a complex multi-clause part of the contract between Solihull MBC and the Airport Company but the main points can be summarised as follows.

- The NFP shall be reviewed every three years.
- The NFP shall incorporate a quota system and an annual limit
- All ATMs will be subject to a quota count. The exception to this are exempt movements and aircraft which perform below 74 db(A) as measured by ANOMS at monitoring points 1, 2, 3, 4, 5 and 6
- The airport Company will impose surcharges on aircraft breaching an agreed noise level on departure. An aircraft will be considered to be violating the level if it records above the limit of 85 dB(A) during the Night Period at noise monitoring terminals 1 and 2.

Birmingham Airport's existing Night Flying Policy is amongst the most stringent in the UK and was designed to minimise community disturbance through a range of measures. A summary of the Night Flying Policy restrictions is detailed below.

CURRENT NIGHT FLYING POLICY

Solihull MBC have agreed to a delay a review of the Night Flying Policy until 2017 where the policy will be put before the planning committee for approval.

The provisions of the current Night Flying Policy are:

- Night Annual Limit for ATMs set at 5% of total ATMs (2330 to 0600), calculated based on the maximum Annual Limit for ATMs over the preceding 5 years
- Annual Noise Quota Count Limit of 4,000 (2330 to 0600);
- Aircraft with a Quota Count value of 4 or more are prohibited to operate during the Night Period (2330 to 0600);
- The Night Noise Violation Level, where departing aircraft registering 85 dB(A), or more, are fined a full runway charge (2330 - 0600);

- Taxiway Tango is not used between the hours 2300 and 0600 as a taxiway except in exceptional circumstances.

QUOTA USAGE FOR PREVIOUS NIGHT FLYING POLICY YEARS

The Quota Count Limit is based on measurements of the perceived noisiness of aircraft which takes into account the type of noise (tonality) made by the aircraft in question, i.e. propeller noise, a low drone, high-pitched whistle or roaring sound or a combination of all of them.

Aircraft noisiness is measured in EPNdB (effective perceived noise in decibels). EPNdB values are clustered together into groups of 3 decibel increases for the purposes of producing a simple quota count. A rise of 3 EPNdB equates to a two-fold increase in noise energy and so the quota count doubles with increasing noisiness of the aircraft.

From October 2017 there will be a new Quota Count of 0.125

Table 5. Relationship between EPNdB and aircraft quota count

Noise Classification	Quota Count
<84 EPNdB	Exempt
84 – 86.9 EPNdB	0.25
87 – 89.9 EPNdB	0.5
90 – 92.9 EPNdB	1
93 – 95.9 EPNdB	2
96 – 98.9 EPNdB	4
99 – 101.9 EPNdB	8
Greater than 101.9 EPNdB	16

Ref: NATS/CAA Supplements to the United Kingdom AIP SUP: 040/2012 [6]

Table 6 gives a breakdown of the quota usage for the Night Flying Policy year (October – October). There is also provision in the Night Flying Policy that the quota can be reclaimed for aircraft registering less than 74dB(A) at the Noise Monitoring Terminals.

Table 6 Quota utilisation 1997-2016

Year	Season	Night ATM Limit	Unused ATMs %	Night Quota Count	Unused Quota Count %
1997-98	Total	4200	27	5500	No data
1998-99	Total	4200	14	5500	64
1999-00	Summer	4180	31	4000	
	Winter	1320	50		
	Total	5500	34		53
2000-01	Summer	4484	36	4000	
	Winter	1416	62		
	Total	5900	42		54
2001-02	Summer	4727	41	4000	
	Winter	1493	61		
	Total	6220	42		54
2002-03	Summer	1427	38	4000	
	Winter	4519	22		
	Total	5946	26		45
2003-04	Summer	4574	28	4000	
	Winter	1444	20		
	Total	6018	26		46
2004-05	Summer	4435	23	4000	
	Winter	1401	62		
	Total	5836	32		51
2005-06	Summer	4102	20	4000	
	Winter	1295	20		
	Total	5397	20		54
2006-07	Summer	4319	22	4000	
	Winter	1364	34		
	Total	5683	25		50
2007-08	Summer	4128	14	4000	
	Winter	1303	27		
	Total	5431	18		57
2008-09	Summer	3969	24	4000	
	Winter	1253	31		

	Total	5222	26		50
2009-10	Summer	3884	5	4000	
	Winter	1227	0.7		57
	Total	5111	4		
2010-11	Summer	4319	12	4000	
	Winter	1364	14		
	Total	5683	13		61
2011-12	Total	5683	42	4000	63
2012-13	Total	5431	40	4000	67
2013-14	Total	5222	42	4000	65
2014-15	Total	5111	40	4000	62
2015-16	Total	5111	39	4000	66

NUMBER OF VIOLATIONS

Aircraft exceeding night noise limit will be subject to a surcharge, currently a full runway charge (up to £4000), unless exempt for a specified reason. The limit changed from 87 dB(A) to 85 dB(A) for departures only on 1st February 2012 in line with the new Night Flying Policy.

During 2015-16 there was one violation of the Night Flying Policy and the details are shown in Table 7.

Table 7. Night Flying Policy violations for 2015-16 (Nov –Oct)

Date/Time	Flight	Aircraft Type	Noise Level	Runway
20/2/2016	GRX2605	AN12	86.1	33

Since the Section 106 Planning Agreement was implemented in 1996, night noise infringements have decreased consistently. The number of night flights has remained relatively stable and the phasing out of noisier aircraft and the night flying policy surcharge have brought about a reduction in excessively noisy night flights.

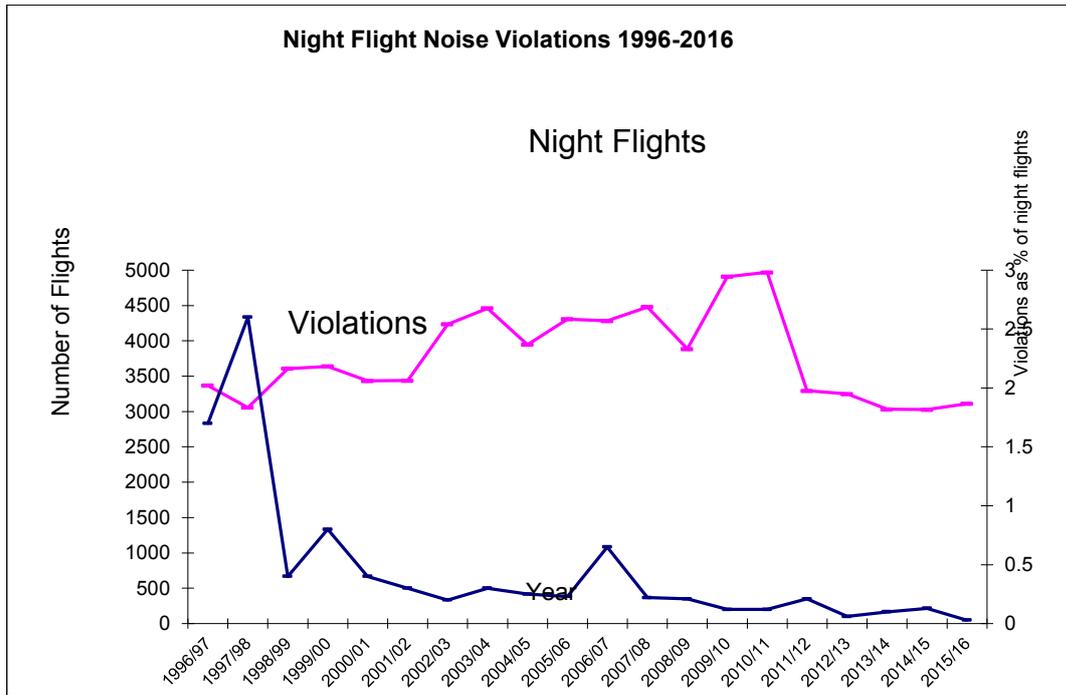
The table below details the night noise picture at Birmingham Airport since 1996 with an additional year 1990/91 included for comparison.

Table 8. Night-time noise violations

Year	Total Night Flights	Total Noise Quota	Total Infringements	Infringements (% of night flights)
1990/91	4767	n/a	n/a	n/a
1996/97	3369	n/a	57	1.7
1997/98	3056	n/a	79	2.6
1998/99	3608	2002.5	13	0.4
1999/00	3640	1936	29	0.8
2000/01	3434	1832.5	15	0.4
2001/02	3439	1854.5	9	0.3
2002/03	4234	2166	9	0.2
2003/04	4460	2161.5	15	0.3
2004/05	3947	1957	10	0.25
2005/06	4307	2172.5	10	0.23
2006/07	4283	2174.5	28	0.65
2007/08	4479	2281.5	10	0.22
2008/09	3886	2010	8	0.21
2009/10	4907	1704.5	6	0.12
2010/11	4968	1556	6	0.12
2011/12	3294	1480.3	7	0.21
2012/13	3248	1338.5	2	0.06
2013/14	3031	1402	3	0.10
2014/15	3026	1525	4	0.13
2015/16	3111	1350.50	1	0.03

The graph below shows the night noise infringements as a percentage of total night flights at BAL since the introduction of the night flying policy in 1996.

Figure 3. Night Noise Violations compared to number of night flights



6. WAKE VORTEX

Schedule 6 states that the Airport Company 'shall maintain a Wake Vortex Protection Scheme and make an annual budget to be used for the purpose of protecting eligible residential properties from aircraft wake vortices'.

Wake vortices are circulating currents which form behind an aircraft as it passes through the air. All aircraft create these but they usually break up before they reach ground level. Under certain weather conditions these vortices sometimes reach ground level.

When an aircraft is close to landing it is possible for these vortices to make contact with the roofs of properties close to the airport. They can, very occasionally, cause the movement and slippage of roof tiles. This is known as Aircraft Wake Vortex damage. It does not occur very often and at Birmingham Airport less than 0.005% of flights cause this damage and only properties with pitched roofs are affected.

Once damage is reported to the Airport an assessor will attend and determine if damage was caused by vortices. Wake Vortex damage is easily recognizable by the assessors as the damage caused is very distinct and different to that caused by wind or storm damage. If the assessor confirms wake vortex damage then the roof will come under the vortex protection scheme.

The vortex proof roof is strengthened by fixing down new modern tiles with special metal clips and is carried out by a contractor appointed by the Airport Company.

Under the Civil Aviation Act 1982 it is the airline responsible and not the Airport who are liable for the damage. However due to the fact that this identification is not always possible the Airport have introduced the Vortex Protection Scheme.

Under the previous Section 106 Agreement the Airport carried out all of these repairs in the essence of being a good neighbour but this now forms a condition of the current Section 106 Agreement and the Airport makes available £100,000 per annum to be used to protect eligible properties

Every house which has been damaged by a vortex strike, or is damaged in the future, is eligible for vortex protection.

In 2016 there were a total of 8 confirmed vortex strikes . Some of these were semi-detached or terraced properties so all of the joined properties are eligible to be included.

7. AIR QUALITY

Schedule 7 states that the Airport Company shall maintain the air quality monitoring station (AQM) and the diffusion tube monitoring facilities and only make changes after agreement with Solihull and Birmingham Councils. Complaints relating to air quality should also be recorded and supplied to Solihull MBC.

The Environment Act 1995 introduced local air quality management (LAQM) which requires local authorities to review and assess air quality in their areas against the national air quality objectives. Where any objective is unlikely to be met the local authority must designate an air quality management area (AQMA) on either the whole of the Borough or on a section. To date Solihull MBC has not declared any Air Quality Management areas within its Borough.

AIR QUALITY MONITORING DATA

Birmingham Airport has carried out air quality monitoring since 1995. There is an Air Quality Monitoring Station (AQMS) on site at the airport which provides continuous monitoring of particulate matter (PM10), carbon monoxide (CO), ozone (O₃), sulphur dioxide (SO₂). The AQMS is located on the airfield to the East of the runway.

The AQMS is operated by Airport staff and is calibrated every two weeks. Independent checks are carried out twice a year by Ricardo-AEA who collect the data which is later validated before an annual ratified report is produced.

In 2016 the data capture target capture of 90% or more was achieved for all pollutants and with the exception of Ozone none of the pollutant objectives were exceeded. The UK Air Quality Strategy objective for ozone is 100 µg m⁻³, as a maximum daily 8-hour mean, not to be exceeded more than 10 days a year. The ozone levels measured at Birmingham Airport monitoring station show that this objective was exceeded on 14 days. However, ozone is a transboundary pollutant which is difficult to control by local measures: it is therefore not currently included in the Local Air Quality Management regime.

A copy of the air quality report is available on the Birmingham airport web site. Live data is also available through the website at www.airqualityengland.co.uk but this is not validated data.

The monitoring is intended to provide information on current air quality in the area and the levels of pollution to which any neighbouring communities may be exposed.

National Air Quality Objectives

The National Air Quality Strategy was produced to determine the ambient air quality in the UK. To meet this aim the Strategy outlined recommended maximum levels of certain pollutants to be obtained nationally. The maximum levels were devised by the expert panel on Air Quality Standards (EPAQS) and were based on medical and scientific evidence.

The strategy defines concentrations of each pollutant over a given time period that are considered to be acceptable. Table 10 shows the pollutants and their concentrations.

Table 9. Objectives in the Air Quality Standards Regulations (2010)

Pollutant	Air Quality Objective	
	Concentration	Measured As
Benzene (England and Wales)	5.00 $\mu\text{g m}^{-3}$	Annual mean
Carbon monoxide (CO)(England, Wales and N. Ireland)	10.0 mg m^{-3}	Maximum daily running 8-hour mean
Nitrogen dioxide (NO ₂)	200 $\mu\text{g m}^{-3}$ not to be exceeded more than 18 times a year	1-hour mean
Particles (PM10) (gravimetric) (All authorities)	50 $\mu\text{g m}^{-3}$, not to be exceeded more than 35 times a year	24 hour running mean
	40 $\mu\text{g m}^{-3}$	Annual mean
Sulphur dioxide (SO ₂)	266 $\mu\text{g m}^{-3}$, not to be exceeded more than 35 times a year	15-minute mean
	350 $\mu\text{g m}^{-3}$, not to be exceeded more than 24 times a year	1-hour mean
	125 $\mu\text{g m}^{-3}$, not to be exceeded more than 3 times a year	24-hour mean
Ozone (O₃)* * not included as part of the LAQM regime	100 $\mu\text{g m}^{-3}$ not to be exceeded more than 10 times a year	8 hourly running or hourly mean*

To enable a comparison of pollutant concentrations at Birmingham Airport with other nearby sites table 11 shows the results for other nearby sites and shows that pollutant levels recorded at Birmingham Airport were consistent with those measured nearby in the same time period. There are currently no monitoring sites in the Solihull area apart from data captured at Birmingham Airport.

The annual mean concentration of PM10 measured was comparable with those measured at the other Birmingham sites. As in previous years, the annual mean concentration of SO2 at Birmingham Airport was low. The annual mean concentrations of NO2 and O3 measured at Birmingham Airport 2 were comparable with those measured in Acocks Green, an urban background site located far away from busy roads.

Concentrations of O3 are typically higher in rural areas, far away from sources of other pollutants such as NO (which removes O3 from the air by chemical reaction). The annual mean ozone concentration at Birmingham Airport is comparable to those measured at Birmingham Acocks Green and Birmingham Tyburn.

Table 10. Comparison results for Birmingham Airport and Local monitoring sites in 2016

	Birmingham Airport	Birmingham Tyburn Roadside **	Birmingham Tyburn	Birmingham Acocks Green
Annual Mean				
PM ₁₀ (µg m ⁻³)	15*	18	16	-
NO ₂ (µg m ⁻³)	23	43	29	21
O ₃ (µg m ⁻³)	46	37	40	42
SO ₂ (µg m ⁻³)	1	-	1	
CO (mg m ⁻³)	0	-	-	

* corrected using FDMS data from AURN sites

** Low data capture. Monitoring site not open for full year. Average provided for information only.

AIR QUALITY COMPLAINTS

Schedule 7, Clause 6 of the Section 106 Planning Agreement requires the Airport Company to record and report the number of concerns raised by the public relating to air quality, on an annual basis.

Table 11. Concerns relating to air quality

Year	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Total	1	0	0	0	0	2	1	1	0	0	1	1	1	13	7	2

Air quality does not constitute a major area of concern for complaints at BAL.

The Airport Company Environment Unit also investigates what are loosely termed 'oily deposits'. Samples are taken to Birmingham City Laboratories for independent analysis. Since 1996 none of the samples sent have been found to be attributable to aircraft.

Laboratory results have indicated that the deposits ranged from natural algae growth in ponds, through pollen coating on windows to bird excreta containing the remains of consumed blackberries.

All complaints relating to oily deposits, odour and general health concerns are logged and included in the total air quality concerns.

8. AIR TRAFFIC

Schedule 8 of the Section 106 Agreement states that, subject to Civil Aviation Authority approval, the Airport Company shall implement any appropriate changes to its airspace as soon as is practicable following the completion of the CAP 725 Process. This contains detailed guidance on the various stages of any airspace change process and is issued by the Civil Aviation Authority who will ultimately approve any changes.

Other conditions relate to monitoring the performance of noise preferential routes for aircraft departure, to maintain an annual track keeping target and to have in place a continuous descent approach policy. These are all detailed below.

Air traffic services are provided by Birmingham Airport Air Traffic Limited (BAATL).

Runway Use

Birmingham Airport has one runway which operates in two modes (Runway 15 and Runway 33) and the direction of operation is dependent upon meteorological conditions. The numbers 15 and 33 refer primarily to the points on a compass to which the direction of the runway is oriented.

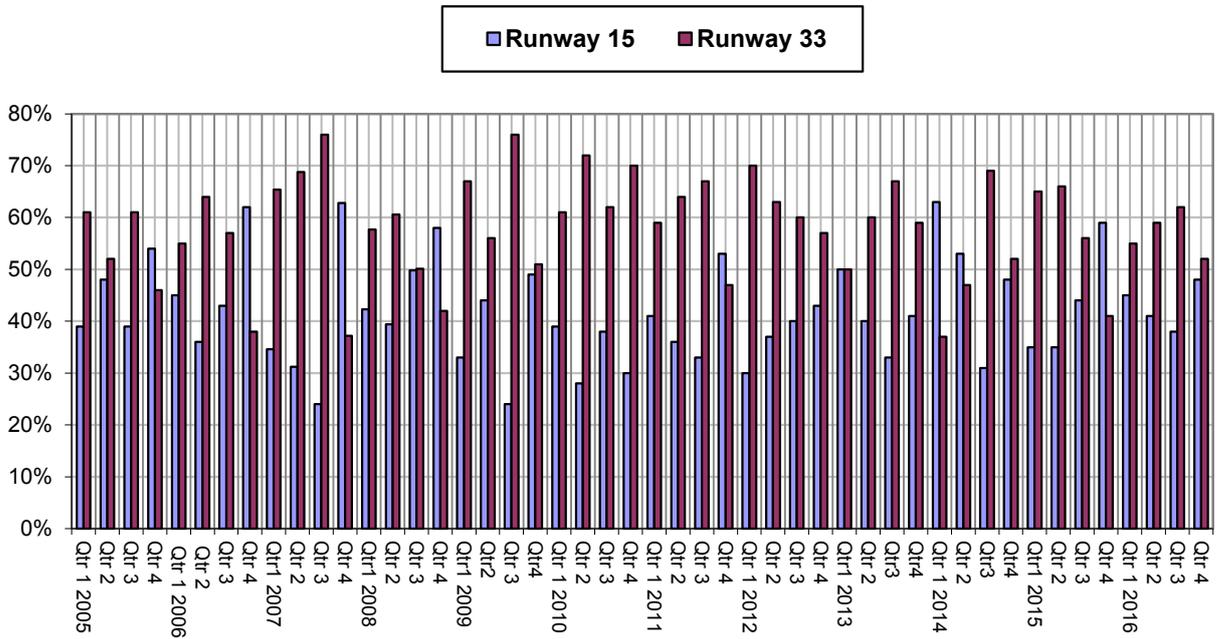
Departing aircraft have set routes they are required to follow. However, on arrival aircraft have no set routes until they are established on the Instrument Landing System.

Aircraft on arrival approach the runway using different arrival procedures with the most common being the use of the Instrument Landing System (ILS). This is a precision guidance approach system which defines the centreline of the runway and the angle of approach for the aircraft's descent. Other approaches that may be used are APV-BARO, Non-Directional Beacon (NDB) and visual.

Although not a specific requirement of the Section 106 Agreement, the pattern of air traffic using the runway does have an impact on how local people are affected by airport operations. Wind direction and meteorological conditions determine runway usage not Airport activity.

The use of a Noise Preferential Route (NPR) is mandatory until an altitude equalling that of the NPR being used is achieved, or unless otherwise directed by Air Traffic Control. This height was 3000 feet for all NPR's but some are now 4000 feet. Please see below for further explanation.

Figure 4. Runway usage at Birmingham Airport



Noise Preferential Routes

Departing Aircraft fly in corridors known as Noise Preferential Routes until they reach the requisite altitude of the NPR. A noise preferential route is a corridor that is constructed around a Standard Instrument Departure Route(SID) . A SID is a set of instructions which links an aircraft from the runway to the en-route airspace network.

The NPRs are for **departing aircraft only** and there are five NPRs, three to the North and two to the South. If an aircraft deviates from these NPRs before it gets to the requisite altitude for that NPR,(either 3000 or 4000 feet) then it is considered to be off track. Smaller aircraft less than 5700kg (such as executive jets) are exempt from adhering to NPRs. All aircraft perform slightly differently and weather conditions can cause slight variations in their flight path which is why aircraft can fly anywhere within the NPR.

The NPRs are designed to take departing aircraft over the least populated areas wherever practicable and are designed so they can be flown by all aircraft operating from the Airport.

A trial commenced in 2016 to determine if it was feasible to raise the ceiling height of the NPR from 3000 feet to 4000 feet and what effect if any this would have. The results of the trial found that aircraft on a southbound departure from Runway 15 showed a reduction of noise from over flights to Balsall Common. Therefore, while the majority of NPR ceilings will remain at 3000 feet, the NPR ceiling for southbound departures from runway 15 has been raised to 4000 feet and this became effective from 1st July 2016.

The departing aircraft use standard instrument departure (SID) procedures when taking off. The direction of aircraft on departure and arrival depends on the wind direction. When the wind is from a northerly direction aircraft will take off over the north-west and arrive from the south-east and vice-versa.

There are many cases where an aircraft can be off track for legitimate reasons, i.e. meteorological conditions or to maintain separation distance for safety reasons. All off-track aircraft are identified and the airline notified of their airlines performance.

Arriving aircraft do not have a specified route to follow before the final approach, where they join the Instrument Landing System

Mosun Departure

A Mosun Departure is a non-standard departure for a small number of flights usually for flights to Southern Ireland, the Canaries or Portugal. The route involves a turn to avoid entering the London Airspace.

On 1st July 2016 the MOSUN procedure was updated in the UK Air Pilot in order to ensure aircraft using it follow the 'Option 6' flightpath in the early stages of departure. Monitoring has shown that this update has successfully achieved the objective.

Track Keeping

In 2006 BAL launched 'Operation Pathfinder'. This is a scheme to encourage better track keeping performance amongst those airlines, which operate, from Birmingham.

The Section 106 agreement states that the Airport Company will seek to achieve and maintain a target of 97% for departures.

The ANOMS system allows the Airport Company to closely monitor the track keeping of departing aircraft and the Airport holds bi quarterly meetings with

the airlines to discuss any track keeping issues. During 2016 97.4% of aircraft were “on-track.”

Currently, there is no provision to surcharge operators whose aircraft are off track. Surcharging currently relates solely to daytime and night-time noise levels. While the Civil Aviation Act 2006 does allow airports to surcharge airlines based on track keeping performance, the track keeping programme in place at Birmingham Airport has seen continual improvements in performance without the need for fiscal penalties.

Continuous Descent Approach

The Continuous Descent Approaches (CDA’s) started at Birmingham Airport in 2009 after a successful trial with airlines and Air Traffic Control and they are considered to be the best practice in the UK in terms of performance.

A Continuous Descent Approach allows aircraft to stay higher for longer and to descend at a steady rate instead of the previously used stepped approach. Air Traffic Controllers issue pilots with their distance to touchdown and the pilots will calculate and perform a continuous rate of descent. The benefits of a CDA is that less thrust is needed from the engines so there is less fuel used, less noise created and emissions are reduced.

Aircraft are collectively achieving over 90% compliance with the CDA procedure and this is built into the Operation Pathfinder Programme with the aim to further improve compliance and reduce noise impact.

When the Continuous Descent Approaches were started they were conducted from 4000 ft. to landing for every ILS approach. In 2015 this changed to 6000 feet and performance is currently showing a total of 95% compliance.

Continuous Climb Departures

Aircraft are given a continuous climb up to 6000 feet on departure by Air Traffic Control unless there are operational reasons not to do this. These type of departures help lower aircraft fuel consumption and lower the CO₂ emissions as the highest levels of fuel burn and CO₂ emissions are generated by an aircraft climbing to 10,000 feet. Air Traffic controllers are encouraged to transfer aircraft to the next controlling centre early to help facilitate climbs past the 10,000 feet level.

Birmingham Airport has a programme to help airlines reduce CO₂ emissions by using a combination of initiatives such as continuous descent approaches,

continuous taxi and by the use of reduced engine taxiing which reduces CO2 emissions and can reduce fuel costs to Airlines

Airspace Change

Departures to the South- runway 15

In April 2016 the Civil Aviation Authority (CAA) gave its response to Birmingham Airports Airspace Change for aircraft on departure from runway 15. The CAA gave permanent approval for the 'Option 6' flightpath which is used by aircraft on departure from runway 15 and on a southerly heading.

As part of the CAA's decision there were 4 conditions attached. One of these conditions was for Birmingham Airport to undertake a further trial whereby all non-jet aircraft on a southerly heading would depart using the 'Option 5' flightpath. Community representatives and Birmingham Airport met with the CAA to further discuss the trial methodology and the CAA asked for public comments with regards to the trial by 9th September 2016. Following this the CAA subsequently removed the requirement and no further trials will be required.

Full information relating to the Airspace Change for departures from runway 15 including the CAA's decision document can be found on their website at the following link:

www.caa.co.uk/Commercial-industry/Airspace/Airspace-change/Decisions/Birmingham-Airport-Runway-15-departure-routes/

Non-RNAV Southbound Departures- runway 15

A small number of aircraft on southbound departures are unable to fly RNAV routes which are used by the overwhelming majority of aircraft. These aircraft that are unable to fly RNAV procedures instead fly a route similar to Option 5. An amended procedure was put in place on 18th August 2016 so those aircraft now fly a route which is closely aligned to Option 6.

Departures to the North- runway 15

This relates to those aircraft that depart from runway 15 to the South but must turn north for destinations including Scotland or across the Atlantic.

During the Airspace Change Trial it was noted that certain aircraft (particularly turbo-prop and Boeing 757-200 aircraft) flew closer to Balsall Common than

was anticipated when using the RNAV departure procedure. This issue was not local to Birmingham Airport as other airports across the UK had similar issues with certain aircraft. A procedure to improve the situation in the interim was found and means that some turbo-prop aircraft that would normally fly an RNAV SID will instead fly a new conventional SID (further details below) which positions the aircraft further to the north of Balsall Common.

A long term solution to the problem is to redesign the RNAV departure procedure and NATS PDG have been appointed to carry out the design work. BAL has received the redesigned RNAV SID for departures from runway 15 using the northbound turn which is intended to concentrate aircraft towards the centreline that was consulted on in 2013. The design will now undergo rigorous safety and simulator validation checks before it can be published for use by aircraft at the Airport.

It was also found that some aircraft flying non RNAV departure procedures (commonly known as conventional departures) and using the Northbound Turn were overflying the community of Hampton-in-Arden. A new conventional SID (the same as that detailed above) became operational on 26th May, 2016 and will primarily be used by a small number of non-RNAV equipped aircraft such as Jetstream 41's and ATR Turboprops which are unable to fly RNAV SID's. This redesigned SID has successfully moved aircraft away from the centre of Hampton in Arden.

Trial of Noise Preferential Route ceiling height change

A feasibility study was undertaken to determine if raising the Noise Preferential Route (NPR) ceiling from the current 3,000ft to 4,000ft would be both possible and if it would bring any benefit in reducing the noise impact of aircraft for local communities. As a result of this a 3 month trial was carried out between August and October 2016. During this period aircraft were not taken off the Standard Instrument Departure (SID) routes until they had reached an altitude of 4,000ft. The data from the trial was assessed using ANOMS to determine if there would be a benefit to local communities and to understand what operational impact there may be.

For departures from runway 15 on a southerly heading (flying Option 6) it was found that there was a slight decrease in the over flight of the community of Balsall Common. As a result of this the Airport Company have permanently raised the NPR ceiling to 4,000ft for all aircraft using the Option 6 SID's. It was found that for aircraft departing from runway 15 on a northerly heading (using the northbound turn) there was no change in the over flight of neighbouring communities and as such the NPR ceiling on this route remains at 3,000 feet.

For departures using runway 33 and overflying areas such as Castle Bromwich, Hodge Hill and Kitts Green- the results showed no change to the track of aircraft over the ground and as such all NPR ceiling on these routes remains at 3,000 feet.

Airspace change for departures from runway 33

The ground based radio beacons which underpin the departure routes from runway 33 will need to be replaced as part of a wider project that affects the whole of the UK. This will require the SIDs be re-designed to RNAV procedures- the same as those implemented for departures from runway 15.

Focus Group meetings have been held and initial concept designs discussed. Comments have been sent to the designers to make alterations if they are achievable. Once the designs have been completed they will be subject to a public consultation in summer 2017.

Air Traffic Movements

Although not required by the Section 106 Agreement, the annual number of Air Transport Movements (ATMs) is a useful indicator of the level of operation at BAL. The total air traffic movements include cargo, passenger and private/executive movements.

Table 12. Total air traffic movements at BAL 1996-2016

Year	Total Aircraft Movements
1996	96,266
1997	100,726
1998	108,852
1999	118,431
2000	126,633
2001	125,209
2002	125,083
2003	128,740
2004	120,799
2005	123,192
2006	119,532
2007	114,717
2008	112,470
2009	101,627
2010	96,668
2011	93,974

2012	91,841
2013	-
2014	96350
2015	98492
2016	112016

Note: these figures have not been verified

9. COMMUNITY BENEFITS

This Schedule of the Section 106 Agreement states that the Airport Company should continue to administer a Community Trust Fund (CTF). The Airport Company also provides sponsorship and education facilities to local areas.

The Airport also has a nominated Charity, Acorns Childrens Hospice Fund, for which they have donated over £56,000.

Birmingham Airport has worked with Our Lady's Catholic primary school in Tile Cross. The project was to raise self-esteem and aspiration amongst children in the area. The project has also established a link with a school in South Africa.

Community Trust Fund

The Community Trust Fund is a registered charity run by nine Trustees and was established in 1998. The purpose of the CTF is to invest in a range of local projects, which benefit the community and environment and grants of up to £3000 are made to community groups in areas most affected by the Airports operations. The trustees comprise two representatives of Solihull MBC, two from Birmingham City Council, three from the Airport Consultative Committee and two from the Airport Company and all administration costs are met by BAL.

The income raised consists of an annual £75,000 investment from the Airport Company (index linked), revenue raised from the surcharges imposed for violations of the daytime noise limit and that given in the night flying policy. Since the inception of the Community Trust Fund in 1998 over £1.3 million has been awarded to projects which have benefitted the local community.

In 2016 The Community Trust Fund awards amounted to a total spend of £81,377. This sum has been distributed among the projects listed in table 13. Any revenue in the CTF that has not been spent in previous years is carried over to the next financial year.

Full details of the scheme and the postcodes of eligible areas are available on Birmingham Airports website

Flight School

Flight School, which opened in 2012, remains very popular with both students and teachers. It is a dedicated unit for exclusive use by primary and secondary students and has been made possible through a partnership between Birmingham Airport, education and business partners.

It is a self-contained unit and provides an insight to the airport and how it works. There is no charge to use the facilities but visits must be pre booked and are available to groups throughout the region. A range of education materials is supplied along with computers, whiteboards and web based resources. The facilities can cater for children from nursery age to post 16.

Birmingham Airport is in partnership with the schools of King Edward VI in Birmingham and by working together the partnership hopes to improve numbers of admittance to Grammar Schools from children in the more deprived areas of the city.

Community Events

Local residents can subscribe to a Twitter feed or an email newsletter which gives details of any issues that may affect local communities

Table 13. Total Community Trust Fund awards 1998-2016

Year	Total Awarded (£)
1998	98,156
1999	83,993
2000	153,139
2001	103,751
2002	97,670
2003	90,212
2004	72,868
2005	65,444
2006	51,175
2007	53,027
2008	67,349
2009	49,994
2010	52,40
2011	54,067
2012	55,165
2013	68,607
2014	76,174
2015	82,516
2016	81,377

Table 14. Community Trust Fund awards for the financial year 2016

Name	Area	Awarded	Purpose
53 rd Berkswell Scout Group	Berkswell	£3,000.00	New Scout Hut
Balsall & Berkswell Football Club	Balsall Common	£2,256.00	Rabbit proof fencing
Solihull Shopmobility	Solihull	£1,500.00	Scooter
Court Lane Allotments Association	Erdington	£1,500.00	Marquee
Our Lady of Compassion School	Solihull/Lyndon	£ 420.00	Planter
Castle Bromwich Singers	C' Brom/Shard End	£2,500.00	Sound Equipment
Solihull Blossomfield Cricket Club	S'hull/Monkspath	£620.00	Practice nets and wicket
Kingshurst Evangelical Church	Kingshurst	£3,000.00	Chairs for community hall
St Giles Parochial Church Council	Sheldon	£3,000.00	Replacement Windows
Bromford Bridge Church Day Centre	Bromford/Hodge Hill	£2,344.68	Replacement Windows
Ward End Unity Cricket Club	Hodge Hill	£1,701.00	Practice nets and wicket
Welcome Change CIC	Shard End	£2,000.00	Tools & equipment
Yew Tree Primary School	Solihull	£3,000.00	Bird Hide, Growing Frames, Pygmy Goats
The Pilot Partnership	Kitts Green /Shard End	£3,000.00	Sleeping Bags for residential learning visits
Friends of Damson Parks	Elmdon/Damson Wood	£2,200.00	Trees & Protection frames
O'Dell's Community Pride Boxing	Hodge Hill	£3,000.00	Running Machines
Hampton in Arden PCC	Hampton in Arden	£3,000.00	Replacement Lighting
Four Oaks Toy Library	Mere Green/Four Oaks	£1,000.00	Toys
Smith's Wood Primary Academy	Smith's Wood	£1,000.00	Outdoor Play Equipment
Spotlight School Fund	Kingshurst/Castle Bromwich	£3,000.00	Costumes
Castle Pool Community Partnership	Castle Vale	£2,700.00	Kitchen Refurbishment
Newhall Allotments Association	Sutton Coldfield	£1,230.00	Shipping Container
Solihull Tennis Club	Solihull	£3,000.00	Repairs to playing surface
Marston Green Parish Hall	Marston Green	£ 699.99	Portable Stage Steps

Knowle Village Hall Association	Knowle	£3,000.00	Heaters and Lighting
Birmingham Trees for Life	Sheldon	£3,000.00	Tree Planting
Grace Academy Solihull	Chelmsley Wood	£1,098.00	Table Tennis Tables
The Oval School	Stechford/Kitts Green	£3,000.00	Planters, Wormery, Outdoor Furniture
Carabela Dance Academy	Shard End	£2,000.00	Costumes
St Clements Church	Castle Bromwich	£3,000.00	Repairs to Parquet Floor
Our Lady Help of Christians	Kitts Green	£3,000.00	Roof repairs
Coleshill CoE Primary School	Coleshill	£2,000.00	Pond Equipment
Friends of Streetly Library	Streetly	£420.00	Bench for garden area
Second Pedals CIC	Castle Vale	£2,500.00	Training supplies & safety equipment
Age UK Solihull	Chelmsley Wood	£1,188.00	IT Equipment
Airborne Trampoline Club	Smith's Wood	£3,000.00	Repairs to trampoline equipment
Generations Choir	Castle Vale	£2,000.00	Microphones & Stands
Birmingham Model Railway Club	Castle Vale	£1,500.00	Shed
Total awarded		81,377.67	

The Airport has a nominated charity, Acorns Childrens Hospice fund, to which it has donated over £56,000 . Birmingham Airport also provides small scale support to other causes by either hosting collections in the Terminal or through staff 'dress down days'.

10. Historic Environment, Ecology and Landscape

Obligations in the Section 106 Agreement set out work that the Airport Company needed to undertake prior to the Runway Extension being used and to prepare a mitigation plan for the Development as identified in the Environmental Statement which was submitted with the Planning Application.

A Steering Group has been established to advise on the Historic Environment Ecology and Landscape Management Plan (HEELMP) as outlined in the Section 106 Agreement.

The Steering Group is made up of members from Birmingham Airport, Solihull MBC, Natural England and Warwickshire Wildlife Trust and will advise on the set out measures to compensate for the effects arising from the Runway Extension on ecological issues.

The Section 106 Agreement outlines a number of items which are to be included in the Historic Environment, Ecology and Landscape Management Plan.

A consultant ecologist was contracted to undertake a number of protected species surveys and monitor the habitat conservation and mitigation carried out as part of the runway extension and a copy of the report has been given to Solihull MBC.

Last year's ecology report recommended that a crayfish survey should be carried out and this has now been done.

The torch survey to determine crayfish population was carried out in July 2016 but no crayfish were found in the location searched. The report suggested that this was not due to water quality and suggested that a similar study to be carried out in 2017 but locations further upstream will be checked.

Bat and bird box checks were carried out in September 2016 but access to some boxes was not possible. This was due to blocked access routes or overgrown areas which prevented access with ladders.

This year 3 bats were found in the bat boxes- a single brown long eared bat and 2 soprano pipistrelle bats.

A variety of different bat boxes models have been erected which can accommodate summer maternity roosts and winter hibernation roosts. Some of

these boxes had been used by breeding birds and the remains of nests were removed during the checks.

SMBC's monitoring programme has identified a number of areas requiring remedial action including the re-positioning of some habitat boxes and re-introduction of appropriate grassland management. The scope of this work is currently being agreed between Birmingham Airport and Solihull MBC.

11. Health

Schedule 11 of the Section 106 Agreement requires Birmingham Airport to prepare a Health Action Plan and to establish a Health Forum which is now known as the Airport Health Group. The group meets on a regular basis and the primary objectives are to discuss specific issues relating to health issues arising from the Airport and its use and to guide health conscious decision making within the Airport Company and monitor the effectiveness of mitigation and community support initiatives.

The Group consists of representatives from the Airport Company, Solihull Public Health and Environmental Health Teams, Birmingham City Council Environmental Health and Public Health Teams and the Airport Consultative Committee

A Health Management Plan has been written and this sets out the terms of reference for the group and details its objectives. The main objective of the Health Action Plan is to record the existing and further agreed health and wellbeing initiatives put forward by the Airport Health Group.

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12. Business Tourism

This schedule relates to promoting and supporting business tourism in Solihull and to help produce a business tourism strategy with Solihull MBC.

The aim of the strategy is to market Solihull as a business tourism destination and to encourage visitors to the region and meet to the visitor's needs.

A Solihull Tourism forum has been set up and meets on a regular basis. The forum includes representatives from Solihull MBC, Birmingham Airport Company, NEC, Resorts World, Solihull Chamber of Commerce, Solihull College, Solihull BID, local hotels and other parties.

The forum is open to all businesses and organisations that operate within Solihull. The forums vision is to increase the value of the visitor economy in Solihull through improving the visitor experience and to raise the profile of Solihull.

The Forum has engaged with airlines to discuss opportunities for partnership and collaboration – including Flybe and Emirates and to encourage business and tourism to the area.

The Airport is currently engaged in developing the Solihull Tourism Action Plan which is currently in draft form and contributing to promoting the area as a place to visit and stay.

13. Corporate Social Responsibility

Condition 1 to 3 of this schedule state that the Airport Company shall continue and maintain its support to Corporate Social Responsibility in Solihull; keep under review its strategy for its programme of Corporate Social Responsibility; engage with Solihull MBC to develop the Councils Corporate Social Responsibility agenda and report annually on its CSR programme and commitments.

The Corporate Social Responsibility report is available on the Airport Website and outlines how the Airport meets its corporate responsibilities and the complexity the Airport faces to balance the needs of the growing aviation industry whilst being aware of the needs of the areas which are affected by its operations.

The report outlines the investments that the Airport makes to local communities not only through the community trust fund but also projects charities and local community support.

Over £56,000 has been raised in 6 years for Birmingham Airport's nominated charity- Acorns

Details of the Corporate Social Responsibilities are reported to Solihull MBC through the Airport Consultative Committee.

14. Employment

Schedule 14 relates to creating a site training and employment strategy for the Airport of the Section 106 Agreement states that the Airport Company 'shall prepare and submit a Site Employment and Training Strategy for the airport ' The strategy will then be reviewed every three years.

Birmingham Airport will work closely with Solihull MBC, business forums and major employers in the area along with other parties, such as Job Centre Plus, and Solihull College to develop the Training Strategy. Birmingham Airport wants to ensure that employment on site is accessible to local communities and hopes to be able to reduce unemployment in the area.

The Strategy is equal opportunity based and responds to issues of unemployment in the West Midlands with a focus on East Birmingham and the North of the Solihull Borough. It helps to supply on-site training, work experience and graduate placement schemes.

Birmingham Airport pay an annual amount Solihull MBC for a period of eight years to 'contribute to the development and delivery of employment initiatives by the Council to enable residents to take advantage of employment opportunities at the Airport'. Solihull MBC will report to Birmingham Airport annually detailing on how the money has been spent.

Between 2016 and 2018 the majority of the Section 106 funding will be used to support the employer engagement element of the Birmingham and Solihull Youth Promise Plus project, which helps 16-29 year olds move into education, training or employment. Employer engagement officers will work with business onsite at the airport to encourage them to offer placements to this group of young people to improve their skills and career prospects.

The Airport will report annually to Solihull MBC on its employment action plans and targets

The Solihull PACT partnership has been set up to offer recruitment support to airport employers and to target local people in the areas seeking employment. The partnership is formed of Birmingham Airport, Solihull DWP, Solihull College and SMBC. The aims of the partnership are to engage with all employers at Birmingham Airport and to support unemployed people to obtain the skills required for the jobs on offer and to support them through the recruitment process. The Solihull Pact is funded through the Flexible Support Fund, Section 106 contributions and contributions in kind from partners.

Much of the Airport's education support activities are focused on raising career aspirations and increasing students' knowledge of the World of Work with the explicit aim of improving their eventual employment prospects. This is in line with the Company's revised CSR strategy which seeks to support priorities identified in the Health Action Plan, agreed with the Airport Health Forum in early 2016 and targeted at communities where levels of deprivation are highest.

15. Monitoring

Schedule 15 of the Section 106 Agreement Schedule 15 relates to monitoring. Birmingham Airport will pay an annual amount to monitor the performance of the obligations within the Section 106 Agreement and to produce this annual report.

16. Carbon Management

In response to the Climate Change Act in 2008 Birmingham Airport produced its climate change adaptation report which sets out how the airport will adapt to climate changes by assessing what risks there may be and prioritising them and the report is available on the Birmingham airport website.

The Climate Change Adaptation Report is available on the Birmingham Airport Website.

Birmingham Airport has produced a Carbon Management Plan which will monitor activities at the Airport that have an impact on the environment. It includes a review of Climate Change issues and legislation, a baseline carbon footprint and an action plan of future initiatives to measure and mitigate its carbon impact. The recent plan covers 2016-2019.

The Airport will first control and reduce those emissions for which they are directly responsible and those that the Airport owns and controls such as gas and diesel consumption and refrigerants included in Scope 1. Fleet vehicles are also included in this.

Scope 2 covers emissions from purchased electricity. This includes tenants within the terminal itself and all buildings where the Airport Company has control over the power supply.

In 2012/13 the total Carbon Footprint of the Airport was calculated to be 168,566 tonnes of CO₂ which included Scope 1, 2 and 3. The total for 2015/16 emission figures are 296,263 and this is discussed below.

Carbon emissions from scope 1 and 2 are normalised to passenger numbers and have been used to benchmark emissions against other airport's. The reduction targets are based on the equivalent carbon emissions per passenger.

Table 15 details the total emissions for Scope 1 and 2 and shows a 9.7% decrease from the baseline 12/13 emission figures .

Table 15. Tonnes of CO₂ for Scope 1 and 2

	Baseline 2012/13	2013/14	2014/15	Baseline 2015/16
	Tonnes of CO₂	Tonnes of CO₂	Tonnes of CO₂	Tonnes of CO₂
Scope 1 (gas, owned transport, fugitive emissions)	6,041	5,433	4,939	5,193
Scope 2 (Purchased Electricity)	19,001	18,460	19,302	17,418
Total Gross Emissions	25,042	23,893	24,241	22,611

Scope 1 emissions have decreased by 14% overall from the 12/13 baseline figure. 2016/16 saw a slight increase which was due to an increase in the refrigerant during this time. Fuel emissions have remained relatively constant.

Scope 2 emissions cover emissions from purchased electricity. This includes tenants within the terminal itself and all buildings where the Airport Company has control over the power supply.

These emissions have reduced by 8% from the 12/13 baseline figures. The emissions for 14/15 were slightly elevated due to emissions from electricity consumption and can be directly attributable to the carbon factor from DEFRA which increased during this period.

Scope 3 emissions cover aspects out of the Airport Company's direct control such as the emissions from people travelling to the airport by surface transport, aircraft landing and take-off, waste management and water use and treatment. The greatest emission in this section is the landing and take-off cycle of the aircraft which accounts for 74% of these type of emissions.

Scope 3 emissions have increased by 90% since the baseline figure which is a significant increase but this is due to a change in the methodology for calculating the emissions of passenger travel.

For the 2012/13 baseline figure passenger travel was calculated as a straight line for travelling from A to B. The figures for 2015/16 were calculated using more accurate route planning software which shows a more accurate, but increased, figure.

The carbon factor for petrol and taxi travel have increased by 45% and 108% respectively since 2012/13 while all other carbon factors have remained consistent.

There has also a more accurate figure calculated for passengers who are being dropped on to incorporate a return journey as well as this is more accurate but effectively doubles the figure.

If the 2015/16 passenger travel results were calculated using the original methodology the scope 3 the figures would show a reduction of 16 to 14 kg of CO₂ per passenger.

Table 16- Scope 3 emission totals

	2012/13 Tonnes CO₂ e	2015/16 Tonnes CO₂ e
LTO cycle	105,428	103,123
Passenger Travel	36,135	168,515
Train-business travel	4	2
Flights-business travel	212	143
Car-business use	3	4
Waste Management	33	33
Water use and treatment	208	394
Electricity transmission and distribution	1501	1438
Total Scope 3	143,524	273,652

(Note: CO₂e is a figure which allows “bundles” of greenhouse gases to be expressed as a single number; and it allows different bundles of GHGs to be easily compared (in terms of their total global warming impact).)

The Airport has already undertaken a number of initiatives to reduce emissions and improve environmental performance. These include Operation Pathfinder, Continuous descent approach, Continuous Climb Departures and reduced Engine Taxiing which are outlined in section 8.

Birmingham Airport has set a 10% target for emission reduction per passenger for 2016/17

The Airport is investing in smart meters to allow automatic monitoring across the site. The results from this monitoring will be reviewed to see where any reductions can be made and also to monitor usage.

Fixed electrical ground power (FEGP) is provided on all aircraft stands to minimise the need to run auxiliary power units and there is an on-going programme to replace older FEGP units.

Table 17 – Kg CO₂ per passenger

Year	12/13	13/14	14/15	15/16
Kg CO ₂ per passenger-Scope 1 and 2 emissions	2.81	2.58	2.45	2.17

A condition of this schedule states that ‘the Airport Company shall make available an annual budget of £10,000 (for a period of 20 years) for the purposes of tree planting and woodland creation schemes in Birmingham or Solihull to be agreed with the Council’. This is to help off-set carbon dioxide emissions

In 2016 a number of projects were funded from this money and just over 2,900 trees were planted and these are detailed below. A £2000 contribution has been made to Birmingham Trees for Life and details of the project will be reported to Solihull MBC.

Location	Trees & Sundries	Total trees
Hobgoblins, Hob lane, Balsall Common	45 mixed native trees and 10 light standard oak, small leaved lime and sweet chestnut	55
Rock Farm, Back Lane, Meriden	300 mixed native trees for 60m hedgerow, 10 light standard oak & sweet chestnut	310
2679 Stratford Road, Hockley Heath	700 mixed trees for 150m double hedge , 10 fruit trees	710
Red Barns, Walsall End Lane	160 mixed native trees for hedgerow, 35 larger native trees for woodland	195
The Spinney, Back Lane, Meriden	10 English oak	10
Solihull Bee Keepers, Whaletankers	225 native mixed trees for 45m double hedge	225
Grange Road, Dorridge	15 hazel and 15 common buckthorn	30
Hampton in Arden Spinney	230 mixed native trees for hedge & woodland planting	230
Scouts, Lode Lane	6 light standards, oak and lime	6
Millison's Wood Local Nature Reserve	400 hazel	400
Beechcroft Local Nature Reserve	750 mixed trees for a 175m double hedge	750
Lode Lane highway	6 large lime trees	6
Total number of trees planted (ex BTFL)		<u>2927</u>

Waste Management

Waste recycling does not form part of the Section 106 Agreement but is reported to Solihull MBC and is included here for information on what Birmingham Airport does towards recycling.

Waste at the Airport is created by passengers to the Airport in the manner of food waste, newspapers, cans and plastic and glass bottles. Other types of waste such as cardboard, metals, pallets, office paper etc. is produced as business waste. Waste is now sent to a waste to energy facility .

Birmingham Airport continues to reduce energy costs where possible which also improves the overall energy consumption.

Conclusion

11.65 million passengers travelled through Birmingham Airport last year, making 2016 the busiest year ever in the airport's history and represents an annual growth of 14.2% compared to 2015. The growth is made up both scheduled and charter traffic with scheduled accounting for 89%.

The number of long haul destinations has increased giving more choice to passengers within the airport radius and encourages more people to choose Birmingham Airport over other airports.

In 2017 there will be a new route flying to Cape Verde in South Africa and daily flights to Hamad International Airport in the capital of Doha along with increased flights to many popular destinations and a wider selection of airlines. Birmingham Airport continue to liaise with Airlines and travel agents to promote Birmingham Airport

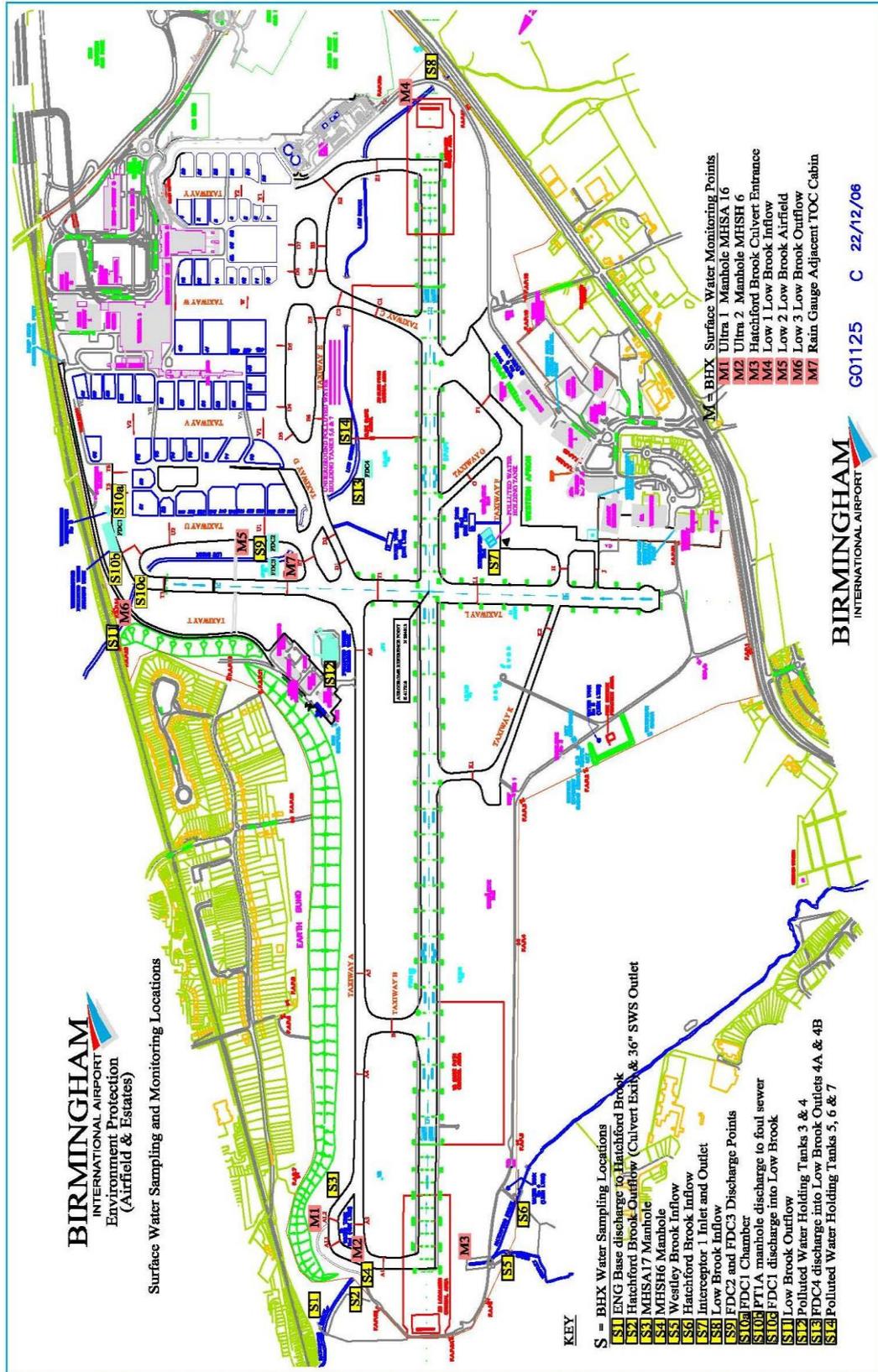
2016 saw Birmingham Airport comply with all Obligations within the Section 106 Planning Agreement.

REFERENCES

- [1] Developing an Integrated Transport Policy (1997)
Department for Transport, Great Minster House, 76 Marsham Street,
London SW1P 4DR
www.dft.gov.uk
- [2] Automatic Urban Network air quality monitoring
www.defra.gov.uk/environment/statistics
- [3] Annex 16 Volume 1 Aircraft Noise, Third Edition (1993) to the Convention
on International Civil Aviation Organisation signed on behalf of the UK 7
December 1944
ICAO, External Relations and Public Information Office, 999 University Street,
Montreal, Quebec, H3C 5H7, Canada
www.icao.int
- [4] Birmingham International Airport and Solihull Metropolitan Borough Council
(2009) Section 106 Obligation: Birmingham International Airport
- [5] HMSO (1990) Town and Country Planning Act 1990
www.publications.parliament.uk

BIBLIOGRAPHY

- Birmingham International Airport (2007)
Airport Master Plan 'Towards 2030'
- Birmingham Airport
Airport Surface Access Strategy 2015-2020
- Birmingham Airport
Sustainability policy framework
- Birmingham Airport
Noise Action Plan 2013-18
- Solihull Local Plan
Shaping a Sustainable Future (2013)



Map 1

Map 2- Sound Insulation Scheme Boundary

