17TH 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 2015

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 and the Environment Agency

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Glossary of Terms

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

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)

ANITA-Airport and NEC Integrated Transport Access

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

CDA - Continuous Descent Approach

Centro - passenger transport executive for the West Midlands

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 - *ATM*s 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

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

IATA - International Air Transport Association

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

$LA_{eq(16\ hour)}$ - 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

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

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

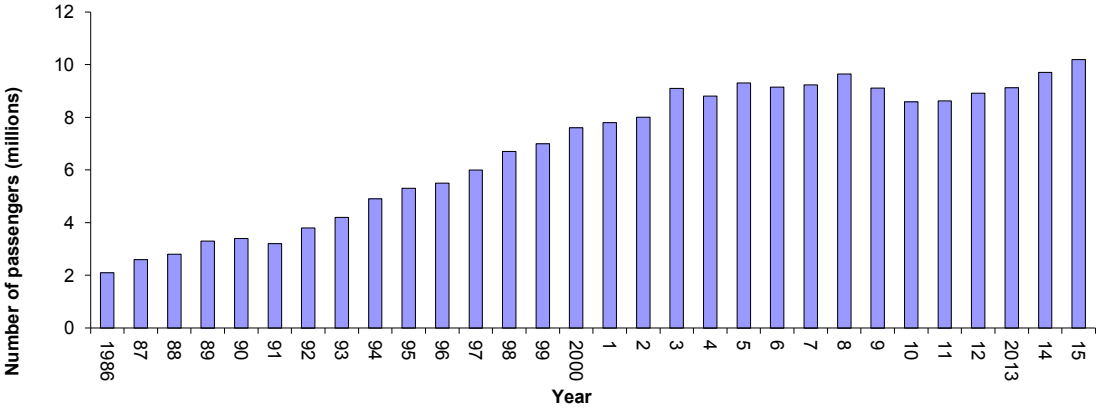
INTRODUCTION

This document, the 17th Annual Report of the Section106 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 2015. This enables comparison of environmental performance year on year. Figure 1 shows the growth in passenger numbers at the airport since 1986.

2015 had 10.2 million passengers pass through its terminal which is a 5% increase on the previous year's figure and there have been some record breaking months in 2015 for passenger numbers which shows an upward trend for the industry.

Figure 1. Passenger numbers at Birmingham Airport 1986-2015



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, https://www.birminghamairport.co.uk/about-us/community-and-environment/aircraft-noise/make-a-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 6908 (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

The runway was closed overnight for a period during November and December 2015 for essential safety work to be carried out.

Improvements to Drop and Go car park to reduce congestion and queuing issues have now been completed and a new apron to allow access for Boeing business jets into the Marshalls hangar was also completed in 2015.

The upgrading of the lighting in Car Park 1 has been completed and this will continue with car parks 2 and 3. The new LED lighting will reduce maintenance costs and energy use. This is also mentioned in schedule 16 Carbon Management.

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.

Plans for a new air-bridge for the A380 starts in 2016 along with a new bussing lounge in the International Pier.

A planning application for the Radisson Blu Hotel was granted planning permission by Solihull MBC in August 2015.

Negotiations on HS2 are continuing regarding the route alignment and the design of the people mover for the Interchange at Birmingham International station.

In March 2015 Birmingham Airport upgraded its membership of Sustainable Aviation. This is a long term strategy which sets out the collective approach of UK aviation to tackling the challenge of ensuring a sustainable future for the industry.

New Car Parking on Elmdon site is taking place with an expected completion date of 2016

3. SURFACE TRANSPORT

The Airport Company published an Airport Surface Access Strategy in 2007(ASAS) and this was reviewed and updated in 2015 and 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. This will hopefully be completed and open for consultation in summer 2016 with and expected publication of early 2017.

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.

ANITA Scheme

The ANITA scheme –Airport and NEC Integrated Transport Access Scheme- was an £11m scheme to improve the road system around Birmingham International Station, Birmingham Airport and The NEC and was funded by the Department for Transport. The scheme has improved transport links between the North and South of Solihull and with the increased and improved bus services has opened up job opportunities for the communities at Birmingham Airport, the NEC and further afield.

The project provided a new interchange at Birmingham International rail station, improved links between trains and buses. It links with Skyrail and the National Exhibition Centre.

The ANITA scheme has also improved walking and cycling facilities and Birmingham Airport will continue to work with the NEC, Solihull MBC, Centro and Train Operating Companies to improve connectivity to and from Birmingham Airport.

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.

Many issues raised in the separate groups were issues that crossed more than one group and some groups were attended by the same individuals. The new group was formed to achieve a more focused approach avoiding duplication while still achieving the overall aim; to increase the public modal transport share.

The newly formed 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 safely 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.

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 4 shows how passenger parking provision has changed relative to passenger numbers over the period.

Table 3.Parking provision to passenger numbers 1995-2015

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

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. This is reported to Solihull MBC.

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 2015 by the levy was reported to Solihull MBC. The funding has gone towards projects such as NCP Software, new cycle shelters and bike padlocks, car share web design, installation of new seating in bus shelters and other transport related projects.

- To encourage on-site staff safely 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.

Other works

In January 2014 Solihull Council commenced work to replace the existing three lane road-over-rail bridge on the A45 (Coventry Road) near the M42 Junction 6 which was not sufficient to cope with the 30,000 vehicles per day it now takes. The new bridge will double the width to accommodate four lanes of traffic and include a safe pedestrian access along the A45 towards the Airport, improve the slip road into the Airport and generally improve traffic capacity, reduce congestion and improve general highway safety.

The original bridge was demolished on 25/26 December 2015 ahead of programme. The work is expected to be completed and fully operational by the end of September 2016.

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.

A House of Commons Select Committee process commenced in July 2014 and was set up to consider representations from those affected by the railway proposal, and to put forward recommendations for changes to the scheme, as

considered appropriate. It is anticipated that the Commons Select Committee will conclude its work in early to mid-February 2016, prior to a House of Lords Select Committee being established to further consider representations for change.

It is anticipated that the HS2 Phase 1 proposals will be granted Royal Assent by the end of 2016, with the railway opening in 2026. 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.

Public Transport Information

The Airport Company continues to review the range and quality of public transport information available at the Airport, and is considering how such information can be provided as real time information and through electronic media such as mobile phones. Live timetables can be accessed via network west midlands for bus, train and tram information.

The Airport Company is working with Centro regarding surface access information and signage and how it can be improved.

There are currently 5 bus services which access Birmingham Airport and/or Birmingham International Station.

Cycling

The Airport Company continued to promote cycling as a convenient and healthy way for journeys to work for the 40% of staff living within five miles of the Airport. Lockers are available for staff use and a salary sacrifice scheme was launched in 2013 to encourage staff to cycle to work. A car share scheme has also been launched in 2015.

Birmingham Airport contributed £50,000 to the Marston Green/Sheldon Country Park cycle route. Solihull MBC will commission a scheme with Birmingham City Council to complete the cycle route.

The proposed cycle route along the diverted A45 Coventry Road between the Clock Junction and the Damson Parkway Junction has now been completed and opened in its entirety in 2014. Feedback from users shows that the route is being well used.

The £2.6 million project to create a series of cycle routes connecting North Solihull with key employment sites in the area was also completed in 2014.

The 19 km cycle friendly route enables people to cycle to and from work more easily and links into cycle improvements created through the recently

completed Airport and NEC Integrated Transport Access Scheme. The North Solihull Strategic Cycle Network scheme was supported by £1.3 million from the European Regional Development Fund and match funded by Solihull Council.

4. NOISE CONTROL

Noise Action Plan

Birmingham Airport has revised its Noise Action Plan and it sets out the company's noise programme to 2018.

Birmingham Airports objectives for managing aircraft noise is

'*To work with our stakeholders, including the local community and industry partners to adopt the best practicable means to assess, manage and minimise the impact of aircraft noise, both now and in the future*'

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 Schools Environmental Improvement Programme subject to a minimum allocation of £50,000 in any 12 month period and report to Solihull MBC on the schools which have benefited from the scheme.

- 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 41 properties insulated in 2015 under the Sound Insulation Scheme.

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 logged and entered onto a management facility which is incorporated into the Airport Noise and

Operations Monitoring System (ANOMS) and 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. However Birmingham Airport is aware that it has a noise impact on local communities and as such engine ground noise generates specific complaints.

During the night-time there is a ban on full power engine ground running. In the morning shoulder period (0600-0700), Birmingham Airport and Solihull MBC have agreed a noise-limiting scheme.

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 Environment 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.

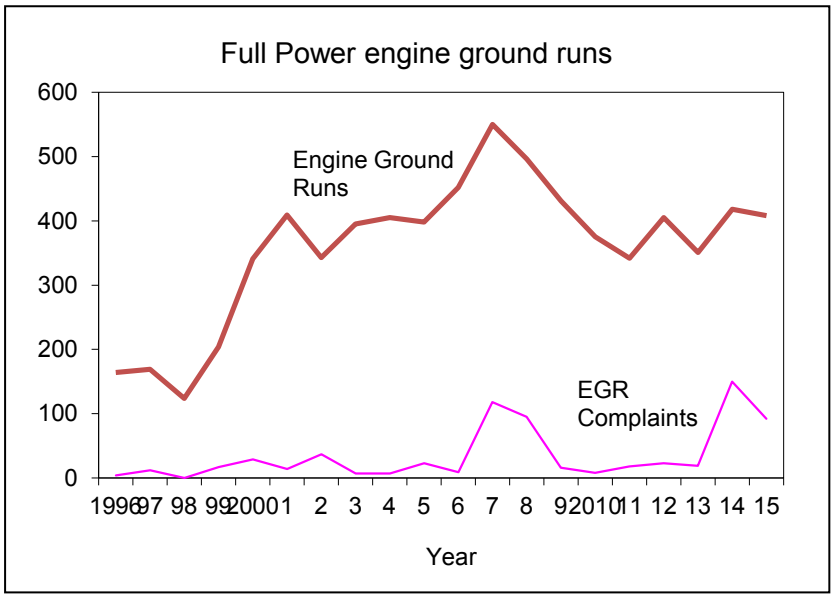
Figure 2 shows the total number of full power engine ground runs that occurred between 1996 and 2015. Full power engine ground runs are currently only permitted at specific locations, with Taxiway Echo being the preferred location with Taxiway Lima as the secondary option which is closer to Elmdon. A Trial is currently on-going to look at potential sites that fall outside of these locations. This is outlined below.

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

Figure 2. Total number of Engine Ground Runs (full power) 1996-2015

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.

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) 1or 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.

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 current 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 is also not appropriate for wide bodied aircraft in the short term. Even though the engine test itself may only take a few minutes the aircraft can be in place for an hour or so.

6 possible locations were outlined but two of these were ruled out at an early stage. The remaining four locations will be examined in depth by way of a trial commencing from 25th January 2014 for a 12 month period. Noise from Engine Ground Runs over the trial period will be monitored along with any complaints received. Noise will be measured at the nearest residential property and compared to the background noise level. It was agreed with Solihull MBC that the trial will be extended for a further 18 months to gain further data particularly in relation to restrictions imposed on Taxiway T.

Noise Action Plan

Birmingham Airport has produced a revised Noise Action Plan which sets out the company's noise programme to 2018. Birmingham Airports objectives for managing aircraft noise is

'*To work with our stakeholders, including the local community and industry partners to adopt the best practicable means to assess, manage and minimise the impact of aircraft noise, both now and in the future'*

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.

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 2015 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 single engine taxiing or reduced engine taxiing. This is where the plane taxis to or from the runway using only one of the engines to 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

The Airport also has a portable noise monitor which can be left for extended periods at different locations.

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

Air Traffic

The Airport Company shall (subject to the approval of the Civil Aviation Authority) implement any appropriate changes to its airspace as soon as practicable following the completion of the CAP 725 process. Further details of this are included in Schedule 8.

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 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.

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) LAmax 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) LAmax 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

The Airport Company undertook a full review of the Night Flying Policy in 2011, including a public consultation. The review was presented to the Airport Working Party and a new Night Flying Policy was agreed in January 2012. It was agreed that the Airport would report to the Airport Working Party on progress after a year. The update was provided to Solihull MBC in 2013. The current policy was deemed to be working successfully and it was decided that no further changes need to be done at present.

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. This is why the quota count doubles with increasing noisiness of the aircraft.

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 8 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 1997-2015

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

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 2014-15 there were 4 violations of the Night Flying Policy. The details are shown in Table 9.

Table 7. Night Flying Policy violations for 2014-15 (Nov –Oct)

Date/Time	Flight	Aircraft Type	Noise Level
2/7/15 03.34	UKL4021	AN26	87.6
3/7/15 01.36	CVK7080	AN26	89.6
28/8/2016 2.06	UKL4035	AN12	88.2
22/12/2014 04:35	RB1643	AN12	85.8

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.

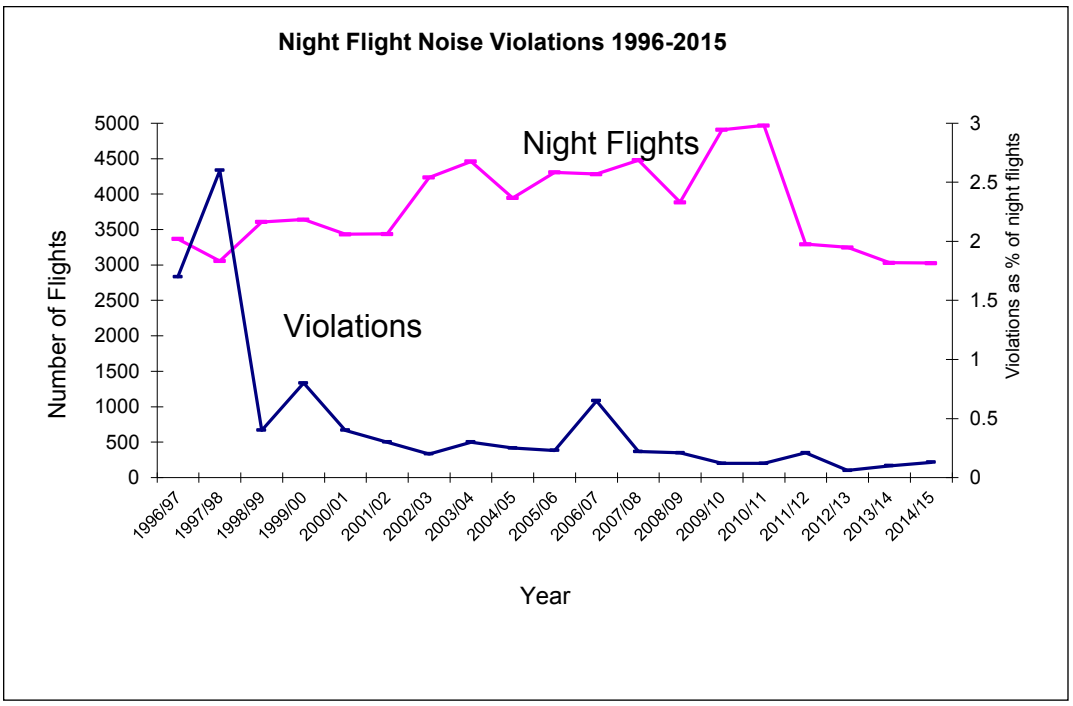
Note; one violation, an Oxfam operation, fine was waived as it was a relief flight

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

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 2015 there were a total of 5 confirmed vortex strikes . If any affected properties are semi detached or terraced properties then all of the joined properties are eligible.

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 (O_3), sulphur dioxide (SO_2). 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 2015 the data capture target capture of 90% was achieved for the instruments NOx, CO and O3 instruments. PM10 and SO2 data captures were slightly below the target (89.7% and 88.7%) in 2015. Any data capture rate above 75% is deemed representative of the full annual period.

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		To be achieved by
	Concentration	**Measured As**	
Benzene (England and Wales)	5.00 µg m^{-3}	Annual mean	31 December 2010
Carbon monoxide (CO)(England, Wales and N. Ireland)	10.0 mg m^{-3}	Maximum daily running 8-hour mean	31 December 2003
Nitrogen dioxide (NO2)	200 µg m^{-3} not to be exceeded more than 18 times a year	1-hour mean	31 December 2005
Particles (PM10) (gravimetric) **(**All authorities)	50 µg m^{-3}, not to be exceeded more than 35 times a year	24 hour running mean	31 December 2004
	40 µg m^{-3}	Annual mean	31 December 2004
Sulphur dioxide (SO2)	266 µg m^{-3}, not to be exceeded more than 35 times a year	15-minute mean	31 December 2005
	350 µg m^{-3}, not to be exceeded more than 24 times a year	1-hour mean	31 December 2004

	125 µg m^{-3}, not to be exceeded more than 3 times a year	24-hour mean	31 December 2004
Ozone (O3)*	100 µg m^{-3} not to be exceeded more than 10 times a year	8 hourly running or hourly mean*	31 December 2005

*** not included as part of the LAQM regime**

To enable a comparison of pollutant concentrations at Birmingham Airport with other nearby sites table 11 shows the results for sites within Birmingham. There are currently no monitoring sites in the Solihull area apart from data captured at Birmingham Airport.

Table 10. Comparison results for Birmingham Airport and Local monitoring sites in 2015

	Birmingham Airport	**Birmingham Tyburn Roadside**	**Birmingham Tyburn**	**Birmingham Acocks Green**
Annual Mean				
PM_{10} (µg m^{-3})	15	17	19	-
NO_2 (µg m^{-3})	21	45	30	19
O_3 (µg m^{-3})	50	35	45	47
SO_2 (µg m^{-3})	2	-	1	
CO (mg m^{-3})	0	-	-	

The report published by Ricardo-AEA shows that in 2015 all of the Air Quality Objectives for the protection of human health were met at the site with the exception of ozone. The ozone levels measured at Birmingham Airport monitoring station show this pollutant had 67 exceedances of the limit value in 11 days during 2015 and so the AQS objective for ozone was therefore not met in 2015. 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.

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
Total	1	0	0	0	0	2	1	1	0	0	1	1	1	13	7

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.

The other conditions relate to monitoring the performance of noise preferential routes for 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 now 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 to the points on a compass to which the direction of the runway is oriented.

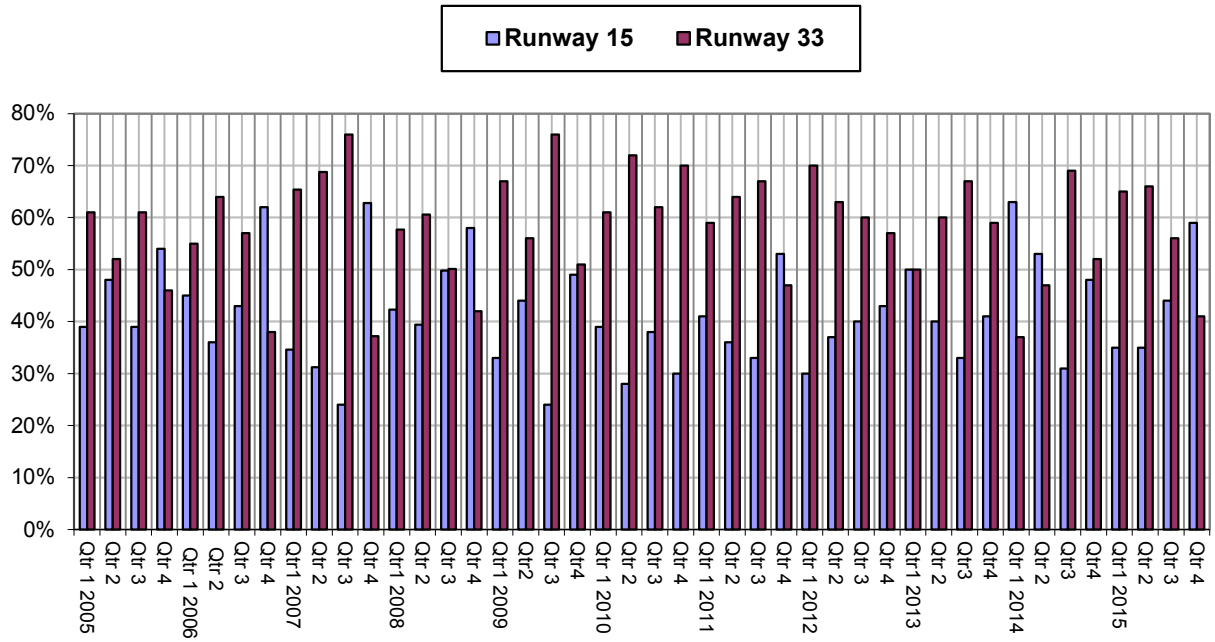
Departing aircraft have set routes they are required to follow. However, on arrival aircraft have no set routes until they are established on the Instrument Landing System.

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 APB-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 of 3000 feet is reached unless otherwise directed by Air Traffic Control.

Figure 4. Runway usage at Birmingham Airport



Noise Preferential Routes

Departing Aircraft fly in corridors known as Noise Preferential Routes until they reach the height allowed for 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 at an altitude less than 3000 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.

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

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

Please see below for details of the Airspace Change Proposal.

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. The procedure has not changed but due to the removal of the Hampton Turn there has been a change in the track over the ground. If Option 6 is accepted by the CAA then the Mosun Departure would be amended to conform to the Noise Preferential Route for Option 6.

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 biannual meetings with the airlines to discuss any track keeping issues. During 2015 97.7% of aircraft were “on-track.” There is an annual ceremony to present awards to Airlines who have achieved high targets. As the Airspace Trial was taking place during this time the figure has been calculated for usage on Runway 33 only.

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.

CDA allows aircraft to descend on less power making a smooth approach without the need to level which traditionally has been the standard approach so helping emissions and also creates less noise.

With this type of approach aircraft stay higher for longer and 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 will be 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. This has now changed to 6000 feet. In 2015 performance is currently showing a 95% improvement in performance levels,

Continuous Climb Departures are currently being studied. At present most departing aircraft from the Airport are given a continuous climb up to 6000 feet and the Airport is looking to change this to 8000 feet. This will help lower aircraft fuel consumption and lower the CO_2 emissions as the highest levels of fuel burn and CO_2 emissions are generated by an aircraft climbing to 10,000 feet. Air Traffic controllers are encouraged to transfer aircraft to the next controlling agency early to help facilitate climbs past the 10,000 feet level.

Birmingham Airport has a programme help airlines reduce CO2 emissions and by using a combination of initiatives such as continuous descent approaches, continuous taxi and reduced engine taxi, the Airport can help airlines reduce their of CO2 emissions . These are discussed in Schedule 16.

Airspace Change Proposal

Departures to the South- Option 5 and 6

As a result of the runway extension departure routes to the South need to be adjusted as aircraft are no longer able to fly the old departure routes.

In view of this there has been a trial of the options for departures to the South of the Airport.

The Airspace Change Trial will lead to a new departure flight path to the South of the Airport and there are 2 available routes which are known as Option 5 and Option 6

Trials to obtain data were completed in February 2015 and all data was sent to the Civil Aviation Authority for the final decision. The information included actual data from flights to measure the potential impact of the changes and data from portable noise monitors located in key areas during the trial.

It was expected that a response from the CAA would be received by November 2015 but by the close of the year Birmingham Airport still had not replied. A response was received from CAA in April 2016 who had decided on Option 6 as the route which will come into force in May 2016 with some conditions attached.

Key community representatives have been kept informed of all aspects of the trial through meetings at Birmingham Airport and community updates which are available on Birmingham Airports Website.

NUMBER OF ATMs

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 1996-2015

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

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 £55,000

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 in 2014), 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 2015 The Community Trust Fund awards amounted to a total spend of £82,516. This sum has been distributed among the projects listed in table 18. 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

Staff from Birmingham Airport attended an events in Sheldon County Park and Shard End and gave information and advice regarding the Airport to members of the public.

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 1998-2015

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

Project Name	Area	Awarded	Purpose
St Thomas Community Project	Garretts Green	£500	Decorating Materials
301st Kingshurst Scouts	Kingshurst	£3,000	Camping Equipment
Solihull County Scout Group	Solihull	£1,500	Disabled Access Ramp
Brookhill Bowling Club	Erdington	£1,500	Paving to Green surrounds
Erdington Methodist Church		£3,000	Replacement Windows
Sport 4 Life	Washwood H'th	£2,249	IT & Sports Equipment
Balsall Common Primary School	Balsall Common	£1,403	Repairs to play equipment
St Mary's Church	Pype Hayes	£3,000	Roof repairs
Sporting FC	Hodge Hill	£1,500	Training equipment
Brownmead Academy	Shard End	£3,000	Outdoor Classroom Storage
Walmley Cricket Club	Sutton Coldfield	£700	Dishwasher
Digbeth in the Field URC	Yardley	£3,000	Glazing & Disabled Access Ramp
Knowle Royal British Legion	Knowle	£3,000	New disabled access doors
Solihull Age UK	Castle Bromwich	£3,000	Library refurb at Castle Bromwich
Birmingham City Mission	Hodge Hill	£2,000	Replacement Glazing
Three Trees Community Centre	Chelmsley Wood	£2,649	Storage Shed and access ramp
Vox Populi	Sheldon	£1,324	Projector & Screen
St Cuthbert's Castle Vale	Castle Vale	£3,000	Lighting for Church Hall
The Blossomfield Players	Solihull	£2,000	Stage Curtains & Track
Training Ship Stirling	Shard End	£3,000	Sailing Boat
Solihull Tree Wardens	Balsall Common	£3000	Tools
B'ham Disability Resource Centre	Kitts Green	£2,096	Art display boards and cabinets
The Birmingham Settlement	Kitts Green	£1,500	Kitchen equipt, for community space
School Lane Allotments Association	Shard End	£3,000	Access driveway repairs
Coleshill Guild of Bellringers	Coleshill	£1,000	Refurbishment of bells
Castle Brom Cricket &	C Bromwich	£3,000	Repairs to artificial playing

Sports Club			surfaces
Family Care Trust	Fordbridge	£3,000	New flooring
John Taylor Hospice	Erdington	£3,000	Men's Shed and tools
Kings Amateur Boxing Club	Sheldon	£1,490	Heaters and toilet refurbishment
Springfield House School	Knowle	£3,000	Outdoor Play equipment
1459 Squadron ATC	Kingshurst	£2,000	IT - Flight Simulators
Pavilions Sports Bowling Club	Kingshurst	£2,000	Irrigation Equipment
31st Sutton Coldfield Scouts	Streetly	£3,000	Sports pitches
1st Solihull Scout Group	Solihull	£2,104	Pond Dipping platform
All Saints Parochial Church Council	Streetly	£3,000	Lighting system
Sheldon Traffic Action Group	Sheldon	£2,000	Static Camera System

Table 14. Community Trust Fund awards for the financial year 2015

The Airport has a nominated charity, Acorns Childrens Hospice fund, to which it has donated over £55,000 . 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.

The steering group met in May and December 2015, with Solihull MBC carrying out monitoring visits throughout the summer (for grassland monitoring) and during the winter to monitor habitat establishment across the HEELMP area.

Solihull MBC is to help Birmingham Airport undertake the tree planting and this will be achieved through a combination of works on Local Nature reserves and liaising with the Tree Officers.

A consultant ecologist was contracted to carry out a study of the protected species to 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.

The report gave a number of points for minor works to be carried out, for example, re-location of some bat boxes and maintenance of the owl boxes. It also recommended that a torch survey for crayfish to be carried out and this will take place in 2016.

The report recommended a review of the grassland management plan with a possible survey of moths and butterflies. Talks are on going with tenant farmers to ensure that the management prescriptions described in the plan are followed.

Any outstanding issues and on-going monitoring will be discussed at the next HEELMP Steering Group meeting

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 draft Health Management Plan has been written and this sets outs 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.

Key members of the Airport Health Group are encouraged to communicate on a regular basis, particularly if any new community health concern has been raised, and if either party is required to make a public response.

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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 visitors 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 is 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 £50,000 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 will 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.

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 then 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 also 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

In 2012/13 the Carbon Footprint of the Airport was calculated to be 168,543 tonnes of CO2 which included Scope 1, 2 and 3 but as Scope 3 details only have to be reported every 3 years for the purposes of this report details of Scope 1 and 2 will be shown. Table 17 below shows that there has been 6.82% decrease since the previous audit. These figures will be updated in the next Section 106 report

The figures are calculated using guidance issued by DEFRA and information was externally reviewed in July 2013 and included verification of methodologies and figures and the Airport is investing in smart meters to allow automatic monitoring across the site.

Table 15. Tonnes of CO_2 for Scope 1 and 2 combined

Year	Tonne of CO_2
2012/13	25,020
2013/14	23,314

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.

Scope 3 covers aspects out of the Airport Company's direct control such as emissions from people travelling to the airport by surface transport, aircraft landing and take off cycle, 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.

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 Single Engine Taxiing amongst other things.

In 2011 solar panels were installed on the roof of the terminal building as part of the programme to improve energy performance, to cut costs and reduce carbon emissions. These save 22 tonnes of carbon dioxide each year and generate 40,000 kWh a year which is sufficient to power 12 average sized houses.

An energy champions group has been formed to raise awareness amongst employees at the Airport with regards to energy use and to encourage energy saving ideas across the site.

Birmingham Airport now has fast charge points for electric motors. The green electric recharges a vehicle between 20 and 30 minutes to fully charge.

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 2015 a number of projects were funded from this money. Fordbridge School and Windy Arbor School had some new hedgerow planted. Land adjacent to Barston Lane and land at Walsall End Lane had hedgerow and tree planting carried out and more tree planting was carried out at Smiths Wood.

The total area covered for these projects was 1.2 acres and 600m of hedgerow. The planting was all native species. A photo below shows some of the planting

Operation Pathfinder

When aircraft depart the airport they have noise preferential routes, currently 3km wide from Runway 33 and for conventional departures from runway 15. RNAV departures from runway 15 have a 2km wide NPR, which aircraft should fly until they reach a height of 3000 feet. Operation Pathfinder was created in 2005 to recognise airlines that performed well and exceeded the target set by Birmingham Airport. Regular meetings with airlines, air traffic and operational staff are held to encourage airlines to achieve the target of 95 % and to share best practices.

Continuous Descent Approach (CDA)

Continuous Descent Approaches were launched at Birmingham International Airport in 2009, following a very successful trial with the Airlines and ATC. Prior to the trial, airlines were achieving just over 50% compliance with the CDA profile; aircraft are now collectively achieving over 90% compliance with the CDA procedure

CDA allows aircraft to descend on less power making a smooth approach without the need to level out which traditionally has been the standard approach so helping emissions and also creates less noise. When the CDA were started they were conducted from 4000 ft to landing for every ILS approach. This has now changed to 6000 feet. It was expected that initially performance levels would decrease but reports have shown that performance is currently showing a 96% improvement in performance levels,

A CDA approach cannot always be flown due to airspace constraints or over riding safety requirements.

Continuous Climb Departures

This is where aircraft operate a steady continuous climb on departure reducing both noise impact and fuel consumption.

At present most departing aircraft from the Airport are given a continuous climb up to 6000 feet. This will change to 8000 feet. This will help lower aircraft fuel consumption and lower the CO_2 emissions as the highest levels of fuel burn and CO_2 emissions are generated by an aircraft climbing to 10,000 feet. Air Traffic controllers are encouraged to transfer aircraft to the next controlling agency early to help facilitate climbs past the 10,000 feet level.

Reduced engine taxiing

Single engine taxiing is encouraged where possible which again reduces CO2 emissions.

Shutting down an engine while taxiing can reduce emissions considerably and reduce fuel burn and costs to Airlines. It also highlights good environmental practice.

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 nee to run auxiliary power units and there is an on going programme to replace older FEGP units.

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.

New LED lights has been installed in Car Park 1 to reduce energy and maintenance costs and this will take place in Car Parks 2 and 3

Conclusion

2015 saw an increase of almost 5% in passenger numbers than the previous year with some record breaking numbers of passengers in four months which shows an upward trend for the industry which is good for Birmingham Airport and gives an economic boost to the region.

The increase in passenger growth is a very encouraging sign for the Airport and gives an economic boost to the immediate region and the area covered by the Airport's catchment area. Birmingham Airport continues to engage with airlines, travel agents and tour operators to promote the benefits of the West Midlands region.

There will be new 11 new destinations to fly to in 2016 which gives travellers more flexibility and choice. Many airlines have increased the frequency of their flights and with onward connections available at Hub Airports it is possible to fly to many destinations that were once only possible from London Airports. 2016 will also see the new A380 airbus on a daily basis to Dubai.

Birmingham Airport were disappointed that a decision still has not been made by the Civil Aviation Authority (CAA) following its submission of the Airspace Change Proposal (ACP) for changes to the Standard Instrument Departure routes (SIDs) and until this is known aircraft will continue to fly Option 6. All interested parties will be informed as soon as a decision has been made.

2015 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

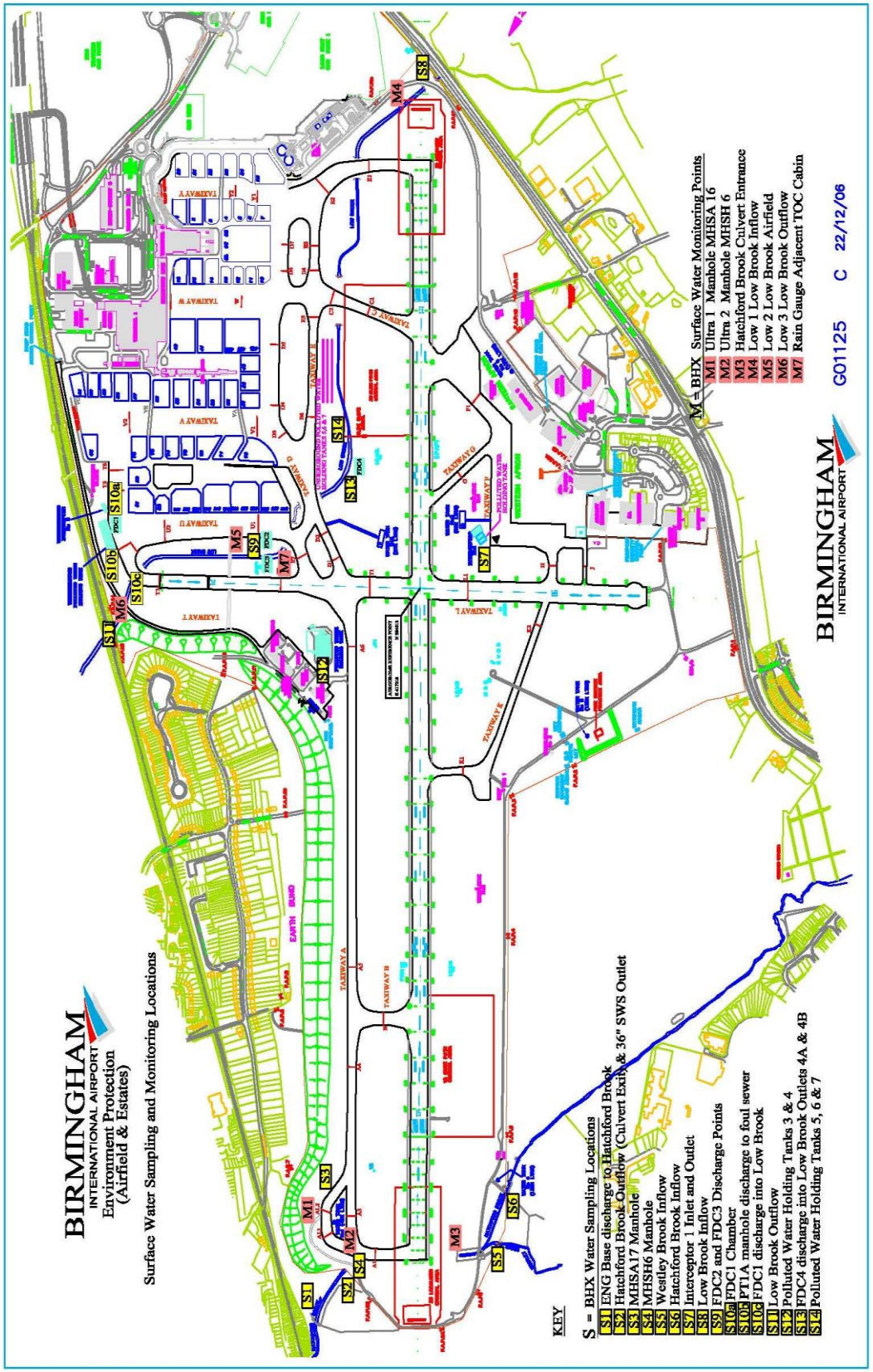
BIRMINGHAM INTERNATIONAL AIRPORT (2007)
Airport Master Plan ‘Towards 2030’

BIRMINGHAM INTERNATIONAL AIRPORT (2007)
Airport Surface Access Strategy ‘Moving Together’

BIRMINGHAM INTERNATIONAL AIRPORT (2001)
Sustainability policy framework

BIRMINGHAM AIRPORT
Noise Action Plan

SOLIHULL LOCAL PLAN
Shaping a Sustainable Future (2013)


BIRMINGHAM
INTERNATIONAL AIRPORT
Environment Protection
(Airfield & Estates)
Surface Water Sampling and Monitoring Locations
BIRMINGHAM
INTERNATIONAL AIRPORT
G01125 C 22/12/06
M = BHX Surface Water Monitoring Points
M1 Ultra 1 Manhole MHSA 16
M2 Ultra 2 Manhole MHSH 6
M3 Hatchford Brook Culvert Entrance
M4 Low 1 Low Brook Inflow
M5 Low 2 Low Brook Airfield
M6 Low 3 Low Brook Outflow
M7 Rain Gauge Adjacent TOC Cabin
KEY
S = BHX Water Sampling Locations
S1 ENG Base discharge to Hatchford Brook
S2 Hatchford Brook Outflow (Culvert Exit) & 36" SWS Outlet
S3 MHSA17 Manhole
S4 MHSH6 Manhole
S5 Westley Brook Inflow
S6 Hatchford Brook Inflow
S7 Interceptor 1 Inlet and Outlet
S8 Low Brook Inflow
S9 FDC2 and FDC3 Discharge Points
S10a FDC1 Chamber
S10b PT1A manhole discharge to foul sewer
S10c FDC1 discharge into Low Brook
S11 Low Brook Outflow
S12 Polluted Water Holding Tanks 3 & 4
S13 FDC4 discharge into Low Brook Outlets 4A & 4B
S14 Polluted Water Holding Tanks 5, 6 & 7

Map 1

Map 2- Sound Insulation Scheme Boundary