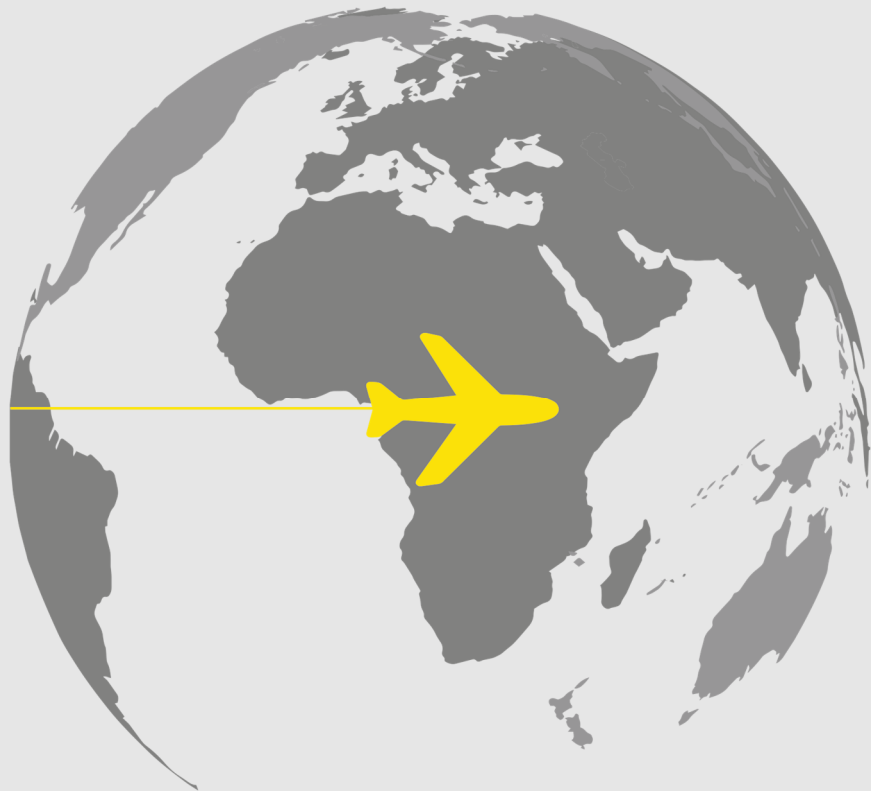




Leeds Bradford[®]
Yorkshire's Airport

Noise Action Plan 2019-2023



Contents

1	EXECUTIVE SUMMARY.....	1
2	INTRODUCTION	2
2.1	Purpose of Noise Action Plan.....	2
2.2	Scope of Noise Action Plan	3
3	LEEDS BRADFORD AIRPORT	3
3.1	Brief History	3
4	BACKGROUND TO AIRPORT NOISE AND REGULATION.....	4
4.1	Quantifying Noise	4
4.2	The Regulation of Aircraft Noise in the UK	6
5	NOISE MANAGEMENT AT LEEDS BRADFORD AIRPORT	10
5.1	Noise Insulation Grant Schemes	11
5.2	Noise Preferential Routes (NPRs)	11
5.3	Target Noise Levels	11
5.4	Ground Engine Running	12
5.5	Noise Monitoring	13
5.6	Complaint Management	13
5.7	Consultative Committee	13
5.8	General	13
6	RESULTS OF NOISE MAPPING AT LEEDS BRADFORD AIRPORT	13
7	COMPARISON WITH FIRST AND SECOND ROUND RESULTS.....	15
8	PROVISIONS ENVISAGED FOR EVALUATING IMPLEMENTATION	16
9	LEEDS BRADFORD AIRPORT ACTION PLAN.....	17
9.1	Completed Actions.....	21
9.2	Actions Removed since First Round.....	23
10	SUMMARY OF CONSULTATION RESPONSES	24

Appendices

Appendix A – Technical Glossary and Abbreviations

Appendix B – Financial Information – Cost of Noise Management

Appendix C – Noise Preferential Routes

Appendix D – Noise Contour Mapping

1 EXECUTIVE SUMMARY

The European Parliament Directive, referred to as the Environmental Noise Directive (herein referred to as 'the Directive') aims to standardise the assessment of environmental noise across Europe, and sets a framework for the ongoing and future assessment and management of environmental noise.

This Directive has been transposed into English law as the Environmental Noise (England) Regulations 2006 (as amended).

The Regulations require the appropriate Competent Authority to develop a Noise Action Plan to assist with the management of noise. In the case of this Noise Action Plan the Competent Authority is LBA.

This document aims to obtain where possible a reduction of the impact of noise produced by aircraft and the associated ground operations through the next five year period 2019-2023. This process will then be reviewed on a 5 yearly basis in accordance with the Regulations.

This Noise Action Plan is the third to be produced under the Regulations and is based on conditions assessed for the 2016 calendar year.

The action plan is aimed to include not only the impact of noise from aircraft both arriving and departing at the airport but to take into account other airside operations and other activities within the operational boundary of LBA.

LBA's Environmental Policy includes an objective relating to aircraft and airport noise:

'Minimise as far as reasonably practicable the effects and disturbance of noise from aircraft and airport operations.'

It is the aim of LBA that this action plan and the airport's 'Route to 2030' Strategic Development Plan (SDP) will work hand in hand to achieve best practice in the management of noise in line with other comparable airports.

For details of the actions planned for the next five years, please see Section 9.

Following the publication of our Noise Action Plan, we appreciate the importance of keeping local communities and other stakeholders informed of progress made and the implications of any policy decisions arising from the commitments made in the plan. To this end we plan to provide monthly noise and track keeping updates to members of the airport's Consultative Committee.

This plan summarises the extent of aircraft noise from LBA. It details the procedures and restrictions already in place to manage noise, and sets out actions proposed over the next five years to further manage the impact that operations at LBA have on neighbouring communities.

LBA identifies that noise is and can be an issue for surrounding areas due to the nature of operations involved. LBA is one of many other airport operators across the UK faced with similar noise considerations. It is not possible to eliminate noise from general operations of the airport and therefore a balance needs to be struck when managing the environmental noise that is generated by aircraft and aircraft operations.

The Government's Aviation Policy Framework (APF) states that the Government's overall policy is *'to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise'*. This statement clarifies that eliminating all noise would be impossible but limiting those affected is the most appropriate way forward.

2 INTRODUCTION

2.1 Purpose of Noise Action Plan

This document details LBA's proposed Noise Action Plan, which aims to manage and where possible reduce the impact of noise from aircraft and its operations at LBA over the five year period 2019–2023. This is the third noise action plan to be produced by LBA, which has been updated to reflect the most recent round of noise mapping prepared for the 2016 calendar year and reports progress made against actions defined in our first plan.

European Union and UK Government regulations require airports with over 50,000 movements a year to produce Strategic Noise Maps and associated Noise Action Plans. Airports are also required to produce noise maps and action plans where their operations effect noise levels within an agglomeration.

Road operators, rail providers and large urban areas of over 100,000 people must also prepare Strategic Noise Maps and associated Action Plans. Details of the EU Directive 2002/49/EC and Environmental Noise (England) Regulations 2006 (as amended) can be found at:

- www.defra.gov.uk

LBA falls below the requirement of over 50,000 movements a year but under the Regulations was identified as an airport required to prepare Noise Maps and a Noise Action Plan to be produced due to its proximity to the West Yorkshire Urban Area agglomeration. Agglomerations are areas with a population of more than 100,000 persons and a population density equal to or greater than 500 people per km².

LBA is aware of the concerns from local communities and surrounding areas regarding noise from aircraft operations and the associated operations on the ground. Following the publication of the 'Route to 2030' Strategic Development Plan (SDP) in 2017, the airport's plans to grow have, if anything, heightened that concern.

LBA have recently consulted on some proposed changes to the current airspace arrangements in the immediate area around LBA in order to provide enhanced protection to aircraft on the critical stages of flight in departure and final approach. The overall aim of LBA's Airspace Change Proposal (ACP) is to update flight procedures and airspace that will align with proposed changes by the National Air Traffic Services (NATS) under the Future Airspace Initiative (FAI) North project. LBA has and will continue to engage with local communities to reassure and inform them that these new procedures will aim to reduce the overall noise footprint.

One of the aims of this noise action plan is to promote two-way communication between LBA, local communities and other key stakeholders. The result of this improved communication will enable the airport to respond to the concerns of local communities and where practicable apply effective mitigation measures.

The EU Noise Directive 2002/49/EC and Environmental Noise (England) Regulations 2006 (as amended) require airports to produce Noise Action Plans. LBA welcomes your views on the proposed Noise Action Plan. This plan lays out the proposals of LBA to monitor, control and wherever possible minimise the level of noise generated by the airport.

2.2 Scope of Noise Action Plan

The aim of this document is to enable LBA to improve and work towards the development and management of noise arising from aircraft and the associated airside operations.

The Environmental Noise (England) Regulations 2006 (as amended) also requires noise maps and associated action plans be produced for major roads (of more than 3 million vehicles passages per year) and for roads within agglomerations. Any roads around LBA that meet the requirements of the Regulations have been noise mapped by Defra and further information is available from:

- www.defra.gov.uk

Under the Directive and Regulations, LBA has produced noise contour maps for the relevant calendar year of 2016. The contours were prepared by the consultancy, Amec Foster Wheeler Environment and Infrastructure UK Limited (now Wood plc). These contours are shown in *Appendix D*.

The Directive also requires action plans to provide estimates of the number of people affected (annoyed, sleep disturbed or other). Noise is subjective; there are many different effects of noise and therefore an individuals reaction to noise may differ significantly to another. The reaction to a particular noise may have a direct relationship to the circumstances in which the noise is experienced.

To this end, quantifying the numbers of people affected by noise and the degree of any resulting impact is difficult. Estimates of the number of people affected by aircraft noise from LBA are included in Section 6.

3 LEEDS BRADFORD AIRPORT

3.1 Brief History

LBA was originally formed as Yeadon Aerodrome which started operating in 1931 with activities predominantly being club flying and training flights. In 1931 it was 60 acres of grassland which was extended by a further 35 acres in 1935.

Today, the operational area of LBA covers 154 hectares, and is located approximately 8 miles northwest of Leeds city centre and 7 miles northeast of Bradford city centre, with a main runway of 2,250m in length at an elevation of 662ft.

Immediate surrounding areas include Guiseley, Menston, Burley-in-Wharfedale, Horsforth, Cookridge, Carlton, Yeadon and Otley.

In 1987, LBA was converted into a limited company under the provisions of the Airports Act 1986 and the five metropolitan Councils of West Yorkshire became the shareholders of the company (Leeds and Bradford owning 40% and Wakefield, Calderdale and Kirklees sharing 20% equally). In October 2006 the local authorities decided to sell the airport. In May 2007 the airport was privatised and sold to Bridgepoint Capital.

In November 2017, AMP Capital acquired 100 per cent of the shares from Bridgepoint Capital and are LBA's current owners.

4 BACKGROUND TO AIRPORT NOISE AND REGULATION

Noise forms part of our everyday life and can be defined as a 'sound which is undesired by a recipient'.

Noise from an aircraft in flight is mainly a result of engine noise or airframe noise (the noise of air moving over the body and wings of the aircraft).

- The noise from departing aircraft is dominated by engine noise.
- The noise from arriving aircraft has a high degree of engine noise, but is also highly influenced by airframe noise.

Aircraft also generate noise whilst on the ground, for example from taxiing. In addition, the APU (Auxiliary Power Unit) is the generator on board the aircraft, which allows the starting of the main engines and supplies onboard electrical power while the aircraft is 'parked'. This combined with the essential conditioning systems and pressurisation needs within the aircraft contribute to the noise generated.

Noise from aircraft is regulated at International, European and National level. The International Civil Aviation Organisation (ICAO) has set progressively tighter certification standards for noise emissions from civil aircraft. These standards are known as 'Chapters' (aircraft 'chapters' are defined by the International Civil Aviation Organisation (ICAO) in Annex 16 Vol1).

Aircraft operating in ICAO member states must comply with these standards, which have been formalised in European and UK legislation.

Modern 'Chapter 3' and 'Chapter 4' aircraft are considerably quieter than 'Chapter 2' aircraft. The latest ICAO 'Chapter 14' aircraft is even more stringent than 'Chapter 4' by a cumulative total of 7dB EPNL and was adopted by ICAO in 2014. It is applicable to new aeroplane types submitted for certification on or after 31 December 2017 and on or after 31 December 2020 for aircraft less than 55 tonnes in mass.

At LBA, the noise level of individual aircraft movements has dropped significantly over recent years, largely due to the introduction of modern quieter aircraft fleets, however, the number of aircraft movements has increased. The result of which is average noise levels through the day have remained relatively constant, but with an increase in the number of noise 'events'.

Individuals experience the impact of noise differently and this can be dependent upon the type of noise, the environment in which it is heard, the time period at which it occurs, the source and duration of the noise.

4.1 Quantifying Noise

There are a range of noise metrics which that can be used to describe and manage aircraft noise. It is universally recognised that there is not one single noise metric that can be used for assessing, describing and communicating aircraft noise effects. For example, some metrics are better correlated with describing long-term health effects, whereas others are best used to describe the amount of noise produced and experienced during an aircraft noise event.

Some of these metrics are used to help develop policies and describe overall exposure to noise, namely Leq metrics. These metrics describe the 'equivalent continuous sound level' and is a measure of the average sound energy over time. Whilst these are often described as 'average' it is important to note that these allow comparison of the total amount of noise exposure in one location as oppose to another.

In the context of this noise action plan and under the Regulations, the key noise policy metrics are the Lden and Lnight which are Leq metrics.

Another key policy metric which is based on the Leq and is used in UK aviation noise policy is the LAeq, 16hr metric. This metric works in a similar manner to the Lden but is based on a 92-day period in accordance with research undertaken in the UK. UK aviation noise policy sets a number of requirements of airport operators using these metrics, namely in relation to noise insulation and compensation schemes.

Other noise metrics which can be helpful are the LAmax and SEL noise metrics. These metrics are used to describe the noise associated with aircraft noise events. In the case of the LAmax, this metric describes the maximum noise level associated with an aircraft event. Associated metrics are the 'N-metrics' which describe airport noise as the number of times a certain maximum level of noise is exceeded on average during the day or night. The CAA has recently introduced the N65 (daytime) and N60 (night-time) metrics which describe the average number of aircraft events exceeding 65dB LAmax and 60dB LAmax respectively at and around an airport.

The SEL metric describes the total amount of sound energy associated with an aircraft event. This metric is used to help calculate Leq metrics. Unlike the LAmax metric, this metric considers the duration and level of an aircraft noise event making it helpful for comparison purposes.

The contours required under The Environmental Noise (England) Regulations 2006 (as amended) are included in *Appendix D*.

4.1.1 Health Effects and Noise

Over the last decade and since the implementation of the Environmental Noise (England) Regulations 2006 there have been a number of studies researching the links between environmental noise exposure and health. These studies have considered a range of transportation sources, including aircraft, and has resulted in publications by the World Health Organisation (WHO) and the European Environment Agency (EEA). These publications have summarised and combined the evidence linking aircraft noise to the following health outcomes:

- Cardiovascular Disease e.g. hypertension, coronary heart disease (CHD), acute myocardial infarction (AMI) and stroke.
- cognitive impairment e.g. impact on childrens reading and education
- sleep disturbance e.g. interference with sleep and awakenings
- Tinnitus i.e. loss of hearing;
- annoyance e.g. becoming or increasingly disturbed or bothered by aircraft noise;
- wellbeing e.g. impacts on quality of life and mental health.

In the UK, the most recent study into the association between aircraft noise and annoyance was the CAA research 'CAP1506 Survey of noise attitudes 2014: aircraft'. This research found that people were more annoyed by aircraft noise than previous. This is consistent with most other evidence gathered by researchers and studies which indicates that people are becoming more annoyed by aircraft noise and that the effects of aircraft noise occur at lower levels of exposure than previously thought.

Research is ongoing and it is expected that further guidelines from WHO will be issued during the course of this noise action plan.

4.2 The Regulation of Aircraft Noise in the UK

There are four main tiers of regulation governing aircraft noise in England.

- International - ICAO
- European - The European Union
- National - The UK Government
- Local - Local Authorities

The airport itself also acts as another important regulator of aircraft noise and operates noise management schemes which are voluntary.

International Regulation

The International Civil Aviation Organisation (ICAO) sets progressively tighter certification standards, known as Chapters, for noise emissions from civil aircraft to which Member countries' fleets must conform.

Further details of these standards can be found at:

<https://www.icao.int/environmental-protection/Pages/technology-standards.aspx>

In addition to these specific requirements, the ICAO requires Member states to adopt a “balanced approach” to noise management, which looks beyond individual aircraft to reduce noise impact through the following measures:

- reduce aircraft noise at source (i.e. quieter aircraft technology)
- land-use planning
- noise abatement operational procedures
- operating restrictions

The ‘balanced approach’ consists of identifying the noise problem at an airport and then assessing the cost-effectiveness of the various measures available to reduce noise through the exploration of four principal elements as outlined above.

European Legislation

The relevant European legislation applicable to aircraft noise in the UK is:

- **EC Directive 2006/93/EC** which sets out the requirements of EU Member States for the regulation of Chapter 3 civil subsonic aircraft, and replaces the repealed EU Directive 92/14/EEC. The EU Member States are required to ensure that all civil subsonic aircraft operating from airports in their territory comply with the Chapter 3 requirements, barring specific exemptions, such as those with specific historical interest.
- **EC Directive 2002/30/EC** which aims to promote the reduction of noise pollution from aircraft at airports by promoting sustainable development. A key objective of the Directive is to facilitate the introduction of operating restrictions to limit or reduce the number of people significantly affected by the harmful effects of noise, and to achieve airport specific noise abatement objectives. The Directive requires that EU member

states adopt the ICAO 'Balanced Approach' to aircraft noise management. This Directive has since been repealed and replaced by EU Regulation No.598/2014.

- **EC Directive 2002/49/EC** which relates to the assessment and management of environmental noise and requires member states to publish strategic noise maps and noise action plans for major airports (defined as having more than 50,000 movements a year) every five years or where they affect noise in agglomerations (a continuous area of at least 100,000 people). This Directive is implemented in the UK through the Environmental Noise (England) Regulations 2006.
- **EU Regulations No.598/2014** which establishes rules and procedures with regard to the introduction of noise-related operating restrictions at union airports within the ICAO Balanced approach. The Regulation repeals Directive 2002/30/EC and also changes the definition of marginally compliant Chapter 3 aircraft and the process to be followed in the implementation of an operating restriction. A fundamental requirement of the Balanced Approach as implemented within EU Regulation 598/2014 is that in determining the most appropriate combination of noise mitigation measures for a given airport, operating restrictions should only be introduced after consideration of the other three elements.

It should be noted that whilst the UK voted to leave the European Union during the EU referendum, until exit negotiations are concluded, the UK remains a full member of the EU and all the rights and obligations of EU membership remain in force.

National Regulation

Relevant parliamentary acts and national regulations that deal with the aircraft noise include:

- **Civil Aviation Act 1982 and 2006** – these acts grant the Government powers to introduce noise control measures, including mitigation and financial incentives for the use of quieter aircraft
- **The Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003** – these Regulations transpose Directive 2002/30/EC into UK law and reflect the adoption of the ICAO balanced approach to achieving noise objectives
- **The Environmental Noise (England) Regulations 2006** – these Regulations transpose Directive 2002/49/EC into UK law. These regulations have been amended.
- **The Aeroplane Noise Regulations 1999** – these regulations provide noise certification standards for propeller and jet aeroplanes registered in the UK. The certification standards reflect those passed down by ICAO.

Full details of the range of aircraft operations related noise controls are set out in statutory notices and published in the UK Aeronautical Information Package and elsewhere as appropriate. These controls include aspects such as Continuous Descent Approaches (CDAs), noise abatement procedures and night flight limits.

Current Aviation Policy – Aviation Policy Framework

In March 2013, the Aviation Policy Framework (APF) outlined policies for airports which control, mitigate and compensate for aircraft noise. The APF recognises that noise is the primary concern for local communities near airports however also acknowledges that the Government wants to '*strike a fair balance between the negative impacts of noise... and the positive economic impacts of flights*'. The APF states that the Government's overall objective on noise is to:

'...limit and where possible reduce the number of people in the UK significantly affected by aircraft noise'.

The current policy set out within the APF were however amended or proposed by the Government in October 2017 through the Consultation Response on UK Airspace Policy which is discussed later in this section.

Future Aviation Strategy

It is expected that the APF will be replaced with the Government's Aviation Strategy for the UK which has already been the subject of early consultation. The Strategy will set the long-term direction for aviation policy-making to 2050. The latest consultation document states that the strategy will look at *"whether the right regulations, controls and incentives are in place to ensure the sector continues to address noise impacts as well as tackling air quality concerns"*.

It is expected that policy proposals will be published by the Government in Autumn 2018 with the final Aviation Strategy being published in Spring 2019.

Airspace Policy

In October 2017, the Government published its response following consultation on UK Airspace Policy. Its response sets out emerging Government policy in relation to airspace and noise and includes policy direction including matters relating to noise. These changes are designed to improve the fairness and transparency of how noise is considered as part of airspace changes.

This direction includes:

- Specific guidance in relation to how the environmental impacts of airspace change options should be considered;
- Classification of the 'types' of airspace changes that can occur;
- Changes to noise compensation policy
- The formation of an Independent Commission on Civil Aviation Noise (ICCAN)
- New metrics and associated guidance to assess noise impacts.

In relation to new noise metrics and airspace change, the Government have made effective their proposals through the Air Navigation Guidance 2017. This guidance has been used by the UK Civil Aviation Authority to develop guidance for the proponents of airspace changes, which is now published (CAP1616). This includes changes to noise assessment thresholds from those documented in the APF. These changes include:

- The setting of a Lowest Observed Adverse Effect Level (LOAEL) for aviation noise at 51 dB LAeq, 16hr (day) and 45 dB LAeq, 8hr (night)
- Recognition that the measure marking the 'approximate onset of significant community annoyance' has been found to occur now at 54 dB LAeq, 16hr as opposed to 57 dB LAeq, 16hr as recognised by the APF.
- The use of L_{Amax}-based metrics to describe the number of times aircraft events occur during the day (N₆₅) and night (N₆₀)
- An 'overflight metric' providing a non-acoustic description of how often a location is overflowed by aircraft
- The use of the Government's monetisation methodology to quantify the cost of aircraft noise in terms of health.

The Government's response also states its intention to modify the Government's compensation policies for aircraft noise as contained in the APF. In short, the proposed policy changes mean that the Government will expect Airport Operators to:

- offer households exposed to levels of noise of 69dB Leq 16hr or more, assistance with the costs of moving;
- offer full insulation to be paid by the airport for homes within the 69dB Leq 16hr contour, where the home owners do not want to move (this is an additional requirement proposed in the 2017 draft Airspace Policy);
- offer acoustic insulation to noise-sensitive buildings, such as schools and hospitals, exposed to levels of noise of 63dB Leq 16hr or more;
- where acoustic insulation cannot provide an appropriate or cost-effective solution, to offer alternative mitigation measures;
- offer financial assistance towards acoustic insulation to residential properties exposed to levels of noise of 63dB Leq 16hr or more regardless of the type (infrastructure or airspace) or level of change (i.e. remove requirement for a minimum 3dB change) (as modified by the changes proposed in the 2017 draft Airspace Policy); and
- consider compensation for significantly increased overflight as a result of the change, based on appropriate metrics which could be decided upon according to local circumstances and the economics of the change proposal (this is an additional requirement proposed in the 2017 draft Airspace Policy);

Local Regulation

LBA operates on a 24-hour basis. A comprehensive night time noise regime and associated monitoring procedures were put in place through planning permission 29/114/93FU dated 19th January 1994. LBA continues to operate under this regime which requires:

- Noise Insulation Grant Scheme;
- Noise Preferential Routes;
- Target Noise Levels;
- A Night Noise Quota System; and
- Restrictions on Engine Ground Running

Airport Operators

The Civil Aviation Act 2006 clarified the scope of the powers available to airport operators in aircraft noise management. An airport may charge aircraft operators for use of the aerodrome by reference to the noise from an aircraft. This enables the airport operator to introduce differential charging to help incentivise the use of quieter aircraft. The airport can also levy financial penalties on an aircraft operator which breaches noise abatement requirements at an airport.

Information on the financial incentives used by LBA to encourage the use of quieter aircraft and operational practices are listed in the airport Conditions of Use which are available from www.leedsbradfordairport.co.uk

Interdependencies

There are interdependencies between the emissions of local air pollutants and carbon dioxide (CO₂) from aircraft engines, which affect aircraft noise management. Most of the technological advances in aircraft design in the last twenty years have led to both a reduction in noise and

CO2 emissions. However in some cases, the drive towards quieter aircraft has resulted in an increase in emissions of local air pollutants such as oxides of nitrogen (NOx).

The challenge for the aviation industry is to manage and balance these three issues simultaneously.

It is also important to ensure that operational controls are also balanced in respect of noise. For example, the adoption of a reduced thrust setting for an aircraft during take-off can lower the NOx emissions by 30% or more. While many airlines already employ 'reduced thrust' as their standard operating procedure, there can be a small increase in the noise experienced by those under the departure flight path as the aircraft takes a more gentle angle of ascent. LBA has long been aware of the interdependencies between noise, local air quality and CO2 emissions and continues to promote further research.

Aviation Industry

The aviation industry is committed to reducing its environmental impacts. LBA is a signatory of Sustainable Aviation (SA), which is a unique alliance of the UK's airlines, airports, aerospace manufacturers and air navigation service providers. SA drives for a long-term strategy to deliver cleaner, quieter and smarter flying.

We fully endorse Sustainable Aviation's 'Noise Road-Map'. This document sets out the aviation industry's expert view of how UK aviation can continue to develop in a sustainable fashion. The document covers what can realistically be achieved between now and 2050. The 'Noise Road- Map' prioritises four areas of work:

- Aircraft and engine technology
- Operational improvements
- Land use planning
- Noise communication and community engagement

SA have also prepared a similar 'Road-Map' document relating to CO2 emissions. Further details of SA's Noise and CO2 'Road-maps' can be found at: <http://www.sustainableaviation.co.uk>

5 NOISE MANAGEMENT AT LEEDS BRADFORD AIRPORT

LBA is an important economic generator, contributing c.£336m to the local economy every year and delivering over 2,350 direct jobs. In 2014, LBA commissioned York Aviation to undertake an economic impact assessment of the airport, looking at the contribution of the airport to the economy. The report identified that LBA had a total net economic footprint in the Leeds City Region of around £107 million of GVA (Gross Value Added), a total net tourism impact in the Leeds City Region of around £29 million of GVA and wider benefits in terms of increased productivity associated with business connectivity.

Where noise can be directly controlled by LBA we will endeavour to do so. However, not all the noise resulting from the operation of LBA is generated by the Airport's own operations. Where the noise is beyond our direct control we will lobby for best practice procedures to be used to, wherever possible, mitigate any noise affecting our neighbours.

The management and mitigation of this noise has been a long standing commitment of LBA. LBA has statutory responsibilities to monitor, manage and mitigate the noise from its operations.

The aim of LBA is to be recognised as a pioneering organisation for the management and control of noise among airports of a comparable size, and demographic characteristics.

Over the past 30 years, LBA has introduced various initiatives and procedures to mitigate aircraft noise. These include:

5.1 Noise Insulation Grant Schemes

LBA has historically offered two noise insulation grant schemes. The first scheme was associated with the runway extension in 1981 and a further scheme was offered in 1994 associated with 24 hour operations, particularly to address night-time noise. Both these schemes are now closed. There has been no significant airport developments or changes to operations (to impact upon noise exposure) since 1994 and therefore no schemes are running at this present time.

5.2 Noise Preferential Routes (NPRs)

Noise Preferential Routes (NPRs) are in force to ensure that, wherever possible, departing jet aircraft fly over the least populated areas. All departing jet aircraft are required to follow the NPRs, the only exceptions being for safety or operational reasons, such as the avoidance of adverse weather. It is important to note, there are no established NPRs for arriving aircraft and turboprop aircraft are exempt. As aircraft take off and land into wind, the runway used will depend upon the prevailing wind direction. A plan of the two NPRs at LBA is included in *Appendix C*.

In the case of LBA, the NPRs are defined by the Local Authority under a Section 106 planning agreement as the swathe, as indicated on the plan in *Appendix C*.

The NPR swathe, therefore, illustrates a containment area within which all departing jet aircraft should remain, until the end is reached (at 3.5 DME). Whilst NPRs are published in the Aeronautical Information Publication (AIP), at LBA their ownership and enforcement is the responsibility of the Local Authority and not the CAA.

The introduction of performance based navigation in the future will allow the accuracy and compliance with the NPR to improve.

5.3 Target Noise Levels

There have been two major planning applications which have resulted in conditions designed to limit noise impact of aircraft operations at LBA on surrounding areas.

These planning conditions required the airport to install a permanent noise monitoring system with both daytime and night-time Target Noise Levels (TNLs), shown below, to enable identification of aircraft which generated noise levels above the average for similar movement types. There are four permanent noise monitors installed around the airport; two at each end of the runway.

Table 1: LBA Target Noise Levels

Runway	Daytime TNL (0700 to 2300 local)	Night-Time TNL (2300 to 0700 local)
14 (Departures)	92 dBA	84 dBA
32 (Departures)	85 dBA	77 dBA
32 (Arrivals)	85 dBA	79 dBA

Quota Count (QC) and Maximum Jet Aircraft Movements

Table 2: Noise Quota Count System operating at LBA

		Quota Count (approx.)
EPNdB	dB(A)	
<87	<74	Exempt
87 - 89.9	74 – 76.9	0.5
90 - 92.9	77 – 79.9	1
93 - 95.9	80 – 82.9	2
96 - 98.9	83 – 85.9	4
99 - 101.9	86 – 88.9	8
>101.9	>90	16

The only aircraft permitted to operate at night (2300hrs – 0700hrs) at LBA are those aircraft which have a QC of less than 1.0 for departures or a QC of 1.0 or below for arrivals (i.e. only the quietest aircraft types). In addition to the restrictions based on QC, the conditions set limits on the absolute number of night-time aircraft movements allowed in any season. These limits currently stand at 2800 for summer (May to October inclusive) and 1200 for winter (November to April inclusive). Aircraft listed as exempt in the quota count system are not included in the limits on night-time movements.

5.4 Ground Engine Running

LBA is responsible for ensuring the safe ground running of aircraft engines on the aerodrome and the control of any resulting blast, fumes and ground noise. This instruction sets out the rules and procedures for aircraft ground engine runs, the use of aircraft auxiliary power units (APU) and ground power units (GPU) associated with all aircraft types.

Due to the environmental impact of engine running, particularly at night, it must be strictly controlled and the number of ground running operations kept to an absolute minimum. These control measures are designed to minimise the impact of aircraft operations at LBA, on the environment in general and the local communities in particular.

Table 3: Periods where Engine ground running times are not normally permitted.

Engine ground runs will not normally be permitted within the following periods :-	
Weekdays	Between 2300-0700 hours local
Saturdays, Sundays and Public Holidays	Between 2300-0700 hours local
Armistice Day	No engine running permitted between 1055 – 1105 hours local.

Notes:

- *Engine ground runs will not be approved within these times unless the aircraft concerned is required for a LBIA service departing within one hour following the start of the authorised engine run period for the same day. Positioning flights are excluded from this provision.*
- *Engine running may not be permitted during other periods that may be specified by the Airport Authority.*

5.5 Noise Monitoring

As part of existing planning conditions LBA works in partnership with Leeds City Council in continuous noise monitoring around the airport. LBA has four permanent Noise monitoring outstations (two monitors to northwest of the runway and two to the southeast). Mobile monitoring stations are also set up at suitable sites around the boundary of the 1994 noise insulation scheme.

A new Noise and Track Monitoring System (NTMS) and associated infrastructure was installed in 2014. The NTMS provides a valuable noise management and complaint handling functions. There have been various upgrades and improvements to this system since the initial installation.

5.6 Complaint Management

All noise and track keeping complaints are recorded and investigated fully. A full response is also provided in a timely manner. All complaints are managed through a noise complaints dashboard, which is an added feature within the NTMS. This provides a mapping facility, which is a useful tool to highlight potential issues within a particular area.

Noise complaints can be reported to LBA by completing a noise complaints form on our website: [Noise Complaint Form](#) or via telephone on 0113 391 1625.

5.7 Consultative Committee

Members of LBA's Consultative Committee are kept up to date with regards to noise management with a regular item on the agenda in terms of reporting noise and track keeping statistics with constructive discussion with Members around this both inside and outside of the meetings.

5.8 General

LBA employs a full time Environmental Manager to proactively manage any environmental issues affecting the airport. The Environmental Manager works closely with local residents, community groups and officers of Local Authorities to ensure any noise issues are identified as quickly as possible and appropriate action is taken to mitigate any impacts. LBA's Environmental Manager also holds a Diploma in Acoustics and Noise Control, awarded by the Institute of Acoustics (IOA).

The noise management defined in this section will be kept under review with respect to changes in Government policy and any future development.

6 RESULTS OF NOISE MAPPING AT LEEDS BRADFORD AIRPORT

The location of LBA and the alignment of the runway means that, depending on wind direction, aircraft normally depart to the northwest and arrive from the southeast. In this scenario departing aircraft are when ever possible routed along the NPR to minimise any disturbance to communities to the north west of the airport. On occasions when wind conditions are therefore

such that aircraft must depart to the southeast the communities to the southeast of the airport are subjected to some aircraft noise. This situation whilst not ideal, is no different to many airports in the UK, some of which are considerably busier than LBA. Over recent years about 70% of aircraft movements arrive from the southeast and depart to the northwest.

In normal conditions, departing jet aircraft following the NPR are routed as far as possible between Menston and Burley-in-Wharfedale. Arriving aircraft follow the centre line from the southeast and as such the populated area of Horsforth is exposed to over flying aircraft.

Helicopter movements whilst much lower in number differ from fixed wing aircraft movements as they fly by using Visual Flight Rules (VFR) as permitted under the Air Navigation Order. As a result Yeadon can also be affected by these over flights.

Detailed below are the results of the 'Round 3' noise mapping at LBA, and the areas and populations exposed to the noise contours which have been produced.

Table 4: Estimated total number of people and dwellings above various noise levels, L_{day} .

Noise Level dB(A)	Number of dwellings	Number of People
≥ 54	6,700	13,500
≥ 57	1,950	4,200
≥ 60	450	1,100
≥ 63	100	300
≥ 66	<50	<100
≥ 69	0	0

Table 5: Estimated total number of people and dwellings above various noise levels, $L_{evening}$.

Noise Level dB(A)	Number of dwellings	Number of People
≥ 54	3,950	8,000
≥ 57	950	2,100
≥ 60	250	600
≥ 63	50	200
≥ 66	0	0
≥ 69	0	0

Table 6: Estimated total number of people and dwellings above various noise levels, L_{night} .

Noise Level dB(A)	Number of dwellings	Number of People
≥ 48	5,650	11,400
≥ 51	1,500	3,400
≥ 54	300	800
≥ 57	50	200
≥ 60	<50	<100
≥ 63	0	0

≥ 66	0	0
-------------	---	---

Table 7: Estimated total number of people and dwellings above various noise levels, L_{den} .

Noise Level dB(A)	Number of dwellings	Number of People
≥ 55	9,450	18,800
≥ 60	1,299	2,700
≥ 65	150	300
≥ 70	0	0
≥ 75	0	0

Table 8: Estimated total number of people and dwellings above various noise levels, $L_{eq(16hour)}$

Noise Level dB(A)	Number of dwellings	Number of People
≥ 54	5,650	11,500
≥ 57	1,650	3,600
≥ 60	400	900
≥ 63	100	100
≥ 66	<50	<100
≥ 69	0	0

Tables 4 - 8: The results shown are based upon the guidance issued by Defra for LBA (EGNM). Environmental Noise (England) Regulations 2006 (as amended) Airport Noise Action Planning Data Pack (July 2017).

The number of dwellings is rounded to the nearest 50, except when the number of dwellings is greater than zero but less than 50, in which case the total has been shown as '<50'.

The associated population is rounded to the nearest 100, except when the associated population is greater than zero but less than 100, in which case the total has been shown as '<100'.

Data presented are derived from the population and number of dwellings within the specified noise contours and the assessment was carried out utilising a strategic residential population location dataset.

Residential dwellings and buildings containing residential dwellings were identified through the 2015 (OS) AddressBase Premium and Topography layer respectively. An average population per residential dwelling was calculated for each discrete dwelling utilising population data attained from the mid year population estimates from the Office of National Statistics (ONS), June 2015.

7 COMPARISON WITH FIRST AND SECOND ROUND RESULTS

Under the Regulations, there is no requirement to compare results from one round to another. Such a comparison has not been presented in this action plan due to several technical reasons which make such a comparison unfair.

For interested parties that wish to make such a comparison, this should be done with respect to the following:

- The Round 3 noise model has been undertaken following a further verification against the latest noise measurements and radar tracks obtained from LBAs up-graded monitoring stations and track keeping systems;
- Aircraft fleet mixes have changed at the airport since 2011; and
- The modal split (i.e. the proportion of time the airport is in a certain operating direction between the second and third round) of the underlying noise mapping is different.

8 PROVISIONS ENVISAGED FOR EVALUATING IMPLEMENTATION

In our second round noise action plan, LBA set a number of performance indicators to help us to monitor the effectiveness of the actions we are taking. These performance indicators and the actions were mainly carried over from the first round noise action plan.

We will use the information from the performance indicators to ensure that the measures we take will have the maximum benefit in terms of reducing any noise impact.

With the exception of two actions, we propose to retain these actions and performance indicators from our first action plan. Our actions and performance indicators are presented in Section 9. We have included details of our progress against each action since our first plan.

The performance against these indicators will be regularly reviewed internally through internal auditing procedures. We will also inform the LBA Consultative Committee of our progress, and will continue to produce reports.

During the five-year life span of this action plan, we may add to or amend the performance indicators to respond to changes in the demands of aircraft noise. Any additions or amendments would only be introduced to enable LBA to better manage noise impacts.

Noise Action Plan 2019-2023

9 LEEDS BRADFORD AIRPORT ACTION PLAN

	Action	Impact	Timescale	Performance Indicator	Approx Estimate Number of people affected by the action	Progress	Status
1	We will continue to monitor and manage current and future aircraft currently using LBA	Current and future aircraft using LBA	Ongoing.	Noise contours. Runway Usage data.	18,800 (Population within 55 L _{den} contour.	Continual monitoring via the Noise and Track Monitoring System (NTMS)	Ongoing
2	We will develop and work with appropriate bodies towards introducing continuous descent approaches (CDA)	Aircraft arrivals	Ongoing	Continuous descent approaches introduced	Area within 55 L _{den} contour to the Arrival runway.	LBA's Airspace Change Proposal will facilitate more CDAs, if approved.	Ongoing
3	We will review and evaluate the process on fining aircraft who exceed the TNL during the night time period.	Current and future aircraft using LBA	Annually	Number of infringements.	6,200 (Population within 48 L _{night} contour	TNL exceedences reported to ACC every 6 months. Currently no compliance issues	Ongoing
4	We will work with the CAA and other bodies to develop and where practicable introduce noise reduced flight procedures and operation of aircraft causing least disturbance to surrounding areas.	Current and future aircraft using LBA and the surrounding region.	Ongoing	Introduction of new flight procedures where practicable possible.	18,800 (Population within 55 L _{den} contour.	NTMS continues to be reviewed on a regular basis to address any potential or foreseeable issues.	Ongoing
5	Comply where possible and adhere to the AIP (Aeronautical Information Publication).	Current and future aircraft using LBA and the surrounding region.	Ongoing	Number of infringements.	Number of those wanting to raise concerns.	NTMS continues to be reviewed to ensure adherence to the AIP	Ongoing
6	Encourage continual operation of all aircraft to operate in such away that noise levels at relevant monitoring points don't exceed the TNLS.	Current and future aircraft using LBA and surrounding region.	Ongoing	Number of infringements.	Number of those wanting to raise concerns.	We have reported and continue to report the number of infringements to our consultative committee. These reports are available online at http://www.leedsbradfordair-	Ongoing

Noise Action Plan 2019-2023

	Action	Impact	Timescale	Performance Indicator	Approx Estimate Number of people affected by the ac- tion	Progress	Status
						port.co.uk/about-the-airport/environment-and-community/consultative-committee	
7	Operation of aircraft during the night time period will continue to be restricted as set out by planning requirements. However, we will review a re-designation of the night-time quota period to 2330-0600. This would bring LBA in line with most other major UK airports	Current and future aircraft using LBA and surrounding region.	Ongoing	Number of infringements.	Number of those wanting to raise concerns.	No progress has been made against this action and therefore will be carried forward. Any progress on this action would require the submission of a planning application to be approved by the local planning authority.	Ongoing
8	Review the penalty procedures for airlines whose aircraft are persistently off-track (using a sliding scale based on a percentage of movements per airline off-track)	Current and future aircraft using LBA and surrounding region.	Annually	Number of infringements	Number of those wanting to raise concerns.	LBA has monitored the number of off-track aircraft and has recorded complaints. The total number of off-track aircraft are formally reported to the ACC bi-annually. A tracking issue in 2017 was found to be caused by a coding error in the aircraft flight management systems, which was discovered quickly and rectified.	Ongoing
9	No continual running of aircraft engines permitted between the night time quota period and is subject to ATC (Air Traffic Control)	Current and future aircraft using LBA and surrounding region.	Ongoing	Log recorded by ATC (Air Traffic Control).	Number of those wanting to raise concerns.	We have not received any complaints regarding aircraft engine running. We continue to monitor engine ground running logs.	Ongoing

Noise Action Plan 2019-2023

	Action	Impact	Timescale	Performance Indicator	Approx Estimate Number of people affected by the action	Progress	Status
	permission at all other times.						
10	We will wherever possible minimise non-aircraft generated noise.	Fixed and mobile on site equipment	Ongoing	Number of contacts logged	Number of those wanting to raise concerns.	Noise has been considered during overnight runway repair works with mitigation measures put in place if necessary. We have not received any complaints regarding non-aircraft generated noise.	Ongoing
11	Manage running time of Ground power units / Auxiliary power units	Fixed and mobile on site equipment	Ongoing	Number of contacts logged	0 (Population within 75 Lden contour. as specified by The Environmental Noise England Regulations 2006 (as amended))	We are looking at methods of monitoring GPU use and limiting running time.	Ongoing
12	The aims set out in this Action Plan will work alongside the noise mitigation measures set out in our masterplan.	Surrounding region.	Ongoing	N/A	Interested Parties	Our Strategic Development Plan (masterplan) was published in March 2017 and reflects the aims presented in Section 5 of this Noise Action Plan.	Ongoing
15	All compliments and complaints received, as appropriate, will be logged and reported to the airport's Consultative Committee	Community and interested parties. Increasing trust, relationships and understanding.	Bi-annually	Monitor, assess, review and report.	Interested parties.	We issue noise and track keeping reports to our Consultative Committee. These will begin to include complaint statistics.	Ongoing
18	Publish annual progress in relation to the action plan and communicate through the Consultative Committee.	Community and interested parties. Increasing trust, relationships and understanding.	Ongoing	Produce and publicise within set timescale.	Interested parties.	Aircraft noise, track keeping and any other relevant information is added to the ACC meeting agenda as and when is required.	Ongoing

Noise Action Plan 2019-2023

	Action	Impact	Timescale	Performance Indicator	Approx Estimate Number of people affected by the action	Progress	Status
19	We will continue to work with the Local Authorities to ensure that planning conditions are adhered to.	Community and interested parties. Increasing trust, relationships and understanding.	Ongoing	Monitor, assess, review and report.	18,800 (Population within 55 Lden contour)	We continue to submit reports to Leeds City Council as required under our planning agreements.	Ongoing
20	Noise monitoring will continue to operate at locations around the airport.	Community and interested parties. Increasing trust, relationships and understanding.	Ongoing	Monitor, assess, review and report.	Community surrounding the airports catchment area.	A new NTMS and brand new noise monitors have been in operation since 2014. We are investigating the potential deployment of an additional two mobile noise monitors to measure noise impacts in the local community.	Ongoing
21	We will publish noise contours periodically.	Community and interested parties. Increasing trust, relationships and understanding.	Every 5 years	Number of applications and completed projects.	Interested parties.	We have complied with the Regulations and will continue to do so as required.	Ongoing
22	At corporate level participate with appropriate groups to discuss current and future policies, legislation and regulations.	Community and interested parties. Increasing trust, relationships and understanding.	Ongoing	Monitor, assess, review and report.	Interested parties.	Airport senior management have participated in discussions and responded to consultations regarding UK Airspace Policy	Ongoing
24	Continue to use where practicably possible the current NPR (Noise Preferential Route).	Surrounding region.	Ongoing	Track Keeping	Community surrounding the airport's catchment area	We continue to work with all airline operators at LBA to ensure we maintain good track keeping performance. Typically compliance with the NPR is >95% on-track.	Ongoing
25	Continue to engage positively with the local community and local interest groups.	Community and interested parties. Increasing trust, relationships and understanding.	Ongoing	Attendance.	Interested Parties.	Senior management have engaged with local neighbourhood forums and committee's and will continue to do so.	Ongoing

Noise Action Plan 2019-2023

	Action	Impact	Timescale	Performance Indicator	Approx Estimate Number of people affected by the action	Progress	Status
27	We will explore all options available to us to minimise the disturbance from light aircraft operations.	Surrounding region	Ongoing	Number of contacts logged	Community surrounding the airports catchment area.	Complaints in relation to light aircraft operations have continued to remain low, with only four reported during the reporting period 2017/18.	Ongoing
28	Noise management will be kept under review with respect to changes in Government policy and any future development.	Surrounding region	Ongoing	Assess and Review	Community surrounding the airports catchment area	New Action	Ongoing

9.1 Completed Actions

	Action	Impact	Timescale	Performance Indicator	Approx Estimate Number of people affected by the action	Progress	Status
13	We will introduce a phone number where enquiries, compliments and complaints can be logged.	Community and interested parties. Increasing trust, relationships and understanding.	Ongoing	Number of contacts logged.	Number of those wanting to make comments.	Completed	Continue to provide
14	An aircraft noise compliments and complaints form will continue to be available on line through LBA website. A service feedback form will also be made available.	Community and interested parties. Increasing trust, relationships and understanding.	Ongoing	Number of surveys completed and results obtained.	Number of those wanting to make comments.	Completed	Continue to provide
16	All noise complaints will be responded to within 21 working days.	Community and interested parties. In-	Ongoing	Response rate tracker.	Those who complain and make enquiries to LBA.	Completed	Continue to respond within the timeframe

Noise Action Plan 2019-2023

		creasing trust, relationships and understanding.				All complaints and enquiries have been responded to within 21 working days.	
17	Review and make improvements to the LBA website and all communication material currently available to ensure accuracy and ease of understanding.	Community and interested parties. Increasing trust, relationships and understanding.	Ongoing	Feedback received and number of contacts logged through phone and online system.	Interested parties.	Completed A FAQ's section is available on our website at https://www.leedsbradfordairport.co.uk/about-the-airport/airport-noise along with other environmental information. This information is reviewed and updated on a regular basis.	Review and update annually
26	LBA will review the airspace delegated to the ATC unit to ensure that it is fit for purpose. This review will focus on proposals to redesign the Airspace in line with the Environmental requirements of CAP 725. This will include studies on new Aircraft holding facilities, Standard Instrument Departures that de-conflict arrivals and departures allowing more efficient climb and decent profiles and the realignment of NPRs to further reduce the overall noise impact.	Surrounding region.	Ongoing	Track Keeping	Population within the NPR (Noise Preferential Route).	Completed Consultation Our airspace change proposal went out to public consultation in 2017. If approved by the CAA, the new procedures will be implemented in February 2019 and is likely to be a phased approach.	Ongoing process

9.2 Actions Removed since First Round

Noise Action Plan 2019-2023

Two actions have been removed from the first round noise action plan, as outlined below.

Action		Impact	Timescale	Performance Indicator	Approx Estimate Number of people affected by the action	Reason for Removal
8	Request airlines to avoid/reduce where practicably possible the use of reverse thrust after landing in line with the safe operation of the aircraft.	Current and future aircraft using LBA and surrounding region.	Ongoing	Percentage achievement.	Number of those wanting to raise concerns.	Conflicts with safety, and difficult to monitor.
23	Continue to apply mitigation measures when carrying out any current and future maintenance and development within the airport boundary.	Surrounding region	Ongoing	Monitor, assess, review and report	Interested parties	Covered under Action number 10

Noise Action Plan 2019-2023

10 SUMMARY OF CONSULTATION RESPONSES

This updated NAP was presented to members of LBA's Consultative Committee for comment. Below is a summary of the responses received.

A total of two responses were received by the airport from:

LBA Consultative Committee representative on behalf of Burley in Wharfedale Parish Council;
LBA Consultative Committee representative on behalf of Menston Parish Council & Menston Community Association.

10.1 Comments from Burley-in-Wharfedale Parish Council

General comment

This draft continues the general improvement in substance and is to be welcomed, and laudably the outstanding issues have not been hidden. While new items have been added (on health for example) there are some that have been removed which arguably still have a place in the document.

LBA Comment

We have attempted to make this document as clear and concise as possible. As part of the NAP update, we have reworded some sections for ease of understanding by the reader. We have not excluded any important content or items that are a requirement of the Directive.

We have extracted some actions from the main table and labelled as 'Completed Actions' to demonstrate significant progress against these actions. Whilst these are labelled as completed actions, they remain ongoing actions that the airport will continue to provide, as indicated in the 'Status' column.

Noise Preferential Route (NPR)

The diagram in Appendix C entitled NPR continues LBA's trend in redefining the NPR by not showing the current SID route through the three DMEs (NPR) for aircraft departing runway 32. This is the route that aircraft are normally required to take and the diagram continues to give the misleading impression that there is no defined departure line. This diagram does not therefore comply with the degree of accuracy and transparency required.

LBA Comment

Observation noted. For clarity, further explanation of the NPR has been provided in Section 5.2 and the centreline is shown on the plan in Appendix C.

Track Keeping Reports

At present the assessment of off-tracks is subjective. While not questioning that off-tracks have reduced over the year, nor the dedication with which these flight traces are studied and evaluation, there needs to be clearer definition and a more procedural basis for this assessment on which an important monitored and reported figure is produced.

Noise Action Plan 2019-2023

LBA Comment

Whilst the NTMS is a powerful tool for monitoring noise and aircraft movements, the system is not infallible. Therefore, a full analysis by the Environmental Manager is the most reliable method of the assessment and reporting of track keeping performance.

Complaint Management

The complaint contact number and location of the complaint form should be provided within the NAP.

LBA Comment

The NAP has been amended and these have been included in Section 5.6.

10.2 Comments from Menston Parish Council & Menston Community Association

General Comment

Menston (and its two community representative bodies) supports LBA's "NAP Round 3".

Aircraft Track Keeping and NPR

We note the proposal to "review penalty procedures for off-track aircraft". We recognise that the definition of "off track" is likely to be taken by LBA and Defra to mean "outside the swathe", assuming that the SID/NPR remains unaltered following the ASC processes. Menston will continue to press LBA for consistency of departure tracks from Runway 32 as close to the centre-line of the existing/current NPR as is practicable. We welcome the potential threat (to operators) of penalties. We would like to hope that the threat itself is enough to ensure compliance.

We embrace the introduction of noise reducing flight procedures, whilst recognising that departures from Runway 32 involve a turn and require sufficient power and thrust from engines, which is bound to make some noise. We hold to the view that the current NPR/SID – albeit designed some years ago – remains the best route through local airspace, passing between Menston and Burley over Green Belt and predominantly unpopulated meadowland. In that respect this is obviously (and by design) the flight path which most fulfils the Government's and CAA's objective "to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise".

LBA Comment

Further information in respect of the NPR has been added in Section 5.2. We have made a commitment to review the penalties for persistently off-track aircraft under action number 8 in Section 9 of the NAP.

Noise Monitoring

In relation to the proposal to "Undertake regular noise monitoring around the Airport", we invite LBA management to undertake a comprehensive consultation with both Menston and Burley – the two most directly and immediately affected communities – in the spirit of paras 3.16 to 3.19 of the Aviation Policy Framework.

Noise Action Plan 2019-2023

We note that paragraph 3.19 in particular advocates consultation with local communities and, in anticipation of the likelihood of some changes to airspace, we would welcome discussion of the suitability of the current noise monitoring mechanisms. We suspect it may be in the interests of LBA and the two villages to assess the effectiveness of the (two) current noise monitors and their locations, with a view to evaluating whether these can be improved to better represent the reality and the perception of aircraft noise. We believe that transparency on this matter could contribute to greater understanding and trust between LBA and these communities.

Menston's representative on the ACC, has often commented upon the "noise exposure levels" graphically produced for each ACC meeting. It is a matter of remark and possible concern that (as measured by LAeq, 16hr), the level of noise exposure on the Menston monitor has not fallen during the past six years, and may in fact have increased. This is despite the expectation that newer aircraft would generate less noise. This community would like to see:

LAeq,16hr validated or rejected as the appropriate monitoring method; steps taken to keep flights as close to the centre-line of the NPR/SID as possible, as this is the line most distant from residences, both in Menston and in Burley; the introduction of newer and technically superior monitoring systems, placed at optimal (agreed) locations; insofar as Runway 32 handles 70-80% of all departures, we would argue that the reduction of noise levels and their dispersal in the area pertinent to Menston and Burley should be a priority. Menston Parish Council believes that achievement of this objective would go a long way towards reducing complaints and concerns and building better relations with LBA.

LBA Comment

With regards to noise monitoring, the conditions imposed on our current planning consent require LBA to monitor and report LAmax. We provide the LAeq,16hr data to the ACC as additional information to assist local communities in understanding the noise exposure levels around LBA. This metric is a good way of highlighting historical trends, taking into account the noise generated by individual aircraft as well as the number of aircraft movements.

LBA's noise monitors and NTMS were replaced in 2013 with the most up to date technology. We are unable to reposition any of our monitoring equipment, as these were agreed by the local authority under a planning agreement.

LBA does enforce that the centre of the NPR should be followed as much as this is practically possible. In the future, the introduction of performance based navigation will allow the accuracy and compliance with the NPR 'centreline' to improve.

Noise Action Plan 2019-2023

Appendix A: Technical Glossary and Abbreviations

Agglomeration	An area having a population in excess of 100,000 persons and a population density equal to or greater than 500 people per km ² and which is considered to be urbanised
AIP	Aeronautical Information Publication
ANASE	Attitudes to Noise from Aviation Sources in England
APU	Auxiliary Power Unit. A power unit located on the aircraft.
ATC	Air Traffic Control
ATM	Air Transport Movement
ATWP	Air Transport White Paper
CAA	Civil Aviation Authority
CDA	Continuous Descent Approach
dB(A)	A unit of sound pressure level, adjusted in accordance with the A weighting scale, which takes into account the increased sensitivity of the human ear at some frequencies
Decibel (dB)	The decibel (dB) is a logarithmic unit of measurement that expresses the magnitude of a physical quantity relative to a specified or implied reference level. Its logarithmic nature allows very large or very small ratios to be represented by a convenient number. Being a ratio, it is a dimensionless unit. Decibels are used for a wide variety of measurements including acoustics, and for audible sound A-weighted decibels (dBA) are commonly used.
DEFRA	Department for Environment Food and Rural Affairs (UK Government).
DfT	Department for Transport (UK Government).
EpndB	Effective perceived noise level. Its measurement involves analyses of the frequency spectra of noise events as well as the maximum level.
ERCD	Environmental Research and Consultancy Department of the Civil Aviation Authority.
ICAO	International Civil Aviation Organization.
ILS	Instrument Landing System.
L_{Aeq, T}	The A-weighted equivalent continuous sound pressure level which is a notional continuous level that, at a given position and over the defined time period, T, contains the same sound energy as the actual fluctuating sound that occurred at the given position over the same time period, T.
L_{Aeq, 16h}	The A-weighted average sound level over the 16 hour period of 0700–2300, local time (for strategic noise mapping this is an annual average)
L_{day}	The A-weighted average sound level over the 12 hour day period of 0700–1900 hours, local time (for strategic noise mapping this is an annual average)
L_{den}	The A-weighted average sound level over the period 0000 – 2400, but with the evening values (1900 – 2300) weighted by the addition of 5 dB(A) and the night values (2300 – 0700) weighted by the addition of 10 dB(A).
L_{evening}	The A-weighted average sound level over the 4 hour evening period of 1900–2300 hours, local time (for strategic noise mapping this is an annual average)
L_{night}	The A-weighted average sound level over the 8 hour night period of 2300–0700 hours, local time (for strategic noise mapping this is an annual average)
NNI	Noise and Number Index. The noise exposure measure that preceded Leq.
Noise Contour	Map contour line indicating noise exposure in dB for the area that it encloses.
NPR	Noise Preferential Route.
QC	Quota Count - the basis of the London airports' Night Restrictions regime

Noise Action Plan 2019-2023

SEL

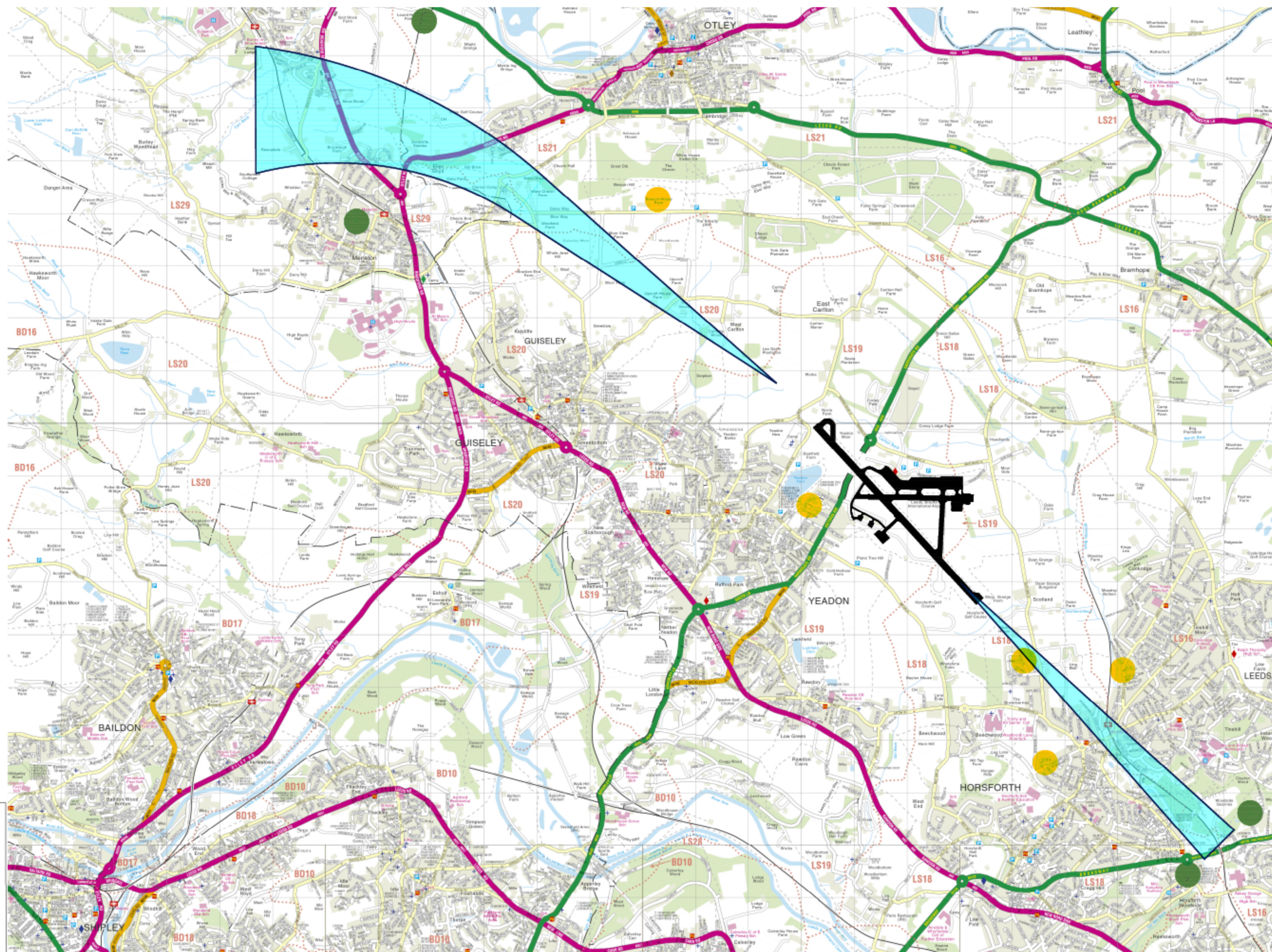
Sound Exposure Level. The level generated by a single aircraft at the monitoring point. Takes account of the duration of the sound as well as its intensity. This is normalised to a 1 second burst of sound allowing comparison between different events of different durations.

Noise Action Plan 2019-2023

Appendix B: Financial Information – Cost of Noise Management

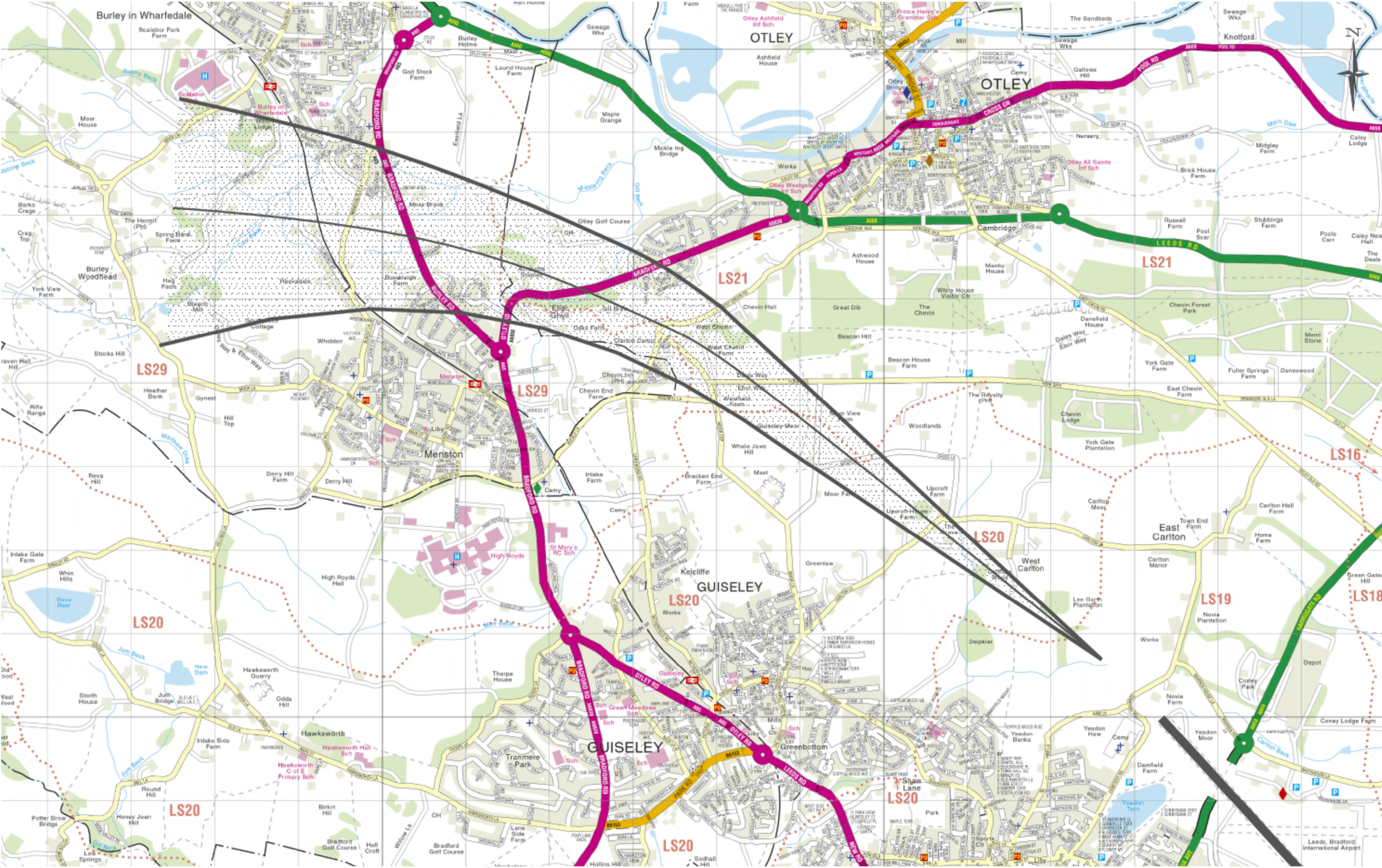
Type	Description	Approximate Cost
Staff Costs	Environmental Manager <ul style="list-style-type: none"> ▪ External communications ▪ Noise & Track Keeping Statistics 	£60,000
	External Professional Assistance <ul style="list-style-type: none"> ▪ Noise measurement ▪ Noise reports ▪ Mobile noise monitoring ▪ Compliance Statistics 	
Equipment	<ul style="list-style-type: none"> ▪ Maintenance of noise monitors ▪ Maintenance of the Noise and Track Monitoring System ▪ Software/computer costs 	£20,000

Appendix C – Noise Preferential Routes



- Key**
- Permanent noise monitor
 - Mobile noise monitor 28.10.13 onward
 - Noise preferential route

NPR – Runway 32



Appendix D – Noise Contour Mapping

