

2013-2018 Noise Action Plan

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1. Foreword by Chief Executive

This Noise Action Plan (NAP) details how we will continue to work pro-actively in collaboration with a variety of stakeholders to mitigate noise from aviation at Edinburgh Airport. We wish to increase the number of flights and passengers at the airport but are fully aware that enhancing our role as a gateway to the rest of the world that noise from aviation can impact upon local communities. This NAP sets out how we will address the impact of noise from aviation.



Gordon Dewar

Chief Executive
Edinburgh Airport

January 2014

2. Executive summary

This document outlines why we have a NAP, sets out progress against the 2008-2013 NAP actions and outlines our proposed actions for 2013-2018.

Edinburgh Airport is Scotland's busiest airport and the fifth busiest airport in the UK. Passenger numbers are forecast to grow further and where possible we seek to directly and indirectly reduce the impact of our operation on neighbouring communities.

This NAP seeks to manage noise from Edinburgh Airport's operations, including terminal and airfield, between 2013 and 2018.

Each year, Edinburgh Airport sets noise targets to work towards and these are published in the airport's Corporate Responsibility Report (CRR), together with performance information against key noise indicators.

The key themes for 2013-2018 are:

- a) continue our commitment to managing aircraft noise impacts associated with Edinburgh Airport's operations including:
 - (i) the quietest fleet practicable.
 - (ii) the quietest practicable aircraft operations, balanced against NO_x and CO₂ emissions.
 - (iii) effective and credible noise mitigation schemes.
- b) engage with the communities affected by aircraft noise and better understand their concerns and priorities.
- c) influence planning policy to minimise the number of noise sensitive properties around our airport.
- d) continue to efficiently and effectively manage aircraft noise.
- e) build on our extensive understanding of aircraft noise to further inform our priorities, strategies and targets.

The Environment Noise Directive also requires that each action plan should contain estimates in terms of the reduction in the number of people affected (annoyed, sleep disturbed or other). While this is difficult to estimate a high level number has been included as part of the action plan in Section 9.

Under the Environmental Assessment (Scotland) Act 2005, our NAP requires a scoping report and environmental report. This has been carried out for one overall NAP, which includes the airport plans, by the Scottish government. The scoping report and environmental report are available on the Scottish government website.

We recognise that it is important to keep communities and other stakeholders informed about any progress made. We are committed to reporting publicly on our performance and the effectiveness of our actions to address community concerns. With this in mind, we report on our progress against the action plan in our annual CRR. This is also provided to Edinburgh Airport's Consultative Committee which is made up from local and community councils along with other airport stakeholders. The CRR is posted on our website at edinburghairport.com/community.

By prioritising noise management activities on the most effective actions, we believe we can ensure maximum benefits for noise affected communities. As a result, since 2006 the number of noise complaints and complainants has gone down and the contours have contracted. However, we have used the 2011 Census results to calculate the number of people within the noise contours and this shows an increase in people living within them. The 2011 Census reflects substantial house building in settlements such as Livingston since the 2001 Census.

3. Purpose and scope

Purpose

The EU Noise Directive (2002/49/EU) and Environmental Noise (Scotland) Regulations 2006 requires airports with over 50,000 movements a year to produce a noise action plan every five years. Details of the legislation, contour maps and noise action plans for road operators, rail providers, relevant airport operators and large urban areas can be found at scottishnoisemapping.org

People have different levels of sensitivity to noise and we recognise that noise from aircraft operations is a concern for the communities around the airport. We engage with local communities in a number of ways and this NAP is just one of them.

Scope

This NAP seeks to manage all noise on the airfield. This goes further than the EU Noise Directive (2002/49/EU) which just considers noise created by aircraft from the start of take-off and noise from aircraft turning off the runway after landing. We believe that the impact of noise should be considered more holistically and while noise from the landing and take-off cycle may affect specific communities more than others we will also propose actions to mitigate the impact of noise from aircraft taxiing and engine running on the airfield.

The scope of the action plan does not include noise from airport construction activities or noise from road and rail traffic associated with the airport. Construction works are temporary. Noise from major road and rail routes in the vicinity of Edinburgh Airport are covered by the Scottish government NAPs.

One of the key outputs of the NAP is dB Lden noise contours for 2011 along with detail of the area, population and number of households within the contour banding. The contours were prepared by the Civil Aviation Authority (CAA). The 2011 contours are shown in Annex B and C. We explain in Section 5 the difference between the commonly used contour metrics.

The UK Aviation Policy Framework (APF) recommends that airports produce masterplans. These detail existing, and forecast future, noise exposure. The 2011 Edinburgh Airport Masterplan contains noise contours for 2009, 2020 and 2040 and in accordance with the 2003 Air Transport White Paper (ATWP) uses the dB LAeq metric. The masterplan is available at edinburghairport.com/expansion.

4. Existing noise management

Given our position adjacent to both the strategic and arterial road network to the west of Edinburgh and main Edinburgh to Fife railway line there are a variety of noise sources in the area. We have the ability to directly control noise from our own operations and indirectly from sources outside our direct control. Where possible we seek to work with others to influence the latter. Table 1 outlines the methods of mitigation we apply at Edinburgh Airport.

Airports have important statutory responsibilities to managing noise from their operations and this forms part of our strategy and we report on noise annually in our CRR. We also respond directly to individuals who contact us either via our dedicated freephone noise number or through our feedback text and email options and quarterly in our Community Newsletter.

Through the previous NAPs we are aware of how many people within the 55dB Lden contour around Edinburgh Airport compares with other UK airports. Based on contours from 2006 Table 2 indicates how we compare with the 15 busiest airports in the UK, which includes Aberdeen and Glasgow.

Table 1

	Vertical noise mitigation (Noise reduction by creating greater distance between the noise source and receptor)	Horizontal noise mitigation (Opportunity to share noise when there is favourable geographic distribution of population)	Aircraft operational practice (Noise reduction at source)
Arrivals	<ul style="list-style-type: none"> • Continuous descents (CDA) 	<ul style="list-style-type: none"> • Runway alternation • Defined Standard Arrival Routes (STARs) • Runway directional preference 	<ul style="list-style-type: none"> • Low power low drag • Reduced landing flap • Delayed deployment of landing gear • Managed approach speeds • Avoiding reverse thrust on landing
Departures	<ul style="list-style-type: none"> • Continuous climb (CCD) 	<ul style="list-style-type: none"> • Runway alternation • Defined standard instrument departures (SIDs) • Noise Preferential Routes (NPRs) • Runway directional preference 	
Airspace structure	<ul style="list-style-type: none"> • Single European Sky ATM Research Programme (SESAR) 	<ul style="list-style-type: none"> • SESAR • Flexible use of airspace between civil aviation, military and general aviation and airspace users • Route availability improvements, conditional routes through military air zones and procedural improvements. 	
Ground noise			<ul style="list-style-type: none"> • Reduced engine taxi

Table 2

Airport	Annual ATMs	Population affected	Population as percentage of the total number of people affected across the European Union
Heathrow	466,393	725,500	28.5%
Manchester	172,515	94,000	3.7%
Glasgow	85,281	63,600	2.5%
Birmingham	101,221	47,900	1.9%
Aberdeen	109,876	16,300	0.6%
Edinburgh	115,969	15,000	0.5%
London City	76,861	12,200	0.5%
Southampton	45,502	12,100	0.5%
Gatwick	251,879	11,900	0.5%
East Midlands	83,256	10,500	0.4%
Stansted	167,817	9,400	0.4%
Luton	98,736	8,600	0.3%
Leeds Bradford	53,817	8,400	0.3%
Newcastle	69,254	5,900	0.2%
Liverpool John Lennon	79,298	5,700	0.2%
Totals	3,486,428	1,044,300	41.0%

While Table 2 outlines how the number of people affected by noise compared to annual flights in 2009, it is difficult to compare one airport with another. At Edinburgh Airport, we only use our main runway while some other airports can alternate as weather conditions dictate or have a different local hinterland in terms of population or topography. The type of air traffic movements is also a factor, for example Aberdeen has a higher percentage of helicopter movements.

Once all of the revised airport NAPs are published, we will compare this table with the 2011 figures, allowing us to see where works to mitigate noise at other airports have been most successful. We will then seek to understand if they could be applied at Edinburgh.

We actively monitor policies at other airports to ascertain whether they could be appropriate for Edinburgh Airport. No two airports are the same but where appropriate we will apply what we have learnt from noise mitigation elsewhere. While we will continue to offer this scheme we propose to amend it to apply to only houses within the 63dB LAeq contour that do not already have double glazing and the property has not benefitted from the scheme before. The reduction on noise threshold would be 1dB per annum over three years.

As in the previous five years, we have set five key themes for our noise work programme:

- a) continue our commitment to managing aircraft noise impacts associated with Edinburgh Airport's operations:
 - (i) the quietest fleet practicable.
 - (ii) the quietest practicable aircraft operations, balanced against NOx and CO² emissions.
 - (iii) effective and credible noise mitigation schemes.
- b) engage with the communities around our airport affected by aircraft noise and better understand their concerns and priorities.
- c) influence planning policy to minimise the number of noise sensitive properties around our airport.
- d) continue to efficiently and effectively manage aircraft noise.
- e) build on our extensive understanding of aircraft noise to further inform our priorities, strategies and targets.

We will keep communities and other stakeholders informed about the progress made and will continue to report publicly on our performance and the effectiveness of our actions to address community concerns.

5. Background to noise and regulation

Sources of airport noise

Air and ground noise is created by:

- aircraft approaching and landing
- aircraft taking off and departing an airport
- aircraft taxiing
- engines running on the airfield.

Noise is caused by air going over the aircraft's fuselage (body) and wings – known as airframe – and the aircraft's engines. When air passes over the aircraft's airframe, it causes friction and turbulence, which results in noise. The level of noise generated varies according to aircraft size and type, and can differ even for identical aircraft. Engine noise is created by the sound of the engine's moving parts and by the sound of air being expelled at high speed.

Aircraft have been getting progressively quieter as designs and engine technology has advanced and it is expected that today's airlines will be operating even quieter models in the future. At Edinburgh Airport, these advances have contributed to the noise contours contracting since the 2008-2013 NAP.

Different people react differently to noise. Perceptions vary depending on the time of day, the location and the level of background noise in a particular location. Attitudes and reactions to noise are just as, if not more, important as the noise level experienced, but these attitudes are less understood than the technical science of sound-generation and measurement. The Scottish government in Planning Advice Note 1/2011: Planning and Noise details common sounds and their decibel rating at source:

- unsilenced pneumatic drill (at 7m distance) - 95dB(A)
- heavy diesel lorry (40km/h at 7m distance) - 83dB(A)
- modern twin-engine jet (at take-off at 152m distance) - 81dB(A)
- passenger car (60 km/h at 7m distance) - 70dB(A)
- office environment - 60dB(A)
- ordinary conversation - 50dB(A)
- quiet bedroom - 35dB(A)

To put some of these noise levels into perspective 70dB(A) is the average noise level at the Newbridge Roundabout while 60dB(A) is the average noise level generated by aircraft at the eastern end of Ratho Station or in parts of Cramond. Actual average noise levels in Ratho Station may be higher due to the proximity of motorways and arterial routes into Edinburgh.

PAN 1/2011 also notes that a change in decibel rating of 10dB(A) is comparable to halving or doubling the loudness of the sound. On that basis someone's perception of noise at different points within Ratho Station or Cramond could vary.

In general, the perceived and actual exposure to aircraft noise is influenced by weather conditions and location compared to the source of the noise. As part of our NAP review we have added more detailed information on aircraft noise to our website.

Methods of Measuring Noise

dB LAeq Contours

Under UK legislation the most common method for measuring noise at airports is the Equivalent Continuous Sound Level, dB LAeq which predicts average noise levels for the busiest 16 hours of the day, between 0700 – 2300 from mid-June to mid-September. In line with UK Government policy, this metric is used in the production of airport masterplans.

The UK Government says that communities become significantly annoyed by aircraft noise above 57dB LAeq. This is why contours are presented from 57 to 72 dB LAeq in steps of 3 dB. The latest summer 16-hour dB LAeq contours for 2011 are shown in Annex B. These show that the 57db contour has decreased in size compared with 2006 from 15.1km² to 13km², however the number of people living within the 57db contour has actually increased from 3,200 in 2006 to 3,300 in 2011 due to the 2011 Census capturing new houses built since the 2001 Census.

dB Lden Contours

The Environmental Noise (Scotland) Regulations 2006 requires that strategic noise mapping should be conducted every five years. Unlike the conventional summer 16-hour dB LAeq contours, the regulations require a different range of noise parameters: Lday, Levening, Lnight, LAeq16hr, and dB Lden. A full definition of these terms is provided in the glossary in Annex A.

Unlike dB LAeq contours dB Lden contours are based on air traffic movements over the entire year. In addition, an arbitrary weighting of 5 dB is applied to each of the evening (19:00-23:00) movements and 10 dB for each of the night (23:00-07:00) movements, to take into account the greater disturbance at night. Contours for strategic noise mapping are presented in 5 dB steps from 55 dBA to 75 dBA except for Lnight where the contours are presented between 50 dBA and 70 dBA. The strategic contours for Edinburgh Airport are presented in Annex C.

It is difficult to compare the two noise metrics due to the different methods of calculating them, however in general terms, the area of the dB Lden contours tends to be larger than those for dB LAeq due to the weightings for evening and night flights. Although the weightings do not directly mirror perceptions, it is clear from community engagement and surveys that flights at night time and evenings tend to cause greater annoyance and disturbance than flights during daytime.

UK regulation of aircraft noise

There are five main tiers of regulation governing aircraft noise in Scotland.

- International – International Civil Aviation Organisation (ICAO)
- European – the European Union
- National – the UK Government, the Scottish Government
- Local – Local authorities.

International regulation

At an international level, the International Civil Aviation Organisation (ICAO) sets progressively tighter certification standards (known as Chapters for noise emissions from civil aircraft) which member countries' fleets must meet. The ICAO Committee on Aviation Environmental Protection will review recent research and consider further noise standards during 2013. Further details of these standards can be found at caa.co.uk.

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:

- reducing aircraft noise at source
- land-use planning
- changes to operational procedures
- restrictions on the use of the noisiest aircraft.

European regulation

The European Union (EU) is increasingly assuming responsibility for the regulation of aircraft noise standards. Previous Directives have restricted certain aircraft from landing at EU airports while the most recent noise Directive (2002/49) required member states to create 'noise maps' of noise from all transport sources in urban areas and for airports with over 50,000 movements. The Directive also aims to harmonise methods for measuring noise across the EU and is the Directive under which we have produced this draft NAP.

National regulation

The UK Government has an important role in setting and developing the policy framework for aircraft noise control at UK airports and has prescribed a range of controls on aircraft noise impacts.

The 2003 ATWP outlined several policies for airports which control, mitigate and compensate for aircraft noise. The new APF proposes further measures and guidance on noise.

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 (UKAIP) and elsewhere as appropriate. These controls include aspects such as Continuous Descent Approaches (CDAs), noise mitigation procedures and night flight limits.

The 1982 and 2006 Civil Aviation Acts grant the Government and airports powers to introduce noise control measures including mitigation.

Aircraft routes

It is a matter for NATS on our behalf to make any amendment to standard arrival routes or standard departure routes at Edinburgh Airport, changes which would have to be put out for full public consultation. Such a consultation would be run by the CAA Directorate of Airspace Policy and could last for two years because of the likely implications and might even require a full public inquiry. Safeguarding issues in relation to departure and approach paths would have to be carefully considered to ensure there were no obstacles of sufficient height that would cause concern. Moving an aircraft route may impact more people or result in additional CO₂ emissions if the resultant route is longer.



Scottish regulation

The regulation of aviation and air transport (including the Civil Aviation Act) has been reserved to the Secretary of State and has not been devolved to the Scottish Parliament. However certain functions, such as aircraft noise, are exercisable by Scottish Ministers.

Planning Advice Notes (PANs) provide advice on good practice and other relevant information. PAN 1/2011 demonstrates the role of the planning system in preventing and limiting the adverse effects of noise without prejudicing investment in enterprise, development and transport. PAN 1/2011 does not aim to provide a definitive source of prescriptive guidance on noise issues. Rather, it sets out the range of noise issues that planning authorities need to be aware of in formulating development plans, making decisions on planning applications and in taking enforcement action to preserve and enhance environmental quality.

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 or emissions from an aircraft. This allows the airport operator to introduce differential charging to help provide an incentive for using quieter and cleaner aircraft. The airport can also levy financial penalties on an aircraft operator which breaches noise abatement requirements imposed by the UK Government, as is the case at Edinburgh Airport.

Information on the financial incentives used by Edinburgh to encourage the use of quieter aircraft and operational practices are listed in the airport Conditions of Use, available at edinburghairport.com.

Noise impact research

In the previous NAP we referred to Attitudes to Noise from Aviation Sources in England (ANASE) which was a social study commissioned by the Department for Transport in 2002. The findings, summarised below, are:

- It is highly probable that annoyance from aircraft noise was higher in 2002 than found in the UK's last major similar study (ANIS 1982).
- There is no evidence of a particular threshold or step point at which people become more annoyed.
- The findings for the valuation of aircraft noise impacts were not robust.
- Night-time noise is valued more highly than daytime noise. Early morning and late evening noise is also of greater concern, although not to the same extent.
- There is indicative evidence to suggest that people may be more concerned about the numbers of aircraft and slightly less concerned about the sound level of an individual aircraft than the present LAeq indicator assumes.

These findings are equally applicable to Scotland and are still relevant. A more recent review by the CAA Environmental Research and Consultancy Department titled Aircraft Noise, Sleep Disturbance and Health highlights how perception and the impact of noise varies but that exposure above certain noise levels can have an impact upon health.

Ground noise and engine running

We continue to recognise that ground noise can potentially cause as significant disturbance to the local community as air noise can. For that reason, although not required under the Environment Noise Directive, we will continue to seek to address this through operating practices.

Engine running is an essential part of airport operations. Engines need to be tested for safety reasons and engine runs form part of the maintenance programme for aircraft. We understand that this noise can cause disturbance to local residents and therefore adopt certain measures to reduce the impact on the community. We do not allow engine testing during the night unless exceptional circumstances require us to do so. High power engine running takes place to the south east of the airfield which is the furthest location from any residential properties. Other engine testing generally takes place on the aircraft stands.

In order to help our community better understand our engine running requirements, we included a specific action within our NAP to report on the frequency and times of engine running to through our community newsletter. We propose to maintain this communication.

Military aircraft

Military aircraft are exempt from the noise certification criteria that apply to civilian aircraft. This is a UK Governmental exemption and UK airports' noise standards, including Edinburgh's NAP, cannot be imposed on military aircraft operations. We restrict military operations to between 0700 and 2300 hours with the only exceptions being for essential operations, mostly on compassionate grounds. In these cases, we may permit arrival operations only, with subsequent departure being permitted after 0700. Military aircraft are also exempt from the terms of the directive.

Interdependencies

Noise regulations at airports combined with international standards have resulted in a gradual reduction in noise generated by aircraft. There are also interdependencies between technologies that are contributing to reducing noise, carbon dioxide and oxides of nitrogen. 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) or greater fuel-burn leading to more CO₂ emissions. The challenge for the aviation industry is to manage and balance these issues simultaneously.

Across the industry steps are being taken to address the environmental impact of aviation. Collaborations such as Sustainable Aviation are ensuring that all aspects of the industry are considered and that stakeholders work together. Sustainable Aviation is currently working on a Noise Roadmap which will consider airframe technology and identify both measures and opportunities that can be deployed at airports.

6. Description of the airport location

Edinburgh Airport covers 367 hectares and its current layout and land use are shown in Map 1. It is bounded to the north by the River Almond, to the south by the Royal Highland and Agricultural Society of Scotland land and to the east by the Edinburgh to Fife rail line.

The existing terminal building and main runway were developed in 1977 replacing the Turnhouse facilities which had been in place since before the Second World War. The facilities at Turnhouse now house our expanding cargo operation, which are Scotland's small parcels hub and a key facility supporting Scottish businesses and the economy.

The core developed area is around the terminal building. Other developed areas comprise the business aviation terminal and maintenance area adjacent to the Gogar Burn and the western ancillary area at Almond Road.

The airport grew from less than 1 million passengers per annum (mppa) in 1977 to 1.85 mppa at privatisation in 1987. Since then, by intensively developing the land within our boundaries to provide all the facilities required to support growth, today's airport now handles over 9 mppa.

Since the 2008-2013 NAP there has been an economic downturn and during this time the profile of airport passengers has altered and while we achieved a record number of passengers in 2011 our future growth forecasts have been amended. Our 2006 Masterplan was updated in 2011 to reflect a more realistic vision for the future. Our projected timescales for airport development and any associated extension to the airport boundary have also been amended.

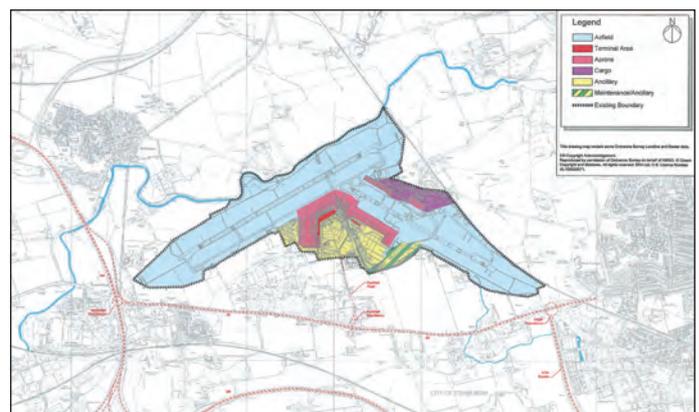
Flight profiles

Naturally, passenger demand is greater in the summer months as leisure demand increases, with peaks in July and August during school holidays. Daily demand profiles show that weekdays are busier on average in the peak month than weekends. This is due to the combination of business and leisure demand during the week and reduced business traffic at weekends.

Edinburgh is an overnight base for a large number of aircraft - this results in a peak departing period at the beginning of each day and a peak arriving period at the end of the day. Other busy periods during the day reflect the in-bound and out-bound patterns created by a busy short-haul, domestic route network.

The monthly profile of passenger air transport movements shows that available capacity is relatively consistent throughout the year. This demonstrates that airlines operating from Edinburgh are generally running year-round businesses with fixed frequencies. Any slight fluctuations are caused by a small number of charter operations.

Map 1: Land Use

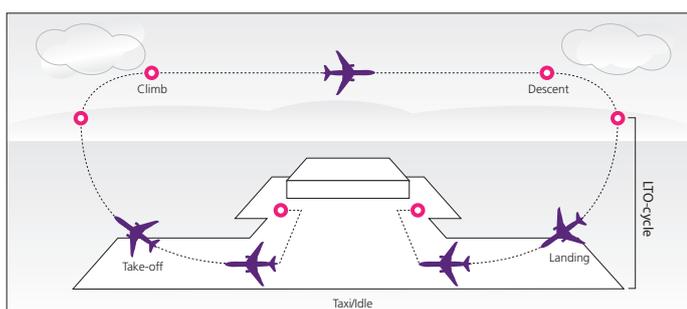


7. Results of the 2011 noise mapping

The location of Edinburgh Airport and the alignment of the main runway mean that relatively fewer people are impacted by contours exceeding 60 dBLden. Only 20% of those generally affected by noise are within these contours, around 80% are within the 55-60dBLden contour which incorporates Livingston.

The prevalence of westerly winds means that around 70% of aircraft arrivals come from the east over the community of Cramond. Around 70% of departures are to the west over Newbridge and Livingston. When aircraft depart to the east, a noise preferential route is used, which seeks to ensure aircraft do not fly directly over Cramond.

The main runway at Edinburgh Airport is currently equipped with an instrument landing system (ILS), which sends out a signal for aircraft to use to arrive at a steady three degree angle of approach. This ILS system requires aircraft to lock into the signal at least eight miles from the end of the runway, over the Firth of Forth for arrivals from the east. As a result of this technology, it is not possible for aircraft to avoid passing over areas of population such as Cramond when arriving from the east. However, together with NATS we have been promoting CDAs and CCDs and the majority of airlines have been trialling it. This will result in a reduction in noise levels during the landing and take-off cycle.



Other communities, including Lennymuir, Ratho Station and Kirkliston are impacted by ground noise from the airport.

The second runway at Edinburgh is predominantly used when the main runway is being resurfaced or repaired and during these periods aircraft are routed over parts of west and south Edinburgh. This has been found to cause particular disturbance to residents in these areas where they are less used to aircraft noise.

Below are the areas and populations exposed to certain noise contours. We have included data from Lday, Levening, Lnight, Lden and Leq noise contours.

Tables

Table 3: Estimated areas, populations and households within Edinburgh Airport year 2011 Lday noise contours

Contour Level dB (A)	Area km2	Population	Households
> 55	20.5	5,100	2,200
> 60	7.1	650	250
> 65	2.6	100	50
> 70	1.0	0	0
> 75	0.5	0	0

Table 4: Estimated areas, populations and households within Edinburgh Airport year 2011 Levening noise contours

Contour Level dB (A)	Area km2	Population	Households
> 55	18.1	4,050	1,750
> 60	6.1	750	300
> 65	2.1	100	50
> 70	0.8	0	0
> 75	0.4	0	0

Table 5: Estimated areas, populations and households within Edinburgh Airport year 2011 Lnigt noise contours

Contour Level dB (A)	Area km2	Population	Households
> 55	20.2	4,900	2,150
> 60	7.4	700	300
> 65	2.9	200	100
> 70	1.2	0	0
> 75	0.6	0	0

Table 6: Estimated areas, populations and households within Edinburgh Airport year 2011 LAeq, 16h noise contours

Contour Level dB (A)	Area km2	Population	Households
> 57	13.0	3,300	1,450
> 60	6.8	650	250
> 63	3.7	350	150
> 66	2.0	100	50
> 69	1.2	0	0
> 72	0.7	0	0

Table 7: Estimated areas, populations and households within Edinburgh Airport year 2011 Lden noise contours

Contour Level dB (A)	Area km2	Population	Households
> 55	37.0	16,850	7,100
> 60	13.6	3,300	1,450
> 65	4.9	450	200
> 70	1.9	50	<50
> 75	0.8	0	0

8. Evaluating implementation

Performance indicators for the Action Plan

We will monitor a set of performance indicators to assess our effectiveness in each area of focus, to ensure that the work we are undertaking is resulting in the maximum benefit in terms of reducing noise impacts.

The full range of indicators is set out in the NAP in Section 9, page 19. Our performance against these indicators will be regularly reviewed internally through our environmental governance structure. We will also report on progress against them in our annual CRRs.

During the five-year period of this action plan, we may add to or amend the range of performance indicators to respond to improvements that enable us to better manage the airport noise impacts.

Quantification of the action plan

When we developed the first NAP we undertook an exercise to quantify the potential costs and benefits to ensure we focused our efforts on those areas which will have the maximum benefit for noise. This informed what actions we could seek to undertake and the timescale for implementation. By prioritising noise management activities on the most effective actions, we believe we can ensure maximum benefits for noise affected communities.

Table 6: A comparison of our performance indicators

Key performance indicator	2002 baseline (where applicable)	2006 performance	2011 performance
Number of air traffic movements	114,293	126,912	113,357
Area/population 57 dBLAeq	N/A	15.1km ² /3,200	13.0km ² /3,300
Night movements	N/A	4,488	6,300
Departure noise limits			
Day	N/A	94	94
Night	N/A	87	87
Number of noise related enquiries	36	261	63
Number of noise related enquirers	31	161	46

9. Noise actions for 2013-18

Action	Impact	Timescale	Performance indicator	Approx. estimate of people affected
1. Demonstrate we are doing all that is reasonably practicable to minimise noise impacts				
1a. Quietest Fleet Practicable				
We will continue to work with airlines to promote the most efficient aircraft when introducing new business to Edinburgh.	Arrivals (A) Departures (D) Ground noise (GN)	On-going	Track the annual percentage of Chapter 4 operations. Contours changes.	16,850
We will continue to review the landing fee differential at least every year.	A, D, GN	2014-18	Conditions of use document changes in charging. Change to contours. Track percentage within different charging categories	N/A
1b. Quietest practicable aircraft operations, balanced against NOX and CO2 emissions.				
We will continue to promote a best practice guide for departures to airlines operating at Edinburgh Airport.	D	On-going	Contour changes.	16,850
We will continue to promote CDAs and CCDs to airlines operating at Edinburgh Airport.	A	On-going	Percentage of CDAs achieved. Contour changes.	16,850
We will continue to fine aircraft in breach of noise limits and increase the fine level if appropriate.	D	Review in 2014 and 2017	Number of infringements	16,850
We will continue to work with our partners in Sustainable Aviation to develop and promote low noise flight procedures through evaluation of future operational methods and implementation of best practice.	A, D, GN	Annual	Website. Annual CSR	16,850
We will continue to engage with our aviation partners to seek to improve adherence to the standard airport procedures.	A, D	On-going	Update the airport consultative committee	N/A

Action	Impact	Timescale	Performance indicator	Approx. estimate of people affected
We will control ground running of aircraft engines. To ensure that the environmental impact of aircraft engine running on the local community is kept to a minimum, aircraft operators with maintenance commitments at the airport are expected to plan their schedule to avoid the need for ground running of engines at night from between 2300-0600 during weekdays and 2300-0900 at the weekend. Only during exceptional circumstances is engine running allowed between these times.	GN	On-going	Number, location and duration	100
We will continue to prioritise stand allocation so as to minimise ground noise impacts.	GN	On-going	Number of aircraft on ground noise sensitive stands during noise sensitive periods.	100
In conjunction with our partners in Sustainable Aviation we will continue to lobby for and seek to support continual improvements in technology and operations towards the ACARE goal of 65% reduction in perceived external noise by flying aircraft by 2050 relative to equivalent new aircraft in 2000.	A, D, GN	On-going	N/A	
1c. Effective and credible noise mitigation schemes				
We will continue to offer a relocation assistance scheme for those households within the airports 69db Leq noise contour, in line with Government policy.	A, D	On-going	Number of requests made	0
We will continue to benchmark our noise mitigation and compensation measures with other comparable airports	Perceived impacts	2015	Publish a table	N/A
We propose to compare noise contours and the number of people exposed with other airports to understand if other noise mitigation schemes have been more successful. We will then seek to understand if this can be applied to Edinburgh	A, D, GN	2015	Publish a table, Take reasonable action	16,850
We will continue to honour the Edinburgh Airport vortex scheme.	Perceived impacts	On-going	Number of properties subjected to vortex damage	N/A

Action	Impact	Timescale	Performance indicator	Approx. estimate of people affected
2. Engage with communities affected by noise impacts to better understand their concerns and priorities, reflecting them as far as possible in airport noise strategies and communication plans				
We will continue to offer a free phone number for complaints and enquires regarding aircraft noise. Complaint data will be published in our CRR.	Community trust and awareness	On-going	Number of contacts and method of contact	16,850
We will annually review our communication material to ensure relevance and ease of understanding.	Community trust and awareness	Annually		N/A
We will continue to log all complaints relating to aircraft operations and publish the statistics quarterly.	Community trust and awareness	Quarterly	Number of callers, events, month and area	N/A
We will seek to acknowledge 100% of all complaints and enquiries within 2 working days and respond within 5 working days. Performance against this will be published at the Airport Consultative Committee	Community trust and awareness	On-going	Response rate tracker	N/A
We will publish a summary of consultation responses within 6 months of the close of this consultation.	Community trust and awareness	2014	Publication of feedback report	N/A
We will publish our progress against the action plan on an annual basis.	Community trust and awareness	Annually	CRR and % of actions complete	N/A
We will continue to direct all money raised by noise infringements to the Edinburgh Airport Community Board.	Community trust and awareness	On-going	Number of infringements and fines raised published in the CRR	N/A
In our newsletter to the local community we will report on engine running frequency and times	Community trust and awareness	On-going	Number of engine ground runs	N/A
3. Influence planning policy to minimise the number of noise sensitive properties around our airport				
We will continue to engage with the local planning authority to ensure awareness of aircraft operations is considered in the development of sensitive land use.	Land use planning, community trust and awareness	On-going	Number of interactions with the local planning authority	N/A
We will continue to commission and publish forecast Leq contours for aircraft noise in future masterplans.	Land use planning, community trust and awareness		Publication of forecast contours	

Action	Impact	Timescale	Performance indicator	Approx. estimate of people affected
4. Manage noise efficiently and effectively				
We will continue to operate and enhance our noise management systems by various means such as holding quarterly management system reviews, analysing noise data periodically and reviewing noise complaint trends.	Consistent and effective management	On-going	N/A	
5. Achieve a full understanding of aircraft noise to inform our priorities, strategies and targets				
We will continue to work with Sustainable Aviation and local stakeholders to understand and address the interdependencies of aircraft operations management and noise.	A, D, GN	On-going	Group participation, research funding and trial participation.	N/A

Annex A:

Glossary

AIP	Aeronautical Information Publication	Leq	Equivalent sound level of aircraft noise in dBA, often called equivalent continuous sound level. For conventional historical contours this is based on the daily average movements that take place in the 16 hour period (0700–2300 LT) during the 92 day period 16 June to 15 September inclusive.
ACARE	Advisory Council for Aeronautics Research in Europe	Levening	The A-weighted average sound level over the 4 hour evening period of 1900–2300 hours.
ACOP	Arrivals Code of Practice	Lnight	The A-weighted average sound level over the 8 hour night period of 2300–0700 hours.
ANASE	Attitudes to Noise from Aviation Sources in England	MPPA	Million passengers per annum
ANIS	Aircraft Noise Index Study	NATS	NATS is licensed to provide en-route air traffic control for the UK and the Eastern part of the North Atlantic, and also provides air traffic control services at Edinburgh Airport.
ANMAC	Aircraft Noise Monitoring Advisory Committee	Noise Contour	Map contour line indicating noise exposure in dB for the area that it encloses.
APF	Aviation Policy Framework	NPR	Noise Preferential Route
ATC	Air Traffic Control	NTK	Noise and Track Keeping monitoring system. The NTK system associates radar data from air traffic control radar with related data from both fixed (permanent) and mobile noise monitors at prescribed positions on the ground.
ATM	Air Transport Movement	PAN	Planning Advice Note
ATWP	Air Transport White Paper – this is superseded by the AWP	PATMs	Passenger Air Transport Movements
CAA	Civil Aviation Authority	SESAR	Single European Sky ATM Research Programme
CCD	Continuous Climb Departures	SID	Standard Instrument Departure route
CDA	Continuous Descent Approach	STARS	Standard Arrivals Routes
CRR	Corporate Responsibility Report	Sustainable	A UK aviation industry initiative aiming to set out a long Aviation term strategy for the industry to address its sustainability issues.
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)	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.		
DCOP	Departure Code of Practice		
DEFRA	Department for Environment Food and Rural Affairs (UK Government).		
DfT	Department for Transport (UK Government).		
ICAO	International Civil Aviation Organization		
ILS	Instrument Landing System.		
Lday	The A-weighted average sound level over the 12 hour day period of 0700–1900 hours.		
Lden	The day, evening, night level, Lden is a logarithmic composite of the Lday, Levening, and Lnight levels but with 5 dB(A) being added to the Levening value and 10 dB(A) being added to the Lnight value		

Annex B: dBLAeq Map



EDINBURGH AIRPORT
Year 2011 Annual L_{Aeq,16hr} Contours
Actual Modal Split 72% W / 28% E

Scale 1:50,000

Annex C: dBLden Noise Map



EDINBURGH AIRPORT
Year 2011 L_{den} Contours
Actual Modal Split 73% W / 27% E

Scale 1:50,000

Annex D:

The cost of Noise Management

Type	Description	Approximate Cost
Staff Costs	Flight Evaluation Team, Communications Team, Environment Team, Airside Team, Planning Manager	£50,000
Computer Costs	Noise and Track Keeping System, website development	£25,000
Equipment Costs	Noise Monitor maintenance, Radar maintenance	£20,000
Publications	Community Newsletters	£15,000



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