BOURNEMOUTH AIRPORT

NOISE ACTION PLAN

2018

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Foreword

Government placed a requirement on certain Airport Operators to prepare a Noise Action Plan in accordance with regulations and guidance. In 2010, we conducted an extensive consultation exercise and submitted our original plan to Government in 2011, which they adopted. This was updated in 2014, and we are now into our second review and update cycle.

The law managing noise, together with the policy, framework and guidelines, is set out at a national and international level. However, many measures to control noise at Bournemouth Airport have been introduced locally. For example, many legally-binding targets, obligations and limits are set out in an Agreement between Christchurch Borough Council and Bournemouth Airport under the terms of Section 106 of the Town and Country Planning Act 1990 that sits alongside the planning permission for the new Terminal buildings.

In preparing the original Noise Action Plan we worked with our Consultative Committee, adjoining Local Authorities, airlines and the General Aviation community and our air traffic control service. We have also, as part of this review, assessed ongoing complaints about noise from our operations to understand if there is anything more that we can do, to reduce our noise impacts, under the requirements of the Noise Action Plan guidance and regulations. Again, we will work in close consultation with our Independent Consultative Committee and adjoining local authorities to ensure the validity of the plan in this cycle.

Aviation is essential to the U.K.'s economy and our future prosperity. Bournemouth Airport is widely recognised as an important asset for the regional economy. The challenge we face is how to deliver the benefits of aviation, in terms of the jobs and connectivity it affords, in a way that meets the needs of our customers in a responsible way. This Noise Action Plan is part of this process and represents the continued and open dialogue with our stakeholders and the communities who live around us and are affected by our operations.

The Noise Action Plan will continue to evolve and our targets, policies and procedures will most likely change as we carry out reviews over the life of the Plan. Any changes will be aimed at limiting and reducing, where possible, the number of people affected by noise as a result of the Airport's activity.

Paul Knight
Managing Director
Bournemouth Airport

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1. Introduction

In 2011, the first Bournemouth Airport Noise Action Plan was approved by DEFRA and published. This was produced in response to the Environmental Noise (England) Regulations 2006, as amended (the "Regulations"). These Regulations transposed the EU Environment Noise Directive (2002/49/EC), known as END, relating to the assessment and management of environmental noise into UK legislation and make the preparation of a NAP for a number of different noise sources, including some Airports, a legal requirement. The Plan was prepared following an extensive public consultation exercise, adhering to the guidance at the time. This was reviewed and updated in 2014. Bournemouth Airport is now required to review this Noise Action Plan again.

The main aim of END and the Regulations is to provide a common basis for managing noise across Europe. To achieve this, the Regulations require the assessment of noise using standardised methods, to assess the number of people affected. Following production of a draft plan, the public were to be informed of the results and afforded the opportunity to contribute to the development of an action plan, which addresses local noise issues. The guidelines establish that one of the primary purposes of the Action Plan and the supporting noise assessment is to establish if the current noise impact is acceptable under the terms of the guidelines. If the answer is 'yes', it can be assumed that the current noise control measures are adequate. If the answer is 'no', further action is required and this action should be proposed as a part of the Action Plan. As summarised in the table below, we have a wide-ranging programme of noise controls and with the introduction of this programme we have concluded that the current situation is acceptable. Our measures go beyond the strict remit of the NAP and reflect the comments that we have received during our consultations.

Summary of Key Noise Control Policies in place at Bournemouth International Airport

Key Noise Control Measures	Key Enhancements as a result of the NAP process
Reducing aircraft noise at source BIA has agreed a legally binding limit on the numbers and types of aircraft that may operate at night. This agreement is expressed as a 'quota count'	
Noise Abatement Procedures Routing instructions are published instructing pilots of departing aircraft to fly a track that avoids, as far as is possible, the	These instructions were substantially changed as a direct result of the comments received during the

more densely populated areas, to minimise the impact of noise. Departing aircraft are instructed to climb as steeply as is consistent with safe operations to ensure they achieve maximum height.	consultation of the draft NAP. In further reviews, the wording of these instructions has been reviewed to enable greater pilot understanding.
It is common, particularly for training and light aircraft to fly circuits in the vicinity of the Airport. Minimum circuit heights are imposed and circuits are not permitted at night. Particularly following maintenance or repair aircraft are required to run their engines whilst they are on the ground. These operations are only permitted in agreed locations on the aerodrome and are prohibited during evenings, night time, Sundays and Public Holidays.	The minimum circuit heights were increased from 1,000 feet to 1,500 feet as a direct result of successive NAPs.
Wherever possible landing aircraft fly a continuous descent approach (CDA). This technique reduces engine noise and increases altitude.	Closer liaison, as direct result of the NAP, has improved the way in which aircraft operations are co-ordinated between air traffic controllers at Bournemouth and Southampton airports and CDA is now achieved more often.
Key Noise Control Measures	**Key Enhancements in NAP**
Landing aircraft are instructed to minimise the use of reverse thrust (engine braking).	
Restrictions on the noisiest aircraft types Those aircraft that have a quota count of 8 or 16 are not permitted to operate at night and those aircraft with a quota count of 4 are not permitted to schedule operations at night.	
Monitoring and engagement BIA was one of the first in the UK to introduce the WebTrak radar replay service,	A number of important amendments were made to the WebTrak system in

which allows members of the public to replay aircraft operations, to display their identity and altitude.	response to the comments received during the consultation of the NAP.
BIA has a well established complaints procedure to record, investigate, respond and report all instances of noise disturbance.	The noise complaints procedure was significantly enhanced as a result of the NAP, including reducing the response time from 10 working days to 5.
BIA use its web site to make available information including noise monitoring, complaints and information about aircraft operations.	This information has been made more accessible as a result of the NAP and the content is being progressively improved in response to the results of the consultation.

These regulations also require that the Noise Action Plan is reviewed at regular intervals, taking into account results of further noise mapping exercises. As a result of this, we have undertaken this review in line with these requirements. DEFRA has produced guidance outlining requirements with regard to the extent of review and consultation. As Bournemouth Airport already has an adopted noise action plan, the guidelines stipulate that we update our plan to take account of any changes that have occurred at the Airport. It also requires that we report on results of the noise mapping completed using 2016 data, as well as report on progress made against actions outlined, and detailing any proposed new actions.

2. Background

Purpose of the Noise Action Plan (NAP)

Noise is one of the principal environmental challenges for the Airport. Evaluating noise impact is difficult as noise disturbance is susceptible to subjective reactions. Whilst noise does not have an effect on the physical environment, it can have significant effects, in particular, on people living close to the Airport in terms of levels of annoyance and disturbance that might affect sleep, communication and learning activities. The onset levels for significant disturbance are discussed in more detail later.

Noise from arriving and departing aircraft is generated both by aircraft engines (from the fans and the exhausts) and the airframe (via the wings, body, flaps, brakes and landing gear). Departing aircraft require a high degree of thrust and so the majority of noise emanates from the engines; typically making this the noisiest aircraft operation. However, because of a steep climb angle, an aircraft soon reaches an altitude where noise impacts are substantially reduced. Arriving aircraft generate more noise from the airframe because of the use of flaps and landing gear being down. Thrust is reduced because of a relatively shallower approach, but it also means that the aircraft are closer to the ground over a longer distance and therefore increasing the distance over which noise disturbance may be experienced on the ground.

The NAP must be put in place for those areas affected by noise from aircraft departing from and arriving at the Airport, as defined by the Guidelines. Those places are clearly shown by the results of the noise assessment, which are published as noise maps. The Plan must include a description and assessment of the existing framework of control relating to noise from the Airport. This review and update of the Noise Action Plan must support the government's aim outlined in the 'Aviation Policy Framework (2013)', and will support the future of the 'UK Airspace Policy: A framework for balanced decisions on the design and use of airspace' to limit and where possible reduce the number of people in the UK significantly affected by aircraft noise.

The procedure requires an examination of the Airport's current noise impact and what measures are already in place to control these impacts. It is then necessary to come to a view as to whether or not those impacts and measures are acceptable.

Strategic Noise Mapping Exercise

The Regulations require major airports, as well as some others, to produce noise exposure information in the form of strategic noise maps utilising standardised noise indicators.

Accordingly, over successive Noise Action Planning cycles, strategic noise maps have been prepared using 2006, 2011 and 2016 aircraft movements (a movement being an aircraft landing or a take-off). The maps from 2016 are reproduced in Appendix 1. They were submitted to the Secretary of State and following validation subsequently approved by Defra. They are also available on the Defra website.

These maps underpin the whole NAP process. Details of the areas covered by the maps and the number of people impacted are discussed in more detail later in the document.

Measuring noise is a complex subject. In the context of measuring aircraft noise, the most commonly used noise measure is the average noise energy over a specified time period. Measuring noise in this way attempts to present the effect of an individual number of "noise events" associated with aircraft taking off or landing, with quieter intervals in between, as an "average" noise level, expressed as decibels. This measure is referred to as L_{eq}.

These average levels are weighted to more accurately reflect the perception of noise by the human ear. This is referred to as 'A weighting'.

The END requires member states to produce noise exposure maps using the L_{Aeq} measure for the daytime, evening and night periods. This is alongside an overall $L_{Aeq,16hr}$ to cover the period from 07.00-23.00. The END also introduces a relatively new measure which seeks to present noise exposure over the whole 24 hour period. To acknowledge the greater potential for noise to be intrusive during evening (19.00 – 23.00) and night periods (23.00 – 07.00), when background noise levels are lower, this measure adds 5 decibels to all aircraft "noise events" that take place during the evening and 10 decibels to all aircraft "noise events" that take place at night. This measure is referred to as L_{DEN} and affords greater weighting to noise in the evening or at night. An L_{DEN} map has also been produced and is available in Appendix 1.

Overview of NAP Requirements

Noise Action plans are required to be completed for major airports (those with over 50,000 movements per annum) or those with specific noise curves overlapping with an identified agglomeration. Under the terms of the END an agglomeration is defined as an area having a population in excess of 100,000 persons and a population density equal or greater than 500 people per km² and which is considered to be urbanised. Appendix 2 shows the area identified as the Bournemouth agglomeration. In the case of Bournemouth Airport, a NAP is required due to a light overlap of the 55 dB(A) L_{DEN} curve with the Bournemouth agglomeration.

The minimum requirements for a NAP are:

- A description of the airport
- The authority responsible
- The legal context
- Any limit values in place
- A summary of the results of the Noise Mapping
- An evaluation of the number of people exposed to noise, identification of problems and situations that need to be improved
- A record of the public consultations organised
- Any noise-reduction measures already in place or in preparation
- Performance against commitments made in previous Noise Action Plans

- Actions proposed over the next 5 years and a programme of evaluation of their effectiveness

The Guidelines further explain these requirements. They require that a NAP must be drawn up for places near the Airport, and defines these as those places affected by noise from arriving and departing aircraft as shown by the results of the noise mapping. NAPs must be designed to manage noise issues and effects, including noise reduction if necessary, particularly where exposure levels can induce harmful effects on human health.

In line with current government aviation policy commitment of limiting, and where possible reducing, the number of people in the UK significantly affected by noise, Government policy has been to concentrate departing aircraft along the least possible number of departure routes, consistent with airspace management considerations and the overriding need for safety. This has resulted in the establishment of Noise Preferential Routes (NPRs). These routes are designed to minimise noise annoyance and concentrate aircraft departures along routes which, as far as is practicable, avoid the more densely populated areas.

The NAP must also include "a description and assessment of the existing national and local framework of control directly or indirectly relating to the management of noise from Airports e.g. current Government policies, noise preferential routes, Airport Master Plans, any local planning agreements and restrictions, and local voluntary agreements etc." Guidance is also offered on the format of the NAP.

Once drawn up, the original draft NAP (2011) was subjected to a public consultation exercise, which it was recommended should run for a 16 week period, following which the plan was reviewed and monitored in 2014. It should be noted that representatives of the Airport's Independent Consultative Committee (ICC) have had a close involvement and continue to oversee the implementation of the measures set out in the Plan.

With this subsequent review and update of the Noise Action Plan, we are required to present the plan again to the Independent Consultative Committee for comment. A description of these comments must then be included in the revised plan, with a reasoned justification for the response to the issues raised.

The process for adoption of this review of the NAP is set out in the Regulations, which require that, once completed, the Plan along with an accompanying summary, is submitted to the Secretary of State for DEFRA.

The Authority Responsible for the Bournemouth Draft Noise Plan

In accordance with the requirements of the END and the Regulations it is noted that Bournemouth Airport, which is part of the Regional and City Airports Group, is the authority responsible for this plan.

3. Description Of The Airport

Bournemouth Airport was originally built during World War II to provide an operating base for the RAF. Shortly before the end of the war it was converted into a municipal airport, and the Government designated it as the intercontinental airport for the UK. By 1945, long haul routes were being flown to North and South America, Africa and Australasia. In 1951, the Vickers Aircraft Company established a production facility at the site, which at its peak became a major employment site for the area, employing over 6,000 people.

The Airport was incorporated under the Airports Act in 1986 and was owned by Bournemouth Borough Council (BBC) and Dorset County Council (DCC). It passed into private ownership in April 1995 and, in 2001, was acquired by Manchester Airport Plc, who are now Manchester Airport Group. In December 2017, Bournemouth Airport was acquired by Regional and City Airports Group, a part of Rigby Group Plc.

Bournemouth Airport site is divided into distinct zones. To the south-east of the runway, which runs on an east-north-east to west-south-west axis, is the main commercial passenger airport, incorporating the main terminal buildings, aircraft apron, car parking and airport support facilities. Following from the 2009 Noise Action Plan, development work has been undertaken to improve terminal buildings, with completion of the new departures building in 2009 and construction of a new arrivals building in 2011. The Airport's runway is 2,271 metres in length. While the typical passenger aircraft in use at the airport are Code C sized e.g. Boeing 737 and Airbus A320/321, the runway is capable of handling the larger Code D and E sized aircraft e.g. Boeing 747, 757, 767, 777 and Airbus A330/340 aircraft.

To the north of the runway there are two distinct zones. The northernmost comprises an area of heath and river corridor, most of which has Site of Special Scientific Interest (SSSI) status. The heath is also identified as a Special Protection Area (SPA) in recognition of its international value as habitat for supporting rare birdlife. South of this heathland is the Northern Sector, an area of industrial and commercial development, split by a disused runway into north-west and north-east sectors. Most of the Airport site's employment is concentrated in the north-west sector. The north-east sector is the focus of the Airport's aviation maintenance operation. There are a number of other users in both sectors that generate air traffic movements such as CTC and Cobham.

In 2017 approximately 700,000 passengers used Bournemouth Airport. Previous forecasts have suggested that Bournemouth could be handling anywhere between 3 and 4.5 million passengers per year by 2030, dependant on the delivery of additional capacity in the South East of the country, more particularly at the main London airports.

There were a total of 36,831 aircraft movements in 2017. This was made up of 4,214 commercial aircraft movements and 32,618 non-commercial movements including test and training flights, training flights, private, military flights and business flights.

4. Aircraft Noise: Regulatory Framework

International

ICAO Regulatory framework

In common with all parts of the aviation industry, we have benefited from improvements in aircraft technology, which have greatly reduced the noise from individual aircraft, particularly on departure. Modern aircraft are typically 20 decibels quieter than those operating 30 years ago.

Whilst further improvements in technology are likely, aircraft operations will still result in relatively high levels of noise with the potential to disturb and annoy. This is particularly so at night when levels of background noise are generally lower. Given the growth forecast in our commercial activity, this makes the control of noise particularly challenging.

In seeking to minimise the impact of aircraft noise, we have followed the agreed principles set out by the International Civil Aviation Organisation (ICAO), known as the "balanced approach". This approach is given effect by European Directive (EC2002/30) and the Aerodrome (Noise Restrictions) (Rules and Procedures) Regulations 2003. In summary, the "balanced approach" requires the consideration of the contribution to noise amelioration that can be made by each of the following measures:

- reducing aircraft noise at source
- land-use planning
- noise abatement operational procedures
- operating restrictions

When considering the need for operating restrictions, ICAO urges that they are not employed as a first resort and that they are only employed after careful consideration of the benefits to be gained from all other elements of the balanced approach. This is part of the overall "control, mitigate and compensate" approach.

National

Aviation Policy Framework

In 2013, the government produced its Aviation Policy Framework. The Government's overall policy on aviation noise is to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise.

The Framework highlights the important role industry has to play in reducing aircraft noise from source

The Aviation Policy Framework outlines a number of measures to achieve this. It recognises the importance of the 'balanced approach' with regard to noise management, as defined by

the ICAO. There is a recognition of the importance of local control with regard to noise management at airports. This includes local planning conditions and agreements, and the review of noise action plans alongside the development of noise preferential routes.

The policy is in agreement with the noise indicators outlined in the Environmental Noise Directive, however it does encourage airports to consider the case for additional or alternative noise indicators, which better reflect how aircraft noise is experienced in different localities.

UK Airspace Policy: A framework for balanced decisions on the design and use of airspace

In 2017, the government released a consultation on an update to UK airspace policy to meet the needs of passengers, communities, the aviation sector and the wider economy.

Within this policy, there is again an endorsement of the ICAO 'Balanced Approach' as outlined above. There is a recognition of the economic benefits of aviation, which must be balanced against the negative impacts of noise to surrounding communities in order to achieve sustainable growth. It is recognised that the aviation sector is a major contributor to the economy, and policy supports its growth within a framework which maintains a balance between the benefits of aviation and its costs, particularly climate change and noise. It is accepted that this is especially important for those who live close to airports and bear a particular burden of the costs. The policy therefore aims to strengthen the arrangements for involving communities near airports in decisions which affect them.

Whilst this policy is yet to be finalised, there are a number of key changes which could impact the Airports Noise Action Plan. The key changes in the policy are:

- The creation of an Independent Commission on Civil Aviation Noise (ICCAN) – This body will be established to help ensure that the noise impacts of airspace changes are properly considered and give communities a greater stake in decisions relating to noise management. It will have a role in facilitating industry and communities to communicate effectively in order to achieve balanced decisions and provide expertise on noise management.

- Changes to aviation noise compensation policy, to improve fairness and transparency. Airspace changes have been incorporated into the existing compensation policy so that compensation policy is the same for all changes which affect noise impacts, regardless of whether they are a result of infrastructure change or airspace change.

- A new requirement for presentation of options analysis in airspace change, to enable communities to engage with a transparent airspace change process and ensure all options are considered. The Civil Aviation Authority's airspace change process has been revised to take account of this change.

- New metrics and appraisal guidance to assess noise impacts and their impacts on health and quality of life. In particular this will ensure noise impacts are considered much further away from airports than at present. These adverse effects should be assessed using a risk-based approach above the lowest-observed adverse-effect level (LOAEL), using the DfT's transport

appraisal guidance WebTAG. Supplementing this risk-based approach with frequency-based noise metrics will ensure that aircraft noise and its impacts can be accurately factored into decisions.

Alongside this consultation, the government has produced the draft 'Air navigation guidance on airspace and noise management and environmental objectives' which shows how these policy principles could be put into place.

Sustainable Aviation

Launched in 2005, Sustainable Aviation is an industry coalition that is developing and implementing long-term strategy for the UK aviation industry. It brings together airlines, airports, manufacturers and air-traffic service providers.

In 2013, Sustainable Aviation launched its Noise Road-Map. The Road-Map has been conceived around the four elements of the ICAO's 'balanced approach'. It prioritises four key areas of work to reduce noise before operational restrictions should be considered:

- Reducing noise at source
- Land Use Planning
- Operational improvements
- Noise communication and community engagement

By looking at how the aviation industry can manage aircraft noise between now and 2050, the Roadmap demonstrates that it is possible for the industry to grow without increasing overall noise impact in the UK. The Roadmap also acts as a toolkit for airports to introduce measures to reduce the effect of noise impact from aircraft operations.

Civil Aviation Act 2006

The Civil Aviation Act 2006 affords airports the powers to establish and enforce a noise control scheme. The noise control scheme can have wide-ranging powers including limits on the numbers or types of aircraft that are permitted to operate, penalties on those that fail to comply with noise abatement procedures and charging mechanisms to incentivise airlines to operate quieter aircraft types.

Local

Bournemouth Airport Master Plan

In our Master Plan, we set out air noise contours for all aircraft movements for the baseline year of 2004, as well as predicted contours for anticipated movements in 2015 and 2030. At the same time, we estimated the numbers of properties that might be affected by different (low, medium or high) noise levels.

As a result of this, we made a commitment in the Master Plan to improve our Noise Complaints procedure, including committing to expand the use of noise monitoring

equipment to record and assess actual noise levels. We also committed to introduce a system for recording aircraft tracks, which would enable us to enforce our noise abatement procedures, through, if necessary, the introduction of a fining system.

Given the small number of existing and envisaged night-time air movements, the Master Plan did not envisage any further controls on night-flights to be necessary.

This Master Plan has been reviewed in line with The 2013 Aviation Policy Framework which reiterates the importance of such plans and how they are implemented.

Section 106 Agreement

In spring 2007, we submitted a planning application to carry out a comprehensive redevelopment of the terminal buildings. This will cater for future increases in activity at the Airport. The application followed the principles set out in the Master Plan and we entered into an Agreement with the Local Authority to obligate us to deliver on many of the measures that had been set out in the Master Plan. This included a general commitment to limit noise, along with specific measures to control noise from arriving and departing aircraft as well as setting out limits to the amount of noise that could be generated at night. These commitments are set out in full in Appendix 4 and our move towards meeting the obligations set out later in this Plan.

Airport Consultative Committee

The Bournemouth Airport Independent Consultative Committee (ICC) is the formal body in charge of liaison between Bournemouth Airport and our neighbouring communities.

It operates according to Government guidelines and representatives from local authorities, amenity and user groups meet three times a year. The Committee consists of representatives from 29 member organisations

According to the Liaison Group of UK Airport Consultative Committees, an ICC "seeks to hold the precarious balance between the interests of civil aviation, of passengers and other users of the airport and of people living in the area, and of the local environment."

5. Noise Control At Bournemouth Airport

Our programme of noise control was originally based upon the schedules set out in the Section 106 Agreement between Christchurch Borough Council and ourselves to accompany the planning permission for the new terminal building and accompanying development. The programme of control is wide-ranging and seeks to apply the guiding regulatory principles to the local situation. Progress reports setting out how we are performing against our obligations are submitted annually to Christchurch Borough Council and reported to the Airport's Independent Consultative Committee. The full requirements of the Section 106 Agreement in relation to noise controls are set out in Appendix 4. The noise control measures introduced by the section 106 agreement were enhanced in response to consultation on the 2011 and 2014 noise action plans, to further reduce the impact of noise in the vicinity of the airport.

To ensure that all operations are undertaken as quietly as possible, the way in which aircraft are operated is closely controlled. The basis of this is a general and overarching requirement that all aircraft are operated in a manner likely to cause minimum disturbance. Our programme sets out a number of detailed and mandatory requirements to control the way in which aircraft are operated, including:

Departing aircraft

- Departing aircraft are required to climb as steeply as is compatible with safety, in an effort to maximise altitude and thereby reduce noise.
- Departing aircraft are required to follow specified departure routings. Commercial aircraft are not permitted to make any turn below 2,000 feet and it is the intention of the departure routings that aircraft avoid flying over built up areas where it is possible to do so. The effect of the routings is to minimise impact to Parley and the Bournemouth agglomeration when aircraft depart to the west (Runway 26) and to minimise the impact to Bransgore when aircraft depart to the east (Runway 08).

Landing aircraft

- We currently provide an instrument landing system (ILS) for arriving aircraft to guide them into land, typically from distances of 6 – 10 miles from the runway. Those aircraft using the ILS will maintain a minimum angle of descent. We require that those aircraft which do not make use of the ILS, approach at no less an angle than those approaching using ILS, to ensure that they do not fly lower than is necessary.
- In order to reduce the speed of the aircraft after it has landed, aircraft can reverse their engines to effectively apply a braking force. Whilst it can, for reasons of operational safety, be necessary to do this, the resulting noise can be intrusive. We

have mandatory instructions to pilots which require that the use of reverse thrust above low, or 'idle' power is minimised.

The way landing aircraft descend can affect their altitude and the engine thrust that must be applied. Both factors can significantly affect noise levels. Following research undertaken for the Government and international research, it is now widely accepted that best practice is to adopt a Continuous Descent Approach (CDA). By constantly descending using minimum engine power, it has been shown that CDA can reduce noise by up to 5 decibels. We encourage pilots to use CDA wherever it is possible to do so.

There are a number of airspace users in the vicinity of our Airport including Southampton Airport, military operations and light aircraft. Aircraft operating to or from our Airport must be integrated within this complex environment and provided with safe onward direction towards international air routes. As a result there are occasions when, in order to ensure that aircraft remain safely separated from each other, a landing aircraft may be requested to maintain level flight or descend to a lower altitude than is ideal to allow another aircraft to pass safely underneath or overhead. Whilst this type of 'vertical separation' is not uncommon, it does mean that landing aircraft that operate in this way do not fly as high as possible, use greater engine power and do not achieve CDA.

We continue to promote the use of CDA wherever it is possible and we will continue to work with National Air Traffic Services and other stakeholders to find ways in which local constraints can be reduced. We have enjoyed some success in working with Southampton air traffic control to optimise the potential for the operation of CDA.

Training and circuiting aircraft

Whilst the use of modern computer flight simulators has reduced the need for pilot training, there are still occasions when aircraft are required to fly circuits in the vicinity of the Airport. These include pilot training, following maintenance or repair and when holding prior to landing.

We stipulate minimum altitudes at which circuits can be flown. The requirements in relation to the section 106 agreement were to fly no less than 1,000ft, although this was made more stringent as a result of consultation following the first round noise action plan, with requirements now being that circuit flight altitudes shall be no less than 1,200 feet for light aircraft (less than 5,700 Kg) or no less than 1,500 feet for larger and jet aircraft. In recognition of the need to make special provisions for noise during the evening and night, the higher minimum altitude of 1,500 feet is applied to any operations after 20:00 hrs.

Transparency and feedback

We believe that it is important that the operation of the noise control measures and, more generally, the conduct of aircraft operations are made widely available, in order to involve and engage local people and their representatives in this important area. To this end we have embraced a number of key measures within the current noise control programme including:

- The operation of an internet based radar replay service, WebTrak. Available on our web site, WebTrak enables the replay of radar recordings of aircraft operations in the vicinity of the Airport, whether or not the aircraft in question is operating to or from the Airport. For aircraft operations associated with Bournemouth, operational details such as airline, aircraft type, destination and altitude are also provided.
- We have a well-established Independent Consultative Committee. The Committee, which meets tri-annually, has representatives from local councils, businesses and interest groups.

The following illustrates the WebTrak system:

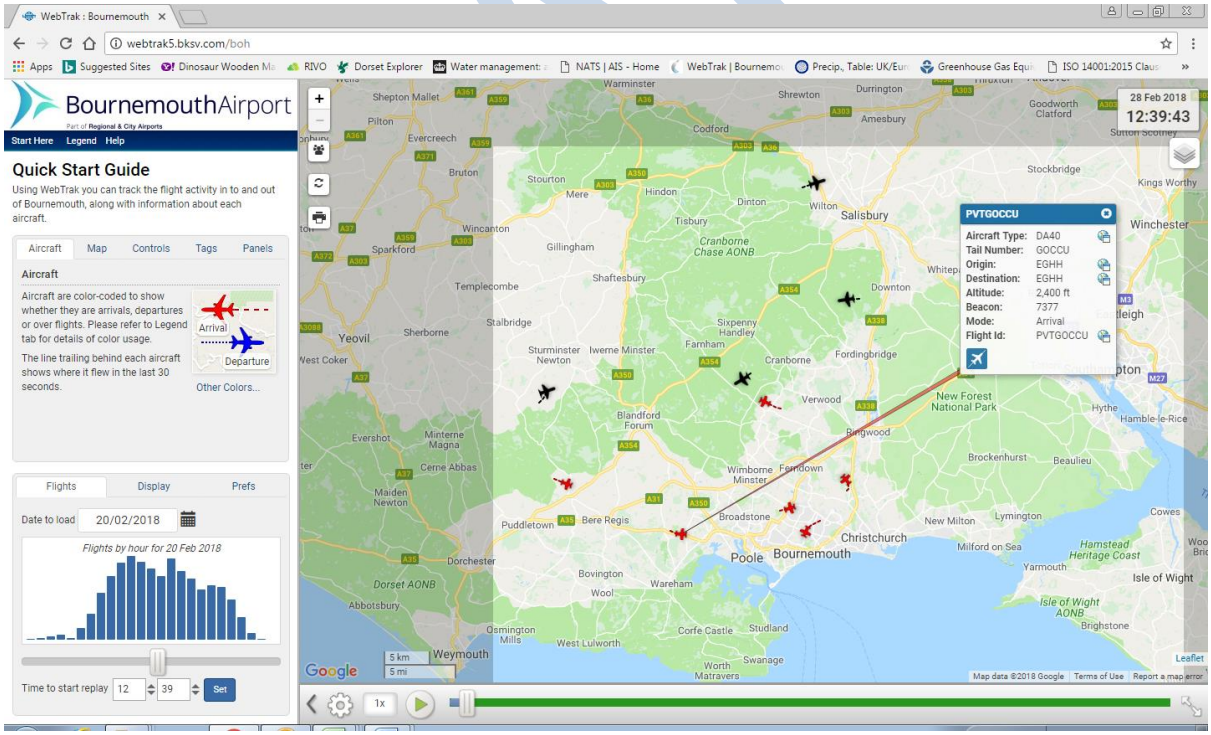


Figure 1 : WebTrak replay

We also provide a clear complaints procedure in the event that noise proves to be disruptive. Details of the complaints procedure are published on our web site and any complaints received are responded to within a target of 5 working days.

It is notable that most complaints relate to operations during the day. In common with other UK airports, we receive greater numbers of complaints during the summer months, when our neighbours are more likely to have open windows and to spend time outdoors. It is also apparent that it is both commercial and other aircraft operations, such as light aircraft, helicopters and training aircraft that give rise to complaint.

Limits

We accept that noise at night can be a particular issue and that some additional safeguards are appropriate to ensure that noise at night is minimised and local people afforded an acceptable level of protection. We have adopted a Night Time Noise Budget, for the period 23:30 to 0600:

- The noise associated with individual aircraft movements can be rated according to a scale, 'the quota count' or QC. Every aircraft is assigned a QC number relating to how much noise it makes on arrival and on departure (as set out in the London Heathrow, London Gatwick and London Stansted Airports Noise Restrictions Notice 2007 or any subsequent notice made under section 78 of the Civil Aviation Act 1982 or any re-enactment). Figure 2 below shows how different aircraft types score against the QC system. Every aircraft is required to possess a noise certificate demonstrating their compliance with appropriate International Civil Aviation Organisation (ICAO) noise certification standards. It is this certificate that fixes an aircraft's QC value.

- We limit operations by the noisiest aircraft types (those attracting a QC rating of 8 or 16). Whilst not the nosiest aircraft, movements of those operations attracting a QC of 4 are also restricted. These operations are not permitted to be scheduled to operate at night (after 23:00 or before 07:00).

- By summing all of the QC ratings associated with aircraft operations at night (23:30 to 06:00), it is possible to express the total impact of aircraft noise at night as single QC point total. This total figure can then be used to report, target and limit the impact of aircraft noise. As the same points total can be maintained by operating a greater number of aircraft that are individually quieter, this system can also be used as an incentive to operate quieter aircraft types. Our noise control programme limits the total QC points at night to no more than 3,100 points per annum.

ARRIVALS			**Maximum certified landing weight – tonnes**							
		Noise Level Band (EPNdB)	<84	84 – 86.9	87 – 89.9	90 – 92.9	93- 95.9	96 – 98.9	99 – 101.9	>102
		Quota Count	**EXEMPT**	**QC/0.25**	**QC/0.5**	**QC/1**	**QC/2**	**QC/4**	**QC/8**	**QC16**
Aircraft	Engine									
Airbus A380-841	RR Trent 970				394					
B737-800	CFM56 7B24				66.36					
B747- 200	CF6-50E2							299.37		
B757-200	RB211-535E4					95.25				

Figure 2: Example of Quota Count Calculations for Arriving Aircraft

6. Progress With Noise Management At Bournemouth

The current noise management programme is predicated on the section 106 agreement as discussed above. In addition to the commitments made in the s106 agreement, further commitments have been made in response to feedback, in particular following the consultation of the draft noise action plans in 2011 and 2014. These included additional procedures, or tightening the operating procedures outlined in the s106 agreement.

With regard to the key aspects of the programme it is notable that:

Departing aircraft

- All of the procedures specified have been published in the UK Aeronautical Information Package (UK-AIP), which is issued by the Civil Aviation Authority. The UK-AIP is an important document as it is the primary source of information used by pilots for all aspects of aerodrome information. The introduction of WebTrak has provided us with the ability to investigate aircraft operations and to confirm that aircraft operations have conformed to the required procedures. With WebTrak, we were the first regional airport in the south to allow the public to view the movement of flights and air traffic patterns. The data to support WebTrak is sourced from the Bournemouth radar and includes all aircraft operations within a 30 mile radius of the airport, with the exception of aircraft operating above 15,000 ft. The public can interrogate the system to obtain information such as the aircraft's track, altitude, airline and aircraft type. Flight information is updated daily and is displayed 24 hours in arrears to maintain aviation security.

Landing aircraft

- All of the approach procedures specified have been published in the UK-AIP for the attention of pilots, and the conduct of operations is supervised by Air Traffic Control.

Training and circuiting aircraft

- The restrictions that are specified have been published in the UK-AIP. The restrictions are highlighted by Air Traffic Control, which is able to monitor the performance of aircraft in 'real time' to ensure that they comply.

Transparency and feedback

The use of the WebTrak radar replay service is now well established and we have received strong support for this facility. The operation of the system has also been demonstrated to officers and members of the Christchurch Borough Council, the local planning authority.

The complaints handling procedure is also well established. A log of all noise complaints received is maintained and the numbers and types of complaints received is analysed and reported monthly. This report is made widely available including to the local planning authority, the Independent Consultative Committee and, via our web site to the general public. The Consultative Committee have requested that complainants who make persistent multiple complaints of a similar nature regarding aircraft that follow noise preferential routes are reported separately. These have been in low numbers from one persistent complainant.

A report of complaints received in 2017 are shown below in Figures 3 to 5.

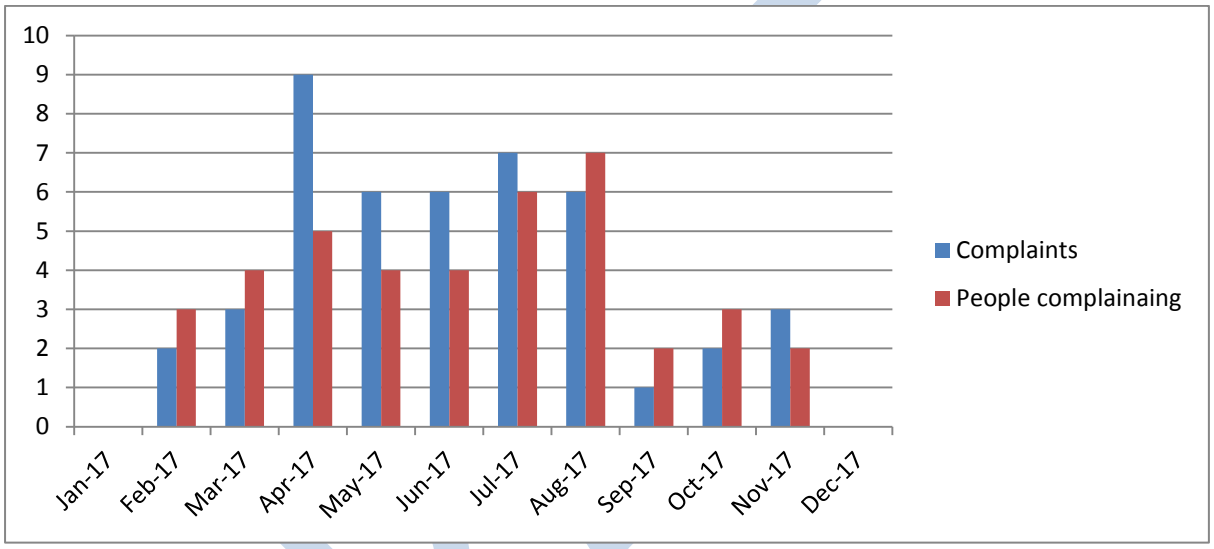


Figure 3: Total Complaints 2017

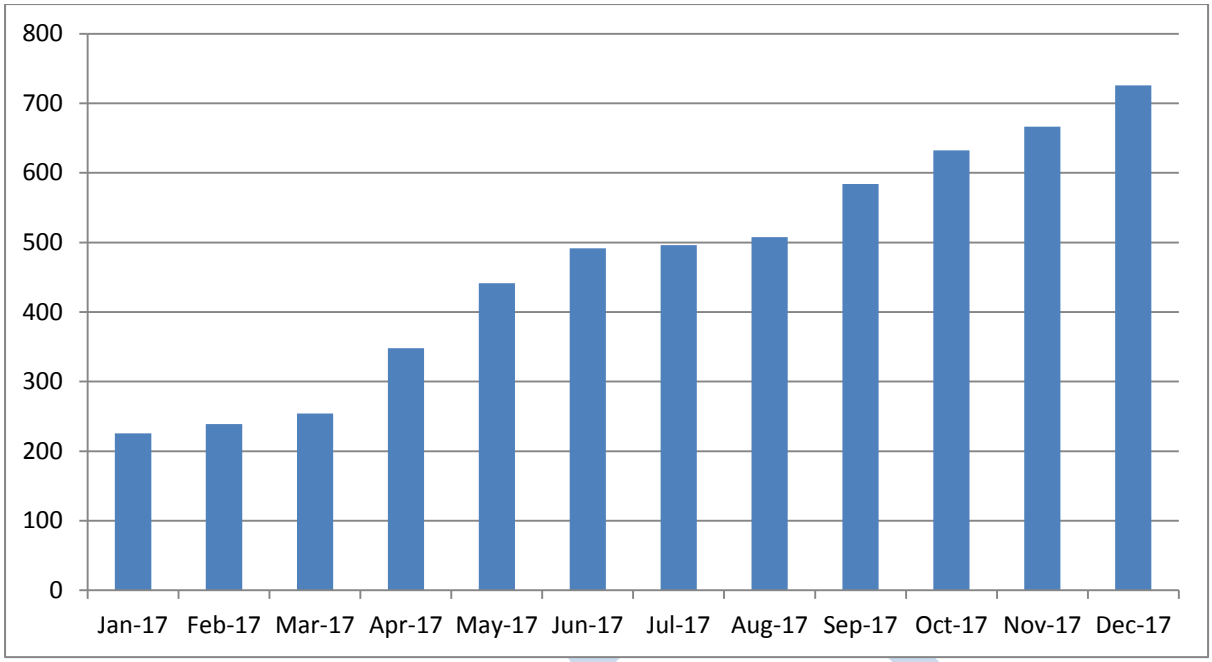


Figure 4: Number of aircraft movements per complaint 2017

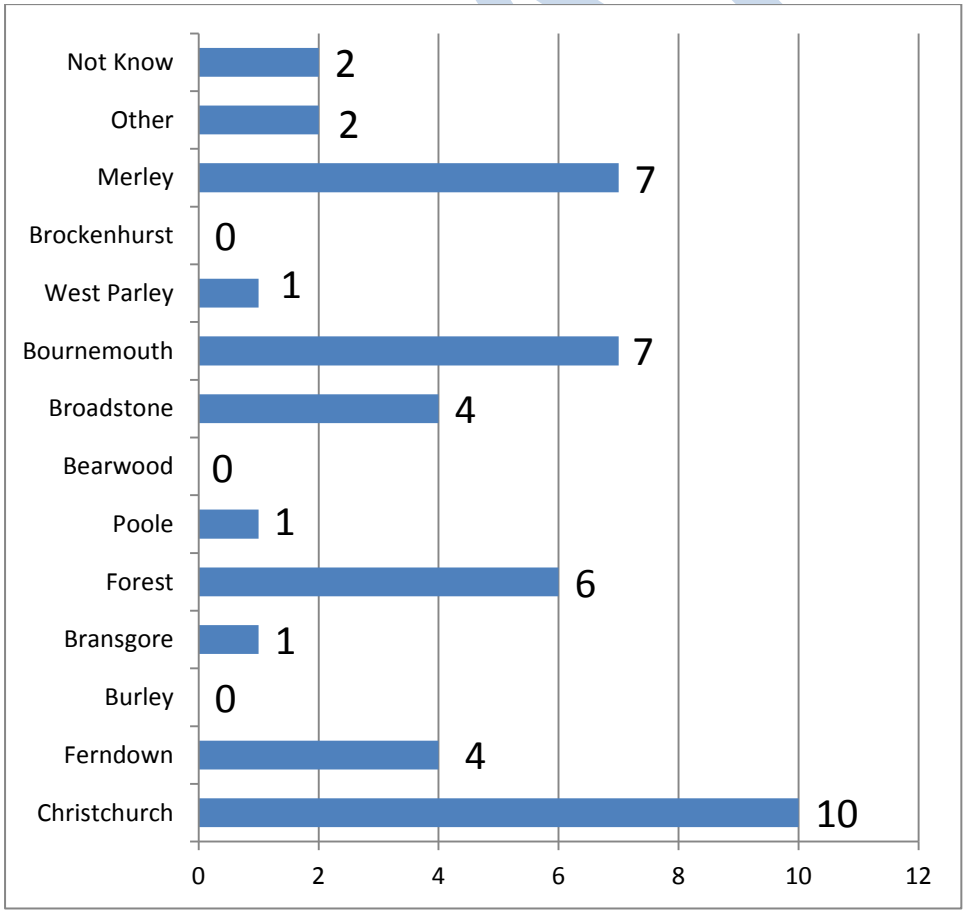


Figure 5: Number of complaints by Area 2017

As can be seen from the data provided above, we have relatively low total numbers of complaint, with 45 in total for 2017, including 7 from our once persistent complainant. For the year 2017 we had 726 aircraft movement per complaint, against a target set of 150.

Limits

The total quota count associated with aircraft operations at night is now routinely calculated and reported. The results for year 2017 are included below in Figure 6. As can be seen, the performance is well within the agreed limit at the current time due to a significant decrease in night flights.

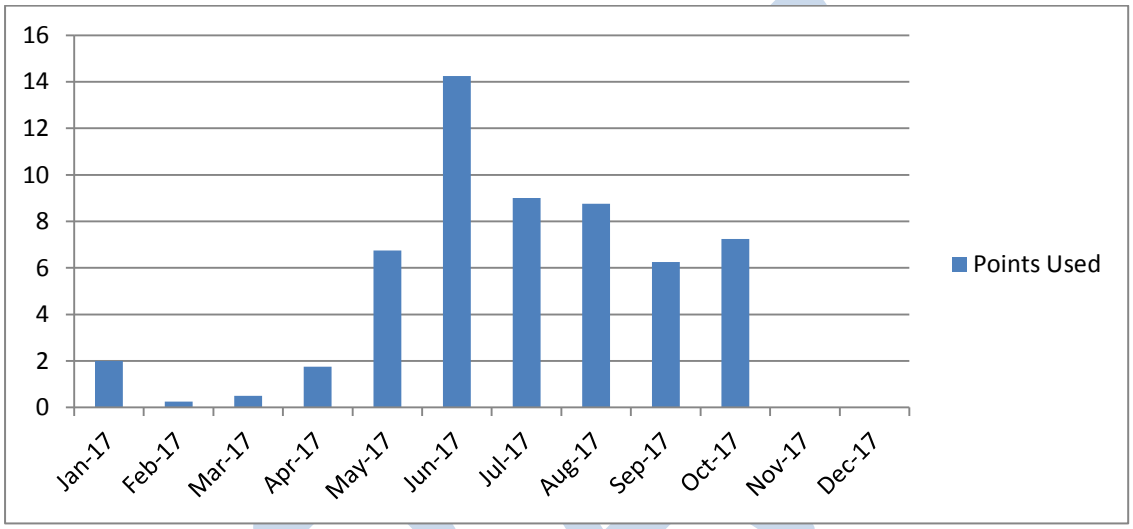


Figure 6: Total Quota Count for 2017

7. Strategic Noise Mapping Of Bournemouth Airport

The results of Strategic Noise Mapping at Bournemouth Airport

As required by the Regulations, we have produced a series of noise maps. The common noise metric underpinning each of the maps is the continuous equivalent noise level, or L_{EQ}. Whilst a fuller explanation of the L_{EQ} metric is provided in the glossary, it is essentially an 'average' noise level over a defined time period.

The noise maps are based on the actual aircraft operations that took place in 2016 in line with Environmental Noise Directive requirements. Aircraft activity over the course of the year is averaged to produce a typical day.

This average noise level is then assessed over four time periods:

- Day (07.00-19.00)
- Evening (19.00-23.00)
- Night (23.00-07.00)
- Extended day (07.00-23.00)

The average 24 hour day is also considered in a fifth noise map using the L_{DEN} metric. This seeks to accord greater weight to noise in the evening and night periods, to reflect the greater potential for disturbance at these times. This is achieved by adding five decibels to noise events during the evening period and 10 decibels to noise events at night.

All five noise maps are included as Appendix 1.

The Guidance suggests that as a first priority, airport operators should consider what further measures should be taken in areas shown on the Noise Maps to have residential premises exposed to more than 69 dB $L_{Aeq\ 16hr.}$ They should then examine the day, evening and night results produced from the noise mapping and consider whether there are any features of the noise impact that might be managed further.

Areas Covered

Areas within four Local Authorities (Christchurch Borough, Bournemouth Borough, East Dorset District and New Forest District) are covered by the Strategic Noise Maps for Bournemouth Airport, as well as a slight incursion into the New Forest National Park Authority area.

Population Exposure

Based upon our Strategic Mapping results, estimations have been made regarding the population and dwelling exposure statistics for various noise levels. In order to produce this estimate Defra has used a formula that utilises census data about household size overlaid onto Ordnance Survey mapping. These are shown in the tables below. The population and dwellings have been rounded as follows:

- The number of dwellings has been rounded to the nearest 50, except where the number is greater than zero but less than 50, when it is expressed as "<50".
- The associated population has been rounded to the nearest hundred, except when it is greater than zero but less than 100 when it is expressed as "<100".

Table 1: Estimated total number of people & dwellings above various noise levels, L_{den}

Noise Level (dB)	Number of Dwellings (2011)	Number of Dwellings (2016)	Number of People (2011)	Number of People (2016)
≥55	800	200	1,700	400
≥60	<100	<50	<100	<100
≥65	0	0	0	0
≥70	0	0	0	0
≥75	0	0	0	0

Table 2 : Estimated total number of people & dwellings above various noise levels, L_{day}

Noise Level (dB)	Number of Dwellings (2011)	Number of Dwellings (2016)	Number of People (2011)	Number of People (2016)
≥54	800	600	1,700	1,400
≥57	<100	<50	200	<100
≥60	<100	<50	<100	<100
≥63	<100	0	<100	0
≥66	0	0	0	0
≥69	0	0	0	0

Table 3 : Estimated total number of people & dwellings above various noise levels, $L_{evening}$

Noise Level (dB)	Number of Dwellings (2011)	Number of Dwellings (2016)	Number of People (2011)	Number of People (2016)
≥ 54	<100	<50	200	<100
≥57	<100	0	<100	0
≥60	<100	0	<100	0
≥63	0	0	0	0

Table 4 : Estimated total number of people & dwellings above various noise levels, $L_{Aeq, 16hr}$

Noise Level (dB)	Number of Dwellings (2011)	Number of Dwellings (2016)	Number of People (2011)	Number of People (2016)
≥ 54	600	350	1,300	800
≥57	<100	<50	<100	<100
≥60	<100	<50	<100	<100
≥63	0	0	0	0
≥66	0	0	0	0

Table 5 : Estimated total number of people & dwellings above various noise levels, L_{night}

Noise Level (dB)	Number of Dwellings (2011)	Number of Dwellings (2016)	Number of People (2011)	Number of People (2016)
≥ 48	<100	<50	100	<100
≥51	<100	<50	<100	<100
≥54	0	0	0	0
≥57	0	0	0	0

Interpreting the results

As can be seen from the tables above, there are no residential properties, or people exposed to a noise level of above 69dB(A) as a result of operations at the Airport. It can also been seen that there has been a significant decrease in the number of dwellings and people exposed to noise resulting from operations at the airport when comparing 2011 with 2016 data. Whilst the number of movements has reduced in this time, it would also suggest that noise reduction measures at the airport are having a positive effect on the numbers of people affected by noise from the airport.

8. Summary Of Public Consultation Exercise

The original draft NAP was prepared for consultation with input from members of the Airport's Independent Consultative Committee, so even prior to the formal public consultation it had been subjected to a degree of independent scrutiny and oversight.

The first draft NAP was circulated to the list of consultees who were consulted on the Airport's Master Plan. This included all adjoining Local Authorities, local Members of the UK and European Parliaments, industry bodies, control authorities and protection agencies and assorted local interest groups. Individuals who had submitted responses to the Master Plan consultation augmented this list.

With the 2014 review of the Noise Action Plan, DEFRA set out clear requirements for consultation. Given the depth of the work that has previously been undertaken, in this case, the airport was required to consult on the contents of this review with the Airport Consultative Committee. Comments received from the consultative committee were reflected on and included in the review.

In this revision, the public consultation requirements are again restricted to the Airports Independent Consultative Committee.

9. Performance Against Noise Reduction Commitments

With the adoption of the comprehensive noise control programme set out in the Airport's Section 106 Agreement, and in response to consultation on our Noise Action Plan, we have in place a locally determined and robust system of noise control. Departing aircraft are routed away from built up areas, landing aircraft are operated sensitively, including the use of the continuous descent approach technique, wherever it is possible and, in recognition of local circumstances, specific controls are applied to training and circuiting aircraft.

Our updated strategic noise mapping exercise has not highlighted significant new areas of noise impact that were not considered when the current noise control programme was defined, and the results demonstrate that the numbers of people affected by noise from operations at the airport has significantly decreased. The objectives and approach taken by the current noise control programme are considered appropriate and proportionate.

However, the public consultation exercise in 2010 demonstrated that there are concerns around Airport related noise beyond the mapped areas. Whilst these issues are beyond the strict scope of the NAP, further improvements were proposed in response. The Airport has continue to monitor, consider and respond to complaints and other feedback, including comments received during the consultation of this draft plan, to inform the future development of noise amelioration measures. A summary of the measures we implemented as a result of the 2011 NAP process, as well as the 2014 review are detailed in table 6.

Table 6: Noise Management Measures

Ref No.	Noise Measure	Comments on implementation	Status
BOH 1/11	Review runway policy at night to ensure that the direction in which aircraft operate strikes the optimum balance between ground noise, which impacts properties close to the Airport and air noise which is experienced by those that are overflown.	In line with the standard industry practice, Bournemouth Airport operates a policy where aircraft take off and land into the wind.	Complete
BOH 2/11	Introduce amendments to the noise abatement procedures, stipulating the linear distance travelled before aircraft turn. We will introduce these changes and thereafter monitor their effectiveness to seek an optimum balance.	The reviewed Noise Preferential Routes were introduced in 2011. • For westerly departures, the turning point is specified as 3.1 nautical miles (3.5 miles) • For easterly departures, the turning point to the south is specified as 4.1 nautical miles (4.7 miles) and to the north at 5.6 nautical miles (6.5 miles). These procedures are prescribed by Air Traffic Control, with any known deviations being investigated and reported.	Complete

BOH 3/11	Amendments to the Airport's web-site to augment the environmental information contained therein and to improve its accessibility	There is now a greater body of Environmental Factsheets including extensive information on aircraft noise. We review this information on a regular basis to ensure the details within them are correct and up to date with the latest information.	Ongoing
BOH 4/11	Continue to work closely with Solent Air Control for greater local airspace control to affect more fully noise abatement procedures.	We continue to work closely with other local airspace operators to ensure we have the greatest control possible over operations associated with Bournemouth Airport.	ongoing
BOH 5/11	Production and publication of annual day time and night noise contours based on actual movements.	These have been produced on an annual basis since 2010. These have demonstrated between a 5-10% reduction in noise contour areas year on year. Aircraft movements at the Airport remain flat, as such we have taken the decision to continue this in the form of 5 yearly noise contouring in line with the requirements of the END. This is to be reviewed should there be significant change in aircraft movements.	Complete
BOH 6/11	Increased release altitude for general aviation from 1,000ft to 1,200ft and seek to amend circuiting guidelines.	Now in AIP	Complete

BOH 7/11	Increasing the level of noise monitoring in local areas, to provide long term data that can establish trends and issues of concern.	These take place on request, with a number of noise monitoring exercises undertaken at properties in the vicinity of the airport. These have demonstrated that the operations at the airport do not have a significant impact on the overall noise climate of the area.	Ongoing
BOH 8/11	Amendments to the noise complaints procedure to reduce the response time from 10 to 5 days and to carry out improvements to the automated telephone line.	This is complete, and is now the published noise complaints policy	Complete
BOH 9/11	Support the Independent Consultative Committee to add to their membership as necessary and to assist with their reporting mechanisms.	We continue to fully support the Bournemouth Airport Independent Consultative Committee, with information relating to any actions linked to our website, allowing freeflow of information.	Ongoing
BOH 10/11	Establish regular liaison meetings with adjoining Authorities' Environmental Health Officers to supplement those already held with Planning and Transportation officers.	This was established following the 2011 noise action plan, although was poorly attended therefore is no longer a formal meeting. We do however demonstrate full co-operation should concerns arise.	Complete

BOH 11/11	We will continue to seek to reduce local airspace constraints where they reduce our ability to consistently achieve continuous descent approach or other noise abatement procedures. In this area in particular, we will need to work closely with our airline colleagues and other aviation stakeholders, including National Air Traffic Services, the Civil Aviation Authority and the Bournemouth Aerodrome Safety Committee.	We continue to liaise with our airline colleagues and aviation stakeholders. The Noise Abatement Procedures are being followed by ATC and are published in the AIP. Future technological improvements will enable closer scrutiny of performance with relation to Noise Preferential Route track keeping and Continuous Descent Approach procedures.	Ongoing
BOH 12/14	Increase in training circuit height from 1,200ft to 1,500ft	This was published in our AIP	Complete
BOH 13/14	Further enhancement of the noise and track monitoring system. This investment in the latest technology will result in a much more robust monitoring and reporting system. These improvements will enable us to have greater scrutiny with regard to track monitoring within defined corridors. This will result in more accurate measuring and reporting procedures in relation to noise preferential routes, and continuous descent approach compliance.	This has now been completed, with the ability for members of the public to make complaints directly from the WebTrak system, and an improved interface and track monitoring capability.	Complete

BOH 14/14	Continue to explore and review the Noise Preferential Routes aided by noise mapping exercises to ensure that there is the most robust routing system in place to reduce the impact from operations at the airport within the local community.	A review is undertaken in line with the noise action planning cycle, and should there be any significant changes to the operation at the Airport. A review took place following consultation from our 2014 NAP. Suggestions for alterations to NPRs were considered, although these were not technically feasible. The wording of the NPRs as detailed in the AIP was reviewed alongside airlines which operate at the airport and use of ICAO language. It has been agreed that these are now less confusing to visiting pilots.	Ongoing
BOH 15/14	Continue to work closely with our colleagues at Solent Air Traffic control to enable full co-operation with track compliance.	A liaison group meets on a regular basis to discuss issues and Airspace Infringements	Ongoing
BOH 16/14	Assess the benefit of including details of noise sensitive areas in the Aeronautical Information Publication	This was considered with ATC and Airlines operating from BOH, although as it is not technically feasible to avoid what could be considered as noise sensitive areas, it was felt that this would lead to greater confusion.	Complete
BOH 17/14	A review of the potential of altering the self-positioning procedures at night, and the possibility of raising these from 2,000ft to 2,500ft.	This review has taken place, and a change in procedures to reflect this has been published in our Aeronautical Information Package	Complete

10. The Future Development Of The Noise Control Programme

As can be seen from the results of the noise mapping, the numbers of dwellings and people affected by our operations at Bournemouth Airport have reduced over recent years. Whilst there is comprehensive and robust system of noise control in place, we will however continue to work with our local community to implement further measures in relation to noise from the airport.

During the next 5 years, Bournemouth Airport will be reviewing our navigation systems in place to vector arrivals to the Airport. One option being considered is the installation of an RNAV system for arrivals on 08 (Easterly) approach, and potentially 26 (Westerly) approach. In terms of Noise Management, RNAV has the following advantages:

- A Continuous Descent Final Approach is assured when an aircraft is undertaking an RNAV approach, which has been proven to reduce the noise experienced within the community
- On approach to the Airport, the aircraft, when operating on RNAV, will use minimal reverse thrust, therefore the noise from the aircraft will be reduced.
- The RNAV approach is more accurate than traditional approaches, therefore would result in less of the population being overflown, which is in line with current aviation policy and the ICAO balanced approach
- There is a capability to have a custom design in the approach path flown by aircraft. This would be designed with the current community into consideration, as opposed to the existing approach path which has been in place for approximately 40 years, during which time there has been significant residential and community development in the area.
- The RNAV system is likely to be within the existing traffic patterns currently in place at Bournemouth, with a shorter transition on the final approach.

There are a number of potential implications of the new 'UK Airspace Policy: A framework for balanced decisions on the design and use of airspace' should Bournemouth Airport decide to go ahead with this project, particularly in relation to any potential associated changes to air operations. If necessary for this project, the amended Civil Aviation Authority's airspace change process will be followed to ensure all requirements of the policy are taken into account in any decision making process.

During the design of the RNAV approach, under the new policy, an options appraisal would be necessary to ensure the most appropriate design to balance the needs of all relevant stakeholders.

Should this project be taken forward, any guidance produced by the new Independent Commission on Civil Aviation (ICCAN) will also be taken into account.

11. Conclusion

In preparing a NAP the Guidance sets out a clear test that should be applied, to consider whether further action is required. We were asked to consider if there is scope to implement additional measures in pursuance of the Government's overall policy on noise and its specific aviation objective.

Having taken into account all relevant factors, along with mapping exercises that have demonstrated a reduction in the numbers of people affected by noise from Bournemouth Airport, we have concluded that the current arrangements for managing noise are acceptable and that therefore no further action is required. However, we will continue to work with the local community to further reduce the impact of noise from operations at the airport wherever possible. This is demonstrated with a continued commitment to noise monitoring and reduction measures as outlined in this review.

We continue to seek a balance between the economic and social benefits provided by the operation of aircraft at the Airport and the resulting environmental impact, including noise. Current government policy recognises this balance noting that the aviation sector is a major contributor to the economy, and the policy supports its growth within a framework which maintains a balance between the benefits of aviation and its costs, particularly climate change and noise.

We hope that the wider changes we have put forward, in conjunction with the ongoing monitoring and review of the clauses of the Section 106 Agreement and those commitments already detailed in our 2011 and 2014 Noise Action Plans, provide reassurance that we have taken the opportunity to consider and react to feedback on our performance. We will continue to work closely with our ICC, airline colleagues and local community to ensure that over time we continue to improve our performance in this important area and try to make sure that we continue to reduce the effect aircraft noise has on their quality of life.

Monitoring and Review

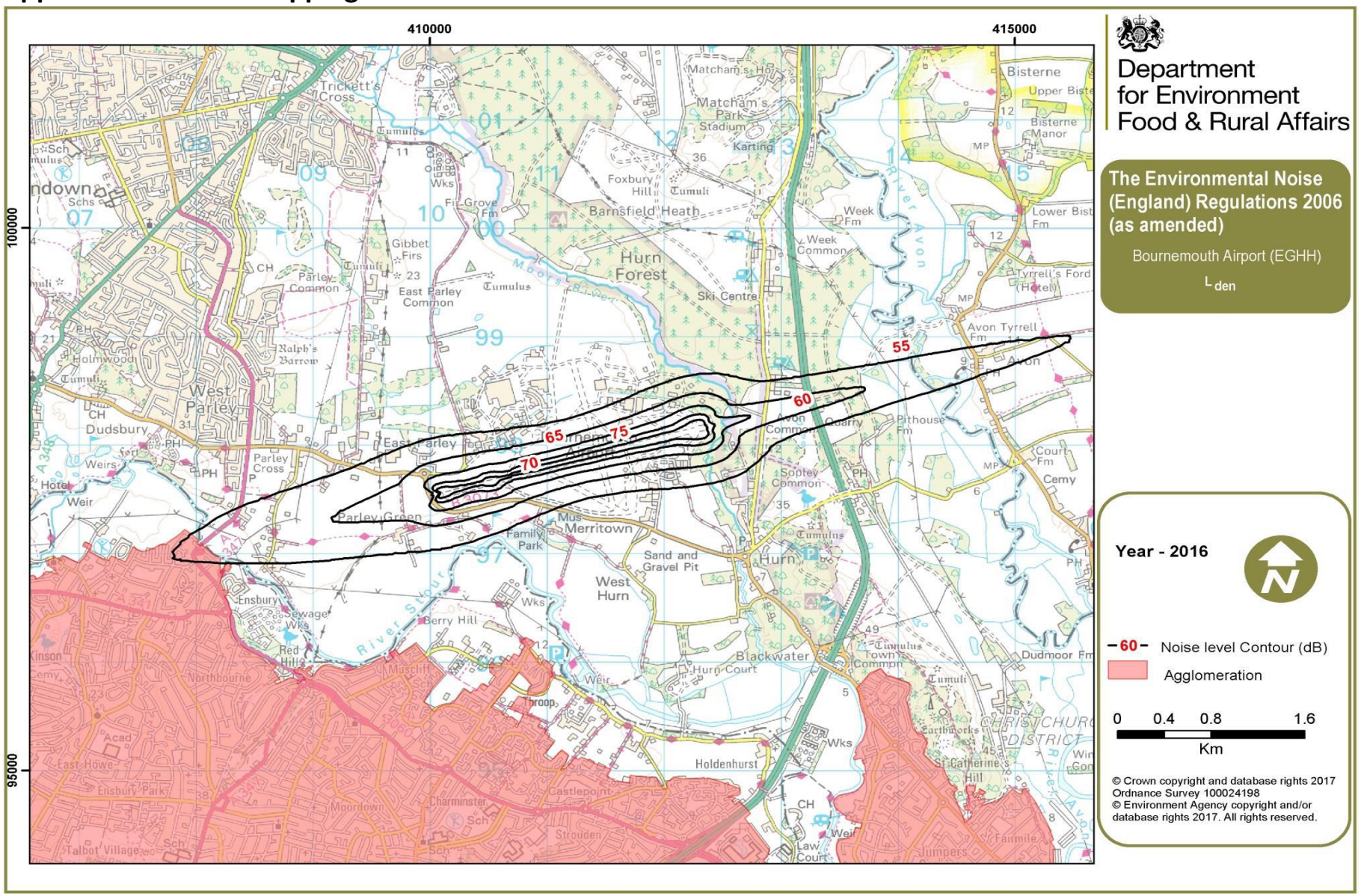
The Guidance notes that the Regulations obligate airport operators to review, and if necessary revise, NAPs at least every 5 years. This timeframe for review can be brought forward if major changes or development occur. It also suggests that Operators may wish to carry out informal reviews as a part of their ongoing reporting of environmental matters. We produce an Annual Monitoring Report in relation to the section 106 agreement with Christchurch Borough Council, which already reports on progress towards many of the measures described within the NAP. This mechanism will allow us to respond quickly to any changes in circumstances that our development brings about.

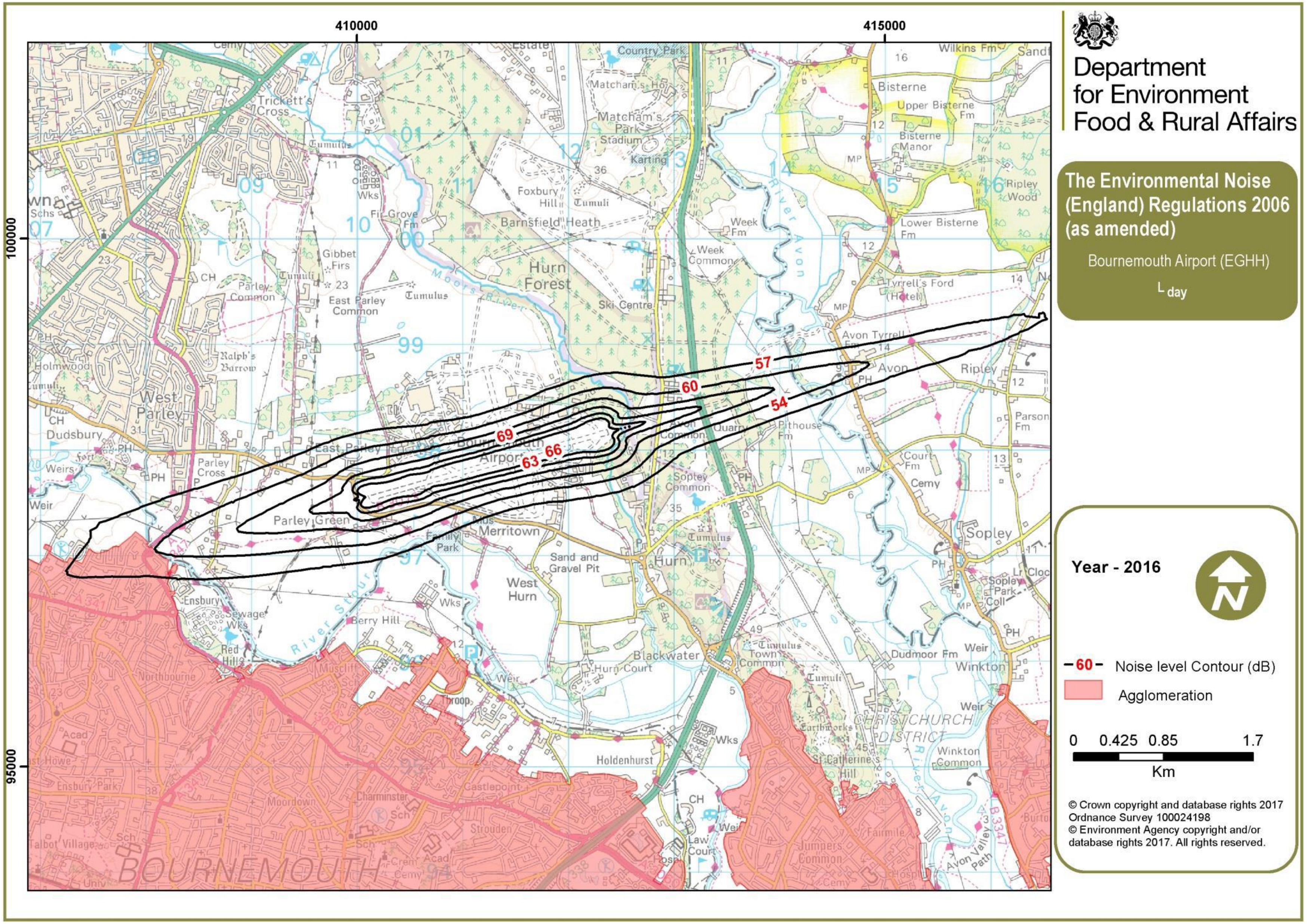
12. Glossary

Agglomeration	An area having a population in excess of 100,000 persons and a population density equal or greater than 500 people per km2 and which is considered to be urbanised.
ATWP	Air Transport White Paper: Published in 2003 the Government's principal statement of aviation development policy in the UK.
CDA	Continuous Descent Approach: A noise abatement technique applied to arriving aircraft.
dB(A)	A-weighted Decibel: A unit of noise measurement in decibels applying a weighting to more closely reflect the response of the human ear.
LAEQ	The continuous equivalent sound level, or Leq, but weighted to more closely reflect the response of the human ear.
LDAY	The A-weighted average sound level over a 12 hour period between 07:00 and 19:00.
LDEN	The Day, Evening, Night Level: A logarithmic composite of the Lday, Levening and Lnight with 5 dB(A) added to the Levening value and 10 dB(A) added to the Lnight value.
LEVENING	The A-weighted average sound level over a 4 hour period between 19:00 and 23:00.
LEQ	Continuous equivalent sound level of aircraft noise expressed over a defined time period.
LNIGHT	The A-weighted average sound level over an 8 hour period between 23:00 and 07:00.
Defra	Department for Environment, Food and Rural Affairs
END	Environmental Noise Directive
ICAO	International Civil Aviation Organisation

ICCAN	Independent Commission on Civil Aviation Noise
NAP	Noise Action Plan: The plan required by the Environmental Noise Directive, to ensure that environmental noise from operations at major airports is, where necessary, prevented or reduced.
Noise Map	A set of noise contours resulting from the strategic noise mapping exercise set out in the Environmental Noise (England) Regulations 2006.
Noise Contour	A map contour indicating noise exposure in decibels for the area that it encloses
SEL	Sound Exposure Level: The noise level generated by a single noise event. To take account of frequency and time the total noise energy associated with the single noise event is normalised over a period of 1 second.
QC	Quota Count: A noise ranking system whereby each aircraft type is assigned a points total reflecting its certified noise either on arrival or departure.

Appendix 1 – Noise Mapping




Department for Environment Food & Rural Affairs
The Environmental Noise (England) Regulations 2006 (as amended)
Bournemouth Airport (EGHH)
L day
Year - 2016
60 Noise level Contour (dB)
Agglomeration
0 0.425 0.85 1.7
Km
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410000
415000
100000
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54
57
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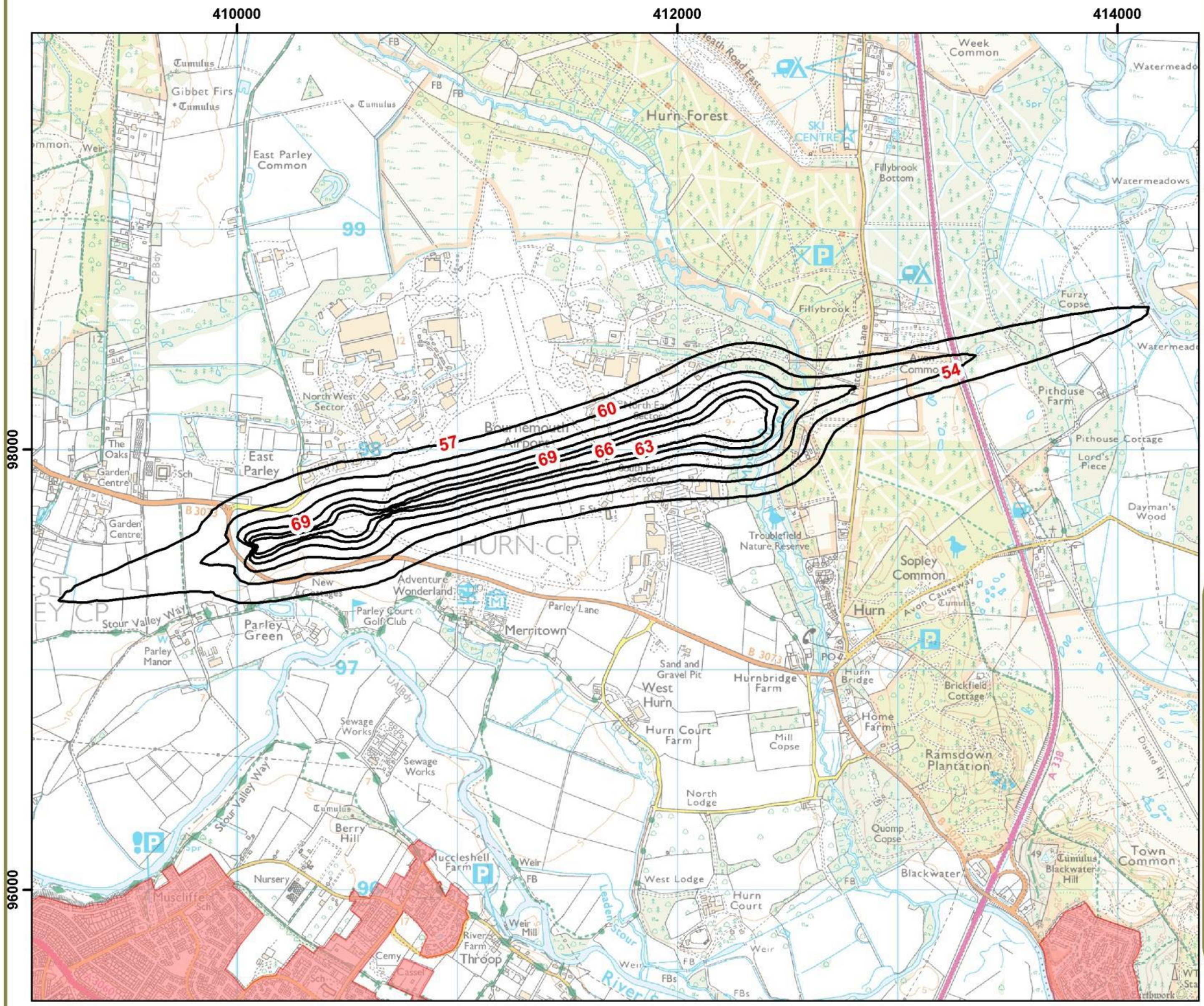
63
66
69
BOURNEMOUTH
CHRISTCHURCH DISTRICT
Bournemouth Airport
Hurn Forest
West Parley
Parley Green
Merritown
Hurn
Sopley
Winkton
Holdenhurst
Avon
Ripley
Bisterne

Department for Environment Food & Rural Affairs

The Environmental Noise (England) Regulations 2006 (as amended)

Bournemouth Airport (EGHH)

$L_{evening}$



Year - 2016

N

-60- Noise level Contour (dB)

Agglomeration

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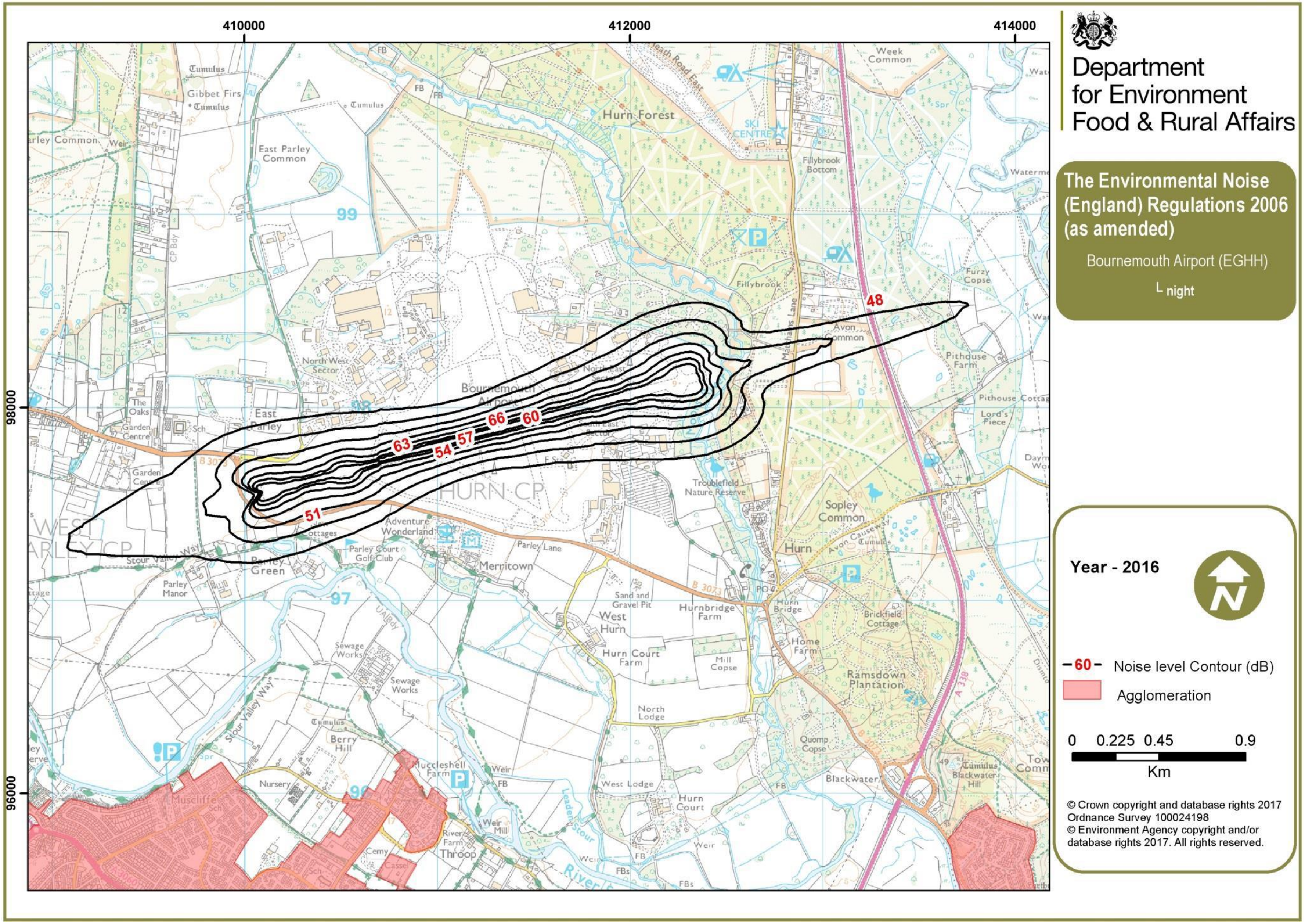
Km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The Environmental Noise (England) Regulations 2006 (as amended)
Bournemouth Airport (EGHH)
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Year - 2016
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60 Noise level Contour (dB)
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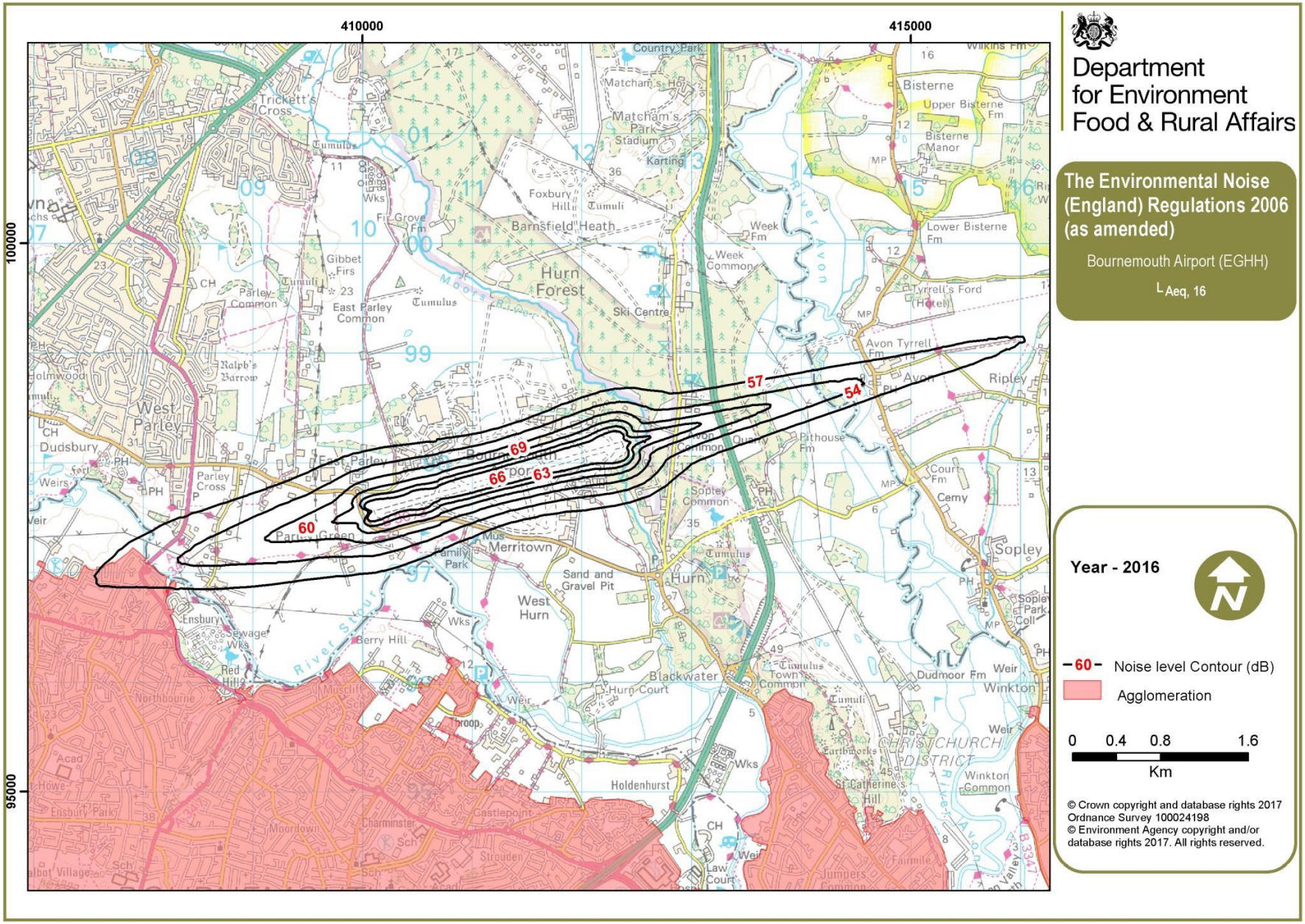
Hurn Forest
East Parley Common
Bournemouth Airport
East Parley
HURN CP
Adventure Wonderland
Parley Court Golf Club
Merritown
Parley Green
Parley Manor
West Hurn
Hurn Court Farm
Hurnbridge Farm
Sopley Common
Hurn
Troublefield Nature Reserve
Avon Common
Fillybrook
Pithouse Farm
Ramsdown Plantation
North Lodge
West Lodge
Throop
Berry Hill
Sewage Works
Stour Valley Way
Muscliffe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Department for Environment Food & Rural Affairs
The Environmental Noise (England) Regulations 2006 (as amended)
Bournemouth Airport (EGHH)
LAeq, 16
Year - 2016
60 Noise level Contour (dB)
Agglomeration
0 0.4 0.8 1.6
Km
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57
54
69
66
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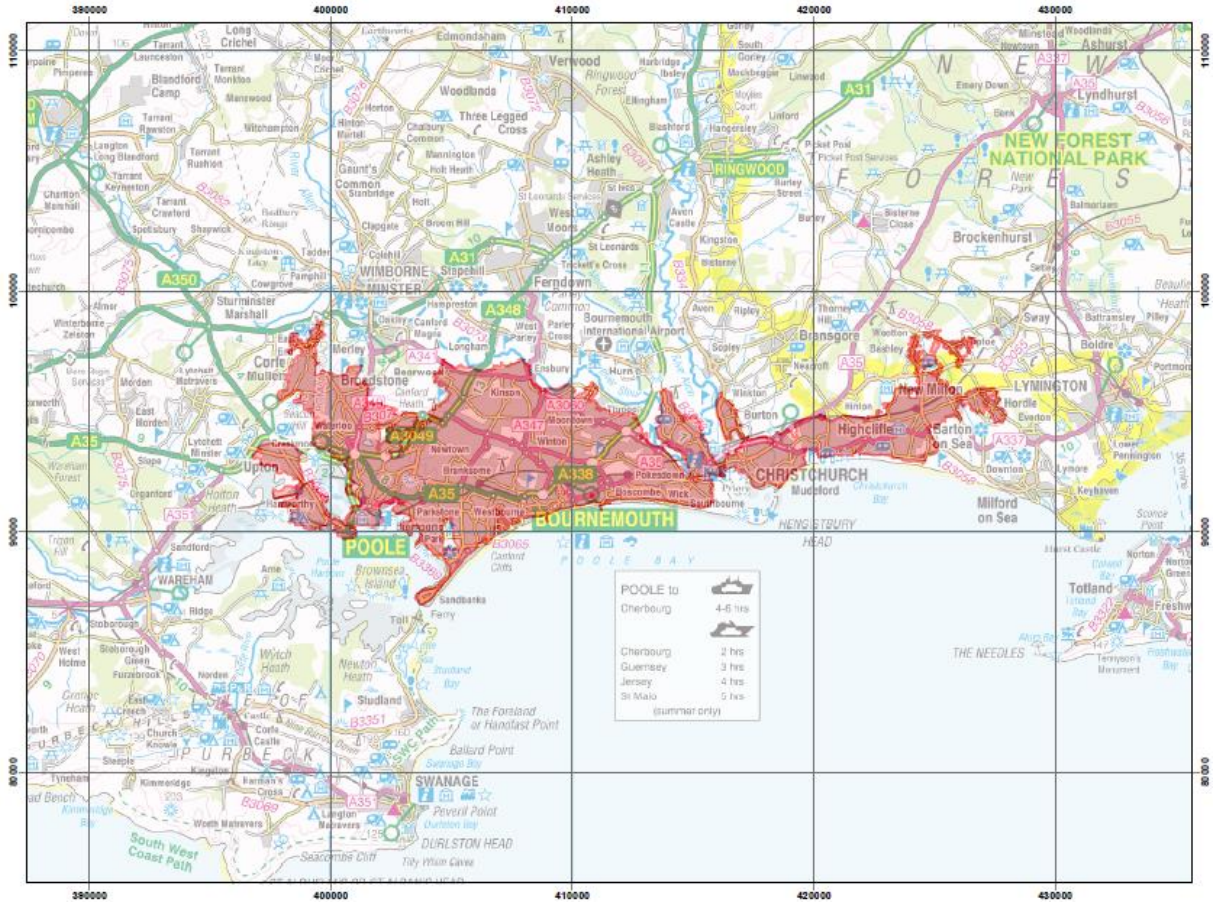
60
Trickett's Cross
Matcham's Park Stadium
Bisterne
Upper Bisterne Fm
Bisterne Manor
Lower Bisterne Fm
Foxbury Hill
Barnsfield Heath
Hurn Forest
Week Common
Week Fm
Ski Centre
Tyrrell's Ford (Hotel)
Avon Tyrrell
Avon
Ripley
Gibbet Firs
Parley Common
East Parley Common
Ralph's Barrow
West Parley
Dudsbury
Parley Cross
Parley Green
Merritown
Family Park
Sand and Gravel Pit
West Hurn
Hurn
Soptey Common
Pithouse Fm
Court Fm
Cemy
Sopley
Sopley Park Coll
Ensbury
Berry Hill
Red Hills
Blackwater
Hurn Court
Dudmoor Fm
Winkton
Winkton Common
CHRISTCHURCH DISTRICT
Earthworks
St Catherine's Hill
Holdenhurst
Northbourne
Moordown
Charminster
Castlepoint
Strouden
Jumpers Common
Fairmile
Law Court
River Stour
River Avon

Appendix 2

Bournemouth Agglomeration



Appendix 3

Extracts from Section 106 Agreement

(Note text in black is directly from Section 106; text in red is further explanatory information.)

Second Schedule – Operational Restrictions

1. Save where incompatible with safe flying operations the Airport Company will use reasonable endeavours to ensure the following requirements of this Schedule are complied with at all times.

Generally

2. Every operator of Aircraft operates its Aircraft in such a manner as to be likely to cause the least disturbance practicable to local residents and where applicable to follow such procedures promulgated by the Airport Company for noise abatement and minimising ground noise.

Landing Noise

3. Aircraft making an approach to land at the Airport shall follow a descent path which will not result in their being lower at any time than the descent path that would be followed by aircraft using the Instrument Landing System (provided by the Airport Company at the Airport).

4. Without prejudice to paragraph 1 of the Third Schedule the use of reverse thrust (above idle power) after landing is minimised, consistent with the safe operation of the Aircraft at all times.

5. To develop protocols to facilitate and encourage the use of Continuous Descent Approaches by aircraft making an approach to land at the Airport.

Departing Noise

6. Departing Aircraft shall climb as steeply as is compatible with safety.

7. Unless otherwise instructed by Air Traffic Control, all departing aircraft save for Light Propeller Driven Aircraft (propeller powered aircraft with maximum take-off weight not exceeding 5,700kg) shall:

(i) When using Runway 26, climb on runway heading to 0.6 nautical miles from the Airport as measured by Distance Measuring Equipment (DME) then track of 270° (M), climbing to a height of 2,000 feet before making turns.

(ii) When using Runway 08, climb on runway heading to 1.0 nautical mile from the Airport as measured by DME then track 075° (M) to 4.1 nautical miles DME before commencing any turn to the south. Northbound departures may commence the turn after passing a height of 2,000 feet.

8. Departing Light Propeller Driven Aircraft shall climb straight ahead to at least a height of 500 feet before commencing any turn, unless otherwise instructed by Air Traffic Control.

Circuits

9. The following minimum circuit heights shall be maintained subject to the provisions of the Third Schedule (Night Operations):

(i) 1,000 feet for circuits between 06:00 – 20:00 hours by all aircraft less than 5,700kg maximum take off weight;

(ii) 1,500 feet for circuits between 06:00 – 20:00 hours by all aircraft more than 5,700kg maximum take off weight and all Jet Aircraft;

1,500 feet for circuits between 20:00 and 23:30 hours by all aircraft.

Ground Running

10. Ground running (means the running of aircraft engines at high power settings for the purpose of testing and maintenance, or where there is no intention to taxi or fly) is only permitted subject to the following restrictions;

- *except in an Emergency, such running of engines shall only take place within the areas shown hatched blue on the Plan C attached (below) or such other areas as may be agreed in writing by the Council.*
- *Ground Running shall not take place at the following times:-*

(i) Before 08:00 hours or after 20:30 hours Monday-Friday, other than start up or shut down procedures and in the case of an Emergency,

(ii) Before 09:00 hours or after 17:00 hours on Saturday and public holidays, other than start up or shut down procedures or in an Emergency,

(iii) Anytime on a Sunday, or

(iv) On Armistice Day between 10:55 and 11:05 hours or during any other period of remembrance specified by HM Government,

provided always that Ground Running may take place at the times mentioned in sub-paragraphs (i), (ii) and (iii) above with the Airport Company's prior consent where Ground Running is essential for safety reasons or the avoidance of unforeseen and serious congestion at the Airport, or serious hardship or suffering to passengers or animals whereupon the Airport Company shall forthwith notify the Council of the Reasons for such consent being granted.

Monitoring

11. The Airport Company shall maintain sufficient records of the number and types of aircraft taking off from and landing at the Airport. Such records shall be available for inspection by the Council at all reasonable hours, upon 3 working days prior written request.

12. Within 6 months of the Commencement of the Development the Airport Company shall submit to the Council for its approval details of an Internet-based system which shows details of the height and track of public transport aircraft using the Airport and within 6 months of approval being given to provide and thereafter maintain the approved system so that it is publicly accessible.

13. Within 6 months of the Commencement of the Development the Airport Company shall establish and thereafter publicise and maintain a noise complaints service which will investigate the cause of all formal noise complaints made to the Airport Company by the public. The Airport Company shall provide a written response to each formal complaint as part of the noise complaint service indicating the outcome of the investigation and any action proposed to be taken to review or modify procedures as a result of the complaint.

14. The Airport Company shall not report not less than annually to the Council and to the Airport Consultative Committee the number and nature of noise complaints together with the action taken by the Airport.

Third Schedule – Night Time Operations

1.The Airport Company will use reasonable endeavours to ensure that Aircraft will not be permitted to use reverse thrust braking at Night Time (between the hours of 23:30 – 06:00 hours) except where it is essential for the safe operation of the said aircraft.

2. The Airport Company will ensure that no circuit or Training Flights (means a flight that is for the sole purpose of testing or training flight personnel, testing aircraft, their engines or accessories) take place at Night Time.

3. The Airport Company will carry out its operations at the Airport in such a way that the Night Time Quota (means the maximum permitted sum of the Quota Counts of all aircraft taking off or landing at the Airport at Night Time during the Noise Year) is not exceeded.

4. No Aircraft with a Quota Count (means the amount of the Quota assigned to one take-off or one landing by the aircraft in question, this number being related to its classification as set out in the Notice (the London Heathrow, London Gatwick and London Stansted Airports Noise Restrictions Notice 2007 or any subsequent notice made under Section 78 of the Civil Aviation Act 1982 or any re-enactment with or without modification of that section)) value of 8 or 16 will be allowed to arrive at or depart the Airport at Night Time nor shall an Aircraft with a Quota Count value of 4 be scheduled to arrive at or depart the Airport at Night Time.

5. Paragraphs 1 –4 shall not apply to:

- *(i) Operations by Military, police and Support Aircraft*
- *(ii) Arrivals and departures by members of the Royal Family and other heads of states.*
- *(iii) Air / Sea operations.*
- *(iv) Emergency oil dispersal operations.*
- *(v) Operational diversions by aircraft due to weather, technical problems, security alert, industrial dispute or onboard emergency.*
- *(vi) Relief flights for humanitarian purposes where there is a special urgency.*

(vii) *Movements suffering unavoidable operational delay, where it would lead to serious congestion at the airport, serious hardship or suffering to passengers or animals.*

(viii) *Early arrivals of aircraft (other than those with a Quota Count exceeding 4) that took off and were scheduled to land after 06:00 hours.*

(ix) *Medical emergency flights.*

Fourth Schedule – Night Time Noise Budget

1. The Night Time Quota for the Initial Night Time Quota Period shall be a Quota Count of 3,100 points per Noise Year (means a summer season (means the period of time where British Summer Time is the local time at the Airport) and the immediately following winter season (means the period of time where Greenwich Mean Time is the local time at the Airport)) save that aircraft movements listed in Third Schedule paragraph 5 shall not count towards this budget. Points that are unused in any season shall not be carried forward to subsequent seasons.

2. At least six months before the expiry of the Initial Night Time Noise Quota Period (the period of five years following the beginning of the first Noise Year following Commencement of Development (development registered as having commenced 10.12.07)) the Airport Company shall propose in writing to the Council together with reasoned justifications the Night Time Noise Quota it proposes for the next 5 year period.

3. Within four months of the receipt of any proposal by the Airport Company under paragraph 2 the Council will notify the Airport Company in writing either that it approves the proposal or that it does not approve it and if so make alternative proposals and give reasonable justification for them.

4. In the event that a proposal submitted under paragraph 2 is not approved the Airport Company will make further proposals to the Council within 2 months of the receipt of notice from the Council that it is not approved and the Council will respond approving the amended proposals or making alternative proposals and reasoned justification for them within a further two months.

5. The process in paragraph 4 shall be repeated until agreement is reached save that if either party consider that they are unable to reach agreement the matter may be referred to a Specialist under clause 9 of this Agreement (a person qualified to act as an expert in relation to the dispute).

6. *The Specialist shall hear representations from both parties and take account of the following considerations:*

(i) *Night time noise impact in the preceding years,*

(ii) *Night time noise complaints,*

(iii) *Past and future air traffic movements for night time,*

(iv) The economic, social, environmental and commercial impacts of the proposed noise budget,

(v) Policies and budgets at other relevant UK regional airports,

(vi) National or regional policy Guidance that may be relevant,

(vii) Economic and social benefits existing or projected in relation to the Airport

7. The procedure set out in paragraphs 4 – 6 shall be repeated prior to the expiry of each successive Night Time Quota period until agreed by the parties or set by the Specialist.

8. Where the Night Time Quota for any individual Noise Year has not been agreed or set by a Specialist two months before the expiry of the previous Noise Year the Airport Company will continue to comply with the last agreed Night Time Quota until the Winter Season or the Summer Season (as the case may be) following the agreement or setting of a new Night Time Quota whereupon the Airport Company will comply with the new Night Time Quota.

Appendix 4

List of consultees for the 2011 Noise Action Plan

Airport Consultative Committee
Airport Pilots Forum
Airport Transport Forum
Borough of Poole
Bournemouth & Christchurch TUC
Bournemouth Airport Service Partners
Bournemouth Borough Council
Bournemouth Chamber of Trade
Bournemouth, Poole & Dorset Economic Partnership
Bransgore Parish Council
Bransgore Residents Association
Burley Parish Council
Campaign for the Protection of Rural England
Christchurch Borough Council
Christchurch Chamber of Trade & Commerce
Christchurch Community Partnership
Civil Aviation Authority
Colehill Parish Council
Department for Transport
Dorset Business (Chamber of Commerce)
Dorset County Council
Dorset Federation of Residents Associations
Dorset Strategic Partnership
Dorset Wildlife Trust
East Dorset Community Partnership
East Dorset District Council
Environment Agency
Ferndown Town Council
Forestry Commission
Friends of Brockenhurst
Friends of the Earth
Government Office for the South West
Hampshire County Council
Highways Agency
Hurn Parish Council
MEPs:
Mr G Booth, MEP
Mr G Chichester, MEP
Mr N Parish, MEP
Mr G Watson, MEP
MPs:
Mrs A Brooke, MP
Sir J Butterfill, MP
Mr C Chope, MP

Mr T Ellwood, MP
Mr O Letwin, MP
Mr D Swayne, MP
Mr R Syms, MP
Mr R Walter, MP
Natural England
Network Rail
New Forest District Council
New Forest National Park Authority
New Milton Town Council
Respondees to the Master Plan
Ringwood Town Council
RSPB
Sopley Parish Council
South West Regional Development Agency
St Leonards & St Ives Parish Council
St Leonards South Landowners Association
Verwood Town Council
West Christchurch Residents Association
West Parley Town Council

Appendix 5

List of Responding Organisations (2011 Noise Action Plan)

Members of Parliament:

Annette Brook MP

Dr Julian Lewis MP

Desmond Swayne MP

Local Authorities

Bournemouth Borough Council

Christchurch Borough Council

East Dorset District Council

Hampshire County Council

Poole Borough Council

New Forest District Council

New Forest National Park Authority

Parish Councils

Bransgore Parish Council

Brockenhurst Parish Council

Burley Parish Council

Colehill Parish Council

Holt Parish Council

Hurn Parish Council

St. Leonards and St. Ives Parish Council

Sopley Parish Council

West Parley Parish Council

Councillor Groupings

Broadstone Ward Councillors

Canford Heath East and West Councillors

Independent Consultative Committee Members

Representing:

Christchurch and District Chambers of Commerce

Dorset Business

Dorset County Council

Dorset Federation of Residents' Associations

Joint Committee of Christchurch Residents' Associations

New Forest National Park Authority

Poole Borough Council x2

Other Organisations

New Forest Association

Friends of Brockenhurst

Bournemouth, Christchurch and Poole TUC

Environmental Protection UK

Airport Watch South West

Crow Hill Residents' Association

Jet2.com

West Parley Residents' Association

Bearwood Airport Watch

Appendix 6

2014 Review Consultation

For airports, which already have a noise action plan, guidance produced by DEFRA suggests that any revised plan should be presented to the airport's Consultative Committee and any other appropriate bodies depending on the extent and nature of the revisions.

As it has been a relatively short period of time since we published our original Noise Action Plan and this review has not materially altered the commitments made in our first Noise Action Plan. The changes proposed included new laws, regulations and policies introduced following the adoption of our first plan, and reporting on our performance against the commitments made in the first plan.

In line with the previously mentioned guidance, the draft review was presented to the Airport's Consultative Committee for comment, with a consultation period of 2 months. Whilst the general feeling of the responses was that they were supportive of the efforts made in meeting our commitments, there were some specific points raised:

General

There was a comment relating to the noise metrics used to produce contour maps. It is felt that the weighting given to evening and night flights (LDEN) does not accurately reflect the additional disturbance caused. This metric is outlined in the The Environmental Noise Directive (2002/49/EC), and as such we are required to produce contour maps on this basis.

Departing Aircraft

There is a general recognition that the revised Noise Preferential Routes, introduced in 2010 have improved the noise levels experienced by respondent groups. However, new NPRs have been suggested by these groups. Whilst these have been relatively recently altered and the mapping demonstrates that less numbers of people are being disturbed by noise from operations at the airport, we will review all of the NPRs in operation at the airport, with consideration given to those routes suggested by consultation respondents. This review will determine if the routes are having the desired effects in terms of reduced disturbance, whilst maintaining safe operations.

Also, with the installation of the improved noise track monitoring system discussed in this noise action plan review, the airport will have greater capability to determine the level of track keeping by specific airlines.

Arriving Aircraft

The use of Continuous Descent Approaches was queried and the validity of them in relation to the size of Bournemouth Controlled Airspace (CAS). CDAs have been in operation at the airport for many years but are not always possible due either to the limitation of the CAS and the integration with Southampton Airport traffic. With the improved noise track monitoring system being installed

at the airport, we will be able to accurately determine the proportion of aircraft implementing this procedure.

The subject of the use of visual approaches when arriving at the airport has been raised, particularly in relation to night movements, and the avoidance of noise sensitive areas. It has been agreed that consideration will be given to including particular noise sensitive areas in the Aeronautical Information Publication (AIP).

During night operations, Radar is not available and hence, inbound aircraft must either carry out a Procedural Approach, following the published procedures, or execute a Visual Approach. When using Radar, our procedures state that aircraft should not descend below 2000ft until they are established on the Instrument Landing System (ILS). At night, procedures require aircraft to maintain 2000ft until established inbound, thereby maintaining the same glide slope profile onto the Runway. We will endeavour to further investigate procedures to improve operations to reduce the impact of noise, and will therefore undertake to review the potential of altering the self-positioning procedures at night, and the possibility of raising these from 2,000ft to 2,500ft.

Night Noise Quota

The Section 106 agreement has been entered into with Christchurch Borough Council. This included the introduction of a night noise quota at the airport and was the first time there had been any restrictions on operations during the night.

The level of this was carefully considered at the time and we are currently in discussions with the Council with regards to its renewal.

Training Flights

It is felt that further restrictions should be placed on training flights. There are already time restrictions in place to reduce the impact of noise from such flights. Alongside this, the minimum height of training circuits has been raised. In order to provide an adequate training facility, it is felt that these restrictions already in place are adequate to reduce the noise impact.

Actions We Will Take (all now complete)

We do feel that there are a number of procedures in place to reduce the impact of noise on our neighbours, which has been demonstrated by the reduced numbers of people being affected by noise from aircraft. We are however always keen to explore opportunities to reduce our impact further. In response to the concerns raised in the consultation process, we will therefore commit to:

- Assess the benefit of including details of noise sensitive areas in the Aeronautical Information Publication
- A review of our NPRs to ensure that routes are having the desired effects in terms of reduced disturbance, whilst maintaining safe operations
- A review of the potential of altering the self-positioning procedures at night, and the possibility of raising these from 2,000ft to 2,500ft.

Appendix 7

Financial information

The Government recognises that there is a balance between local disturbance, the limits of social acceptability and economic benefit, and has therefore provided guidance as to financial information that should be included in our Noise Action Plan. Any new noise control measures considered for inclusion in the plan must take account of the cost of implementation and the likely benefit expected to be accrued.
No new noise control measures have been included within this update and review of the plan that fall under the remit of the END and associated legislation.