

Airports Commission Discussion Paper on Aviation Noise

Comments from Protect Kent

The Kent branch of the Campaign to Protect Rural England



CPRE Protect Kent response to the Airports Commission Discussion Paper: “Aviation Noise”

Our aspirations for tranquillity and air transport noise

Tranquillity

A particular concern for CPRE is protecting areas of tranquillity, by which we mean an absence or relative absence of forms of visual intrusion as well as that from noise. CPRE’s research and the mapping outputs – maps and data – have been used by numerous National Park authorities, AONBs and by county, unitary and district councils, so the concept is well established for use in national and local policy.

CPRE’s expertise with regard to Tranquillity has been recognised by the CAA (ERCD Report 1207, June, 2012), and so we seek the use of the CPRE definition of tranquillity.

We hope that policies, guidance and information will implement our common aspirations embodied in the new National Planning Policy Framework (NPPF), for areas of tranquillity to be protected (NPPF paragraphs 77, 123), landscapes protected from intrusion (NPPF 115, 125) and the need to protect the intrinsic character and beauty of the countryside (NPPF paragraph 17).

The Noise Policy Statement for England separates “health’ and ‘quality of life’. Tranquillity is both a health and quality of life factor.

Data from CPRE¹ shows, for example, that in the early 1960's 31% of Kent suffered disturbance. This proportion had more than doubled by 2007, showing the need for strong action to avoid any further increase.

The Government Tourism Policy² highlights that Britain scores weakly on perceptions of natural beauty, one of the five most important criteria for attracting visitors. So we need to strengthen the performance of our visitor economy in the areas where it is relatively weak, in order to maintain the international competitiveness of the UK as a destination. It is therefore critical that our protected landscapes and wider areas of tranquillity are protected from intrusion by aviation.

Rural areas

The CAA’s Report (ERCD 1207, Paragraph 6.4) says there is a strong argument that any policy protecting Quiet Areas should apply both inside and outside an agglomeration, and we support this view.

Everyone should be able to access space where they can ‘get away from it all’. It is therefore important that areas of tranquillity are protected from aviation noise, whether in large parks or accessible natural greenspace in or near urban areas, or more generally in the countryside.

The 'Report on the Definition, Identification and Preservation of Urban and Rural Quiet Areas'³ recommended that the upper average noise limit criterion for rural quiet areas should be 40 dB Laeq, 24h or its Lden equivalent.

The requirement of the European Noise Directive of maintaining, and where possible improving, the existing noise

¹ www.cpre.org.uk/resources/countryside/tranquil-places/item/1756-englands-fragmented-countryside-south-east-and-london-intrusion-statistics

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78416/Government2_Tourism_Policy_2011.pdf Appendix A

³ DOC REF: 7/7/2003 7/7/2003 DATE: 6/7/2003 4E 59492 Symonds Group Limited

environment is the standard against which proposals must be measured.

'Balance'

It is impossible to 'balance' noise against other environmental impacts or benefits. Noise is not comparable to global warming emissions, and there is no 'common currency' by which they can be compared.

We disagree with the idea of balance between impacts and benefits. There is a need for any changes to produce a reduction of impacts and an increase in benefits, or as at least an increase in benefits with no increase in impacts, or reduced impacts with the same benefits. The idea that if you receive economic benefits then that can be traded with increasing damage, is clearly untenable, and in the case of noise, for example completely against the European Noise Directive (END). Hence there is a need for minimum standards and proper assessment.

The only situation in which there might be a need to 'balance' different environmental impacts is when an impact, such as noise, has been reduced to such a level that further reduction would bring no benefit.

Noise

Grant Shapps, the former housing minister, has highlighted the damage done by noisy or disruptive neighbours to communities. "My view for a long time has been that the voice of the victim seems to be the last thing taken into account, rather than the first thing."⁴ We hope that sufferers or potential sufferers of aviation noise will now be the first to be considered in any proposals.

In the rejection of expansion at Coventry Airport⁵ the Secretaries of State concluded that the harmful impact and the conflict with sustainability objectives was not outweighed by the socio-economic and other benefits. We trust that such analysis will be used to both protect residents and provide clarity to air transport operators.

The economic damage caused by noise is very difficult to calculate, but one estimate based on 'quiet areas' in urban locations gives an annual value between £19m and £1.4 bn, which shows the difficulty of estimation. The same report caveats that 'trying to put an absolute price on accessible quiet or relative quiet undermines the very richness of the characteristic'. In other words we should value quiet areas for themselves, and protect them properly. ("The economics of quiet areas – final report"⁶).

Noise affects health in a variety of ways – for example the wider costs of dementia are put at £22.7bn a year, and dementia has a link to higher blood pressure which in turn is linked to higher noise levels. According to the Department of Transport's evaluation of less disturbing road vehicle noise (dft_roads_pdf_038524.pdf) a reduction of 1 dB was worth £524m per annum in 2004. DEFRA's research reports that road traffic noise costs over £7bn a year⁷, while the costs of just acute myocardial infarction, stroke and dementia caused by road noise (which is less disturbing than aviation noise) is £1bn in the agglomerations surveyed for the European Noise Directive. The report "Quantifying the links between environmental noise related to hypertension and health effects"⁸, recognises that the figure is an under-estimate as it covers the costs to the individual not the health care costs nor

⁴ <http://www.telegraph.co.uk/news/politics/9498457/Grant-Shapps-ill-lead-fight-against-neighbours-from-hell.html>

⁵ www.uk-airport-news.info/coventry-airport-news-160607.htm and www.communities.gov.uk/pub/382/coventryairportsiskinparkwaywestcoventry_id1511382.pdf

⁶ www.defra.gov.uk/environment/quality/noise/research

⁷ www.gov.uk/government/policies/protecting-and-enhancing-our-urban-and-natural-environment-to-improve-public-health-and-wellbeing

⁸ 2009 HSL www.defra.gov.uk/environment/quality/noise/research

the wider costs to society, which can be far higher, and this report only covers new cases of three diseases (not pre-existing cases becoming worse) and only for the populations in agglomerations (about 43% of UK population). Reducing noise provides health benefits so also reduces the costs the NHS of medical care and prescribed medicines, and improves learning in schools and better productivity at work.

The European Noise Directive (END)

A logical approach to managing noise suggests using the European Noise Directive (END, 2002/49/EC) as the baseline. The END aims to 'define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise.' This is to be achieved by 'informing and consulting the public about noise exposure, its effects, and the measures considered to address noise, in line with the principles of the Aarhus Convention', and 'addressing local noise issues by requiring competent authorities to draw up action plans to reduce noise where necessary and maintain environmental noise quality where it is good'.

Hence this requires that noise becomes no worse, in particular that quiet areas are maintained, and that noisiest areas are made quieter.

Using this approach avoids the need for arguments over the potential monetary or other values of noise.

Noise Metrics

It is well known that aircraft noise is a very complex subject, so it is essential that the clearest metrics are used by decision makers, who are unlikely to be noise experts, and for public explanations. Omega⁹ and others¹⁰ have reported research showing that a suite of metrics providing information on flight paths, number of flights at peak times and maximum sound levels would be particularly useful.

British Standard BS 4142:1997

This standard describes a method for assessing whether the noise referred to is likely to give rise to complaints. It may be helpful in environmental planning and may be used in conjunction with recommendations on noise levels and methods of measurement published elsewhere.

BS 4142 takes into account background noise and the tonal effects of aircraft noise for which it requires a 5 dB penalty, and hence provides a more realistic comparator which is already widely known and used by professionals in the acoustic field.

Background noise measurement is important because it affects how humans react to aircraft noise.

For Tonal noise, we have heard complaints at some airports about buzz-saw and whining engine noise, particularly on approach about 20 miles away from an airport. The cause is understood to be the huge fan on the front of a modern high ratio bypass turbofan engine. It produces noise with a large tonal content which explains the whine. Some are worse than others depending on the bypass ratio (the bigger the bypass the harder the front fan has to work and the greater the risk of the blade tips going supersonic and making harsh noises). It is also compounded by the extent to which individual operators are prepared to bear the overhead cost of noise-suppression treatments: we understand that Singapore Airlines' A380s carry around 2 tonnes of additional kit at the front of the nacelles so as to meet Heathrow requirements for landings at night.

⁹ www.omega.mmu.ac.uk/Events/OMEGA%20Noise%20Report%20Final%202026-2-09%20RD%20270209.pdf

¹⁰ eg www.fican.org/pdf/supplemental_metrics.pdf

The CAA report (Paragraph 5.30, ERCD Report 1207, June, 2012), refers to research which shows that the louder the aircraft noise with respect to background levels, the greater the percentage of visitors who feel annoyed, so this supports the use of BS 4142.

'C' weighting of sound levels

We continue to support a move away from the 'A' weighting, because that has been used for purely historical reasons when sound level meters were unsophisticated, and other weightings were more difficult to provide in one instrument. It does not reflect the predominately low frequency sounds of aircraft nor the tonal nature of such sounds, and the 'A' weighting was never intended for such use.

Unfortunately a perverse effect of using the A weighting has hidden changes in noise levels which would be revealed if other weighting were used. Research by the BBC and others showed that the ITU-R 468 noise weighting more accurately reflects how our ears respond to random noise. A 100 Hz source would have its noise level shown on the A-weighted scale as 18 dB lower than the same sound measured using C-weighting, showing that the 'A' weighting does not fully capture the loud low-frequencies contained in aircraft noise. This was demonstrated at the 2007 Stansted Public Inquiry by the National Trust, showing some 13 db difference between A and C readings. The WHO Guidelines require that where the two weightings give differing results, the C data should also be provided. Using 'C' weighting would more accurately reflect the effects of the tonal noise heard from aircraft. Further acoustic quirks are that lower frequency sounds have greater penetrating effect, they do not obey the inverse square law and loudness doubles for smaller increases in sound level, and are thus much more annoying than might be expected.

The recent report from the European Network on Noise and Health (Ennah) supports the use of 'C' weighting especially for assessing aircraft noise and its effects on health and well-being¹¹.

The 'Sydney metric'

The 'Sydney metric' such as N70, which has been shown to provide a better correlation to how people experience aircraft noise, would be a very useful indicator.

Maximum Sound Level, Lmax, and Sound Exposure Level, SEL

Both Lmax and the SEL show the maximum sound levels experienced. SEL may be better than Lmax, because it includes both the peak noise level and the length of time of the individual noise event, so can give better representation of noise from both fast moving commercial aircraft and slow but noisy microlights.

Average Noise Levels, Leq

Although the END uses the averaging metric of Lden, which has some use as a historic comparator, it is not very helpful for aircraft noise. The Ennah report above, also confirms that Leq averaging is not a useful indicator, and that more attention is needed in relation to low frequency noise and health.

Averaging aircraft noise, which by its nature is an intermittent loud noise, gives a misleading impression. The Leq metric only increases by 3dB if the number of events is doubled, which is clearly misleading as to the impact of such a change.

¹¹ www.ennah.eu/assets/files/ENNAHFinal_report_online_19_3_2013

The 'Attitudes to Aircraft Annoyance Around Airports (5A)' report¹² shows that annoyance is inherent to noise but that it is not only correlated to physical sound characteristics. Noise exposure, and its physical characteristics, account for about 25-30% of the variance in annoyance (*Miedema, Oudshoorn, 2001*). Hence using standard noise index-associated contours does **not** reflect the value or the actual annoyance of the residents of communities concerned.

The Final Report (April, 2006) also showed that a unit increase in noise is more noticeable than a unit decrease, (ie the negative value of a noise increase cannot be balanced by the positive value of the same noise decrease). Threshold effects were examined in the SP1 movements model with thresholds at 45, 50 and 55dB(A) tested, and contrary to expectations, there was no support for the presence of threshold effects.

The valuation of changes in aircraft movements does vary, as would be expected, with the base level of aircraft noise in that the unit value of a change becomes higher as the base level of noise becomes higher.

The recent paper, 'Trends in aircraft noise annoyance: the role of study and sample characteristics'¹³ says that: 'A significant increase over the years was observed in annoyance at a given level of aircraft noise exposure'.

Continuing the use of Leq as a rough indication of relative noise means that a much lower level must be used, as the weight of evidence, including that from the ANASE study,¹⁴ showed that the averaging process used to define those locations where "significant community disturbance" occurs is fundamentally flawed and that many people are annoyed or disturbed by levels much lower than 57 dB Laeq. See also, for example Technical Report 11/2010, by the European Environment Agency and 'The Quiet Con' (HACAN) which elaborates on this.

Noise Level Targets

World Health Organisation (WHO)

The Government has previously committed to the reduction of noise levels to the World Health Organisation noise standards (in the Consultation stage 1, Night Flying restrictions at Heathrow, Gatwick and Stansted, 2004)(WHO Guidelines for community noise 1999, and the Night Noise Guidelines for Europe, WHO 2009, E92845, ISBN 978 92 890 4173 7).

The UK is already a signatory to the WHO Charter on Environment, Transport and Health which includes the WHO community noise guidelines. As a signatory, there is an expectation that the Government will work towards achieving this goal.

However we have seen little evidence of any progress – indeed the noise levels seem to be continually increasing. So much stronger action is required to ensure achievement of the Guidelines.

We consider that a measurable objective is vital, so this means a standard for all to strive for. We note that the UK is in the minority among EU states for not having legally binding noise limit values (EUR-Lex – 52011DC0321 – EN). So we support the Government's commitment to achieve the WHO values for both day and night noise as the measurable objective.

¹² http://www.eurocontrol.int/eec/public/standard_page/proj_5A.html

¹³ (<http://www.ncbi.nlm.nih.gov/pubmed/21476651>)

¹⁴ (<http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/pgr/aviation/environmentalissues/Anase/>)

Other Targets or Metrics

We strongly object to any proposal to use noise-per-flight metrics because it is the total noise which matters to people and the countryside. Noise-per-flight metrics may be useful to aircraft designers and operators for use to estimate the value of changing aircraft, but that is not relevant to the management of operational noise.

Noise disturbance from aircraft relates to the aircraft type and the number of air transport movements or flights so it is no use using the number of passengers for noise envelopes as passenger numbers will not directly affect noise levels.

We do not think that a reduction in the number of people affected by noise is a sufficient policy objective, as it ignores the relative effect of noise on quiet areas, which may have few people.

An objective to limit, and where possible reduce the number of people affected is insufficient because it implies allowing an increase in noise. The objective must be in line with the European Noise Directive (END) which requires that there is no increase in noise and that the noisiest areas should be made quieter.

For historical comparison, the use of contour areas may be useful, as that will cover both people and land which may be countryside (and so need protection). In addition, reducing contour areas will reduce the number of people affected. Although a hectare reduction of a contour in London will improve life for more people than a hectare in open countryside, this is relatively unimportant as airports are fixed, and what is under consideration is how the existing contours can be made smaller.

There is a relatively simple relationship between noise reduction and area affected – for each 3 dB noise reduction area increase by 1.6 times, so if 10 sq.km. are affected by the 57 dB level, then 54 dB will affect 16 sq. km.

Reducing Noise

Obviously reduction at source is the most effective way to reduce noise. Hence the essential need is to have aircraft noise emission targets that keep ahead of the growth of air traffic, so that there is an actual reduction in noise levels. Hitherto, quieter aircraft have made little difference because the growth in traffic has far exceeded the reductions in noise emissions achieved.

So there is a need for not only targets for noise reductions per plane, but also targets for reduction in total noise, with restraint in the growth in air transport movements if the targets are not met.

The END requires actual reductions in noise, so simply reducing the noise emissions per plane is not enough.

We support the aim for continuous improvement, and support environmental management systems, such as the ISO 14000 standards.

Airport Noise Standards and Management

We consider that all airports should have noise control regimes at least as good as those for the currently designated airports. A particular aspect of the regime at the designated airports is that: “The quotas allocated to each airport operating the system are gradually reduced year-on-year in order to achieve long term reductions in the impact of night time aircraft noise.” (ERCD Report 1104 June 2011). This is a very simple but effective way of reducing the noise impacts, and should be applied to all environmental impacts as part of an environmental management system. Hence we have great concerns at allowing a ‘free-for-all’ approach of agreeing controls locally, which tends to mean having the fewest restrictions.

At present noise limitations for airports range from the clearly specified requirements for the Designated airports, down to those with no effective limits. This means that airport operators lack clear targets, the public and the local authorities are often unclear about noise limitations and noise experts have to research each airport's situation to know what standards are relevant. As noise is such a complicated subject, clarification is required.

Hence there is a very strong need for minimum standards, such as those listed above.

The present arrangement whereby the Local Authority in whose area the airport is located sets the airport noise controls causes many problems, because the aircraft affect neighbouring authorities who have no authority over the airport, although they may be consulted. This is apparent at many airports, for example Manston, Luton, Gatwick and Farnborough (Hants).

Consequently, to avoid uncertainty and disputes between local authorities or complaints from residents, there is a requirement for an equivalent to the current designation standards for *all* airports.

Operating restrictions

Relationship of ICAO certification Noise Levels to actual in-use noise levels

The HACAN Response to the CAA Consultation on Future Airspace Usage¹⁵ referred to: 'a letter from Dr Darren Rhodes of CAA/ERCD, 10th March 2005 saying that: '*...ICAO is currently reviewing the noise certification process; the UK is chairing this task. Whilst this is naturally a long-term initiative, one item identified is consideration of a possible supplementary approach noise certification point more distant from the airport, where the aircraft would be in a configuration (different from that) required by the current demonstration test.*' Subsequently, we understand, the ICAO work was discontinued at the request of the industry. It should be restarted.'

For approach noise, the ICAO certification is based on testing the noise the plane makes at a monitor 2km from touchdown - i.e. in the vicinity of the airport. That may not be appropriate to discriminate between planes for communities who suffer disturbance from approach noise at considerably greater distances from the airport. The Committee on Aviation Environment Protection (CAEP) 7th Meeting, Montreal, 5 February 2007¹⁶, included the 'Report of WG1 Task concerning the future of the Noise Certification Scheme', and as Dr Rhodes suggests, it appears that the WG agreed that the current classification system does not work well for points "more distant from the airport" ,(page 22/55:

"4.5 For arriving aircraft there are two locations at which significant numbers of people are highly annoyed, between 0 and 3 km and between 9 and 12 km. The certification point at 2 km is representative of the first location. The group recommends that the "problem" of noise arising from arriving aircraft at locations far away from the airport be studied by WG2. " A report from the WG2 on this inconsistency has not been found.

The data showing very little difference between approach noise from the A380 and 747 planes over Barnes and Chiswick proves that there is a serious issue with the current ICAO certification relating to new, and supposedly less noisy planes. This also confirms previous CAA work which showed that aircraft of similar Certification rating could have noticeably different noise emissions in actual use.

¹⁵ www.hacan.org.uk/resources/.../caa.airspace.response.from.hacan.pdf)

¹⁶ http://www.tc.gc.ca/media/documents/ca-opssvs/caep7_wp34.pdf

Night noise

It is important that the precautionary principle is applied, as that is part of the NPPF, so night flights should be banned. If night flights are not to be banned, we would expect to see real evidence of the need for any proposed night flights.

Banning night flights would be economically beneficial, as well as better for health, as has been shown, for example by CE Delft, January 2011.

Air-freight transport spends a small proportion, at 17%, in the airport to airport segment, out of its total travel time of 2 to 5 days. Hence banning night flights would make little difference to overall travel time, as the main delays occur on the ground. This was shown in the evidence to the Commission for Air traffic Noise, Frankfurt, November 2011.¹⁷ Subsequently the German high court approved on 14/3/2012 a regulation for a permanent total night flight ban between 23.00 – 05.00 h at Frankfurt- a major German hub airport, showing that it is practical for large airports in successful European economies to have a proper night flight ban.

The CAA reports that awakenings from sleep rarely (but may occasionally) occur when level inside is below 45 dB L_{max}, and this correlates to an outdoor noise level of 60 dB L_{max} for partially open windows (ERCD Report 1104, June 2011).

However, for the night period, the WHO Night Noise Guidelines for Europe (WHO 2009, E92845, ISBN 978 92 890 4173 7) recommend 40 dB L_{night}.

Hence these should be used for the maximum allowable noise levels for night time.

The 'night' period should provide at least 8 hours of uninterrupted sleep period from 11 pm to 7 am.

We support the proposal for costs to airlines for night slots to reflect the full costs on society including noise. Likewise we support requiring night landing fees to be set to avoid perverse consequences.

Noise limits, monitoring and penalties

We support strong incentives for noise reduction and noise limits together with monitoring and enforcement, and measures such as differential landing fees. However the differential charges must be standardised at all airports to avoid perverse incentives to divert aircraft to less suitable airports.

There should be a minimum penalty value such as £1500 per tonne MTOW for initial 3 dB over limit, which would increase with the standard scale of fines (Criminal Justice Act 1982, as amended). Having the penalty as a per tonne value, will ensure it is proportionate to the 'value' of the flight concerned.

A necessary pre-condition for all monitoring is for the airport to have adequate aircraft tracking equipment. Such equipment is available from £500, so there is no reason why the smallest airport (as opposed to aerodromes) cannot have this. So we request airport tracking equipment to be required and also that all the aircraft using the airport have transponders for the tracking equipment to identify them.

¹⁷ http://cms.uni-kassel.de/unicms/fileadmin/groups/w_030110/Publikationen/Nr._72_Verlagerungspotentiale_von_Nachtflügen.pdf English translation is available

Note that most gliders and similar aircraft, for whom transponders could be problematic, usually use aerodromes, not airports, so transponder cost will not be an issue. Powered aircraft which tow gliders (as opposed to winching) should of course be required to have transponders

There should be reference to required standards, such as ISO 20906:2009 'Acoustics – Unattended Monitoring of aircraft sound in the vicinity of airports'.

We strongly support full implementation of 'Reducing the Environmental Impacts of Ground Operations and Departing Aircraft, An Industry Code of Practice', 2012, and the use of Continuous Descent Approach (www.caa.co.uk/docs/68/Basic_Principles_CDA.pdf). In addition all airports should publish details of airlines which fail to achieve the requirements of these procedures. This is now being done by Gatwick, for example, and this provides a strong first incentive towards encouraging compliance, but fines are also needed for those who frequently contravene the requirements.

Departing aircraft typically achieve an 8 degree climb, which reduces the area affected by the loudest noise, so increasing the 3 degree glide slope usually used under CDA would provide further improvement.

Landing and Take-off Fees

We fully support differential landing fees to encourage quieter aircraft. We think that there should be guideline values, so that if the quietest aircraft is charged 'U' the 'Unit' fee, then aircraft twice as noisy will pay 2*U, four times as noisy 8*U, and eight times as noisy 32*U. This increasing scale would emphasise the increasing impact of the noise.

While current fees tend to be based on ICAO certification, we disagree with arguments against Quota Count (QC) that larger aircraft could be penalised relative to smaller ones because they have larger footprint values. Strangely, noise certification regulations permit heavier aircraft to generate more noise, so there can be a 10 dB difference in aircraft nominally of the same certification, but of different weight (ERCD 0307 December 2003). The objective is to reduce the area affected by noise (and thus the number of people disturbed), so aircraft affecting a larger area should be penalised in order to encourage quieter aircraft.

However if QC values are to be used, then a rigorous review of them is required, to assign the QC to actual noise levels rather than certified because noise levels in use can be a whole QC different, and to remove the 9 EPNdB reduction applied by DfT for arrival noise, because most night flights are arrivals, so this reduction adversely affects people under the arrival route. Also the scale is now out of date, with some aircraft QC 0.25, and decreasing numbers above QC 4. The alternative of using the Effective Perceived Noise Level (EPNL) has the benefit of being used for the international certification of aircraft and perhaps better reflects the annoyance caused by aircraft as it includes duration and the tonality of aircraft noise (ERCD Report 1104, June 2011), thus indicating the effective disturbance caused by the aircraft.

We therefore support the use of differential landing fees, and for this differential to ensure fees reflect disturbance, especially at night.

Compensation Schemes

Our view is that the first priority is for noise levels to be reduced so that compensation schemes would not be required. For many people, compensation or providing noise insulation does not remove the annoyance, so the next alternative is to offer to purchase the properties affected. Often airport staff would be happy to live in such houses, so the cost to the airport would be minimal. The third step is to offer either compensation or for provision of noise insulation.

Our assessment of most schemes is that they are meagre and inadequate. The noise levels seem much too high in view of the WHO guidance, and it would be better to have graduated schemes starting from lower noise levels. In addition to the average noise levels, we also recommend stronger support for use of individual maximum noise levels, as these are what wake people up.

With regard to compensation for noise increases this is actually against the END which requires quiet areas to be maintained and noisiest areas to be made quieter. This means that if an airport wants to expand it must use quieter aircraft, which is also consistent with the targets for noise contours to cover smaller areas over time, and the objective for continual improvement.

CPRE Protect Kent
August 2013