Department for Transport

Night Flying Restrictions at Heathrow, Gatwick and Stansted

Stage 1 of Consultation on Restrictions to apply from 30 October 2005

July 2004

Department for Transport

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1. Introduction and Executive Summary

1.1 On 15 January 2004 the Government announced[1] its decision, in the light of consultation carried out in 2003[2], to continue the present night restrictions at Heathrow, Gatwick and Stansted until 30 October 2005. We need to consult now about the next night restrictions regime. We would welcome responses from any person or organisation who thinks they may be affected.

1.2 The Government intends that the next night restrictions regime should apply for six years, from 30 October 2005 until the end of the summer season 2011.

1.3 This paper:

- explains the structure of the consultation about the next night restrictions regime, which will take place over two stages and is rather different from previous consultations on this subject;
- explains what the base case is and how it is established;
- sets out the intended length of the next regime;
- invites suggestions on environmental objectives and noise abatement objectives;
- explains the contextual framework and the broad aims of the night restrictions;
- makes proposals in respect of the classification of aircraft; and
- takes a preliminary look at some other aspects of the next night restrictions regime.

1.4 This consultation is being carried out in accordance with the Government's Code of Practice on Written Consultations (see Annex A). All the basic information that is relevant to this consultation is in this paper, including the Annexes. Details of how to obtain reports containing more detailed technical information are set out in section 10 below.

1 House of Commons *Official Report*, 15 January 2004, cols 44-46WS.

2 *Night Flying Restrictions at Heathrow, Gatwick and Stansted: consultation on a one-year extension and certain general principles*, published April 2003.

2. The structure of the consultation

2.1 We intend to carry out the consultation in two stages: this is stage one. This paper covers:

- the general background to the whole of the consultation;
- our intention on the length of the next night restrictions regime;
- a statement of our broad aims for the night restrictions at Heathrow, Gatwick and Stansted and an invitation to suggest environmental objectives and specific noise abatement objectives for each of those airports;
- detailed proposals relating to the classification of aircraft, the main focus of this first stage of the consultation;
- further background information and extended preliminary consultation on some other aspects of the night restrictions regime; and
- an explanation of how and when we shall carry out assessments to comply with European Directive 2002/30/EC and also a Regulatory Impact Assessment.

2.2 The issues relating to the way aircraft are classified for night restrictions purposes need to be resolved in stage one so that the effects of different options for the length of the night quota period, the size of the noise quotas and movement limits and the ratios between them, can each be assessed properly in stage two.

2.3 In stage two we shall:

- consult on the length of the Night Quota Period (NQP). We will be consulting as to whether the NQP should remain as it is now (2330 – 0600) or whether it should be extended, perhaps to make it the same as the full night period (2300 – 0700). We will look at the three half-hour segments at the beginning and end of the current NQP as follows:
  2300 – 2330
  0600 – 0630
  0630 – 0700;
- carry out detailed assessments of the number and types of services currently operating during these three half-hour segments in order to give some indication of the impacts of possibly adjusting the NQP (and, if so, what the appropriate movements limits and noise quotas might be);

- at Heathrow, where the morning shoulder period (0600 – 0700) is particularly important for arrivals, take account of the interface with the Project for the Sustainable Development of Heathrow including the implications for the capacity and operation of the runways;

- at all three airports, propose new movements limits and noise quotas;

- consider whether to introduce controls to prevent 'bunching' of flights at any particular time of night, or at either end of the NQP, if we propose to extend it. If controls were needed for each individual time band that might raise transparency and administrative issues;

- propose further noise insulation schemes in respect of night disturbance. (The new criteria in *The Future of Air Transport*[3] relate to daytime noise only.)

2.4 During the course of the consultation we will therefore cover all outstanding commitments. These are:

(i) to take account of the responses to the question asked in the consultation on *The Future Development of Air Transport in the United Kingdom: South East*[4] about the length of the night restrictions regime;

(ii) to consider the results of the EPNL monitoring[5] in a way consistent with European Directive 2002/30/EC;

(iii) to draw on the results of the QC System Review[6];

(iv) in the light of the results of (ii) and (iii) to consider banning aircraft classified as QC/4 from being scheduled to operate 2330 – 0600 hours;

(v) to make use of the findings of ERCD Report 0204[7] on reanalysis of differences between Arrivals and Departures;

3 Cm 6046, published December 2003.

4 *The Future Development of Air Transport in the United Kingdom: South East*, second edition published February 2003.

5 The results of the work are contained in *Quota Count Validation Study; Noise Measurement and Analysis:* ERCD Report 0205, April 2003. Further background on one of the techniques used in the work is provided in *A Practical Method for Estimating Operational Lateral Noise Levels:* ERCD Report 0206, April 2003.

6 *Review of the Quota Count (QC) System used for administering the night noise quotas at Heathrow, Gatwick and Stansted Airports*. DfT administrative report, 2003; available on the Department's website www.aviation.dft.gov.uk or from the address given in paragraph 9.3 of this consultation paper.

7 *Review of the Quota Count (QC) System: Re-analysis of the differences between Arrivals and Departures:* ERCD Report 0204, November 2002.

(vi) to consult on a possible extension of the night quota period (as promised in the decision on Heathrow Terminal 5[8]);

(vii) to consult on reducing the departure noise limits that apply in the present night shoulder (2300-2330 and 0600-0700) and night quota period (2330-0600) to an extent consistent with other changes (if any) in the night restrictions; and

(viii) to consult on a proposal to install two additional fixed noise monitors at Heathrow.

2.5 We are dealing with commitments (i) to (v) in stage one. We shall deal with commitments (vi) to (viii) in stage two. This is consistent with the structure explained in paragraphs 2.1 and 2.2 above. **Are there any other matters that you think we should cover?**

2.6 This consultation paper contains a considerable amount of information at Annexes B and C that is designed to meet the new regulatory requirements. It is explained in section 4 below. All of the information in Annex B is already publicly available or updates that which has been published but it has not been put together previously in this way. We hope you will find it useful. You are welcome to copy it and to share it widely.

2.7 In contrast, the noise contours and related data in Annex C contain a lot of information that has not been published previously and may be difficult to interpret, as explained in paragraphs 4.3 – 4.12. We have provided additional data relating to the present night restrictions regime, but all of Annex C should be used only in the context of this consultation, stages one and two.

2.8 The data in Annex C will be used in stage two as the basis against which we will be able to compare the effects of proposed changes to the night restrictions regime, as required by Directive 2002/30/EC and SI 2003 No 1742. The data will also feed into the draft Regulatory Impact Assessment that we shall provide at stage two. **Would consultees please include in their responses to this stage of the consultation any data that they wish to have taken into account when we produce those draft assessments for stage two.**

8 Decision letter of 20 November 2001.

3. General background

Where we are now

3.1 The present night restrictions regime for Heathrow, Gatwick and Stansted was originally intended to apply to 31 October 2004. The consultation paper that we published in April 2003 proposing to extend the restrictions for a further year explained that the policy environment was in the process of changing. In particular, it drew attention to the then consultation on *The Future Development of Air Transport in the United Kingdom: South East*, to the judgment then awaited from the Grand Chamber of the European Court of Human Rights on an action against the 1993 night restrictions regime at Heathrow, and to European Directives on Noise Related Operating Restrictions and on the Assessment and Management of Environmental Noise. These have progressed as described at paragraphs 3.4 to 3.25 below.

3.2 The April 2003 consultation paper focussed on the proposed one year extension of the regime. It also commenced consultation on some general principles and policies underlying the night restrictions and explained how we were intending to take forward the results of some technical reviews. In the decision announcing the extension of the current restrictions to 30 October 2005, the Government confirmed that the responses on the other matters would be taken into account in developing proposals for the next night restrictions regime.[9]

3.3 In February 2004 we held a night restrictions forum with participants from airlines, local authorities, environmental groups and experts from Brussels International Airport, the German Aerospace Research Centre and the UK Civil Aviation Authority Environmental Research and Consultancy Department (ERCD). The forum had been proposed by some people responding to our previous consultation on night restrictions. The forum focussed on exchanging information and discussion on points arising. It too has informed this consultation.

The White Paper

(a) The national framework

3.4 In December 2003 we published *The Future of Air Transport*[10], a White Paper setting out a strategic framework for the development of airport capacity in the United Kingdom over the next thirty years, against the background of wider developments in air transport.

3.5 The Government has endorsed a balanced approach which recognises the importance of aviation to our national and regional economies, seeks to reduce and minimise the impacts of airports on those who live nearby and on the natural environment, and will ensure that, over time, aviation pays its external costs.

9 See note 1. The summary of responses is available on the Department's website: www.aviation.dft.gov.uk or from the address given in paragraph 9.3 of this consultation paper.

10 Cm 6046.

3.6 The White Paper emphasises the importance of making best use of existing runway capacity, both at regional airports and at Stansted, Heathrow and Gatwick, prior to the development of new capacity. Growth at Stansted should help realise the Government's objectives for regional and sub-regional growth and complement the wider Sustainable Communities agenda for shifting growth to the north and east of the South East region, to relieve pressures elsewhere.

3.7 In the White Paper, the paragraph most relevant to the present consultation states

> 'The Government recognises that noise from aircraft operations at night is widely regarded as the least acceptable aspect of aircraft operations. We will bear down on night noise accordingly, but we must strike a fair balance between local disturbance, the limits of social acceptability and the economic benefits of night flights. This should be done on a case-by-case basis.'[11]

(b) Public health aspects of aviation

3.8 The White Paper also refers to the public health aspects of aviation. It notes

> 'Research continues on the effects of noise on human health, and the Government will take account of existing guidelines from the World Health Organisation. We are also supporting research to obtain better evidence on this....'[12]

3.9 The WHO *Guidelines for Community Noise*[13] reflect conclusions drawn up after consideration of the research evidence on the health significance of noise pollution. This was summarised under various headings according to specific effects: the section dealing with disturbance of rest and sleep is reproduced at Annex D. That research was not wholly conclusive. It supports the advice in the *Guidelines* for regular review and revision as new scientific evidence emerges[14].

3.10 The current WHO guideline values for night noise are:

> Inside bedrooms – 30 dB L_{eq} (8 hour) and 45 LA_{max},
> Outside bedrooms (window open) – 45 dB L_{eq} (8 hour) and 60 LA_{max}.
>
> These values relate to conditions producing 'no disturbance'. They assume 15dB noise attenuation from open windows.

11 Cm 6046, paragraph 3.12.

12 Cm 6046, paragraph 3.32.

13 *Guidelines for Community Noise*, edited by Birgitta Berglund, Thomas Lindvall, Dietrich H Schwela; published by the World Health Organisation, 1999; available at www.who.int/docstore/peh/noise/guidelines2.html

14 *Guidelines for Community Noise*, paragraph 5.7.7.

3.11 The WHO considers the extent of the community noise problem is large. It notes that

> 'When all transportation noise is considered, about half of all European Union[15] citizens live in zones that do not ensure acoustical comfort to residents. At night, it is estimated that more than 30% is exposed to equivalent sound pressure levels exceeding 55dBA, which are disturbing to sleep.'[16]

3.12 The guideline values are very low. It would be very difficult, if not impossible, to achieve them in the short to medium term without draconian measures – but that is not what the WHO proposed. The recommendation was that the *Guidelines for Community Noise* should be adopted as long term targets for improving human health. This is also consistent with the advice above. The UK Government is committed to take account of this. In respect of aircraft noise at night, the 30 year time horizon of the White Paper, provides a suitable time parameter for 'longer term'.

3.13 The WHO *Guidelines* recommend that cost-effectiveness and cost-benefit analyses should be considered when making management decisions relating to implementation. This will be taken into account by the assessments now required by Directive 2002/30 and the UK Regulations, and by our Regulatory Impact Assessment (see paragraph 4.2).

(c) Project for the Sustainable Development of Heathrow

3.14 The Government has started an urgent programme of work to find solutions to the key environmental issues at Heathrow and to consider how to make the best use of the existing airport while ensuring that the EU limits for NO_2 can be met. This work is known as the Project for the Sustainable Development of Heathrow. It will interface with stage two of this night restrictions consultation because runway capacity and the way the present runways are operated in the early morning peak hours, including the 0600-0700 hour, are key considerations. There will be public consultation on any proposals to change existing runway operations before any final decisions are reached.

The European Court of Human Rights

3.15 On the 8 July 2003 the European Court of Human Rights, sitting as a Grand Chamber, delivered its judgment in the case of *Hatton and Others v. the United Kingdom*. The judgment is final.

3.16 The case was brought in 1997 by eight residents living in the vicinity of Heathrow who alleged that Government policy on night flights at Heathrow (in the form of the night noise regime introduced in 1993) gave rise to a violation of their rights under Article 8 of the *Convention for the Protection of Human Rights and Fundamental Freedoms* ('the Convention') and that they were denied an effective remedy under Article 13 of the Convention. The Court decided by a twelve to five majority that there had been no violation of Article 8, and by sixteen votes to one that there had been a violation of Article 13.

15 pre enlargement of May 2004.

16 *Guidelines for Community Noise*, p.19.

3.17 The Court found that the decision[17] taken by the Government establishing the night noise regime of 1993-98, was taken properly and struck a fair balance between the rights and interests of the individuals affected by the night noise and the conflicting rights and interests of others and of the community as a whole. It also said that the decision to introduce a regime based on the quota count system was not incompatible with article 8. The finding on article 13 is of historical significance only because this procedural violation was remedied by the *Human Rights Act 1998* (HRA). The Court reached its finding on Article 13 because the case predated the HRA, which did not come fully into effect until 2 October 2000.

3.18 The Court said it was legitimate for Government to take economic interests into consideration in shaping its policy, and therefore in striking a balance. It also said that it is necessary for appropriate investigations and studies to be undertaken, but that did not mean that decisions require comprehensive and measurable data in relation to each and every aspect of the matter to be decided. The Court recognised the direct 'democratic legitimation' of national authorities and accepted they are better placed than an international court to evaluate local needs and conditions and reach a decision on general policy in circumstances where opinions within the democratic society may differ widely. The Court sees its role as supervisory and limited to reviewing whether the particular solution adopted can be regarded as striking a fair balance.

3.19 The judgment provides much needed clarity and has cleared the way for this thorough review of policy on night flights at Heathrow, Gatwick and Stansted.

Directive 2002/30/EC: Noise Related Operating Restrictions

3.20 European Directive 2002/30/EC of 28 March 2002 reflects the 'balanced approach' to aircraft noise management recommended in October 2001 in Resolution A33-7 of the 33rd Assembly of the International Civil Aviation Organisation (ICAO). It has established new rules and procedures with regard to the introduction of noise related operating restrictions at the largest airports. The Directive has been incorporated into UK legislation by *The Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003*[18]. These rules and procedures apply to restrictions of a partial nature affecting the operation of aircraft according to a period of time, such as at night.

3.21 The UK has incorporated the necessary arrangements to give effect to the Directive in UK legislation. The Secretary of State for Transport has retained responsibility for noise issues at the airports designated for the purposes of section 78 of the Civil Aviation Act 1982 (in other words Heathrow, Gatwick and Stansted) and is the 'competent authority' under Article 3 of the Directive. At all other airports covered by the Directive, including Luton, the airport operator is the 'competent authority'. The 'competent authority' is responsible for setting out the environmental noise objectives for the relevant airports and for following the rules on the assessment of measures to achieve those objectives.

17 See Department of Transport Press Notice No 252 of 16 August 1995.

18 SI 2003 No. 1742.

3.22 The UK Regulations state that

> ''Environmental objective', in relation to an airport, means an objective set by a competent authority in support of one or more of the following objectives – the promotion of the development of airport capacity in harmony with the environment, facilitating any specific noise abatement objectives at that airport, achieving maximum environment benefit in the most cost effective manner, limiting or reducing the number of people significantly affected by aircraft noise'.

3.23 A description of the information that, as far as appropriate and possible, must be considered in making decisions on operating restrictions is set out at Annex II of the Directive. This includes information about the airport and existing noise mitigation methods, a forecast of the noise climate without the introduction of new noise mitigation measures and an assessment of the impact and costs of additional measures that could be taken to improve the noise climate. The assessment of noise is also linked through to a noise mapping process established by a European Directive on the Assessment and Management of Environmental Noise (see paragraphs 3.24-3.25 below).

Directive 2002/49/EC: Assessment and Management of Environmental Noise

3.24 This is a measure that refers to noise from all transport modes (including major roads, railways and airports), industry and significant population clusters ('agglomerations'). The Directive was published on 25 June 2002, and the Government is in the process of transposing it into UK law. The Directive seeks to harmonise the measurement and assessment of noise, principally by requiring a programme of strategic noise maps to be produced in prescribed comparable form[19], with the first round to be completed by 30 June 2007. The Directive also requires the production of action plans, based on the noise maps, to manage noise issues and effects at the mapped locations. The Directive stipulates that preparation of the plans must include early and effective opportunities for public consultation. The first round of these action plans must be completed no later than 18 July 2008. Directive 2002/49/EC does not introduce limit values but action plans will seek to address, in particular, areas where noise exposure is deemed to induce harmful effects on human health or to preserve environmental noise quality where it is good.

3.25 The Government is also currently developing a separate National Ambient Noise Strategy for England, which will build on the requirements of Directive 2002/49/EC. The Department for Transport is working with the Department for Environment, Food and Rural Affairs which takes the lead on this subject. The strategy will not, however, modify the London airports' night restrictions currently under consultation.

19 The noise indicators, based on the day-evening-night level L_{den}, are defined in the Directive.

4. Establishing the base case and further assessments

4.1 As indicated in paragraph 3.23, the new regulatory framework requires us to provide information about the airport and existing noise mitigation measures and an assessment of the impacts and costs of additional measures. At Annex B we have provided a current inventory describing each airport, its surroundings, numbers of movements and the present noise mitigation measures. This follows the format outlined in Annex II of Directive 2002/30/EC. **We would welcome any comments you have on these assessments**.

4.2 At Annex C we have provided what we term the 'base case assessments' and the 'forecasts without new measures'. These show the current situation in terms of the numbers of people and the areas affected by aircraft noise around the three airports and the extent to which these could differ if maximum use were made of the movements and noise quotas permitted under the present night restrictions. Together, these provide reference points with which to compare the effects of any proposals for changes to the current night restrictions regime in the second stage of the consultation. Annex C is also intended to meet requirements set down in Annex II of Directive 2002/30 and SI 2003 No 1742. The data will also feed into the draft Regulatory Impact Assessment that we shall provide at stage two.

4.3 It has been long standing Government practice to produce, on an annual basis, 16 hour average summer daytime noise exposure contours using the indicator L_{eq}. Directive 2002/30/EC states that contours should be displayed, where available, using the indicators L_{den} and L_{night} described in Directive 2002/49/EC. We have decided to produce these contours now as it is technically feasible for ERCD to do so using ANCON[20]. We have no robust basis on which to interpret these contours but it may be useful to bear in mind the points set out in paragraphs 4.4-4.12 below.

4.4 We have used the methodology described in Directive 2002/49/EC to calculate contours as follows:

Average annual L_{den} comprising
- 12 hour day (0700 – 1900)
- 4 hour evening (1900 – 2300)
- 8 hour night (2300 – 0700)

The 4 hour evening and 8 hour night carry 5dB and 10dB weightings respectively, to allow for the supposed greater sensitivity of people to noise in the evening and at night, as required by Directive 2002/49/EC.

Average annual L_{night},
- 8 hour (2300 – 0700), no weighting

4.5 The L_{den} measurement attempts to introduce dose-effect relationships to assess the effect of aircraft noise on populations around the airports. This is done by adding a 5dB and 10dB weighting to each event during the evening and night period respectively. These

20 The Civil Aviation Authority's Aircraft Noise Contour Model; see Annex C.

measurements are intuitive estimates based on research carried out in Europe but are not consistent with findings from past UK research[21]. The effect of the 5dB and 10dB weightings is to increase the area and population within the contours compared with the 16 hour average summer day contours.

4.6 Compared with the unweighted daytime L_{eq} contours, the L_{den} contours for any given numerical value tend to be larger, to an extent that varies across airports. Other things being equal, the effect of the 5dBA evening weighting is to increase the area of the contour as a matter of arithmetic. The effect of incorporating night movements with a 10dBA weighting depends on the relative number of night movements and in practice this too increases the area.

4.7 Additionally, the Directive specifies 5dBA rather than 3dBA intervals, and showing the outermost contour at 55dBA rather than 57dBA as for L_{eq} produces, of course, a further increase in comparative area.

4.8 L_{den} is averaged over the whole year rather than the busy three month summer period used for L_{eq}. This tends to reduce the comparative size of L_{den} contours, but not sufficiently to offset the above mentioned factors which make them larger.

4.9 L_{night} is based on the L_{eq} measurement, with no weighting, the same as is currently used to produce average summer daytime contours. L_{night} is an 8 hour measurement and therefore includes movements during the night quota period (2330 – 0600) and the shoulder periods (2300 – 2330 and 0600 – 0700).

4.10 In the base case assessments we have included L_{night} contours for the 6.5 hour night quota period to demonstrate how the current night restrictions regime affects the night time contour. L_{night} (6.5 hour) contours have also been produced for the theoretical maximum use of the noise quota allocated to each airport. This gives an indication of the approximate size of the L_{night} (6.5 hour) contour should 100% of the noise quota be used.

4.11 We have also included tables to indicate the area and population included within the 90dBA SEL (Sound Exposure Level) footprint from comparatively noisy arriving and departing aircraft. SEL is measured in dBA and takes account of both the duration and intensity of the noise event. 90dBA SEL is approximately equivalent to 75-80dBA L_{max}. These are well established UK criteria.

4.12 The area and populations calculated are based on a generic QC/4 aircraft. This is a theoretical aircraft which would be classified towards the top of the QC/4 band, the noisiest aircraft that is currently permitted to take-off and land during the night quota period, although at present there are very few actual QC/4 operations in practice due to the voluntary ban on scheduling movements by these types of aircraft. There are more movements by these types in the night shoulder periods.

4.13 Graphical representation of the contours, the areas in square kilometres within the contours and an assessment of the numbers of people within the contours are also provided. **Do you have any comments on the presentation of the material in Annex C?**

21 *United Kingdom Aircraft Noise Index Study: main report*, DR Report 8402 published 1985.

5. Length of the next night restrictions regime

5.1 The consultation paper on *The Future Development of Air Transport: South East* explained that previous practice has been to review the night restrictions at Heathrow, Gatwick and Stansted approximately every five or six years, enabling us to take account of technological improvements (e.g. quieter aircraft), the findings of sleep research and related matters. It invited views on whether this review cycle remains appropriate or whether we should attempt to develop a longer term strategy.

5.2 This question drew a low response. Overall, there was no great demand for change, while those who favoured change suggested regimes lasting between one and fifteen years. A very short regime would introduce uncertainty both for airlines and for local communities, making it very difficult to secure either economic benefits or worthwhile improvements in the night noise climate. A very long regime would be administratively attractive, but would fossilise the arrangements. The Grand Chamber of the ECHR, in the *Hatton* judgment, placed some weight on the practice of carrying out a regular review of the balance struck between the conflicting rights and interests involved. The World Health Organisation *Guidelines for Community Noise* also advise that noise standards (or regulations) should be regularly reviewed and revised as new scientific evidence emerges.

5.3 The Government intends to continue this practice and to set the next regime for six years, to the end of the summer season 2011. By that time the 5th Terminal at Heathrow will have been in operation for about three years and the opening date for a 2nd runway at Stansted (if planning permission is granted) should be known.

6. Aims and Objectives

Contextual framework and aims

6.1 The contextual framework for the present two stage consultation on night restrictions is provided by the *South East* consultation, the April 2003 consultation on night flying restrictions and the responses to both those consultations together with the air transport White Paper.

6.2 From this framework we have derived the following broad aims for night restrictions at Heathrow, Gatwick and Stansted:

- to take account of the strategic framework for the next thirty years set out in *The Future of Air Transport*;
- to take account of the final Judgment reached by the ECtHR[22] in the case of *Hatton and Others v. the UK*;
- to take account of the undertaking given in the decision letter granting planning permission for Terminal 5 at Heathrow to consult on an extension of the night quota period[23];
- to take account of the *Guidelines for Community Noise* published by the World Health Organisation in 1999, noting that these are long-term targets for improving health;
- to take account of wider competitiveness, employment and economic considerations;
- within the scope of existing legislation[24] to bear down on night noise[25], particularly by encouraging the use of quieter aircraft at night; and
- at each airport, to strike a fair balance between the protection of local communities from excessive aircraft noise levels at night and the provision of air services at night where they are of benefit to the national, regional or local economy.

22 European Court of Human Rights, Strasbourg.

23 Although the Inspector at the T5 Inquiry heard a lot of evidence about night flights and interference with sleep, we need to consult from first principles on the possibility of extending the night quota period because the evidence was put forward in a different context and because it may now be out of date.

24 Section 78 of the Civil Aviation Act 1982 and SI 2003, No 1742 implementing Directive 2002/30/EC.

25 Paragraph 3.12 of the White Paper, *Future of Air Transport.*

Objectives

6.3 Previous practice has been to set objectives for a night restrictions regime at the start of the consultation. In 1998, when there was a two stage consultation, they were set at stage two but were informed by responses to the preliminary consultation and Government policy on integrated transport. The objectives for the 1993-1999 and 1999-2005 regimes are at Annex E.

6.4 As can be seen at Annex E, the objectives for 1993-99 were expressed in fairly broad terms, rather like the aims for the forthcoming regime that we have identified in paragraph 6.2 above. Some of the objectives for the 1999-2005 regime were similarly broadly based but others were more sharply focused.

6.5 We are considering what further, more sharply focused objectives may be appropriate from 2005. Both the Directive and the UK Regulations refer to environmental objective(s) and to noise abatement objectives. Neither of these terms is defined in the Directive. As already noted in paragraph 3.22, the UK Regulations state:

> ''environmental objective' in relation to an airport, means an objective set by a competent authority in support of one or more of the following objectives –
>
> the promotion of the development of airport capacity in harmony with the environment,
>
> facilitating any specific noise abatement objectives at that airport,
>
> achieving maximum environment benefit in the most cost-effective manner,
>
> limiting or reducing the number of people significantly affected by aircraft noise'.

6.6 We intend to formulate one or more environmental objectives for each airport and a specific noise abatement objective or objectives for each airport in the second stage consultation paper. We consider that these objectives should

- be consistent with the aims set out in paragraph 6.2;
- be formulated in such a way that it will be possible to see, separately for each airport, if the suggested objectives can be achieved at not too great a cost; and
- not be so specific that they effectively pre-determine the outcome of the consultation (ie the details of the restrictions).

We would welcome your comments on this. We would also welcome your suggestions for environmental objectives and specific noise abatement objectives for each airport.

6.7 Although not a requirement of either the Directive or the UK Regulations, it might be helpful to think in terms of the aims as applying long term, consistent with the thirty year horizon of the White Paper; with the environmental objectives applying for the medium term – say 10 to 15 years – and the noise abatement objectives more sharply focused on the regime for 2005-2011. For example, the noise abatement objective might be to achieve by 2011 some improvement in the night noise climate in comparison with one or more of the base case indicators in Annex C or to facilitate some growth in aircraft movements at night while curbing the growth in noise, again by reference to one or more of the base case indicators. The environmental objectives would include an objective framed so as to facilitate the achievement of the specific noise abatement objective.
If you suggest any objectives, please state for each objective the base case indicator against which it should be assessed.

7. Classification of aircraft

The present system

7.1 The present night restrictions regime recognises both a night period, 2300-0700 hours, and a night quota period, 2330-0600 hours. During the whole of the night period, the noisiest types of aircraft may not be scheduled to land or to take off and they are effectively banned from doing so (other than in the most exceptional circumstances) in the night quota period. In addition, during the night quota period aircraft movements are restricted by a movements limit and a noise quota, which are set for each season. The seasons change with the clocks.

7.2 For these purposes, aircraft are classified according to the Quota Count (QC) system which was specially designed for the night restrictions at Heathrow, Gatwick and Stansted and introduced in 1993. The QC classification system is based on aircraft noise certification data. Aircraft are classified separately for landing and taking off by reference to data which are determined according to internationally agreed conditions and standards with adjustments to take account of differences in noise measurement points[26]. Propeller aircraft with maximum take-off weight (MTOW) not exceeding 5700 kg (i.e. those not subject to such criteria) and older propeller aircraft also not subject to these criteria are classified according to assumptions based on available noise data[27]. The aircraft are classified on the basis of their noise data (adjusted as appropriate) into six QC bands and the very quietest aircraft are exempt. The bands are

Certificated Noise Level (EPNdB)[28]	**Quota Count**
More than 101.9	16
99-101.9	8
96-98.9	4
93-95.9	2
90-92.9	1
Less than 90	0.5

26 The noise classification of aircraft into 3EPNdB wide QC categories are based on certificated Effective Perceived Noise Level (EPNL) as follows:

Arrival = EPNL at approach certification point minus 9 EPNdB (to put on an equivalent basis to departure certification points)

Departure = $\frac{\text{Sideline EPNL + Flyover EPNL}}{2}$ if certificated under Chapter 3 or Chapter 5 of Annex 16

= $\frac{\text{Sideline EPNL + Flyover EPNL}}{2}$ plus 1.75 if certificated under Chapter 2 (to allow for difference in sideline certification point).

27 Helicopters are classified on the basis of their certificated flyover noise level only. For Chapter 8 this is the flyover EPNL mentioned above; for Chapter 11 (helicopters not exceeding 2730 kg), it is the only noise level recorded, plus 3dB (because the Chapter 11 certification level is in SEL and analysis of available helicopter data shows that, on average, EPNL = helicopter SEL + 2.5 dB

28 Effective Perceived Noise decibels, a specialised noise unit used for aircraft noise certification tests.

Jet aircraft with a maximum certificated weight not exceeding 11,600 kg and propeller aircraft are exempt from the movements limits and noise quotas restrictions if their noise data are classified at less than 87 EPNdB.

7.3 Under the QC system, each aircraft type, including different versions of the same model, is assigned to a QC band according to its noise performance as determined by the ICAO noise certification process. For example, a Boeing 737-800 is classified as QC/0.5 on arrival and as QC/0.5 or QC/1 on departure (depending on its maximum certificated take-off weight), whereas a much larger and older Boeing 747-200 will vary between QC/2 and QC/8 on arrival, and between QC/4 and QC/16 on departure, depending on engine fit and MTOW. The individual classification of each type of aircraft is set out in Part 2 of the Schedule to the Notice which is published each season (in a supplement to the UK Aeronautical Information Publication (UKAIP)) to give effect to the night restrictions.

Proposals

7.4 In general, this QC system has worked well over the past 10 years and **we propose to retain it**. **Are you content?**

7.5 ICAO Assembly resolution A33-7 and Article 4(4) of Directive 2002/30/EC, both require that restrictions which differentiate between types of aircraft should be based on the noise performance of the aircraft as determined in accordance with ICAO certification procedures (their 'ICAO noise certification data').

7.6 When the QC system was first proposed in 1993, the Government said it would use data collected in normal operational circumstances from the noise and track-keeping system at the three airports to verify the QC classification of aircraft types. The results of the large-scale 'EPNL' noise monitoring, published in ERCD Report 0205 *Quota Count Validation Study; Noise Measurement and Analysis*[29], show that **most** aircraft currently operating at night at Heathrow, Gatwick and Stansted have operational noise levels that accord with their present QC classification. They also show some types are noisier than their classification, and some quieter.

7.7 The key aircraft found to be noisier than its QC classification is the Boeing 747-400 powered by Rolls Royce (RR) engines which is the main type used by airlines in the NQP at Heathrow. This means that the aircraft has been making more noise than other aircraft with the same classification (QC/2 on arrival) and using up less of the available noise quota than it would have if ranked according to its operational noise. However, it does not necessarily mean that people living around Heathrow have experienced more noise than they would have if the aircraft had been reclassified earlier. That is because the noise quotas set in 1993 and 1999 took account of the original QC classification of aircraft – if the classifications had been different the size of the noise quotas set for those regimes might also have been different.

29 See note 26.

7.8 To the extent that the *Quota Count Validation Study* has highlighted differences between measured operational noise and the noise performance of aircraft as indicated by their 'ICAO noise certification data' (after taking account of differences bound to affect all aircraft in-service compared with controlled certification conditions), these differences have been brought to the attention of the international technical experts currently examining the ICAO noise certification requirements. The UK Government believes in and supports the international system of noise certification. We are pressing for the certification requirements to be updated, to reflect modern operating procedures and conditions, and to be made more rigorous.

7.9 However, Article 4.4 of Directive 2002/30/EC and Regulation 5(3) of SI No. 1742 preclude the use of any system of noise classification other than that based on 'ICAO noise certification data'. It follows that, although the UK (and other Member States) may choose how to use the noise certification data when imposing operating restrictions, it has no discretion to substitute measurements of operational noise as an alternative to the noise certification data. That would have the effect of decoupling the classification of the aircraft concerned from their noise certification data. **We are, therefore, not consulting on this issue.**

7.10 If we retain the QC system it is still possible to modify or extend it provided the classification remains based on noise certification data. With this in mind, we have considered possible changes arising from earlier commitments and the results of some technical studies, as already noted in paragraph 2.4 above.

7.11 The changes that we are considering taking forward are:

(a) whether to remove the weight limit on jet aircraft able to qualify as exempt but, at the same time, to introduce a new QC/0.25 band;

(b) whether to retain the minus 9 EPNdB adjustment for arrivals which takes account of the difference between the noise impacts of arrivals and departures; and

(c) whether to prohibit QC/4 aircraft from being scheduled or from operating in the present night quota period.

7.12 These are the key issues for this first stage of the consultation. We need to resolve them by the end of this stage, in the light of responses, in order to be able to present meaningful proposals on other aspects of the night restrictions, along with assessments of the likely costs and benefits associated with them, in stage two. **Please would all consultees, particularly airlines and users of their services, include financial and other information that you consider relevant with your responses.**

(a) whether to remove the weight limit on jet aircraft able to qualify as exempt but, at the same time, to introduce a new QC/0.25 band;

7.13 The section from the report on the *Review of the Quota Count System* dealing with the possible downwards extension of the QC scale or bands and the review of the weight limit for jet aircraft is reproduced in full at Annex F. As that explains, the weight limit is the only non-noise based component of the QC classification system. It is not consistent with the 3dB doubling of noise energy principle or with the ICAO noise certification requirements. The weight limit criterion was included in 1993 to reduce the types of otherwise exempt aircraft but its application to jet aircraft and not propeller aircraft could serve as a perverse incentive to use noisier turboprops when quieter jet aircraft are available.

7.14 Extending the QC scale downwards by a further 3dB band would strengthen the incentives to use the quieter aircraft while preventing a proliferation of exempt jets, in the absence of a weight limit. The exempt category would then be confined to very quiet aircraft below 84 EPNdB on the basis of their noise data alone without discriminating between jets and turbo props. **We propose to revise the QC classification of aircraft on this basis. We would welcome your views on this.**

7.15 The new QC/0.25 band (84-86.9 EPNdB) would include aircraft in the following table (the list is not comprehensive):

JETS		PROPS	
ARRIVALS	**DEPARTURES**	**ARRIVALS**	**DEPARTURES**
some BAe 146	some BAe146	some ATR 72	some ATR 72
some AVRO RJ	some Avro RJ	some BAe ATP	Dash 7 & 8
A319	some MD80	some BAe 748	
some A320/321	some B717	Shorts 360	
some B757	Falcon 900	Dash 7	
some B737	Gulfstream G-V		
some MD80 series			
some MD90 series			
some Fokker 28			
Embraer 170 RJ			
BAe 125-800			
Falcon 2000			

The props listed above are currently exempt and the jets are currently classified as QC/0.5 because of the weight limit. Some small business jets that are currently exempt but which would be reclassified as QC/0.25 include the Learjets 24E, 24F and 45 on arrival and the Cessna 560 Citation XL on departure.

7.16 At present there are more night-time operations by these types of aircraft types at Gatwick and Stansted than at Heathrow. The immediate impact of the proposed reclassification is likely to be small but its effectiveness as an incentive to use quieter aircraft is expected to increase over time; it would also increase if it were decided to extend the NQP. **Do you think this proposal will be beneficial?**

7.17 Airlines or other users directly affected by these proposals should include relevant economic information in their responses. Anyone wanting an aircraft to be reclassified (either upwards or downwards) in accordance with this proposal should also send noise certification data to:

Mr W J G Readman,
Safety Regulation Group,
Civil Aviation Authority,
Aviation House,
South Area,
Gatwick Airport,
West Sussex, RH6 0YR.

If, in the light of responses to this stage one consultation, we decide to proceed with this proposal we will make use of the information in carrying out the draft assessments for inclusion in the stage two consultation paper. We shall also produce schedules showing the QC classification of aircraft according to the new criteria.

(b) whether to retain the minus 9 EPNdB adjustment for arrivals which takes account of the difference between the noise impacts of arrivals and departures;

7.18 As explained in paragraph 7.9 above, whilst Directive 2002/30/EC requires Member States to use 'ICAO noise certification data', and none other, in classifying aircraft for operating restrictions, it leaves it to Member States to decide how to use those data. Under our QC classification system aircraft are classified separately for departure and for arrival. The movements limits and noise quotas are not subdivided between departures and arrivals, allowing airlines to make best use of what is permitted; the relative environmental impact of their choices is reflected by the classification of their aircraft and the amount of noise quota used. The purpose of the adjustment is to take account the difference between the noise impacts of departures and arrivals, due to the different measurement points and the larger size of departure noise footprints and thus the number of people likely to be affected. It thus allows departures and arrivals to be counted against the noise quotas on broadly equivalent terms.

7.19 The adjustment has been criticised on various grounds, chiefly that:

- the improved climb performance of modern twin-engined jet aircraft is likely to have led to a shrinkage in the average size of departure footprints since the adjustment was calculated;

- equating the footprint areas ignores the fact that a substantial part of the departure footprint falls on airport land (unlike approach noise) and will therefore have little or no effect on the local population;

- and even when their footprint areas are equal in area, noise levels inside the arrival footprints can be greater and the disturbance caused will therefore also be greater.

7.20 In view of this the Environmental Research and Consultancy Department of the CAA were commissioned to reanalyse how certificated take-off and landing noise data compare with the noise impact on the local population, and to assess whether the minus 9 EPNdB adjustment was still appropriate. That assessment has been published as ERCD Report 0204[30]. The main conclusions are summarised as follows:

1. The method by which aircraft QC classifications are determined from official certificated noise levels remains appropriate.

2. The areas within which noise levels under the approach path exceed those reached under the departure path are close to the airport and relatively small.

3. The use of operational sound exposure levels in the 1991 analysis (instead of the certificated effective perceived noise levels) distorted the difference between arrivals and departures.

4. The percentage of noise generated which falls on airport land is greater for take-offs than landings. Adjusting the levels of noise impact to account for this reduces the difference between the community impact of arrivals and departures.

5. The effects of 3 and 4 tend to cancel each other out.

6. Improvements in departure noise achieved by modern aircraft have not been matched by equal noise reductions on approach. This closes the gap by around 2 EPNdB.

7. As a consequence of factors 3 – 6 above, the actual difference between the impact of arrivals and departures is now calculated to be equivalent to 9 EPNdB. This is the differential currently used to calculate QC values, but less than the differential of 11dB measured in the 1991 study, prior to the introduction of the QC system.

7.21 We accept these findings and propose to retain the minus 9 EPNdB adjustment for arrivals. **Are you content?**

30 See note 7.

(c) whether to prohibit QC/4 aircraft from being scheduled or from operating in the present night quota period

7.22 Strictly speaking, this is not a classification issue but a decision to be taken in the light of other classification issues. The voluntary ban on scheduling QC/4 aircraft in the NQP has been a success and, together with the present ratios between the movement limits and noise quotas, has helped ensure that there are now very few services using QC/4 aircraft at any of the three airports[31] in the NQP. The Government first gave notice of its intentions in this respect in 1999 and firmly intends to at least prohibit the scheduling of QC/4 aircraft between the hours of 2330 and 0600 from the start of the next night restrictions regime. However, it seems appropriate to consider going one step further than simply formalising the QC/4 scheduling ban – which would still allow delayed departures or early arrivals by these aircraft – and instead to ban the QC/4 operations entirely in the current NQP (2330-0600). We realise this might cause some difficulties for airlines, as indicated in responses to the April 2003 consultation, but it is consistent with our aim of bearing down on night noise, particularly by encouraging the use of quieter aircraft at night. **We therefore propose to prohibit QC/4 aircraft from operating between the hours of 2330 and 0600. Do you have any comments on this?**

7.23 If in the light of responses to the above proposals, we decide to proceed with them, we intend at stage two,

(a) to propose to reduce the departure noise limit that applies between the hours of 2330-0600, from 87dBA to 84dBA;

(b) to propose new night-time noise insulation criteria that take account of the actual operational noise of the noisiest aircraft that would still be likely to be operating at night. At Heathrow, for example, this would probably be the B747-400 with Rolls Royce engines. A map of the area around Heathrow with 90 SEL landing footprints for this aircraft type superimposed at each end of each runway is at Annex G, together with an explanation of how they have been calculated, for information; and

(c) to consider whether QC/4 aircraft should still be allowed to operate in the time periods 2300-2330, 0600-0630 and 0630-0700, if any such times were to be brought within the night quota period, and, if so, on what basis. For example, would it be practical to phase them out over the six year period of the next regime, or would it be an issue for a subsequent review?

You may wish to bear these points in mind when commenting on the proposals at 7.4 to 7.22 above.

31 The exception is a DAS Air Cargo service at Gatwick.

8. Night restrictions from October 2005: further preliminaries

8.1 The April 2003 consultation paper on night flying restrictions at Heathrow, Gatwick and Stansted included a preliminary look at some of the general policies and principles underlying the restrictions, in particular, whether to continue the present policy of having common arrangements at all three airports, and the broad issues relating to possible extension of the night quota period. These aspects are summarised at paragraphs 8.2-8.17 below, together with points that emerged from the April 2003 consultation and the night restrictions forum. **We would welcome your further views and will take them into account when we develop firm proposals for stage two of this consultation.**

Common arrangements

8.2 Common arrangements were introduced in 1993. What this means in practice is that the same system for classifying aircraft is used at each airport and individual aircraft are restricted according to common rules, including the same hours of restrictions, the same rules for dispensations, early arrivals and similar administrative aspects; but the movement limits and noise quotas are set separately for each airport. The general principle is that having the same rules at the three airports is fair to all the people living round those airports and to the airlines.

8.3 The majority of respondents to the April 2003 consultation thought the principle of common arrangements was fair to people living around the airports and should be retained. Some of the responses, while supporting a common framework, emphasised that implementation should take account of the impact of night flights at each airport. We accept this: it is usually achieved through the size of the movements limits and noise quotas.

8.4 Less was said in the responses about the implications for airlines and other users of the airports. Having common arrangements at the three airports should mean that the London night restrictions are relatively simple for airlines to understand and to take into account when planning their operations, and when considering how to cope with unforeseen demands or changes in weather or other circumstances. Directive 2002/30/EC now requires competent authorities to formulate environmental and noise abatement objectives at the level of individual airports. We propose to do this for Heathrow, Gatwick and Stansted at the second stage of this consultation (see paragraphs 6.3-6.7 above). If common arrangements are to be continued, we would have to be satisfied that these arrangements were appropriate, and no more restrictive than necessary, to achieve the environmental objectives for each airport. **Would airlines and other users please let us know what value, if any, they attach to there being common arrangements at the three airports. Further comments from other consultees would also be welcome.**

8.5 After common arrangements were introduced in 1993 requests for 'special treatment' or for an airline to operate at one airport but under the different arrangements which had applied at another, decreased. This has assisted efficient and economic administration and transparency. In the April 2003 consultation we asked whether these considerations are deemed important. The great majority of those who responded on this point thought they are.

8.6 In the April 2003 consultation paper we indicated it would be possible to continue having the same system for classifying aircraft at all three airports, and the same system of movements limits and noise quotas, without necessarily having the same 'night quota period' (when the movements limits and noise quotas apply). The general consensus of the responses was that the night quota period should be the same at all three airports to ensure fair treatment and to ensure that an airline did not use an airport more frequently than it otherwise would, simply because of the restricted period being shorter. **We would welcome comments from airlines and other users on this.**

8.7 Some of the responses thought it would be preferable to have arrangements that were more tailored to each individual airport although it was not clear how they thought the restrictions should be amended to achieve this. **If anyone wishes us to pursue this further, please provide relevant details.**

The Night Period and the Night Quota Period

8.8 Before October 1993 the hours of the night restrictions varied over the years, with different hours applying in summer from those in winter, with variations on Sundays and between airports. By 1993 all these differences appeared to be unnecessary and to be exacerbating airlines' scheduling difficulties and the development of year-round services. The hours of the night restrictions were therefore standardised in October 1993 with a night period, 2300-0700 hours, and a night quota period, 2330-0600 hours, applying at all three airports. During the whole of the night period the noisiest types of aircraft may not be scheduled to land or take off and they are effectively banned from do so (other than in the most exceptional circumstances) in the night quota period. In the night quota period, movements by all other types of aircraft, except the very quietest, are severely restricted by a movements limit and a noise quota[32], hence the name 'the night quota period'.

8.9 The aviation industry generally has supported the continuation of the night quota period as running from 2330 to 0600 at all three airports. Local authorities, local groups and individuals have generally sought a longer night quota period or a complete ban on flights in all or part of the present night. The majority of non-industry responses to the April 2003 consultation thought that the night quota period should start at 2300 hours and end at 0700 hours. Some non-industry responses suggested times ranging from 2200 to 0800 while others suggested extending the night quota period on Sundays and/or Bank Holidays.

32 The movements limits and the noise quotas are set on a seasonal (rather than an annual, weekly, nightly or other) basis.

8.10 As indicated in paragraph 2.3, we intend to consult on the length of the NQP in stage two. We will be consulting as to whether the NQP should remain as it is now (2330 – 0600) or whether some adjustments should be made to make it the same as the full night period (2300 – 0700). We will look at the three half-hour segments at the beginning and end of the current NQP as follows:

2300 – 2330
0600 – 0630
0630 – 0700.

We do not consider that any further extensions to the night quota period would be feasible, bearing in mind the need to make best use of existing runway capacity.

8.11 **We need detailed information from airlines and other users now, in response to this stage one consultation, as to the number of flights they want to operate each season in each of these half hour time periods, the value of these flights to their business and the likely operational and financial consequences if they are restricted. We also need similar information in relation to the present NQP**. We intend to subject the information provided to appropriate scrutiny and analysis, to take the results into account in drawing up proposals for consultation at stage two, and to take it into account in the assessments that we shall provide in the second stage consultation paper in support of those proposals. There will therefore be an opportunity to comment on our use of the data in those assessments before they are finalised. **However, we do need the data now in order to take this process forward.**

Other considerations

8.12 Some respondents said there should be fewer night flights at Heathrow because the surrounding area is more densely populated and therefore more people will be affected. Some others suggested there should be fewer night flights at Stansted because the ambient noise is lower and aircraft noise is therefore more noticeable. These points seem more germane to the issues concerning the size of the noise quotas and the number of movements permitted, rather than to the length of the night quota period. **If you disagree, please let us know why.**

8.13 As to the influence of ambient noise, the WHO *Guidelines for Community Noise* comment that a number of studies have suggested that the annoyance effect of a particular noise would depend on how much that noise exceeded the level of the ambient noise; that this has been shown to be true for noises that are relatively constant in level but that it has not been consistently found for time-varying noises such as aircraft noise.

They consider that:

> 'Because at some time during an aircraft fly-over the noise almost always exceeds the ambient level, responses to this type of noise are less likely to be influenced by the level of ambient noise.'[33]

We are minded to take this into account. Are you aware of any reason why we should not?

Possible further controls

8.14 Extending the night quota period implies setting movements limits and noise quotas over the extended night quota period. Apart from considering the possible costs and benefits of any such extension, the types of aircraft that should be permitted to operate then (see paragraph 7.22 above) and the relevant movements limits and noise quotas, it will also be necessary to consider how an extension of the NQP might impact on the night restrictions regime itself. The present movements limits and noise quotas are set 'per season'. If the night quota period were extended and the seasonal movements limits and noise quotas increased, it would, in theory, be possible for some or all of the increase to be used at different times within the total NQP.

8.15 It might be necessary to do something to prevent that happening, such as having separate movement limits and noise quotas for the 'shoulder' periods. Other measures that might prevent some form of 'bunching' of night flights are nightly or weekly limits, or an hourly cap that would apply as a discrete control, alongside of the seasonal movements limits and noise quotas.

8.16 An alternative might be to specify separate movements limits/noise quotas for arrivals and departures, or to specify a discrete cap on the amount of any seasonal quota that could be used for arrivals/departures. That would not prevent bunching of movements on any particular night but would prevent all the permitted movements overflying the same people.

8.17 The factors described in paragraphs 8.14-8.16 were identified in the April 2003 consultation paper but attracted very little comment. When these possibilities have been looked at previously, the difficulties – such as being too inflexible to cope with normal variations in traffic within a season and differences between scheduled and actual times of arrival, or setting up further mechanisms to deal with this – have been more obvious than the advantages, in terms of additional protection against noise, that they might provide. **Do you consider any further controls may be necessary? If so, please let us know what further form of control you want and why.**

33 Guidelines for Community Noise paragraph 2.3.4.

9. Comments on the proposals

Summary of questions

9.1 You are welcome to comment on any matter mentioned in this consultation paper, even where no specific question is posed. **Consultees should include in their responses to this stage one consultation any data they wish to have taken into account in the draft cost benefit assessments that we shall produce for stage two** (see, in particular, paragraphs 2.8, 7.12, 7.17 and 8.11).

9.2 The specific questions posed in this paper are summarised below:

Q1. Are there any other matters that you think we should cover in this consultation in addition to those set out in paragraph 2.4 of this paper?

Q2. Do you have any comments on the assessments described in Annex B of the consultation document? (see paragraph 4.1)

Q3. Do you have any comments on the presentation of the noise contours and other information in Annex C? (see paragraphs 4.2-4.13)

Q4. (a) Do you have any comments or suggestions for environmental objectives and specific noise abatement objectives for each airport? (see paragraph 6.6)

(b) If so, please state for each objective the base case indicator against which it should be assessed

Q5. Are you content that we should retain the QC system for classifying aircraft? (see paragraph 7.4)

Q6. Do you have any comments on the proposals to:

(a) remove the weight limit for jet aircraft able to qualify as exempt but, at the same time, extend the QC system downwards by a further band to QC/0.25 (84-86.9 EPNdB)?

(b) retain the minus 9EPNdB adjustment for arrivals?

(c) prohibit QC/4 aircraft from operating between 2330 hours and 0600 hours? (see paragraphs 7.10-7.23)

Q7. Do you have any comments on:

(a) the value of there being common arrangements at the three airports?

(b) retaining the same night quota period at the three airports (see paragraphs 8.1-8.11)

Q8. (a) Points relating to density of population and ambient noise seem more germane to issues concerning the size of the night quotas and the number of movements permitted, rather than to the length of the night quota period: do you disagree?

(b) Are you aware of any reason why we should not take account of the comment in the WHO Guidelines that responses to aircraft noise are less likely to be influenced by ambient noise than are some other types of noise? (see paragraphs 8.12-8.13)

Q9. Do you have any suggestions for further controls on movements during the night quota period if it is extended? (see paragraphs 8.14-8.17)

How to respond

9.3 Please send us your comments by **29 October 2004**.

The address to send comments to is:

Department for Transport
Aviation Environmental Division 2
Zone 1/34
Great Minster House
76 Marsham Street
LONDON, SW1P 4DR.

email: nightrestrictions@dft.gsi.gov.uk

9.4 A list of organisations and others to whom this consultation paper is being sent is at Annex H.

9.5 Representative bodies or organisations are asked to bring this paper to the attention of all the various interests they represent. **When responding, representative groups should provide a summary of the people and organisations they represent.**

9.6 Additional copies of this consultation paper may be obtained by writing to the address given in paragraph 9.3 or by telephoning 020 7944 5796, or may be downloaded from the DfT website www.aviation.dft.gov.uk

9.7 All responses will be taken into account and reflected as appropriate in the stage two consultation paper and related assessments.

Disclosure of responses

9.8 In due course, the Department may wish, or be asked, to copy or disclose responses to others. Please make it clear if you would object to us copying or disclosing all or part your response. We will make your response publicly available unless you ask us not to.

9.9 All responses will be included in any summary of results, although individuals will not be identified. Names and addresses may be held in an electronic database of interested parties for the purpose of distributing future documents on similar issues. However, any such details on a database will not be given to a third party.

9.10 If you wish to view individual responses after the consultation period has ended, these will be available for public viewing for a period of 6 months at the DfT Library and Information Centre, Ashdown House, 123 Victoria Street, London SW1E 6DE. Details on how to make an appointment to view the responses are in paragraph 10.5 below.

10. Availability of documents

10.1 All the ERCD technical reports listed below are available from Documedia Solutions 37 Windsor Street, Cheltenham, Gloucestershire GL52 2DG. Telephone 01242 283100; Fax 01242 283131. An additional charge will apply for posting. These reports are also available on the CAA website: www.caa.co.uk/publications

Review of the Quota Count (QC) System: Reanalysis of the differences between Arrivals and Departures: ERCD Report 0204; November 2002, £15.

Quota Count Validation Study; Noise Measurement and Analysis: ERCD Report 0205; £12.

A Practical Method for Estimating Operational Lateral Noise Levels: ERCD Report 0206; £4.

Departure Noise Limits and Monitoring Arrangements at Heathrow, Gatwick and Stansted Airports: ERCD Report 0207; £24.

An Assessment of the Accuracy of Flight Path Data used in the Noise and Track-keeping System at Heathrow, Gatwick and Stansted Airports: ERCD Report 0209; £5.75.

The CAA Aircraft Noise Contour Model: ANCON Version 1 DORA Report 9120 published November 1992

The UK Civil Aircraft Noise Contour Model: ANCON – Improvements in Version 2 R&D Report 9842 published July 1999 (ERCD).

10.2 *United Kingdom Aircraft Noise Index Study: main report*, DR Report 8402 published 1985 (available from Documedia Solutions as above), £15.40.

10.3 Further copies of this night restrictions consultation paper and the reports listed below are available from:

Department for Transport
Aviation Environmental Division 2
Zone 1/34
Great Minster House
76 Marsham Street
LONDON, SW1P 4DR
Telephone 020 7944 5796

They are also available on the DfT website: www.aviation.dft.gov.uk

Review of the Quota Count (QC) System used for administering the night noise quotas at Heathrow, Gatwick and Stansted Airports. DfT administrative report, 2003

Night Flying Restrictions at Heathrow, Gatwick and Stansted: consultation on a one-year extension and certain general principles published April 2003

The Future Development of Air Transport in the United Kingdom: South East, second edition published February 2003

The Future of Air Transport, CM 6046 published December 2003, £25 TSO

10.4 *Guidelines for Community Noise*, published for the World Health Organisation 1999 Available at www.who/docstore/peh/noise/guidlines2.html

10.5 All these reports may be inspected free of charge at the DfT Library and Information Centre, Ashdown House, 123 Victoria St, London, SW1E 6DE. The Library is open Monday to Friday. Anyone wishing to inspect the reports, or the consultation responses as referred to in paragraph 9.10, is requested to telephone the Librarian on 020 7944 3039 to make an appointment. Please note that it will not be possible to gain admittance without an appointment.

Department for Transport

July 2004

ANNEX A

Code of Practice

This consultation is being carried out in accordance with the Government's Code of Practice on Written Consultation (updated Jan 2004). The Code of Practice set out six consultation criteria as follows:

1. Consult widely throughout the process, allowing a minimum of 12 weeks for written consultation at least once during the development of the policy.

2. Be clear about what your proposals are, who may be affected, what questions are being asked and the timescale for responses.

3. Ensure that your consultation is clear, concise and widely accessible.

4. Give feedback regarding the responses received and how the consultation process influenced the policy.

5. Monitor your department's effectiveness at consultation, including through the use of a designated consultation co-ordinator.

6. Ensure your consultation follows better regulation best practice, including carrying out a Regulatory Impact Assessment if appropriate.

A full version of the code can be found at:

http://www.cabinet-office.gov.uk/regulation/consultation/code.asp

If you have any complaints or comments about this consultation process please contact:

Andrew D. Price
Consultation Co-ordinator
Department for Transport
Zone 9/09
Southside
105 Victoria Street
London
SW1E 6DT
email: andrewD.price@dft.gsi.gov.uk

ANNEX B

INFORMATION REFERRED TO IN DIRECTIVE 2002/30/EC Annex II

Section 1 – Current inventory

1.1 A description of the airport

Heathrow

The airport has two main runways plus a cross-wind runway, four passenger terminals and two cargo terminals. A fifth terminal is under construction. The airport is located approximately 13 miles (21 km) west of London City Centre and is surrounded by suburban housing, business premises and mixed use open land to the north and south, surburban housing and business premises to the east and three large reservoirs, mixed use open land, housing and business premises to the west. It currently handles around 64 million passengers a year.

	Movements			Freight tonnage	
	Day[1]	Night[2]	All	Cargo	Mail
Winter 02/03[3]	176,926	10,638	187,564	519,917	34,216
Summer 03[4]	260,350	14,800	275,150	700,590	41,920
Total	**437,276**	**25,438**	**462,714**	**1,220,507**	**76,136**

		Movements		
		Day	Night	All
Passenger		429,196	23,838	453,034
Air cargo[5]		2,042	1,057	3,099
Other[6]		6,038	543	6,581
Total		**437,276**	**25,438**	**462,714**
Freight tonnage	Cargo	1,043,351	177,156	1,220,507
	Mail	61,108	15,028	76,136

1 0700-2259 hours (local time).

2 2300-0659 hours (local time).

3 1 November 2002 – 31 March 2003.

4 1 April 2003 – 31 October 2003.

5 All-cargo movements (excluding mail).

6 Mail, air ambulance, government charter, air taxi, positioning flights, other non commercial flights, training, testing, General Aviation, flying clubs, diplomatic, military, local charter, aeroclub, banner towing and club training flights.

Gatwick

The airport has two runways, only one of which can be operated at any given time, and two terminals. It is situated in mostly lightly-populated countryside (though between the towns of Crawley and Horley) about 28 miles (45 km) to the south of London and about 2 miles (3 km) north of Crawley. It currently handles around 30 million passengers a year.

	Movements			Freight tonnage	
	Day[1]	Night[2]	All	Cargo	Mail
Winter 02/03[3]	82,056	7,461	89,517	96,562	5,165
Summer 03[4]	135,004	18,792	153,796	129,218	6,210
Total	**217,060**	**26,253**	**243,313**	**225,780**	**11,375**

		Movements		
		Day	Night	All
Passenger		209,122	23,015	232,137
Air cargo[5]		1,952	1,455	3,407
Other[6]		5,986	1,783	7,769
Total		**21,7060**	**26,253**	**243,313**
Freight tonnage	Cargo	185,110	40,670	225,780
	Mail	6,849	4,526	11,375

Stansted

The airport has one runway and one terminal. It is situated 35 miles (56 km) north east of London and is surrounded by countryside and small villages to the north south and east and the town of Bishop's Stortford to the west. It currently handles around 19 million passengers a year.

	Movements			Freight tonnage	
	Day[1]	Night[2]	All	Cargo	Mail
Winter 02/03[3]	64,166	7,369	71,535	80,896	3,562
Summer 03[4]	100,014	13,937	113,951	115,200	2,686
Total	**164,180**	**21,306**	**185,486**	**196,096**	**6,248**

		Movements		
		Day	Night	All
Passenger		143,715	13,634	157,349
Air cargo[5]		7,337	5,349	12,686
Other[6]		13,128	2,323	15,451
Total		**164,180**	**21,306**	**185,486**
Freight tonnage	**Cargo**	144,333	51,763	196,096
	Mail	1,704	4,544	6,248

Air transport movements at major UK airports during the night

Airport	Number of movements in 2003	
	2300 – 0700	2330 – 0600
London Heathrow	25,125	5,969
London Gatwick	25,910	13,155
London Stansted	21,332	9,046
Birmingham	10,000	4,592[7]
Cardiff	3,143	1,522
Liverpool	11,906	9,447
Luton	11,518	6,458
Manchester	17,278	9,551
Nottingham East Midlands	17,470	14,184
Edinburgh	9,995	5,242
Glasgow	7,018	2,841

7 This figure is for 2300 – 0600 hours.

1.2 A description of the environmental objectives for the airport and the national context

See paragraphs 3.1-3.7 and 6.1-6.7 of the main consultation document.

1.3 Details of noise contours for the current and previous years

Noise contours and other relevant data are contained in Annex C.

1.4 A description of measures to reduce aircraft noise already implemented

a) Land-use planning

The Government's policies are set out in planning policy guidance (PPG) notes. Local authorities must take their content into account in preparing their development plans. PPG24[8] gives advice on how the planning system can be used to minimise the adverse effects of noise.

When assessing a proposal for residential development near a source of noise, local planning authorities should determine into which of the four noise exposure categories (NECs) the proposed site falls, taking account of both day and night-time noise. The NEC categories are as follows:

NEC	
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no quieter alternative sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

8 Planning Policy Guidance 24: Planning and Noise, published September 1994.

Recommended Noise Exposure Categories for new dwellings near existing noise sources

Noise levels[9] corresponding to the noise exposure categories for new dwellings L_{eq} dB

	Noise exposure category			
Noise source	A	B	C	D
Road traffic				
0700 – 2300	<55	55 – 63	63 – 72	>72
2300 – 0700[10]	<45	45 – 57	57 – 66	>66
Rail traffic				
0700 – 2300	<55	55 – 66	66 – 74	>74
2300 – 0700	<45	45 – 59	59 – 66	>66
Air traffic[11]				
0700 – 2300	<57	57 – 66	66 – 72	>72
2300 – 0700	<48	48 – 57	57 – 66	>66
Mixed sources[12]				
0700 – 2300	<55	55 – 63	63 – 72	>72
2300 – 0700	<45	45 – 57	57 – 66	>66

9 Noise levels: the noise level(s) (L_{eq},T) used when deciding the NEC of a site should be representative of typical conditions.

10 Night time noise levels (2300 – 0700): sites where individual noise events regularly exceed 82 dB L_{max} (S time weighting) several times in any hour should be treated as being in NEC C, regardless of the L_{eq} (except where the L_{eq}, 8hr already puts the site in NEC D).

11 Aircraft noise: daytime values accord with the contour values adopted by the Department for Transport which relate to levels measured 1.2M above open ground. For the same amount of noise energy, contour values can be up to 2 dB(A) higher than those of other sources because of ground reflection effects.

12 Mixed sources: this refers to any combination of road, rail, air and industrial noise sources. The 'mixed source' values are based on the lowest numerical values of the single source limits in the table. The 'mixed source' NECs should only be used where no individual noise source is dominant.

b) Noise insulation schemes

Heathrow and Gatwick airports are designated for the purpose of section 79 of the Civil Aviation Act 1982 which enables the Secretary of State to make a noise insulation scheme for relevant buildings near the airport. There have been several statutory schemes at these airports but none is extant. Stansted is not so designated but insulation has been provided on an equivalent basis.

Heathrow

Various statutory insulation schemes have been undertaken around Heathrow since 1966. The latest statutory scheme, the 1989 extension scheme, was available to people whose dwellings were within the specified boundaries and who had been in residence as of 1 April 1980. The noise criteria which determined the boundaries of the scheme were 50 NNI (Noise and Number Index) daytime contour and 95 PNdB night noise footprints (equivalent to 66 L_{eq} (day) and 90 SEL night footprint respectively).

An additional voluntary Noise Insulation Scheme was introduced by BAA Heathrow in May 1995. This is open to residential properties with a particularly high level of noise and the boundary for this scheme is defined by the 69 L_{eq} (18 hour) noise contour with a 3dB enhancement for landing noise in the early morning. This is a voluntary scheme, devised and managed by the airport.

Gatwick

There is currently no voluntary or statutory noise insulation scheme. The latest statutory scheme, the 1989 extension scheme, was available to people whose properties were within the specified boundaries and who had been in residence as of 1 April 1980. The noise criteria were the same as in the Heathrow scheme. Consultation on a new scheme is expected to commence shortly.

Stansted

The airport operator ran a voluntary insulation scheme in 1991 – 1993. The arrangements were reviewed and proposals for further schemes published for consultation by the airport operator in 2003. This was in response to a commitment in the 1991 scheme to review the programme when the actual noise climate associated with Stansted operating at 8 million passengers per annum (mppa) was known and for a further scheme related to 15mppa. The proposals in the consultation document were confirmed in December 2003. The boundary calculation for noise insulation in the 15mppa programme is defined by the 66 L_{eq} (16 hour) daytime and 57 L_{eq} (eight hour) night-time contours and the 90dBA SEL footprint for an average worst QC/2 aircraft. Ground noise is also taken into account.

Noise insulation commitments from the air transport White Paper

Airport operators are expected to implement in 2007, proposals for noise insulation to those properties which suffer a medium to high level of noise (more than 63dBA) and a large increase (3dBA) in noise in 2006, compared with 2002. This applies to the 16 hour daytime noise contour.

c) Operational procedures and operating restrictions

Full details are set out in statutory notices and published in the UK AIP (Aeronautical Information Package)[13] and elsewhere as appropriate. The following extracts contain provisions which apply at night.

i) General (Heathrow, Gatwick and Stansted)

After take-off the aircraft shall be operated in such a way that it is at a height of not less than 1000ft aal (above aerodrome level) at 6.5km from the start of roll as measured along the departure track of that aircraft.

To minimise disturbance in areas adjacent to the aerodrome, commanders of aircraft are requested to avoid the use of reverse thrust after landing, consistent with the safe operation of the aircraft, between 2330 and 0600 (local time).

ii) Gatwick and Stansted

Between the hours of 2330 (local) and 0600 (local), inbound aircraft, whether or not making use of the ILS (Instrument Landing System) localiser and irrespective of weight or type of approach, shall not join the centre-line below 3000ft closer than 10nm (nautical miles) from touchdown.

iii) Heathrow

Between 0600 and 2330 hours (local time) where the aircraft is approaching runway 27L or 27R (0700 and 2300 hours when approaching runway 09L or 09R) and is using the ILS it shall not descend on the glidepath below an altitude of 2500 ft before being established on the localiser, nor thereafter fly below the glidepath.

Between 2330 and 0600 hours (local time) where the aircraft is approaching runway 27L or 27R (0700 and 2300 hours when approaching runway 09L or 09R) and is using the ILS it shall not descend below an altitude of 3000ft before being established on the localiser, nor thereafter fly below the glidepath.

iv) Stansted

Aircraft using Stansted airport shall avoid flying over Bishop's Stortford and shall avoid flying over Sawbridgeworth and Stansted Mountfitchet at an altitude of less than 2500ft and shall avoid flying over St Elizabeth's Home at an altitude of less than 4000ft.

13 Sections AD2-EGLL-1-16 to 19, AD2-EGKK-1-13 to 16, AD2-EGSS-1-11 to 13.

v) Gatwick

After taking off the aircraft shall avoid flying over the congested areas of Horley and Crawley.[14]

Before landing at the aerodrome the aircraft shall maintain as high an altitude as practicable and shall not fly over the congested areas of Crawley, East Grinstead, Horley and Horsham at an altitude of less than 3000ft nor over the congested area of Lingfield at an altitude of less than 2000ft.

Continuous descent approach

A voluntary code of practice is in place which was compiled by a group representing airlines, the National Air Traffic Services, Civil Aviation Authority, airports and the Department for Transport, Local Government and the Regions (DTLR) (now DfT), and is primarily concerned with Heathrow, Gatwick and Stansted airports.

The code encourages air traffic controllers and pilots to seek to facilitate a continuous descent approach in the descent from 6000ft. This is a leading technique for reducing arrivals noise. The following is an extract from the UK AIP instructing pilots to use CDA wherever possible. The full text can be found in the AIP and in the arrivals code of practice on the CAA website: www.caa.co.uk

"Where the aircraft is approaching the aerodrome to land (runway 23 only at Stansted) it shall commensurate with its ATC clearance minimise noise disturbance by the use of continuous descent and low power, low drag operating procedures (referred to in Detailed Procedures for descent clearance in AD 2-EGSS-1-13 of the UK AIP). Where the use of the procedures is not practicable, the aircraft shall maintain as high an altitude as possible."

Heathrow, Gatwick and Stansted airports have developed a common working definition for monitoring CDAs as follows:

'For monitoring purposes, a descent will be deemed to have been continuous provided that no segment of level flight longer than 2.5nm occurs below 6000ft QNH and 'level flight' is interpreted as any segment of flight having a height change of not more than 50ft over a track distance of 2nm or more, as recorded in the airport Noise and Track-keeping system.'

The CDA compliance levels are regularly reported back to the airports' noise and track keeping working groups and consultative committees.

Runway Alternation, Cranford Agreement and Westerly Preference (at Heathrow)

For safety and aeronautical technical reasons aircraft normally take-off and land into the wind. In the UK the prevailing winds are westerly, so at Heathrow aircraft land from the east and depart to the west ('westerly operations') about 70-80% of the time, during a typical year.

14 Does not apply to aircraft using other airports.

A system of ***Runway Alternation*** was introduced in 1972-73 for aircraft landing during westerly operations (i.e. when arriving aircraft make their final approach over London) to provide predictable periods of relief from the noise of landing aircraft for communities under the final approach tracks to the east of the airport.

The pattern of alternation has been modified several times since the 1970s and in 1999 was extended to the night period. The present pattern provides for one runway to be used by landing aircraft from 0600 hours until 1500 hours and the other runway to be used from 1500 hours until midnight, after which landing aircraft use the first runway again until 0600 hours. However, on Sunday each week the runway used before midnight continues to be used for landings until 0600 hours. This means early morning arrivals before 0600 hours use a different runway on successive weeks and that the runways used by landing aircraft before and after 1500 hours also alternate on a weekly basis. Aircraft taking off during westerly operations can use either runway, but most use the runway that is not in use for arrivals.

When the runway alternation scheme was extended to the night period in 1999 it was also introduced – at night only – for easterly operations; i.e. when arriving aircraft make their final approach over Windsor in an easterly direction. Runway alternation does not operate in the daytime during easterly operations due to the Cranford Agreement.

The ***Cranford Agreement*** is an undertaking dating from the 1950s to avoid use of the northern runway for take-offs in an easterly direction over Cranford. Originally it applied during off-peak periods only but has come to be applied more generally. As a result, departures during easterly operations normally use the southern runway so most landings use the northern runway. However, some easterly arrivals land on the southern runway between departures.

The pattern of runway alternation may be suspended by Air Traffic Control if there are serious arrival holding delays or due to local weather conditions. It is often necessary for both runways to be used simultaneously for arrivals between 0600 hours and 0700 hours. Runway alternation may also be suspended to allow essential maintenance of the runways, lighting and the instrument landing systems, although most maintenance carried out at night is synchronised with the alternation pattern.

A ***Westerly Preference*** is operated at Heathrow. This means that during periods of light easterly winds, aircraft will often continue to land in a westerly direction making their final approach over London. The westerly preference was introduced in the 1960s to reduce numbers of aircraft taking off in an easterly direction over London. In 2000 following consultation, the westerly preference was replaced at night by a weekly rotation between westerly and easterly operations. However, the rotation is not operated in all weather conditions and the airport maintains the westerly preference when there are delayed departures.

At Gatwick and Stansted the runways are operated normally, according to wind direction.

d) Night limits/curfew

Current night restrictions regime

The current night restrictions regime was introduced in 1999[15] following extensive consultation. The restrictions are set out in a statutory notice, published each season in the supplement to the UK AIP.

Night Period and Night Quota Period

The 'night period' is 2300 – 0700 hours (local time) during which period the noisiest types of aircraft classified QC/8 and QC/16 may not be scheduled to land or take-off. From 2330 to 0600, the 'night quota period', aircraft movements are restricted by movements limits with noise quotas as a supplementary measure. These are set for each season.

The Quota Count System

Aircraft are assigned quota counts (QC) as follows:

Certified noise level (EPNdB)	Quota count
More than 101.9	QC/16
99 – 101.9	QC/8
96 – 98.9	QC/4
93 – 95.9	QC/2
90 – 92.9	QC/1
Less than 90	QC/0.5

and are classified separately for take-off and landing. Schedules showing the QC classification of individual aircraft are published as part of the statutory notice (see also section 7.1 – 7.3 of the main consultation document).

Exempt aircraft

Jet aircraft with a maximum certificated weight not exceeding 11,600 kg and propeller aircraft are exempt from the movements limits and noise quotas if their noise certification data are less than 87 EPNdB.

15 House of Commons *Official Report* 10 June 1999 cols 378-380.

Movements limits

The movements limits for the three airports, from 31 October 1999 to the end of the 2005 summer season are:

Season	Heathrow	Gatwick	Stansted
Winter	2,550	5,250	5,000
Summer	3,250	11,200	7,000

Noise quotas

The winter season noise quotas are:

Season	Heathrow	Gatwick	Stansted
1999 – 2000	4,140	6,820	3,110
2000 – 2001	4,140	6,820	3,220
2001 – 2002	4,140	6,680	3,330
2002 – 2003	4,140	6,660	3,440
2003 – 2004	4,140	6,640	3,550
2003 – 2004	4,140	6,640	3,550
2004 – 2005	4,140	6,640	3,550

The summer season noise quotas are:

Season	Heathrow	Gatwick	Stansted
2000	5,610	9,550	4,350
2001	5,610	9,550	4,500
2002	5,610	9,060	4,650
2003	5,610	9,030	4,800
2004	5,610	9,000	4,950
2005	5,610	9,000	4,950

Seasons

The summer season is the period of British Summer Time in any one year as fixed by or under the Summer Time Act 1972 as amended by S.I. 2002/262; the winter season is the period between the end of British Summer Time in one year and the start of British Summer Time in the next. The change to British Summer Time occurs at 0100 Greenwich Mean Time (Universal Co-ordinated Time).

End of season flexibility

The normal flexibility margin is 5%; i.e. up to 5% of the current season's movements limit may be carried over if sufficient amount of the limit is unused, and up to 5% of the next season's movements limit may be anticipated in the event of an overrun. Where there are calendar reasons (i.e. when the increased number of flights associated with Easter falls within the winter season or when the summer season lasts for longer than the normal 30 weeks), a higher rate of up to 10% carry-over and anticipation is allowed. Any excess overrun is penalised in the following season at double the amount of the excess. The same arrangements apply to the noise quotas.

Permitted operations (including delayed departures, early and late arrivals)

Departures:	
2300 – 0700 (night period):	Aircraft in groups QC/8 and QC/16 may not be scheduled to take off during this period. Delayed departures by such aircraft are permitted between 2300 and 2330, subject to monitoring (see below).
2330 – 0600 (night quota period):	Only aircraft in groups QC/0.5, QC/1, QC/2 and QC/4 and exempt aircraft may take-off during this period. All movements during this period (including delayed departures) of aircraft in groups QC/0.5 or above, count against the movements limit and the noise quota. Delayed departures by aircraft in groups QC/8 and QC/16 are not permitted to take-off other than in the most exceptional circumstances.
Arrivals:	
2300 – 0700 (night period):	Aircraft in groups QC/8 and QC/16 may not be scheduled to land during this period. Any such aircraft which arrives early or late during this period will be permitted to land subject to monitoring (see below).
2330 – 0600 (night quota period):	Only aircraft in groups QC/0.5, QC/1, QC/2 and QC/4 and exempt aircraft may be scheduled to land in this period. All movements of aircraft in groups QC/0.5, QC/1, QC/2 and QC/4 scheduled to land during this period count against the movements limit and the noise quota. Late arrival of aircraft in groups QC/0.5 or above scheduled to land before 2330, count against the movements limit and the noise quota. Early arrival of aircraft in groups: QC/8 and QC/16 which arrive during the night quota period will count against the movements limit and the noise quota.
Early arrival of aircraft in groups:	QC/0.5, QC/1, QC/2 and QC/4 which are scheduled to arrive between 0600 and 0630 but arrive before 0600 are counted against the noise quota according to their QC classification, but are not counted against the movements limit. QC/0.5, QC/1, QC/2 and QC/4 which are scheduled to arrive after 0630 but arrive before 0600 are permitted to land and are not counted against the noise quota or the movements limit, subject to monitoring (see below).

Dispensations

The Secretary of State has the power to specify circumstances in which movements may be disregarded from the night restrictions by the airport managers and the power to authorise that specific flights should be disregarded. The airport companies may disregard night movements in the following exceptional circumstances:

- delays to aircraft which are likely to lead to serious congestion at the aerodrome or serious hardship or suffering to passengers or animals
- delays to aircraft resulting from widespread and prolonged disruption of air traffic.

Monitoring

The three airports provide to their respective Airport Consultative Committees and to the Department regular reports (in a format advised by The Aircraft Noise Monitoring Advisory Committee (ANMAC)) on usage of the movements limits and the noise quotas, details of any dispensations or exemptions granted, and reports on any movements by QC/8 and QC/16 aircraft during the night period. In addition, under section 78(4) of the 1982 Civil Aviation Act 1982 all dispensations granted by the airports have to be reported to the Department in writing within a maximum of one week from when the dispensed flight took place.

e) Noise preferential routeing

Aircraft departing from Heathrow, Gatwick and Stansted airports follow noise preferential routes.

Aircraft departing Heathrow, Gatwick and Stansted are required to follow specific paths called noise preferential routes (NPRs) up to an altitude of 4000ft (3000ft on some routes at Gatwick and Stansted due to airspace restrictions), unless directed otherwise by air traffic control (ATC). NPRs were designed to avoid overflight of built-up areas where possible. They lead from the take-off runway to the main UK air traffic routes, and form the first part of the Standard Instrument Departure routes (SIDs). Associated with each NPR is a swathe extending approximately 1½km each side of the nominal NPR centre line, within which aircraft are considered to be flying on track. This takes account of various factors that affect track-keeping including tolerances in navigational equipment, type and weight of aircraft, and weather conditions – particularly winds that may cause drifting when aircraft are turning. Aircraft reaching 4,000ft (3000ft on some routes at Stansted and Gatwick) at any point along an NPR may be turned off the route by ATC onto more direct headings to their destinations – a practice known as ‘vectoring’. ATC may also vector aircraft from NPRs below 4000ft for safety reasons, including in certain weather conditions, for example to avoid storms.

Changes in the NPR structure are rare and stability is regarded as important, so that people may know where aircraft noise will be experienced. The frequency with which any particular NPR is used will vary, and is an operational decision for ATC, taking account of the final destination of individual flights, together with other considerations such as overall air traffic and weather conditions, both locally and along intended routes.

f) Noise limits

During the night quota period (2330-0600) the departure noise limit is 87dB L_{max}. During the remainder of the night period (2300-2330 and 0600-0700) the noise limit is 89dB. The limits apply at fixed noise monitors (see g) below). These night time limits are consistent with the night restrictions regime. (There is also a daytime noise limit of 94dBA.)

Airlines whose aircraft breach the noise limits are fined by BAA (£500 or £1000, depending on the seriousness of the breach), with the money donated to local community projects.

There are no arrivals noise limits. A report which considered the feasibility of setting noise limits for arriving aircraft, *'Noise from Arriving Aircraft: Final Report of the ANMAC Technical Working Group'*, was published in 1999. In light of the findings, the then Aviation Minister, decided against imposing operational noise limits for arriving aircraft. A code of practice has been developed (described above) for night time (and day time) arrivals.

g) Noise monitoring

Most large airports have noise and track-keeping (NTK) systems, which take radar data from air traffic control radars and combine it with flight information such as callsign, tail number, type and destination. At Heathrow, Gatwick and Stansted airports the noise and track-keeping (NTK) system captures data from both fixed and mobile noise monitors around the airports, to be matched to operational data. This information ensures that the noise model database is kept up to date which in turn is used as an input to the annual noise contours for each of the three airports.

Fixed noise monitors at the three airports are located at approximately 6.5km from start-of-roll (SOR). This corresponds to the flyover measurement point in the ICAO Annex 16 noise certification procedure. There are 5 fixed monitors around Gatwick Airport, 10 around Heathrow and 8 around Stansted. The location of the monitors takes account of the noise preferential routes.

The location and distance of the fixed noise monitors were decided in 2000[16] after consultation. Relating the noise limits to a reference distance 6.5km from start-of-roll encourages aircraft operators to gain height as quickly as possible and then reduce engine power and noise at the earliest opportunity. This point was also chosen as few residential areas lay closer to major airports than that and this would result in a noise benefit for residents who live further out from the airport.

In addition, aircraft are required, after take-off, to be operated in such a way that it will not cause more than 89dBA L_{max} by night (from 2300-0700 hours local time) and that it will not cause more than 87dBA L_{max} during the night quota period (2330-0600 hours local time) as measured at any noise terminal at any of the sites referred to in the AIP[17].

16 House of Commons *Official Report* 18 December 2000 cols 11W-12W.

17 Sections AD2-EGLL-1-16, AD2-EGKK-1-13, AD2-EGSS-1-11.

h) Noise charges

Conditions of use and airport charges for Heathrow, Gatwick and Stansted are published every year by BAA. The charge on landing is assessed and paid on the basis of the Maximum Total Weight Authorised as recorded by the airport companies on 1 April each year and, at Heathrow airport, on the Aircraft's Ascertained NO_x Emission.

Summary of charges

- The base charges on landing apply to jet aircraft over 16 metric tonnes which meet the noise certification standards of ICAO Annex 16 Chapter 3. Non-jet aircraft and all aircraft not exceeding 16 metric tonnes automatically qualify for the base charges.

- The chapter 3 base charge on landing is increased to three times for aircraft failing to meet chapter 3 noise certification standards.

- A Chapter 3 minus charge applies to those jet and non-jet aircraft in excess of 16 metric tonnes which, on both arrival and departure, have a quota count of 0.5 or 1, or are exempt.

- Aircraft deemed to be marginally compliant Chapter 3 aircraft (noise performance is 5 or more EPNdB below Chapter 3 certification limits) are subject to a weight charge on landing of 150% of the Chapter 3 base charges.

- Landing charges at Heathrow, Gatwick and Stansted are increased during daytime peak periods. At Heathrow, the peak charge also applies during the following periods: 2300-0459 UTC (GMT), 1 April to 31 October and 0000-0559 UTC (GMT), 1 November to 31 March. Between 0000-0329 UTC (GMT), 1 April to 31 October and 0100-0429 UTC (GMT), 1 November to 31 March the charge is peak x 1.5.

ANNEX C

Base case assessments and forecasts without new measures

The noise contours in this annex have been produced by the Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority (CAA) using the UK aircraft noise contour model (ANCON 2).

A description of the method by which the contours are computed and the sources of input data, which include actual monitored data, are contained in *The CAA Aircraft Noise Contour Model: ANCON Version 1:* DORA Report 9120 and *The UK Civil Aircraft Noise Contours Model ANCON – Improvements in Version 2:* R&D Report 9842.

The population data included in the table uses data from the population database owned by ERCD at postcode level. This is based on the 2001 census (updated by CACI in 2002).

1. L_{den} and L_{night} (8 hours) contours

Annex vi of Directive 2002/49/EC describes how information about the number of people and the area affected by aircraft noise should be displayed. The estimated number of people living in dwellings (rounded to the nearest hundred as required by Directive 2002/49/EC) exposed to the following bands of values of L_{den} in dB: 55-59, 60-64, 65-69, 70-74 and >75, and the following bands of values of L_{night} in dB: 50-54, 55-59, 60-64, 65-69, >70, should be provided. In the case of graphical representation, strategic maps must show at least the 60, 65, 70 and 75 dB contours.

For the purposes of this consultation we have displayed, on aerial maps, contours for the following values: 55, 60, 65, 70 and 75 (L_{den}) and 50, 55, 60, 65 and 70 (L_{night} 8 hour). The corresponding areas, population and household data are also provided for each band of values.

The L_{den} and L_{night} contours have been calculated using average actual recorded data for the calendar year 2003. This is the most recent year for which a full set of data is available to produce contours from. L_{den} and L_{night} contours have not been published previously apart from those for Heathrow for 2001 produced in ERCD Report 0306[1], commissioned by DEFRA as one of a series of "scoping" mapping projects, prior to transposition of Directive 2002/49/EC.

These contours should be considered along with paragraphs 4.2-4.12 of the main consultation document.

1 ERCD Report 0306 available on the DEFRA website at www.defra.gov.uk/environment/noise/aviation-mapping

L_{den} London Heathrow 2003 (figure 1)

Contour band (dBA)	Area (sq km)	Population	Households
55 – 59.9	160.8	531,200	244,000
60 – 64.9	54.8	161,500	69,600
65 – 69.9	25.3	52,100	21,000
70 – 74.9	10.6	10,800	4,000
>75	5.8	1,700	600

L_{den} London Gatwick 2003 (figure 2)

Contour band (dBA)	Area (sq km)	Population	Households
55 – 59.9	46.6	7,500	3,000
60 – 64.9	21.3	1,700	700
65 – 69.9	9.3	500	200
70 – 74.9	3.4	100	100
>75	1.7	<100	<100

L_{den} London Stansted 2003 (figure 3)

Contour band (dBA)	Area (sq km)	Population	Households
55 – 59.9	41.4	6,900	2,700
60 – 64.9	17.4	1,300	500
65 – 69.9	7.8	600	200
70 – 74.9	2.9	100	<100
>75	1.5	<100	<100

L_{night} (8 hour) London Heathrow 2003 (figure 4)

Contour band (dBA)	Area (sq km)	Population	Households
50 – 54.9	54.1	180,400	80,400
55 – 59.9	25.1	49,400	19,800
60 – 64.9	8.6	16,600	6,400
65 – 69.9	2.8	2,500	800
>70	1.7	<100	<100

L_{night} (8 hour) London Gatwick 2003 (figure 5)

Contour band (dBA)	Area (sq km)	Population	Households
50 – 54.9	26.9	3,400	1,300
55 – 59.9	11.2	700	300
60 – 64.9	4.3	200	100
65 – 69.9	1.5	<100	<100
>70	0.7	<100	<100

L_{night} (8 hour) London Stansted 2003 (figure 6)

Contour band (dBA)	Area (sq km)	Population	Households
50 – 54.9	21.4	2,500	1,000
55 – 59.9	9.3	900	400
60 – 64.9	3.6	100	<100
65 – 69.9	1.1	<100	<100
>70	0.6	<100	<100

2. L_{night} (6.5 hour)

Also included in the base case assessment are L_{night} contours for the 6.5 hour night quota period to demonstrate how the current night restrictions regime affects the night time contour. These contours are displayed at 3dB intervals from 48dB (reflecting the NEC A/B boundary described in PPG24[2]). These contours have been calculated using data recorded between 31 October 2002 and 30 October 2003 (a full summer and winter season as described in the current night restrictions regime). The areas, population and household data are also provided for each contour level, on a cumulative basis, in accordance with normal practice.

L_{night} (6.5 hour) London Heathrow 2002-2003 (figure 7)

Contour (dBA)	Area (sq km)	Population	Households
48	53.9	123,000	50,900
51	27.9	55,800	21,800
54	14.8	28,000	10,700
57	7.8	10,200	3,600
60	4.0	3,600	1,200
63	2.2	1,400	400

L_{night} (6.5 hour) London Gatwick 2002-2003 (figure 9)

Contour (dBA)	Area (sq km)	Population	Households
48	41.3	3,800	1,600
51	23.7	1,200	500
54	13.4	500	200
57	7.3	300	100
60	3.9	100	<100
63	2.0	<100	<100

L_{night} (6.5 hour) London Stansted 2002-2003 (figure 11)

Contour (dBA)	Area (sq km)	Population	Households
48	30.4	3,400	1,400
51	16.8	1,000	400
54	9.3	400	200
57	4.9	<100	<100
60	2.5	<100	<100
63	1.3	<100	<100

2 A description of the NEC boundaries in PPG24 (which relate there to an 8 hour night) can be found in Annex B of this consultation document.

3. 90dBA SEL Footprints

The following tables display population and household data based on illustrative single event 90dBA SEL footprints for a generic aircraft type that lies towards the top of the QC/4 band. They are included in here to indicate the coverage of a single noise event.

For departures, results are presented separately for four engined and two engined types due to their varying climb performance. Additionally, departure footprint areas vary slightly for many reasons, but principally due to the variation in route geometry across the different departure routes. For arrivals, no such distinction is necessary since performance is constrained by the 3 degree glideslope and the extended runway centre-line within the boundary of the footprint.

London Heathrow

DEPARTURES		QC/4 (4-engines)			QC/4 (2-engines)		
Rwy	Route	Gross Area (sq km)	Population (000's)	Households (000's)	Gross Area (sq km)	Population (000's)	Households (000's)
09R	BPK	13.1	31.0	11.7	14.7	30.5	11.6
09R	BUZ	13.1	31.1	11.7	14.7	30.2	11.5
09R	CPT	12.1	18.7	7.8	13.7	17.1	7.1
09R	DVR	13.1	31.2	13.1	14.7	25.1	10.4
09R	MID	12.6	21.5	9.0	14.4	21.4	9.0
09R	SAM	13.2	29.7	12.4	14.9	25.9	10.7
27L	BPK	13.3	6.2	2.6	14.9	6.0	2.6
27L	CPT	13.2	5.5	2.3	14.9	5.6	2.3
27L	DVR	12.0	2.8	1.1	13.9	4.5	1.9
27L	MID	12.9	4.1	1.7	14.7	5.7	2.4
27L	SAM	13.1	5.6	2.3	14.9	5.7	2.4
27L	WOB	13.4	6.5	2.8	15.0	6.7	2.9
27R	BPK	13.0	8.3	3.7	14.7	8.9	4.0
27R	CPT	13.2	4.2	1.9	14.9	6.4	2.9
27R	DVR	11.9	4.7	2.2	14.0	6.1	2.8
27R	MID	13.1	4.2	1.9	14.8	6.4	2.9
27R	SAM	13.2	4.3	2.0	14.9	6.4	2.9
27R	WOB	13.0	8.3	3.8	15.0	8.9	4.0

ARRIVALS			
Rwy	Gross Area (sq km)	Population (000's)	Households (000's)
09L	13.5	21.8	9.6
09R	13.5	4.6	1.9
27L	13.5	55.5	24.0
27R	13.5	53.3	21.3

London Gatwick

DEPARTURES		QC/4 (4-engines)			QC/4 (2-engines)		
Rwy	Route	Gross Area (sq km)	Population (000's)	Households (000's)	Gross Area (sq km)	Population (000's)	Households (000's)
08R	CLN/BIG/ DVR	13.0	1.2	0.5	14.8	1.1	0.5
08R	KEN	12.9	1.2	0.5	14.8	1.2	0.5
08R	LAM	13.0	1.2	0.5	14.9	1.1	0.5
08R	SFD	12.6	1.3	0.5	14.6	1.1	0.5
26L	HAR/BOG	13.0	0.2	<0.1	14.8	0.3	0.1
26L	KEN/SAM	13.2	0.2	<0.1	14.9	0.3	0.1
26L	LAM/BOG/ CLN/DVR	12.4	0.2	<0.1	14.4	0.3	0.1
26L	WIZ/TIG	11.9	0.2	<0.1	13.8	0.3	0.1

ARRIVALS			
Rwy	Gross Area (sq km)	Population (000's)	Households (000's)
08R	13.5	0.2	<0.1
26L	13.5	2.4	1.0

London Stansted

DEPARTURES		QC/4 (4-engines)			QC/4 (2-engines)		
Rwy	Route	Gross Area (sq km)	Population (000's)	Households (000's)	Gross Area (sq km)	Population (000's)	Households (000's)
05	BUZ/BKY/ CPT	12.4	0.5	0.2	14.4	0.7	0.3
05	CLN	13.1	0.7	0.3	14.7	0.7	0.3
05	DVR/LAM/ LYD	12.9	0.6	0.2	14.6	0.6	0.2
23	BUZ/BKY/ CPT	12.9	1.1	0.4	14.7	1.2	0.5
23	CLN	12.3	0.8	0.3	14.4	0.9	0.4
LYD	12.9	1.2	0.5	14.6	1.1	0.4	

ARRIVALS			
Rwy	Gross Area (sq km)	Population (000's)	Households (000's)
05	13.5	1.4	0.6
23	13.5	2.0	0.9

Forecasts without new measures

Description of airport developments

Heathrow

At Heathrow, for many years now the demand for runway capacity has exceeded the available supply for virtually all hours of the day – and there are very stringent controls on the number of flights permitted during the night quota period. In November 2001 it was announced that a fifth terminal would be built at Heathrow. This is to allow for an increase in passengers using the airport, mainly through an increase in the average size of aircraft using the airport and will have the capacity to accommodate approximately 30 million passengers. Construction has started and the terminal is planned to be in use in 2008.

Gatwick

With no further major development of the airport, a small increase in capacity could be achieved by an increase in the average size of aircraft using the airport and more intensive use in off-peak hours of terminal and other facilities, facilitated by additional construction of piers, stands and other airport assets in accordance with the airport's Sustainable Development Agreement.

Stansted

Traffic at Stansted has grown rapidly in recent years. In 2003 it handled nearly 19 million passengers compared with just under 7 million passengers in 1998. The airport has planning approval to cater for up to 25 mppa, subject to an annual aircraft movement limit of 241,000. The airport operator is bound[3] not to seek any relaxation of the night flying restrictions currently in force for the night period or the night quota period. At current rates of growth, Stansted's daytime runway capacity could be fully used within a few years. The airport operator is planning to seek planning approval for 35mppa. Development to provide that increase in terminal capacity would be limited to the current airport site.

The *Future of Air Transport* White Paper supports development of a new runway at Stansted. If planning permission is granted for a new runway it would not be operational until after the end of the summer season 2011 (see paragraph 5.3 of the main consultation paper).

Forecast without new measures

Night flying restrictions have been in place at Heathrow since 1962, Gatwick since 1971 and Stansted since 1978. All three airports have shown growth in daytime passenger movements but continued restrictions on movements during the night quota period (or night as variously defined in previous restrictions) has constrained growth during the night.

The current night restrictions regime started in October 1999. The movements limits and noise quota available have been virtually fully used at Heathrow each season but usage has fluctuated at Gatwick and Stansted. An analysis of the actual number of movements and the amount of noise quota used each season is shown overleaf.

3 Contained in agreement under s106 of the Town and Country Planning Act 1990.

Heathrow

Heathrow	**Movements limit**	Actual movements used	% of movements limit used	Movements[4] available from previous period	Flexibility used	**Noise quota**	Noise quota used	% of Noise quota used	Quota[4] available from previous period	Flexibility used
Winter 99/00	**2,550**	2,529	99.2	112	0	**4,140**	3,972	95.9	700	0
Summer 2000	**3,250**	3,028	93.2	21[5]	0	**5,610**	4,967.5	88.6	1682	0
Winter 00/01	**2,550**	2,615	100	162	65	**4,140**	4,118	99.6	280.5	0
Summer 2001	**3,250**	2,939	90.4	0	0	**5,610**	4,694	83.7	22	0
Winter 01/02	**2,550**	2,684	100	162	134	**4,140**	4,257	100	280.5	117
Summer 2002	**3,250**	2,937	90.4	0	0	**5,610**	5,051.5	90.1	0	0
Winter 02/03	**2,550**	2,620	102.8	162	70	**4,140**	4,316	104.3	280	176
Summer 2003	**3,250**	2,899	89.2	0	0	**5,610**	5,156.5	91.9	0	0

4 Carried over under the end of season flexibility arrangements. No use has been made of the anticipation provision in these arrangements at any airport in the seasons covered by this table.

5 Corrected from figures published in April 2003.

Gatwick

Heathrow	**Movements limit**	Actual movements used	% of movements limit used	Movements[4] available from previous period	Flexibility used	**Noise quota**	Noise quota used	% of Noise quota used	Quota[4] available from previous period	Flexibility used
Winter 99/00	**5,250**	2,854	54.4	1,120	0	**6,820**	3,189.5	46.8	644	0
Summer 2000	**11,200**	9,967	88.9	525	0	**9,550**	8,809.5	92.3	682	0
Winter 00/01	**5,250**	3,431	65.4	560[5]	0	**6,820**	3,689	54.1	477.5	0
Summer 2001	**11,200**	10,890	97.2	525	0	**9,550**	8,938	93.6	682	0
Winter 01/02	**5,250**	2,864	54.6	310	0	**6,680**	2,582	38.7	477.5	0
Summer 2002	**11,200**	9,358	83.6	262	0	**9,060**	6,905	76.2	334	0
Winter 02/03	**5,250**	2,976	56.7	560	0	**6,660**	2,358.5	35.4	453	0
Summer 2003	**11,200**	8,978	80.2	262	0	**9,030**	6,357.5	70.4	333	0

4 Carried over under the end of season flexibility arrangements. No use has been made of the anticipation provision in these arrangements at any airport in the seasons covered by this table.

5 Corrected from figures published in April 2003.

Stansted

Heathrow	**Movements limit**	Actual movements used	% of movements limit used	Movements[4] available from previous period	Flexibility used	**Noise quota**	Noise quota used	% of Noise quota used	Quota[4] available from previous period	Flexibility used
Winter 99/00	**5,000**	1,625	32.5	700	0	**3,110**	1,628	52.4	420	0
Summer 2000	**7,000**	4,659	66.6	500	0	**4,350**	4,541.5	100	311	191.5
Winter 00/01	**5,000**	2,190	43.8	350	0	**3,220**	2,182.5	67.8	0	0
Summer 2001	**7,000**	5,035	71.9	500	0	**4,500**	4,541.5	100	322	41.5
Winter 01/02	**5,000**	2,445	48.9	350	0	**3,330**	2,313	69.5	0	0
Summer 2002	**7,000**	5,297	75.7	250	0	**4,650**	4,284	92.1	166.5	0
Winter 02/03	**5,000**	2,862	57.2	350	0	**3,440**	2,462	71.6	232.5	0
Summer 2003	**7,000**	4,832	69.0	250	0	**4,800**	4,042.5	84.2	172	0

4 Carried over under the end of season flexibility arrangements. No use has been made of the anticipation provision in these arrangements at any airport in the seasons covered by this table.

With the current regime in place, there is no capacity for any significant increase in flights during the night quota period at Heathrow. At Gatwick and Stansted there is scope for some increase, particularly in winter but only up to the limit of the movements and noise quota published. Should the night restrictions regime be withdrawn there would probably be an increase in noise around all three airports. Although the demand for slots at night is unlikely to equal the demand during the day, we would expect to see a significant worsening of the night noise climate. Therefore it is essential that we maintain a night restrictions regime to protect residents around the airports.

As part of the assessments detailed in Directive 2002/30/EC we have calculated theoretical contours and number of people affected should 100% of the noise quota be used. These are shown for the 6.5 hour night period and can be compared with the actual contour for the 6.5 hour night quota period.

These contours include movements by exempt aircraft but do not include dispensations. A summary of the usage of the movements available and noise quota at each airport, together with the number of exempt movements and those given dispensations is shown at the end of this annex.

L_{night} London Heathrow 2002-2003 (6.5 hour, actual usage) (figure 7)

Contour (dBA)	Area (sq km)	Population	Households
48	53.9	123,000	50,900
51	27.9	55,800	21,800
54	14.8	28,000	10,700
57	7.8	10,200	3,600
60	4.0	3,600	1,200
63	2.2	1,400	400

L_{night} London Heathrow 2002-2003 (6.5 hour, maximum usage) (figure 8)

Contour (dBA)	Area (sq km)	Population	Households
48	55.7	129,300	53,700
51	28.6	57,000	22,400
54	15.1	28,700	11,000
57	8.0	11,100	4,000
60	4.1	3,800	1,300
63	2.2	1,600	500

L_{night} London Gatwick 2002-2003 (6.5 hour, actual usage) (figure 9)

Contour (dBA)	Area (sq km)	Population	Households
48	41.3	3,800	1,600
51	23.7	1,200	500
54	13.4	500	200
57	7.3	300	100
60	3.9	100	<100
63	2.0	<100	<100

L_{night} London Gatwick 2002-2003 (6.5 hour, maximum usage) (figure 10)

Contour (dBA)	Area (sq km)	Population	Households
48	66.1	6,500	2,600
51	38.0	3,700	1,500
54	21.4	1,100	400
57	12.0	400	200
60	6.6	200	100
63	3.4	100	<100

L_{night} London Stansted 2002-2003 (6.5 hour, actual usage) (figure 11)

Contour (dBA)	Area (sq km)	Population	Households
48	30.4	3,400	1,400
51	16.8	1,000	400
54	9.3	400	200
57	4.9	<100	<100
60	2.5	<100	<100
63	1.3	<100	<100

L_{night} London Stansted 2002-2003 (6.5 hour, maximum usage) (figure 12)

Contour (dBA)	Area (sq km)	Population	Households
48	37.7	4,100	1,700
51	20.8	1,300	500
54	11.7	700	300
57	6.3	100	100
60	3.2	<100	<100
63	1.7	<100	<100

Maximum usage of the noise quotas could lead to a minor worsening of the noise climate compared to 2003 but not beyond that already permitted and taken into account in establishing the restrictions. Year on year growth in the number of flights in the night quota period, as seen at some other European airports, has not and cannot take place at Heathrow, Gatwick and Stansted if the restrictions continue unchanged.

Movements and noise quotas: analysis of usage

		QC0.5 no.	QC0.5 value	QC1 no.	QC1 value	QC2 no.	QC2 value	QC4 no.	QC4 value	QC8 no.	QC8 value	QC16 no.	QC16 value	Total quota value	Early[1]	Mvmts against limit	Exempt types	Not cnt'd delays[2]	Not cnt'd DfT[3]	Not cnt'd emgcy[4]	Total runway mvmts	Arrivals no.	Arrivals %	Deps no.	Deps %
Gatwick	Winter 02–03	2,185	1,092.5	530	530.0	144	288.0	112	448.0	0	0.0	0	0.0	2,358.5	4	2,976	389	0	0	0	3,365	2,638	78.4	727	21.6
	Summer 03	6,863	3,431.5	1,612	1,612.0	333	666.0	162	648.0	0	0.0	0	0.0	6,357.5	8	8,978	525	0	0	0	9,503	7,352	77.4	2,151	22.6
Heathrow	Winter 02–03	410	205.0	435	435.0	1,706	3,412.0	66	264.0	0	0.0	0	0.0	4,316.0	3	2,620	96	230	5	161	3,112	2,714	87.2	398	12.8
	Summer 03	371	185.5	405	405.0	1,957	3,914.0	159	636.0	2	16.0	0	0.0	5,156.5	4	2,899	113	44	3	15	3,074	2,595	84.4	479	15.6
Stansted	Winter 02–03	1,848	924.0	486	486.0	492	984.0	17	98.0	0	0.0	0	0.0	2,462.0	15	2,862	659	0	0	0	3,521	2,402	68.2	1,119	31.8
	Summer 03	2,795	1,397.5	1,437	1,437.0	570	1,140.0	17	68.0	0	0.0	0	0.0	4,042.5	9	4,832	1,071	0	1	0	5,904	4,113	69.7	1,791	30.3

Note 1 early: Scheduled to land after 06:30, but lands before 06:00.
Note 2 not cnt'd delays: Delays likely to lead to serious congestion or serious hardship and delays resulting from widespread disruption of Air Traffic.
Note 3 not cnt'd DfT: Exemptions granted by DfT (VIP Passengers, Emergency Relief).
Note 4 not cnt'd emgcy: Emergency Take-offs and Landings.

Figure 1: Heathrow 2003 average mode L_{den} contours (55-75dBA)

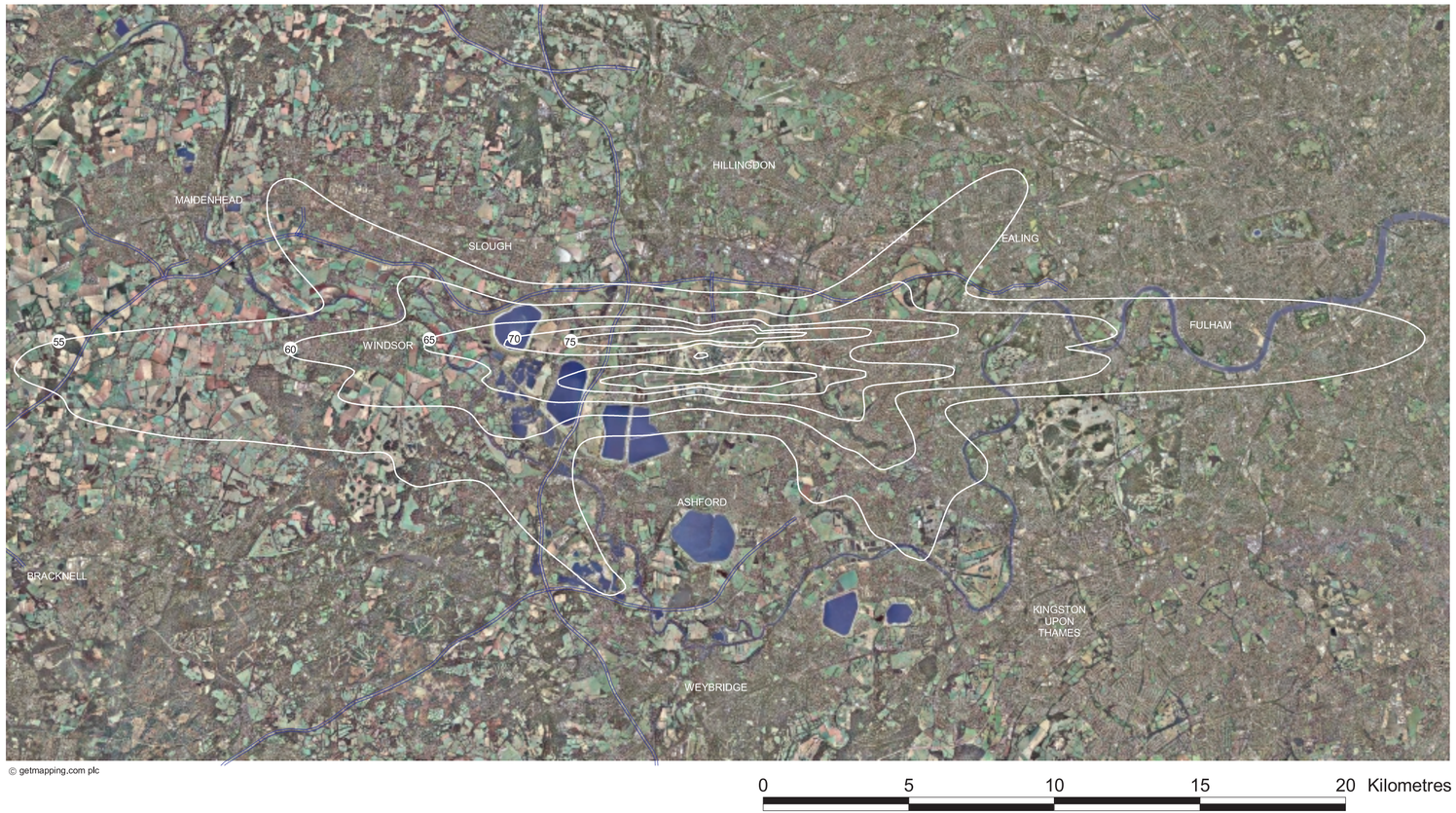


Figure 2: Gatwick 2003 average mode L_{den} contours (55-75dBA)

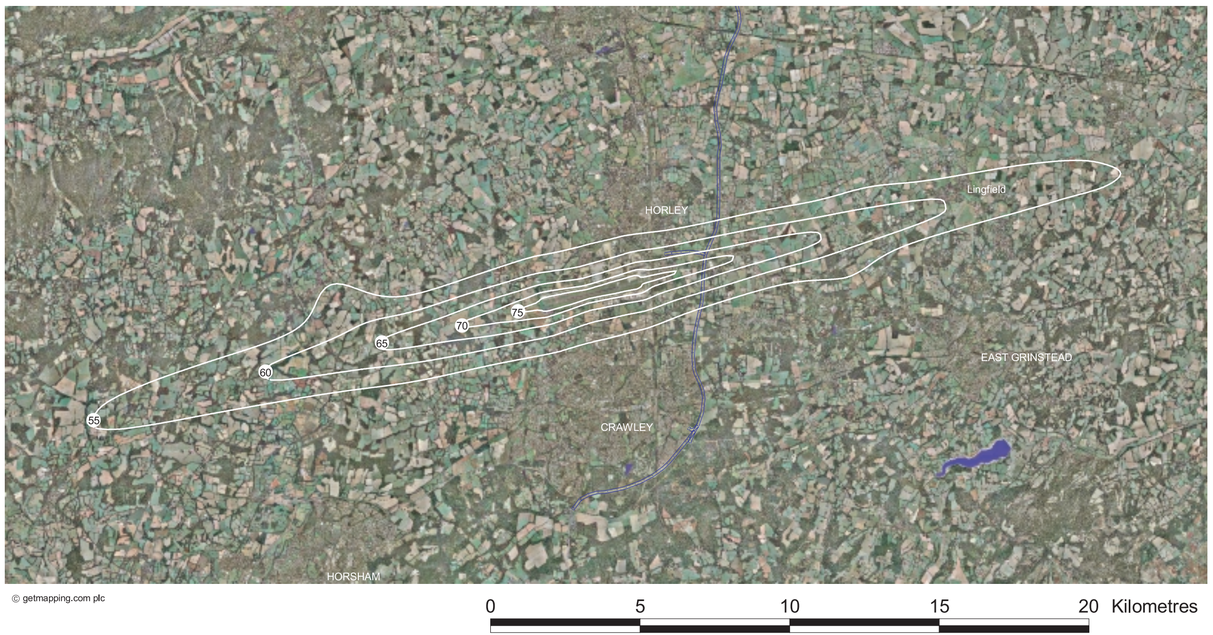


Figure 3: Stansted 2003 average mode L_{den} contours (55-75dBA)

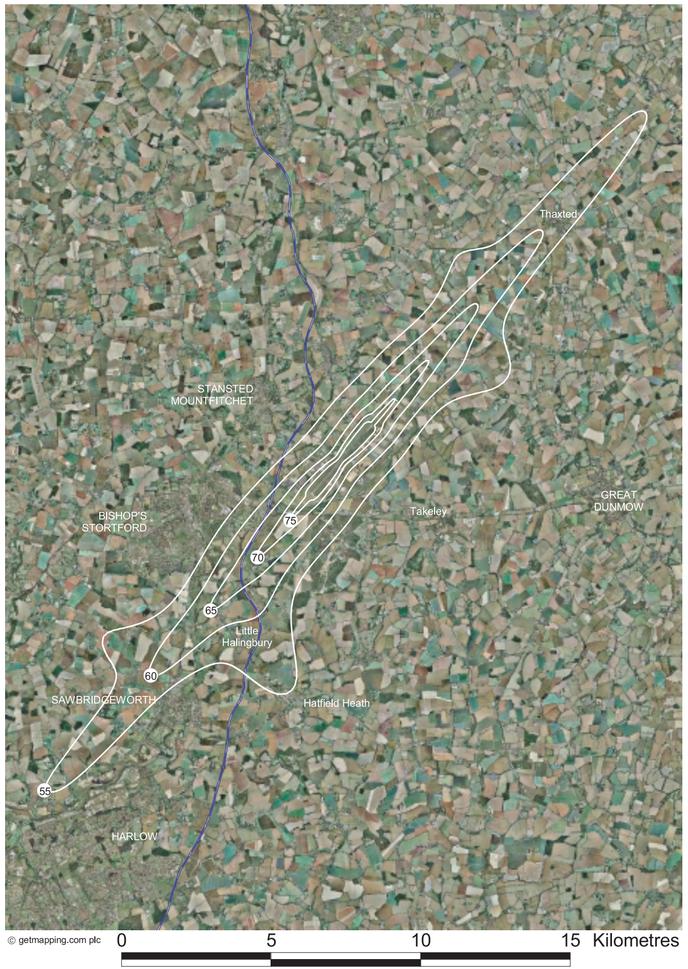


Figure 4: Heathrow 2003 average mode L_{night} (8 hour) contours (50-70dBA))

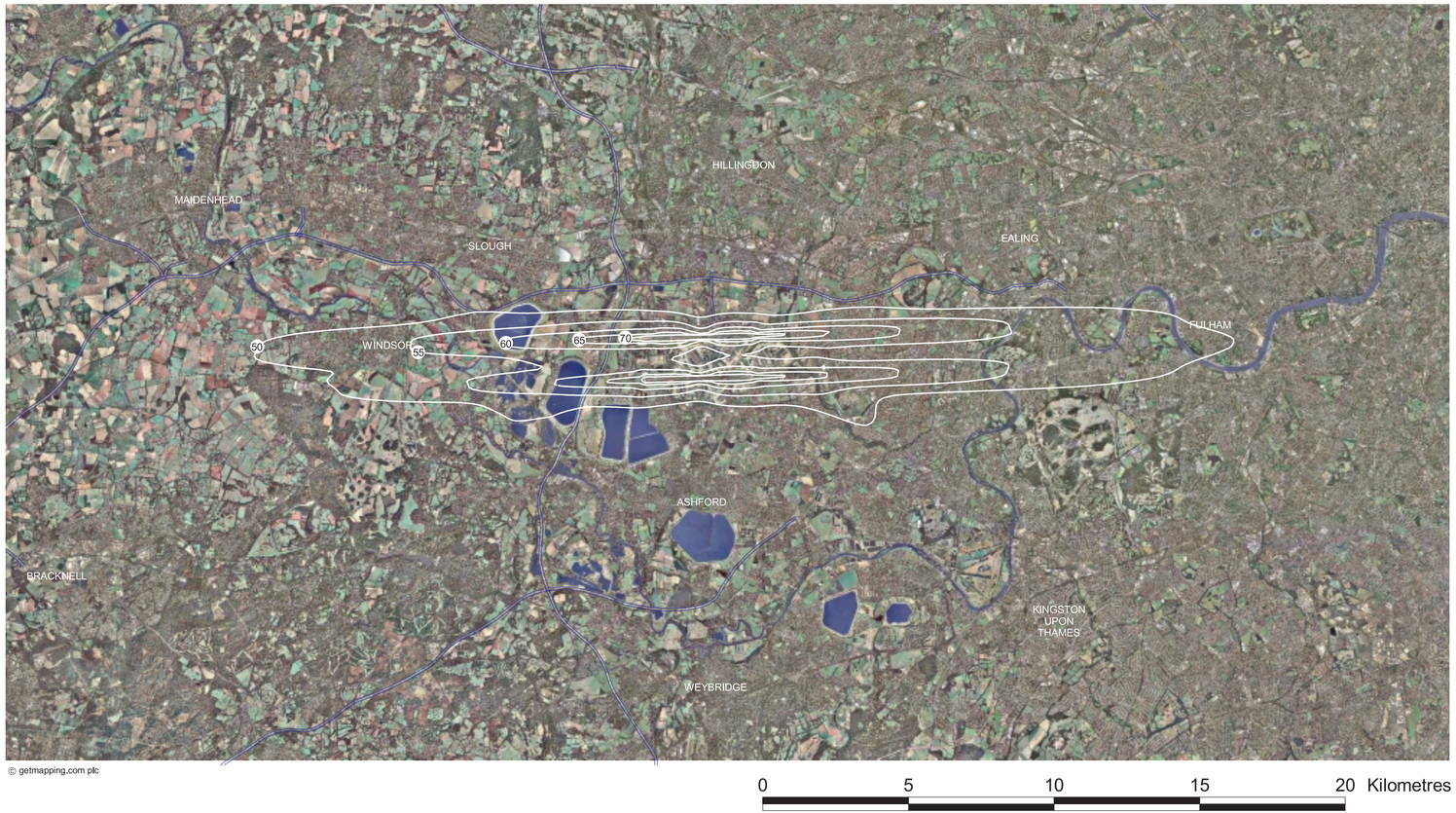


Figure 5: Gatwick 2003 average mode L_{night} (8 hour) contours (50-70dBA)

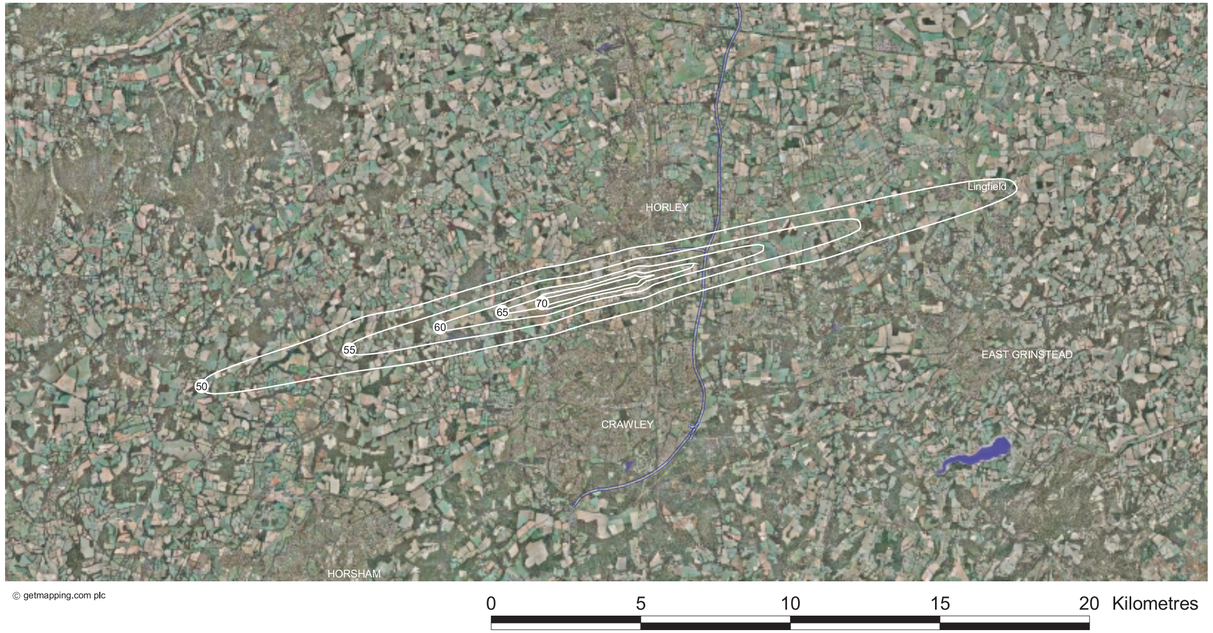


Figure 6: Stansted 2003 average mode L_{night} (8 hour) contours (50-70dBA)

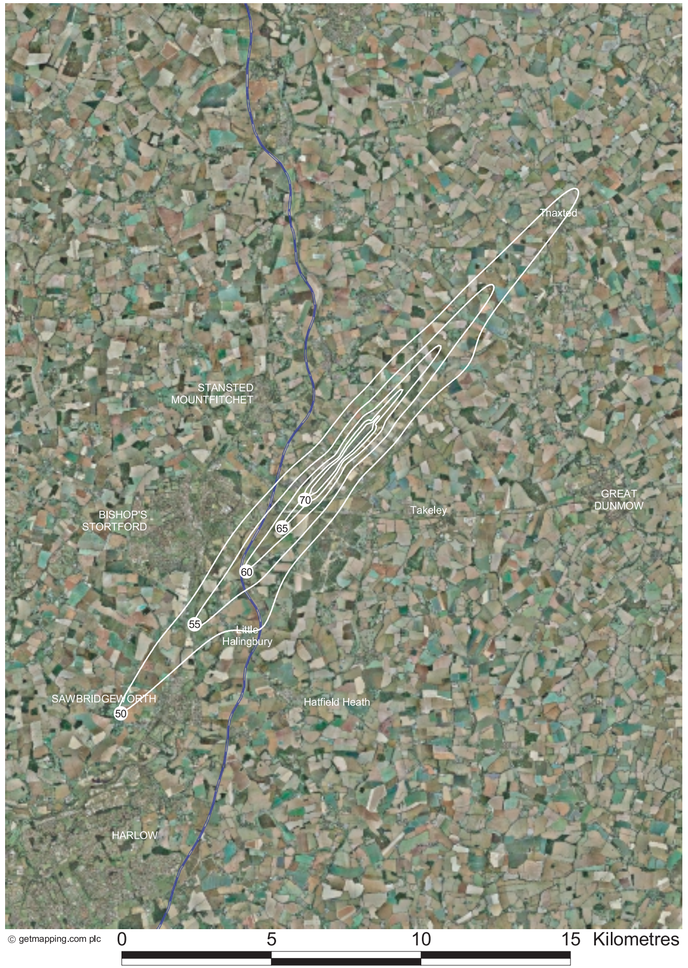
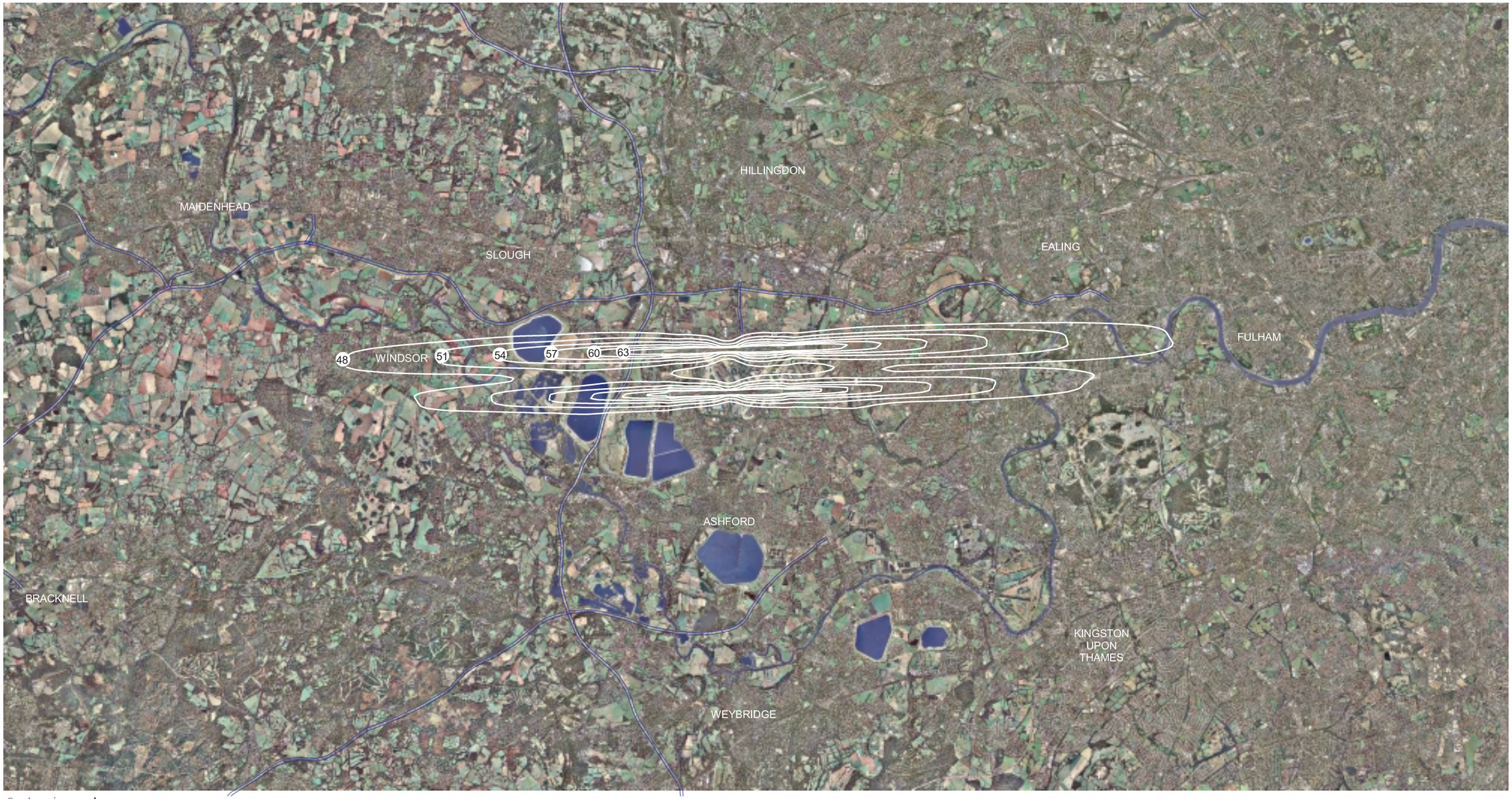
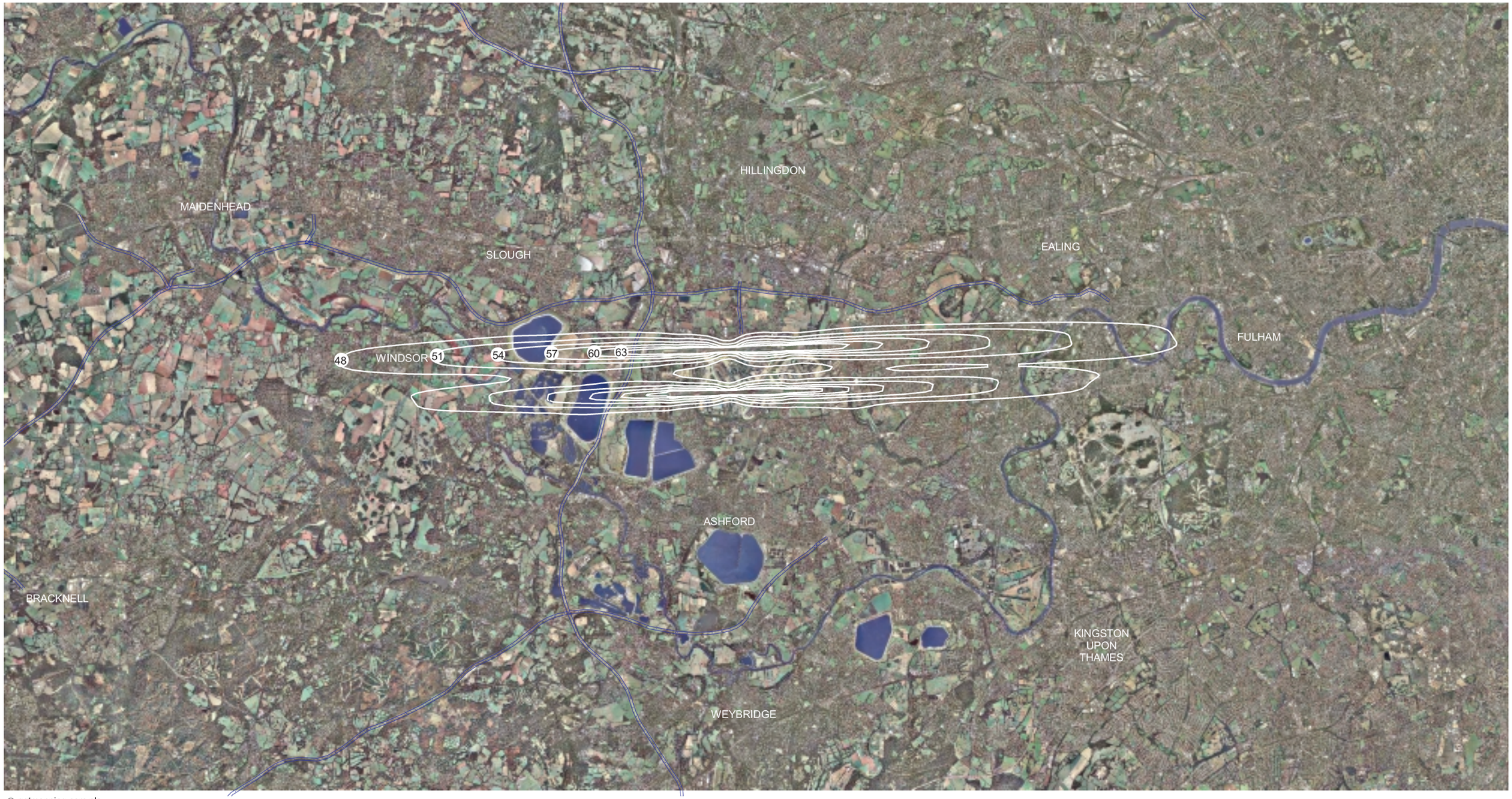


Figure 7: Heathrow October 2002 – October 2003 average mode L_{night} (6.5 hour) contours (48-63dBA)



0 5 10 15 20 Kilometres

Figure 8: Heathrow October 2002 – October 2003 average mode L_{night} (6.5 hour) contours (48-63dBA) assuming maximum quota usage



0 5 10 15 20 Kilometres

Figure 9: Gatwick October 2002 – October 2003 average mode L_{night} (6.5 hour) contours (48-63dBA)

Figure 10: Gatwick October 2002 – October 2003 average mode L_{night} (6.5 hour) contours (48-63dBA) assuming maximum quota usage

Figure 11: Stansted Oct 2002 – Oct 2003 average mode L_{night} (6.5 hour) contours (48-63dBA)

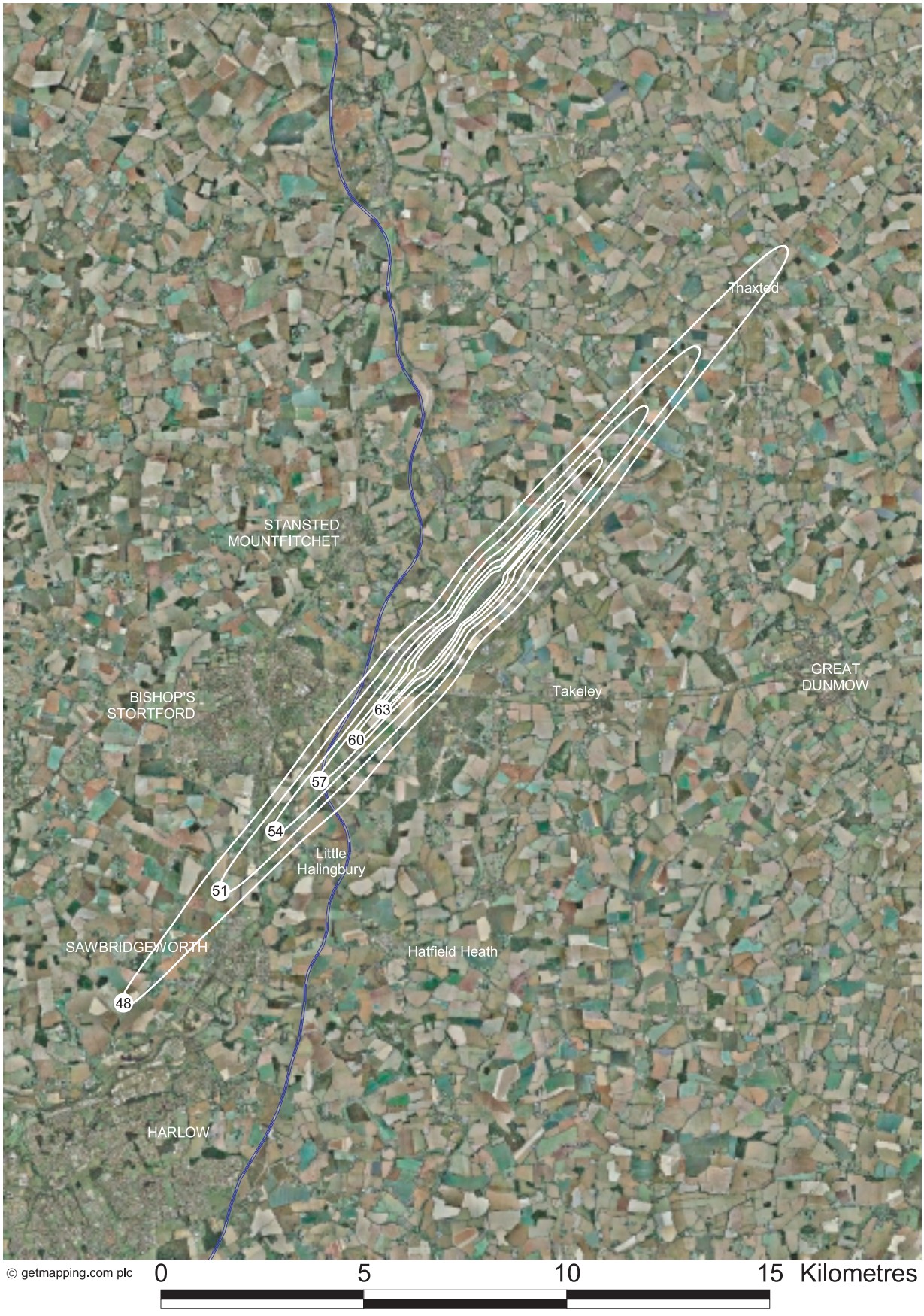
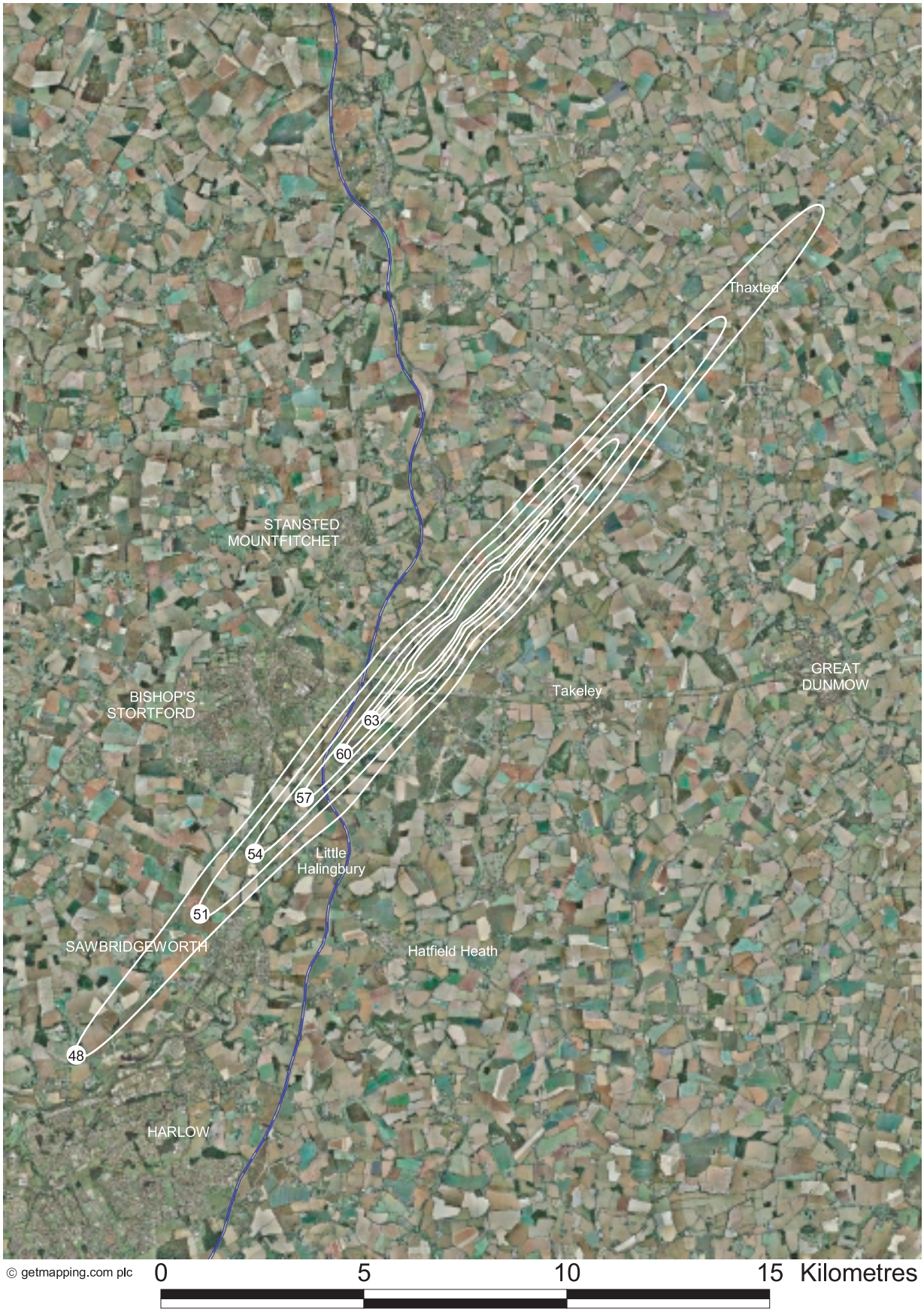


Figure 12: Stansted Oct 2002 – Oct 2003 average mode L_{night} (6.5 hour) contours (48-63dBA) assuming maximum quota usage



Annex D

Extract from Guidelines for Community Noise: Sleep Disturbance

edited by Birgitta Berglund, Thomas Lindvall, Dietrich H Schwela

Sleep disturbance

Uninterrupted sleep is known to be a prerequisite for good physiological and mental functioning of healthy persons (Hobson 1989); sleep disturbance, on the other hand, is considered to be a major environmental noise effect. It is estimated that 80-90% of the reported cases of sleep disturbance in noisy environments are for reasons other than noise originating outdoors. For example, sanitary needs; indoor noises from other occupants; worries; illness; and climate (e.g. Reyner & Horne 1995). Our understanding of the impact of noise exposure on sleep stems mainly from experimental research in controlled environments. Field studies conducted with people in their normal living situations are scarce. Most of the more recent field research on sleep disturbance has been conducted for aircraft noise (Fidell et al. 1994 1995a,b 1998; Horne et al. 1994 1995; Maschke et al. 1995 1996; Ollerhead et al. 1992; Passchier-Vermeer 1999). Other field studies have examined the effects of road traffic and railway noise (Griefahn et al. 1996 1998).

The primary sleep disturbance effects are: difficulty in falling asleep (increased sleep latency time); awakenings; and alterations of sleep stages or depth, especially a reduction in the proportion of REM-sleep (REM = rapid eye movement) (Hobson 1989). Other primary physiological effects can also be induced by noise during sleep, including increased blood pressure; increased heart rate; increased finger pulse amplitude; vasoconstriction; changes in respiration; cardiac arrhythmia; and an increase in body movements (cf. Berglund & Lindvall 1995). For each of these physiological effects, both the noise threshold and the noise-response relationships may be different. Different noises may also have different information content and this also could affect physiological threshold and noise-response relationships (Edworthy 1998).

Exposure to night-time noise also induces secondary effects, or so-called after effects. These are effects that can be measured the day following the night-time exposure, while the individual is awake. The secondary effects include reduced perceived sleep quality; increased fatigue; depressed mood or well-being; and decreased performance (Öhrström 1993a; Passchier-Vermeer 1993; Carter 1996; Pearsons et al. 1995; Pearsons 1998).

Long term effects on psychosocial well-being have also been related to noise exposure during the night (Öhrström 1991). Noise annoyance during the night-time increased the total noise annoyance expressed by people in the following 24 h. Various studies have also shown that people living in areas exposed to night-time noise have an increased use of sedatives or sleeping pills. Other frequently reported behavioural effects of night-time noise include closed bedroom windows and use of personal hearing protection. Sensitive groups include the elderly, shift workers, persons especially vulnerable to physical or mental disorders and other individuals with sleeping difficulties.

Questionnaire data indicate the importance of night-time noise on the perception of sleep quality. A recent Japanese investigation was conducted for 3 600 women (20–80 years old) living in eight roadside zones with different road traffic noise. The results showed that four measures of perceived sleep quality (difficulty in falling asleep; waking up during sleep; waking up too early; feelings of sleeplessness one or more days a week) correlated significantly with the average traffic volumes during night-time. An in-depth investigation of 19 insomnia cases and their matched controls (age,work) measured outdoor and indoor sound pressure levels during sleep (Kageyama et al. 1997). The study showed that road traffic noise in excess of 30 dB LA_{eq} for night-time induced sleep disturbance, consistent with the results of Öhrström (1993b).

Meta-analyses of field and laboratory studies have suggested that there is a relationship between the SEL for a single night-time noise event and the percentage of people awakened, or who showed sleep stage changes (e.g. Ollerhead et al. 1992; Passchier-Vermeer 1993; Finegold et al. 1994; Pearsons et al. 1995). All of these studies assumed that the number of awakenings per night for each SEL value is proportional to the number of night-time noise events. However, the results have been criticized for methodological reasons. For example, there were small groups of sleepers; too few original studies; and indoor exposure was estimated from outdoor sound pressure levels (NRC-CNRC 1994; Beersma & Altena 1995; Vallet 1998). The most important result of the meta-analyses is that there is a clear difference in the dose-response curves for laboratory and field studies, and that noise has a lower effect under real-life conditions (Pearsons et al. 1995; Pearsons 1998).

However, this result has been questioned, because the studies were not controlled for such things as the sound insulation of the buildings, and the number of bedrooms with closed windows. Also, only two indicators of sleep disturbance were considered (awakening and sleep stage changes). The meta-analyses thus neglected other important sleep disturbance effects (Öhrström 1993b; Carter et al. 1994a; Carter et al. 1994b; Carter 1996; Kuwano et al. 1998). For example, for road traffic noise, perceived sleep quality is related both to the time needed to fall asleep and the total sleep time (Öhrström & Björkman 1988). Individuals who are more sensitive to noise (as assessed by different questionnaires) report worse sleep quality both in field studies and in laboratory studies.

A further criticism of the meta-analyses is that laboratory experiments have shown that habituation to night-time noise events occurs, and that noise-induced awakening decreases with increasing number of sound exposures per night. This is in contrast to the assumption used in the meta-analyses, that the percentage of awakenings is linearly

proportional to the number of night-time noise events. Studies have also shown that the frequency of noise-induced awakenings decreases for at least the first eight consecutive nights. So far, habituation has been shown for awakenings, but not for heart rate and after effects such as perceived sleep quality, mood and performance (Öhrström and Björkman 1988).

Other studies suggest that it is the difference in sound pressure levels between a noise event and background, rather than the absolute sound pressure level of the noise event, that determines the reaction probability. The time interval between two noise events also has an important influence of the probability of obtaining a response (Griefahn 1977; cf. Berglund & Lindvall 1995). Another possible factor is the person's age, with older persons having an increased probability of awakening. However, one field study showed that noise-induced awakenings are independent of age (Reyner & Horne 1995).

For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB LA_{max} more than 10–15 times per night (Vallet & Vernet 1991), and most studies show an increase in the percentage of awakenings at SEL values of 55–60 dBA (Passchier-Vermeer 1993; Finegold et al. 1994; Pearsons et al. 1995). For intermittent events that approximate aircraft noise, with an effective duration of 10–30 s, SEL values of 55–60 dBA correspond to a LA_{max} value of 45 dB. Ten to 15 of these events during an eight-hour night-time implies an LA_{eq},8h of 20–25 dB. This is 5–10 dB below the LA_{eq},8h of 30 dB for continuous night-time noise exposure, and shows that the intermittent character of noise has to be taken into account when setting night-time limits for noise exposure. For example, this can be achieved by considering the number of noise events and the difference between the maximum sound pressure level and the background level of these events.

Special attention should also be given to the following considerations:

a. Noise sources in an environment with a low background noise level. For example, night-traffic in suburban residential areas.

b. Environments where a combination of noise and vibrations are produced. For example, railway noise, heavy duty vehicles.

c. Sources with low-frequency components. Disturbances may occur even though the sound pressure level during exposure is below 30 dBA.

If negative effects on sleep are to be avoided the equivalent sound pressure level should not exceed 30 dBA indoors for continuous noise. If the noise is not continuous, sleep disturbance correlates best with LA_{max} and effects have been observed at 45 dB or less. This is particularly true if the background level is low. Noise events exceeding 45 dBA should therefore be limited if possible. For sensitive people an even lower limit would be preferred. It should be noted that it should be possible to sleep with a bedroom window slightly open (a reduction from outside to inside of 15 dB). To prevent sleep disturbances, one should thus consider the equivalent sound pressure level and the number and level of sound events. Mitigation targeted to the first part of the night is believed to be effective for the ability to fall asleep.

ANNEX E

Objectives for 1993-99 and 1999-2005 Night Restrictions Regimes

In 1993 the objectives were to:

(a) revise and update the arrangements as appropriate;

(b) introduce common arrangements for night restrictions at the three airports;

(c) establish further restrictions at Stansted as promised in the 1985 White Paper;

(d) continue to protect local communities from excessive aircraft noise levels at night;

(e) ensure that the competitive influences affecting UK airports and airlines and the wider employment and economic implications are taken into account.

In 1998/9 the objectives were:

(a) to strike a balance between the need to protect local communities from excessive aircraft noise levels at night and to provide for air services to operate at night where they are of benefit to the local, regional and national economy;

(b) to ensure that the competitive factors affecting UK airports and airlines and the wider employment and economic implications are taken into account;

(c) to take account of the research into the relationship between aircraft noise and interference with sleep and any health effects;

(d) to encourage the use of quieter aircraft at night;

(e) to maintain common arrangements for night restrictions at the three airports;

(f) for the night quota period (11.30pm to 6.00am), to put in place at Heathrow arrangements which will bring about further improvements in the night noise climate around the airport over time;

(g) for the night quota period (11.30pm to 6.00am), to put in place at Gatwick arrangements which will bring about an improvement in the night noise climate around the airport over time;

(h) to provide for the planned development of Stansted broadly as envisaged in 1993, but to ensure that airlines are given the necessary incentive to use quieter aircraft in the night quota period; and

(i) to update the arrangements as appropriate.

ANNEX F

Extract from Report on the Review of the Quota Count System

Extension of the QC scale and review of the weight limit for jet aircraft

39. Under the present regime, only those jet aircraft with a maximum certificated weight of 11,600 kg or less may be classified exempt from the movement limits and noise quotas on the basis of their noise certification data. The weight limit is the only non-noise related element of the QC classification system. It is not consistent with the principle that the quota-count should be related to noisiness of aircraft irrespective of their form of propulsion (and with the 3dB doubling of noise energy principle) and may weaken or even counter the incentive to use quieter aircraft.

40. The weight limit was adopted in 1993 as a control on the potential number of exempt jet movements, but its application to jet aircraft and not to propeller driven aircraft can serve as a perverse incentive to use noisier turbo props when quieter jet aircraft are available. Many of the faster climbing short haul regional jets can be up to four times quieter than aircraft classified as QC/0.5 on the basis of their noise alone. In terms of incentivising the use of quieter aircraft, it is illogical to classify these small quieter jets as QC/0.5 on the basis of their weight alone when similar or noisier propeller aircraft of an equivalent size and serving in the same role, are classified as exempt. For example, under the present arrangements an AVRO RJ70 on take off is classified QC/0.5 on the basis of its weight (it would be QC/0.25 on the basis of its noise certification) and an ATR-72 turbo-prop is classified QC/0 (exempt), when both make approximately the same amount of noise and serve in the same role.

41. With the exception of small numbers of delayed departures and early arrivals virtually all movements in the night quota period (2330-0600) today now involve aircraft classified QC/2 or quieter (although this could change if quota restrictions were extended into one or both shoulder periods). While the aircraft used are increasingly concentrated towards the bottom end of the QC scale at all three airports, the following tables illustrate that there remain important differences:

Average QC score per movement:
winter 2001/02 and summer 2002

Heathrow		Gatwick		Stansted	
Summer	Winter	Summer	Winter	Summer	Winter
1.72	1.59	0.74	0.90	0.80	0.95

42. Extending the QC scale at the lower end would have little bearing on operations at Heathrow, where most QC/0.5 movements at night are classified as such according the amount of the noise they make. It would be a different matter at Gatwick and Stansted. The proportion of QC/0.5 movements at each airport is:

	Proportion of QC/0.5 movements		
	Heathrow	Gatwick	Stansted
Winter 2001/02	18%	70%	61%
Summer 2002	19%	73%	68%

43. At Gatwick and Stansted a significant proportion of QC/0.5 arrivals at night (in the region of 30%) and a small number of departures (about 1%) are classified as such on the basis of their weight instead of the amount of noise they make; most of these would be QC/0.25 on the basis of their noise data alone, while only a very small number (about 1%) would be classified as QC/0.125 (a detailed study using aircraft registrations would be necessary to establish more exact figures).

44. The aircraft types in question include:

- most of the Airbus 320 family on arrival;
- some of the new generation Boeing 737s on arrival;
- some Boeing 757s on arrival;
- the Boeing 717 and MD90 on arrival and departure;
- some other Boeing MD-80 series on arrival;
- some BAe146 and AVRO-RJ on arrival and departure;
- most of the new 'regional jets' on arrival and departure.

45. If the QC scale was extended down by one or possibly two additional bands to include less noisy jet aircraft classified according to their noise certification data alone, it should strengthen the incentives to use the quieter aircraft and provide an opportunity to dispense with the weight limit without allowing a large numbers of exempt movements to operate. The exempt category could then be redefined in the QC system on the basis of noise data alone without discriminating between jets and propeller aircraft.

46. A new QC/0.25 band would include aircraft in the following table (the list identifies significant aircraft and is not intended to be comprehensive):

JETS		PROPS	
ARRIVALS	**DEPARTURES**	**ARRIVALS**	**DEPARTURES**
some BAe 146(70-90)	some BAe146(70-90)	some ATR 72(68)*	some ATR 72(68)*
Some AVRO RJ(70-115)	some Avro RJ(70-90)	some BAe ATP(60)*	Dash 7 & 8(40-75)*
A319(125-145)	some MD80(150)	some BAe 748(50)*	
Some A320/321(150-180)	some B717(110)	Shorts 360(36)*	
some B757(200)	some bizjets*	Dash 7(40-70)*	
some B737(110-150)			
Some MD80 series(150)			
Some MD90 series(160)			
some Fokker 28(75)			
Embraer 170 RJ(70)			
some bizjets*			

Figures in brackets show typical passenger seat capacity

47. Those aircraft shown in blue* are currently exempt and those in green are jets currently classified as QC/0.5 on the basis of their weight.

48. A QC/0.25 band could be expected to raise the incentive for airlines to use the less noisy types of aircraft and the changes would be consistent with 3dB doubling of noise energy principle which is the foundation of the QC system. Introduction of a QC/0.25 band would mean that some propeller aircraft (e.g. ATR-72s) and some business jets ('bizjets') which are currently exempt from the night restrictions would also become subject to the movement limits and noise quotas for the first time.

49. A new QC/0.125 band would include aircraft in the following table (again the list is not intended to be comprehensive):

JETS		PROPS	
ARRIVALS	**DEPARTURES**	**ARRIVALS**	**DEPARTURES**
some MD80 series(150)	Canadair RJ(40-90)	SAAB SF340(34)*	SAAB SF340(34)*
B717(110)	most bizjets*	some ATR 72(68)*	Shorts 360(36)*
A318(110)		some BAe 748(50)*	some ATR 72(68)*
Embraer 135 RJ(37)			ATR 42(45)*
Embraer 145 RJ(50)			Fokker 27(45)*
Embraer 190 RJ(100)			BAe ATP(60)*
Canadair RJ(40-90)			
most bizjets*			

Figures in brackets show typical passenger seat capacity

50. Extending the scale by two bands (i.e. to include new QC/0.25 and QC/0.125 bands) would bring most small business jets and many small propeller aircraft within the scope of the QC system for the first time. It is anticipated that the *ad hoc* operators of these aircraft could face significant difficulties in securing allocations from the noise quotas and movement limits, unless allocations were ring-fenced for them. As smaller alternative aerodromes such as London City, Biggin Hill, Northolt and Farnborough are closed at night, ad hoc operators of business jets could find most of the London airport system closed to them, possibly leaving Luton as the only runway open to them at night. The implications for doing business in London could outweigh any environmental benefits as these small business jets do not cause significant additional disturbance.

51. It should be possible to avoid the unintended consequence of closing London to all ad hoc business jet movements at night by extending the QC scale by one 3dB band only. Larger business jets would still come within a QC/0.25 band, and indeed some are already classified as QC/0.5 on the basis of their noise alone.

52. There is a growing population of new short range regional jets (typically carrying between 50 and 100 passengers) such as the B717, A318, Bombardier/Canadair RJs and Embraer RJs carrying fare-paying passengers on scheduled services. These would be made exempt from restrictions with the addition of just one new band and no weight limit. Given the markets they serve (mainly short haul 'thin' city-pairs such as Birmingham-Edinburgh, Manchester-Dublin, Gatwick-Strasbourg) there is little demand for night operations, and their noise levels would not cause significant additional disturbance. If classified exempt these aircraft could be used to meet a particular niche requirement for overnight mail services to the remoter parts of the UK. However, it would be possible to classify some or all of them to the QC/0.25 band if the 11,600kg weight limit or a higher weight limit was applied. A suitable higher weight limit that would allow the smaller regional jets to be classified exempt (i.e. Bombardier-Canadair and some Embraer) but not the larger B717 or A318, would be one set at 34,000kg. This weight limit is attractive because it is used already in the EU Operating Restrictions Directive (2002/30EC) for other purposes. However, retaining a weight limit would not be consistent with the principle of relating noise quota specifically to the noisiness of aircraft.

53. The consultation on the next night restrictions regime could invite comments on the proposition of removing the weight limit for exempt jet aircraft together with introduction of a new QC/0.25 band, and possibly a new QC/0.125 band, setting out the consequential issues arising in each case, and the supplementary options of retaining a higher 34,000kg weight limit if the QC scale was ended by one band only to QC/0.25.

DfT 2003

ANNEX G

Example of landing footprints as possible night-time noise insulation criterion

1. As mentioned in paragraph 7.23, we intend at stage two to propose new night-time noise insulation criteria that take account of the actual operational noise of the noisiest aircraft that would still be likely to be operating at night. At Heathrow, for example, this would probably be the B747-400 with Rolls Royce engines. A map of the area around Heathrow with 90 SEL landing footprints for this aircraft type superimposed at each end of each runway is at Figure 1 below.

2. This has been generated based on the landing footprints of the noisiest variant of the Boeing 747-400 identified in ERCD Report 0205. The data in that report consisted of EPNL noise measurements at 2km from the landing runway threshold. However, it is established UK practice to relate the threshold of sleep disturbance to the 90dBA SEL footprint. SEL data was also collected during the EPNL validation study and has therefore been used in the generation of Figure 1. The contour plotted represents the 95th percentile of the noise measurements obtained, i.e. 95 percent of operations of this variant were found to be quieter than shown in Figure 1. The total number of households and population enclosed within the footprints is 41,100 and 98,900 respectively. These footprints, and therefore the number of households and population, are smaller than those for the QC/4 footprints given in Annex C. However, these footprints are larger than those for a QC/2 aircraft at the top of its band.

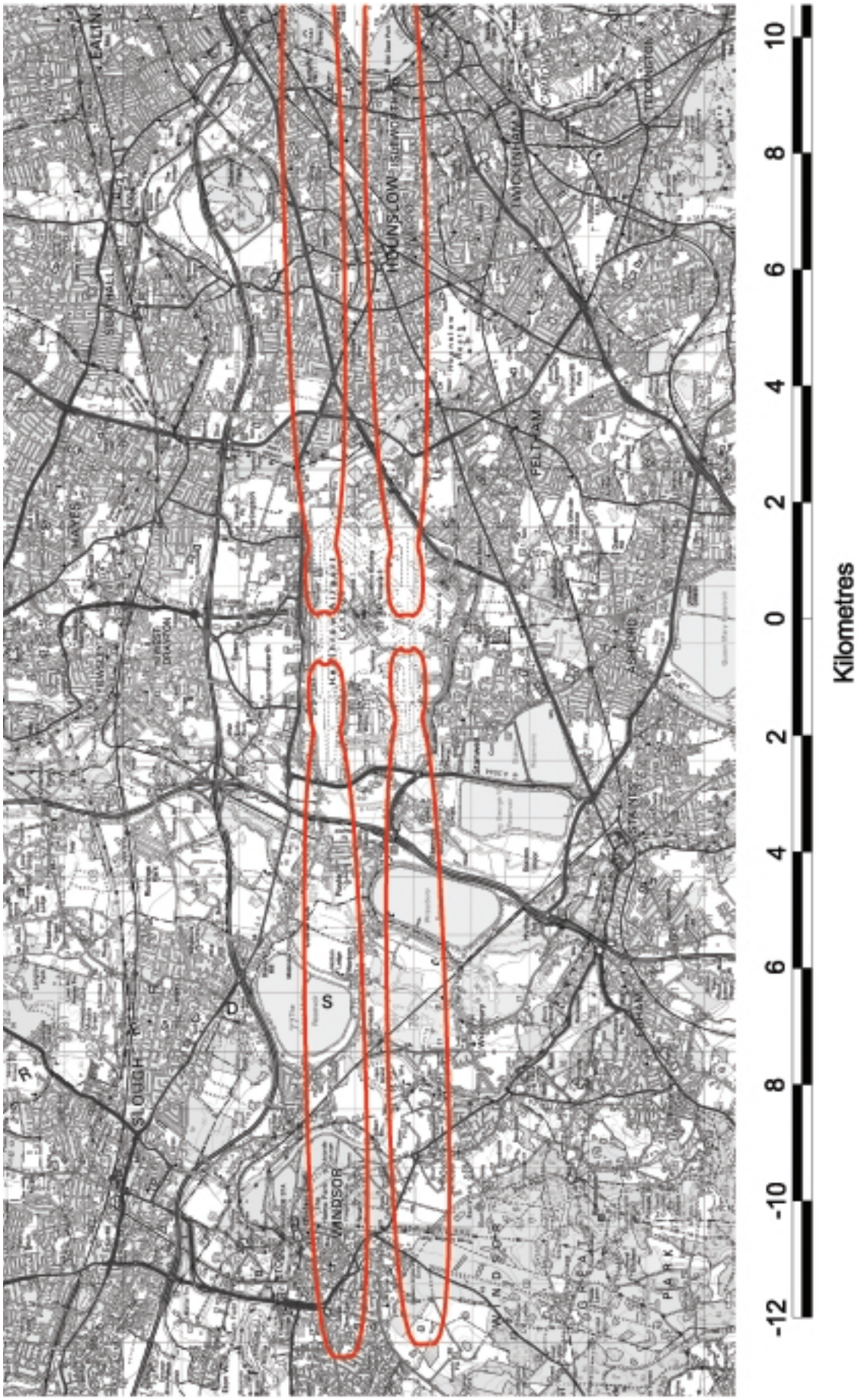


Figure 1: Possible insulation scheme boundary based on the 95th percentile of the noisiest variant of the Boeing 747-400 90dBA SEL footprint

ANNEX H

Consultation list

Consultative Committees
Gatwick Airport Consultative Committee
Heathrow Airport Consultative Committee
Stansted Airport Consultative Committee

Local authorities

Gatwick

Crawley Borough Council
East Sussex County Council
Horsham District Council
Kent County Council
Mid Sussex District Council
Mole Valley District Council
Reigate and Banstead Borough Council
Surrey County Council
Tandridge District Council
West Sussex County Council

Heathrow

Bracknell Forest Borough Council
Buckinghamshire County Council
Corporation of London
Elmbridge Borough Council
Guildford Borough Council
Greater London Authority
London Borough of Bexley
London Borough of Bromley
London Borough of Camden
London Borough of Croydon
London Borough of Ealing
London Borough of Greenwich
London Borough of Hammersmith and Fulham
London Borough of Hillingdon
London Borough of Hounslow
London Borough of Kingston-upon-Thames
London Borough of Lambeth
London Borough of Lewisham
London Borough of Merton
London Borough of Newham
London Borough of Richmond upon Thames
London Borough of Southwark
London Borough of Sutton
London Borough of Tower Hamlets
London Borough of Wandsworth
Mayor of London
Oxfordshire County Council
Reading Borough Council
Royal Borough of Kensington and Chelsea
Royal Borough of Windsor and Maidenhead
Runnymede Borough Council
Slough Borough Council
South Buckinghamshire District Council
South Oxfordshire District Council
Spelthorne Borough Council
Westminster City Council
West Berkshire District Council
Woking Borough Council
Wokingham District Council
Wycombe District Council

Stansted

Braintree District Council
East Hertfordshire District Council
Epping Forest District Council
Essex County Council
Harlow District Council
Hertfordshire County Council
Maldon District Council
Uttlesford District Council

Parish and town councils

Gatwick

Abinger Parish Council
Betchworth Parish Council
Billingshurst Parish Council
Bletchingley Parish Council
Brockham Parish Council
Buckland Parish Council
Burstow Parish Council

Capel Parish Council
Charlwood Parish Council
Colgate Parish Council
Dormansland Parish Council
Edenbridge Town Council
Felbridge Parish Council
Forest Row Parish Council
Horsted Keynes Parish Council
Limpsfield Parish Council
Lingfield Parish Council
Newdigate Parish Council
North Horsham Parish Council
Ockley Parish Council
Rudgwick Parish Council
Rusper Parish Council
Salford and Sidlow Parish Council
Tandridge Parish Council
Twineham Parish Council
Washington Parish Council
Worth Parish Council

Heathrow

Beaconsfield Town Council
Bix and Assendon Parish Council
Bray Parish Council
Burnham Parish Council
Colnbrook with Poyle Parish Council
Dachet Parish Council
Fulmer Parish Council
Harpsden Parish Council
Henley-on-Thames Town Council
Highmoor Parish Council
Iver Parish Council
Marlow Town Council
Nuffield Parish Council
Old Windsor Parish Council
Pishill with Stonor Parish Council
Rotherfield Greys Parish Council
Rotherfield Peppard Parish Council
Shinfield Parish Council
Shiplake Parish Council
South Stoke Parish Council
Stanwell Village Hall Council
Stoke Row Parish Council
Tilehurst Parish Council
Waltham St Lawrence Parish Council
White Waltham Parish Council
Wraysbury Parish Council

Stansted

Bishop's Stortford Town Council
Birchanger Parish Council
Braughing Parish Council
Broxted Parish Council
Chickney Parish Council
Elsenham Parish Council
Farnham Parish Council
Felsted Parish Council
Great Dunmow Town Council
Great Easton Parish Council
Great Hallingbury Parish Council
Hatfield Broad Oak Parish Council
Hatfield Heath Parish Council
Hempstead Parish Council
Henham Parish Council
High Wych Parish Council
Hormead Parish Council
Hunsdon Parish Council
Leaden Roding Parish Council
Little Canfield Parish Council
Little Easton Parish Council
Little Hadham Parish Council
Little Hallingbury Parish Council
Much Hadham Parish Council
Ongar Parish Council
Sawbridgeworth Town Council
Sheering Parish Council
Stansted Parish Council
Takeley Parish Council
Thaxted Parish Council
Tilty Parish Council
The Sampfords Parish Council
Thorley Parish Council
Wareside Parish Council
White Roothing Parish Council
Widford Parish Council

Environmental groups and residents associations

Gatwick

Cowden Conservation Society
Domewood Private Residents Association
East Grinstead Society
Forest and Riverside Neighbourhood Association

Gatwick Area Conservation Campaign
Haslemere District Aircraft Disturbance Action Group
Hassocks Amenity Association
Hookwood Residents Association
Hurstpierpoint Society
Lingfield Society
Marsh Green Residents Association
Meadvale Village Residents Association
Meath Green Protection Society
Mid Sussex Branch: Council for the Protection of Rural England
Sussex Branch: Council for the Protection of Rural England
Millands Valley Rural Conservation Society
NALCAAN
Warnham Society

Heathrow

Albert Square and St Stephen's Association
The Alberts Residents Association
Astell Street Residents Association
Aysgarth Road Residents Association
Barnes Community Association
Environment Group
The Blackheath Society
The Boltons Association
Brockley Society
The Brompton Association
Camberwell Society
Calton Avenue Residents Association
The Chelsea Society
Chiswick Protection Group
Colnbrook Residents Association
Cranford Cross Residents Association
St John's Resident Association
The Cromwell Road Association
Culverley Green Residents Association
The Dulwich Society
Ealing Aircraft Noise Action Group
East Dulwich Society
Egham Riverside Residents Association
Elm Park & Chelsea Park Residents Association
Fulham Flight Path Comunity
Greenwich Society
Harmondsworth & Sipson Residents Association
HACAN Clearskies
HACAN Clearskies – Ealing Branch
Heston Residents Association
The Kensington Society
The Kew Society
Kingswood Creek Residents Association
Lawn Crescent Residents Association
Longford Residents Association
Poyle Residents Association
The Marlow Society
The Marylebone Association
Normanhurst Residents Association
Oakley Green, Fifield and District Residents Association
Oakley Street Residents Association
Paddington Resident's Active Concern on Transport – PRACT
The Putney Society
The Richmond Society
Royal Hospital Ward Residents Association
Spring Grove Residents Association
St Margaret's Estate Residents Association
St Mary Cray Action Group
Stanwell Moor Residents Association
Staines Town Society
Sydenham Society
Touchen End & Paley Street Residents Association
West Windsor Residents Association
White Hermitage Residents Association

Stansted

Abbess and White Roding Conservation Society
Bishop's Stortford Civic Society
Broad Oak Aircraft Noise Group
Hare Street and Little Parndon Neighbourhood Office
Hatfield Broad Oak Branch: The Council for the Protection of Rural England
North West Essex and East Herts Preservation Association
Perry Green and Tye Green Society
The Hertfordshire Conservation Society
Uttlesford Advisory Group of the Council for the Protection of Rural England

Other local authorities and other representative organisations

ACRE (Association for Communities in Rural England)
Association of County Councils
Association of District Councils
Association of East Herts, Town and Parish Councils
Association of London Authorities
Association of London Borough Planning Officers
Association of London Local Authorities
Association of Metropolitan Authorities
Association of Noise Consultants
Association of Port Health Authorities
Aviation Environment Federation
Babergh District Council
Bedfordshire County Council
Chartered Institute of Environmental Health
The Council for the Protection of Rural England
Countryside Agency
East of England Local Government Conference
Federation of Airport Noise Groups
Friends of the Earth
Horsham District Association of Parish Councils
Joint Airport Committee of Local Authorities
Local Authorities Aircraft Noise Council
London Boroughs Association
London Planning Advisory Committee
Luton Borough Council
National Society for Clean Air and Environmental Protection
The National Trust
Noise Abatement Society
Strategic Aviation Special Interest Group of Local Government
Surrey County Association of Parish & Town Councils
Suffolk County Council
Sustainable Development Commission
National Trust
The Noise Abatement Society
Transport 2000
UK Environmental Law Association
Uttlesford Association of Local Councils
Walsall Borough Council

Airports, airline organisations, manufacturers and other business

Organisations

Aerospace Industries Associations of America Inc
Airbus UK Ltd
Aircraft Owners and Pilots Association
Airline Operators Cargo Committee (Heathrow)
Airline Operators Cargo Committee (Stansted)
Air Transport Association of America
Air Transport Auxiliary Association
Air Transport Operators Association
Air Transport Users' Council
Airport Co-ordination Ltd
Airworld Aviation Ltd
APCO UK
Association of Asia Pacific Airlines
Association of British Travel Agents: ABTA
Association of European Airlines
Association of Independent Tour Operators
Association of International Courier and Express Services
AVRO International Aerospace
BAA plc
BAR-UK
Birmingham International Airport
The Boeing Company
British Aerospace – Aerodynamics Department (Acoustics)
British Air Transport Association
British Airline Pilots Association
British Helicopter Advisory Board
British Tourist Authority
Business Aircraft Users Association Ltd
Cardiff International Airport

Civil Aviation Authority
Confederation of British Industry
Edinburgh International Airport
Federal Aviation Administration
Freight Transport Association
Gatwick Scheduling Committee
General Aviation Manufactures and Traders Association
General Aviation Awareness Council
GKN Westland Helicopters Ltd
Glasgow International Airport Ltd
Guild of Air Pilots and Air Navigators
Guild of Air Pilots and Air Navigators of London
Guild of Business Travel Agents
Heathrow Scheduling Committee
Helicopter Club of Great Britain
International Air Carriers Association
International Air Transport Association
ICAO
Leyline Helicopters Ltd
Liverpool John Lennon Airport
London Chamber of Commerce and Industry
Luton Airport
Manchester Airport Consultative Committee
Manchester International Airport
National Air Traffic Services Ltd
Nottingham East Midlands Airport
Pratt & Whitney
Railtrack Property
Raytheon Corporate Jet Inc
Rolls-Royce International Ltd
Royal Aero Club of the UK
Royal Aeronautical Society
Society of British Aerospace Companies Ltd
Stansted Scheduling Committee
Thames Valley Chambers of Commerce & Industry
The Chartered Institute of Tranport
The Environment ACEU
Royal Mail Group Plc
Tour Operators' Study Group
Trades Union Congress
Universal Aviation (UK) Limited

Airlines

Adria Airways
Aer Arann
Aer Lingus
Aeroflot Russian Airlines
Aerolineas Argentina
African International Airways
Air Algerie
Air Astana
Air Atlanta Europe
Air Berlin
Air Canada
Air China
Air Contractors
Air Europa
Air Foyle Heavylift
Air France
Air Freight Express
Air Gabon
Air India
Air Jamaica
Air Lithuania
Air Malta
Air Maurituis
Air Namibia
Air New Zealand
Air Seychelles
Air Transat
Air Wales
Air Zimbabwe
Airworld Aviation Ltd
Alitalia
All Nippon Airways
American Airlines
Asiana Airlines
Astar Air Cargo
Astraeus
Atlas Air
Aurigny Air Services
Austrian Airlines
Azerbaijan Airlines
BAC Express Airlines
Belavia Belorussian Airlines
Biman Bangladesh Airlines
BMI British Midland
Brit Air
Britannia Airways

British Airways
British Mediterranean Airways
Bulgaria Air
Buzz Stansted
BWIA West Indies Airways
Cathay Pacific
Channel Express (Air Services)
China Eastern Airlines
Cirrus Airlines
CityJet
Continental Airlines, Inc.
Croatia Airlines
CSA Czech Airlines
Cyprus Airways
Daallo Airlines
Dairo Air Services
Das Air Cargo
Delta Airlines
DHL Air UK
Eastern Airways
East African Safari Air
Easy Jet Switzerland
EasyJet
EgyptAir
El Al
Emerald Airways
Emirates
Estonian Air
Ethihad Airways
Ethiopian Airlines
Eurofly
European Air Express
European Air Transport
European Aviation Air Charter
Eva Air
Excel Airways
FedEx Express
FinnAir
First Choice Airways
Flybe
FlyJet
Ford Air
Futura International Airways
Garuda Indonesia
GB Airways
GermanWings
Ghana Airways
Global Supply Systems
Gold Air International Ltd
Gulf Air
Hamburg International
Helios Airways
Iberia
Icelandair
Iran Air
Japan Airlines
Kenya Airways
Kibris Turk Hava Yollari
KLM
Korean Air
Kuwait Airways
Lauda Air
Libyan Arab Airlines
Lithuanian Airlines
London Executive Aviation
LOT Polish Airlines
Lufthansa
Luxair
Maersk Air
Malaysia Airlines
MALEV
Martinair
Middle East Airlines
MK Airlines
Monarch Airlines
Mytravel Airways
Nigeria Airlines.com
Nippon Cargo Airlines
NorthWest Airlines
Norwegian
Nouveliar Tunisie
Olympic Airlines
Onur Air
Pakistan International Airlines
Philippine Airlines
Phuket Airlines
Polet
Qantas Airways
Qatar Airways
Royal Air Maroc
Royal Brunei Airlines
Royal Jordanian Airlines
Ryanair
Saudi Arabian Airlines Ltd

Scandinavian Airlines
Scot Airways
Sierra National Airlines
Singapore Airlines ltd
Sky Europe Airlines
Sky Europe Hungary
SN Brussels Airlines
South African Airways
Spanair
Sri Lankan Airlines
Sudan Airways
Swiss International Airlines
Syrian Air
TAAG Angola Airlines
TAP Air Portugal
Thai Airways
Thomas Cook Airlines
THY Turkish Airlines
Titan Airways
TNT
Trans Mediterranean Airways
Transaero
Transavia Airlines
Tunis Air
Turkmenistan Airlines
Ukraine International Airlines
United Airlines
United Parcel Service
US Airways
Uzbekistan Airways
Varig
Virgin Atlantic Airways
Virgin Express
VLM Airlines
WDL Airlines
WestJet Airlines
Yemenia
Zambian Airways
Zoom Airlines

Others

Individuals
Libraries and Information Centres
Solicitors and Technical Consultants