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## INTRODUCTION

This report sets out Hillingdon Council's detailed response to the Government's consultation document "Adding Capacity at Heathrow Airport" published on 22 November 2007. In addition to this report, the Council's opposition to the principle of a third runway at Heathrow, as detailed in the White Paper titled "The Future of Air Transport" December 2003 is set out in its original response to the SERAS consultation (The Future Development of Air Transport in the United Kingdom: South East – a National Consultation (Second Edition February 2003)) which is available on the Council's website. It is considered that the Council's original submission and arguments against the third runway are equally applicable and therefore remain relevant. In almost every respect the impacts identified at the time of the White Paper have worsened when compared to the current consultation proposals.

Answers to the specific consultation questions are provided at Appendix 1.

## THE COUNCIL'S POLICY ON HEATHROW EXPANSION

1. The Council has always benefited from the cross-party support from all Councillors and the three local Members of Parliament. To re-affirm its position on Heathrow expansion, a motion was submitted to a meeting of the full Council on 17th January 2008. The motion, clearly setting out the council's policy, was adopted unanimously as follows:

*'The London Borough of Hillingdon reaffirms its absolute opposition to any further expansion at Heathrow Airport.*

*Council deeply regrets that the Department for Transport's proposals for a third runway, sixth terminal and changes in runway and flight patterns will obliterate the village and community of Sipson and multiply the suffering for residents around Heathrow, particularly in Harmondsworth and Harlington, who are already subject to excessive amounts of disruption, noise and air pollution.*

*Furthermore, Council notes that new areas of the borough including the Uxbridge, Ruislip and Northwood areas will be affected bringing additional noise, traffic congestion and carbon emissions along with increased demand for development.*

*Council is also concerned at the fundamental flaws in the Department for Transport's consultation process, which is both meaningless and clearly biased in favour of the airport's growth.*

*Council therefore resolves to confront this unprecedented environmental and social threat working together with the 2M Group of neighbouring councils, the local action group NoTRAG, (No Third Runway Action Group) Members of Parliament and Councillors of all parties.'*

## AIR QUALITY

### Definition of the Air Quality Constraint

2. Large areas of Hillingdon are subjected to levels of annual mean nitrogen dioxide (NO<sub>2</sub>) above the National Air Quality Standard of 40ug/m<sup>3</sup>. The highest concentrations of this pollutant are found around the major roads in the borough and around Heathrow Airport. In 2010 this annual mean limit for nitrogen dioxide becomes an EU air quality limit which Member States are under obligation to meet. Current predictions, (reference figure 10.11 of CERC Air Quality Studies for Heathrow Report), suggest that this will not be the case by 2010, especially in the area around Heathrow Airport.

### Government Position on Air Quality around Heathrow

#### South East Region Air Services (SERAS) Consultation

3. In 2003, the SERAS consultation stated that the predicted air quality exceedances for the annual mean nitrogen dioxide levels, with a 3<sup>rd</sup> runway in place, at Heathrow were deemed extensive. A statement was also made (ref paragraph 16.30) that:

*“another runway at Heathrow could not be considered unless the Government could be confident that levels of all relevant pollutants could be consistently contained within EU limits”.*

#### Air Transport White Paper (ATWP)

4. The Future of Air Transport White Paper included support for an expanded Heathrow with the proviso that the Government had to be confident that key environmental tests could be met. One of these tests was the ability to achieve, and maintain, the EU Air Quality limit as set for 2010 for annual mean nitrogen dioxide at all relevant locations. At this stage, in 2003, this was deemed challenging.

*“...we cannot be confident that air quality limits at Heathrow with the addition of a third runway will be met, even with aggressive mitigation measures”.*

Paragraph 11.61

*“Our current assessment is that a new runway could not come into operation before some time in the period 2015-2020”.* Paragraph 11.66

#### Air Quality Technical Panels

5. Under the Project for the Sustainable Development of Heathrow (PSDH), the DfT set up three panels of air quality-related experts to advise on how to strengthen and update the air quality model used to predict future air quality in the Heathrow region. The report of these three Airport Air Quality Technical Panels was published in July 2006. This gave an expert view on the most appropriate air quality model to use and the emission sources that should be included in order to give an accurate air quality forecast. The remit of the Panels was to provide guidance on the tools to assess air quality at Heathrow and the recommended air quality model chosen was the CERC model, ADMS-Airport. It was not the role of the Panels to undertake future year modelling of Heathrow or to generate the input data (emissions inventories) needed to do so. The quantification of uncertainty and its expected effect on final dispersed concentrations was also outside the remit of the Panels.

## **Adding Capacity at Heathrow Consultation Document**

6. The consultation document reiterates the key air quality condition that the Government need to meet before they are able to support further growth:

*“...Confidence that European air quality limits, applicable from 2010, would be met”.* Paragraph 1.11

7. Mention is also made of a new ambient air quality directive, which is still under negotiation in Europe, where there may be the potential to introduce flexibilities (derogations) in meeting EU limit values, ie for annual mean NO<sub>2</sub> this could potentially be an extra five years for compliance to 2015.

### Meeting the Environmental Tests

8. The consultation document acknowledges exceedences of the EU limit in a number of areas around Heathrow Airport in the base case year of 2002. The air pollution plots in the accompanying technical document, CERC Air Quality Study, indicate there will be exceedences in 2010. The most significant contributors to the pollution levels are identified as road vehicles and aircraft, with aircraft emissions dominating in areas close to the runways, particularly to the north-east of the airport, and road vehicle emissions close to the motorways and main roads. This view equates with that of modelling carried out by Hillingdon as part of the review and assessment process under the Local Air Quality Management regime.

### Third Runway Conclusion

9. The conclusion is that the air quality modelling has predicted there will be no exceedences of the EU limit value, at relevant locations, by 2020 and in 2030, with an operational 3<sup>rd</sup> runway and Heathrow Airport handling 702,000 annual movements. It also concludes that this would not require any specific mitigation measures with regards to minimising emissions from surface access.

*“The ability to meet air quality limits in future years largely results from substantial improvements in road vehicle emissions due to further developments in European emission standards. It also reflects trends in cleaner aircraft engines and moves towards a higher proportion of twin-engined, as opposed to four-engined aircraft, with lower emissions.”* Paragraph 3.80

### Mixed Mode Conclusion

10. The Government view at paragraph 3.121 is that full mixed mode to a capacity of 540,000 annual movements by 2015 would be compatible with compliance with EU air quality limits for PM<sub>10</sub> and NO<sub>2</sub> in the vicinity of the airport, without the need for further mitigation measures. It acknowledges some limited NO<sub>2</sub> exceedences north of the M4 and states that these are not mainly due to the airport but would need to be addressed by a variety of traffic management or other measures.

### Cranford Agreement and Adopting Easterly Preference

11. The consultation states that loss of the Cranford Agreement would affect the distribution of NO<sub>2</sub> concentrations around the western end of the airport, by up to 13% at some receptors, and by up to 5% at the eastern end of the airport. Adopting an easterly preference, with the Cranford Agreement, in place would increase NO<sub>2</sub>

concentrations to the west by up to 5% near to Longford but reduce concentrations by a similar percentage to the north east of the airport.

12. The Government view is that there are no strong grounds for disturbing the current practice of westerly preference. Although decreases in air quality impacts would be felt in the north east of the airport the issue is not critical to air quality compliance.

#### Monitoring and Control Mechanisms

13. The Government states at paragraph 3.186 that in taking forward any proposals to a planning application it would be for BAA to demonstrate that there is an appropriate mechanism in place to monitor the situation carefully and regulate activity on the airport in the event of approaching the environmental limits.

#### **Can Government Be Confident of Ensuring Compliance with the EU Limit**

14. Hillingdon would draw Government's attention to the key message in both the ATWP and in the Adding Capacity document that the Government must be confident that the air quality constraint, ie the EU limit in 2010, can be met and maintained under increasing capacity scenarios. The following information looks into the evidence presented to assess whether this aspect of being "confident" is realistic or feasible.

15. Given the tight time constraints on this consultation, Hillingdon and Hounslow, on behalf of the 2M group, commissioned consultants to help review the technical documentation.

#### Conclusions of the Consultants Reports

##### The Air Quality Review

16. This has been undertaken by Air Quality Consultants (AQC) and deals with the potential implications and accuracy of the air quality modelling process and modelling inputs. Evidence is provided to show that:

- Key recommendations from the Air Quality Technical Panels work have not been taken forward in the work carried out in this consultation;
- The air quality model is under-predicting and the predicted improvement trends in air quality concentrations are not substantiated with scientific fact;
- Assessments into the uncertainties and sensitivities into the future have not been addressed and key inputs provided by the airport operator and other stakeholders have been inadequately independently audited;
- The assumption of acquiring a derogation could potentially be against EU law;
- There is no evidence presented to suggest the Government can be confident in the air quality modelling results.

##### The Surface Access Emissions Review

17. This has been undertaken by Transport Research Laboratory (TRL) and deals with the assumptions, uncertainties and sensitivities around the surface access inputs to the air quality modelling process. Evidence is provided to show that:

- An in-depth evaluation of the surface access has not been possible to carry out due to the lack of key information provided with this consultation. Over 47 points for clarification are raised on the issue of road transport emissions alone;
- Just small errors in the surface access assumptions can cause significant

- changes in the air pollution concentrations;
- The lack of sensitivity studies on future predicted assumptions has not been addressed therefore the Government's forecast on future air quality cannot be judged to be robust.

18. These reports are attached as Appendices 2 and 3 and form an integral part of the council's response to the consultation.

## **Inadequacies of the Consultation**

### Insufficient Time

19. Given the complexity of this consultation, including over 1,000 pages of technical documentation, the statutory minimum of 12 weeks (with an extra 2 weeks to cover the Christmas period) has been woefully inadequate with regards to understanding the details involved in the air quality modelling work. Numerous requests for an extension to the consultation deadline have been continually denied to Hillingdon by the DfT, and a request for a meeting between the DfT technical experts and consultants on behalf of the 2M group was also denied. This is confirmed in Appendix 2 Air Quality Review paragraph 3.9 which states that the delayed response to data requests and refusal of a meeting has hampered their appraisal process.

### Quality Assurance of the Results

20. The Air Quality Technical Panels report set a high standard for both objectivity and scientific scrutiny in recommending an air quality model for use at Heathrow. This level of assurance has not been carried through to the rest of the PSDH process and, in particular, in this consultation document.

21. Hillingdon draw the DfT's attention to the fact that the lack of independent scientific audit is a serious omission from the consultation. The level of scrutiny as seen in the Air Quality Technical Panels' work should have been maintained throughout the PSDH process to ensure that Government could remain scientifically confident of future outcomes. Of great concern is that several of the key recommendations from the Technical Panels work have not been carried through into this consultation. Evidence for this can be found in Appendix 2 Air Quality Review paragraph 4.12 - 4.13 and paragraph 4.32 - 4.36.

### Lack of Independent Scrutiny

22. The Government acknowledge in the Adding Capacity Consultation document (paragraph 3.52) that the most significant contributors to nitrogen dioxide concentrations (NO<sub>2</sub>) are road vehicles and aircraft. Hillingdon notes that airport operations and surface access inputs were not prepared under contract to DfT but by the airport operator BAA. There is no independent documentation available which has reviewed the surface access inputs or key factors such as aircraft fleet mix. Hillingdon considers this conflict of interest compromises the validity of the air quality model's results. This is confirmed in Appendix 2 Air Quality Review paragraph 3.16, 4.9 and 4.13 with regards to the future aircraft fleet and in Appendix 3 Surface Access Emissions Review, Chapter 1 paragraph 5.

23. Additional information on key issues, such as the outputs from the surface access modelling, was requested by the 2M group from the DfT (request dated 9th January 2008) but this was denied:

*“It is the Department’s view that the relevant information for consultation purposes is already in the public domain in the published reports. Whilst we are happy to provide clarification where appropriate, the data requested above is not held by the Department and is substantial, and retrieving it would require significant additional work which we do not consider is justified in the circumstances”.* (received by email 1/2/08)

24. This has meant that Hillingdon, and the 2M group, have been unable to independently verify or scrutinise this vital part of the air quality modelling process. In addition, given that this is a Government consultation, it is of great concern that vital data is held by a third party. Hillingdon believe the technical documentation supplied has been inadequate as it has not allowed respondents to consider the assumptions made in the documentation.

#### Using Sound Science Responsibly - The Precautionary Principle

25. The precautionary principle is introduced by the DfT in the sustainable development assessment, Appendix B of the main consultation document, as the fifth principle of sustainable development (Using Sound Science Responsibly) and is defined as:

*“ensuring policy is developed and implemented on the basis of strong scientific evidence, whilst taking into account scientific uncertainty (through the precautionary principle)”.*

26. The consultation, despite making reference to the precautionary principle, actually falls foul of it in many cases. The consultation document does not offer any proof of harmlessness. The document offers a fait accompli with regards the results of the environmental tests with a presumption throughout of optimistic technological innovation. No sensitivity analyses have been performed on the key inputs to ensure proof of harmlessness.

27. Hillingdon believe that this requirement for proof lies with the DfT not with consultees. Without sensitivity studies and a rigorous assessment of the uncertainties involved in the data inputs to the air quality model, Hillingdon contests that the Government has failed to meet its own principle. This view is confirmed in Appendix 2 Air Quality Review paragraph 4.52 where lack of application of the precautionary principle is described as a critical weakness of the consultation.

28. In summary:

- Insufficient time has been provided given the nature and complexity of the consultation;
- The key inputs for the air quality ie surface access and airport operations, have been supplied by BAA and other stakeholders, who have a vested interest in the outcome, and there is a lack of documented independent scrutiny to ensure the integrity of these vital issues;
- The ability to independently challenge the key inputs such as road vehicle assumptions and aircraft fleet assumptions has either been denied, or, the information supplied has been inadequate;
- Not applying the precautionary principle throughout the process is a critical weakness of the documentation;
- Hillingdon believe this is all constitutes a failure of an adequate consultation process.

29. How these factors have impacted on the ability for the Government to be confident in stating that expansion can go ahead, whilst keeping within EU limit values, is outlined below, and discussed in detail in Appendices 2 and 3. In Hillingdon's opinion, it does not consider the Government can be confident of meeting the EU limit value in future years with any of the increased capacity options proposed.

## Policy Concerns

### Mis-application of Current Air Quality Legislation

30. As the air quality law currently stands, the Government have a legal responsibility to assess, and report against, compliance with the **current** 2010 limit value date. The consultation document does not refer to air quality exceedences at this critical attainment date yet the technical documentation ("Air Quality Studies for Heathrow: Base Case, Segregated Mode, Mixed Mode and Third Runway Scenarios modelled using ADMS-Airport" figure 10.10) clearly presents a picture of predicted exceedences of annual mean nitrogen dioxide in 2010 with the current airport operation (5 terminals and an annual movement limit of 480,000). Hillingdon considers that the Government is not presenting the data objectively. As the EU limit is an absolute value the Government could be judged as remiss in not enacting immediate plans to address this issue and will, potentially, be in breach of European Law in 2010 with Heathrow airport even under its current planning limits.

31. Given that there are predicted exceedences of the EU limit in 2010 in the area around Heathrow, it is Hillingdon's opinion that, even without further expansion, the Government has in fact failed to meet the environmental test on air quality, as a Member State, and is in breach of European Law.

### Potential Mis-use of the Derogation

32. Reference is made in Chapter 1 of the consultation to the potential for derogations to be applied for to extend the EU compliance deadline for certain pollutants. However, in Chapter 3 paragraph 3.119 the statement is made that the NO<sub>2</sub> limit can be met, close to the airport, and would be consistent with EU obligations. This statement is under the **assumption** that a derogation has been applied for, and granted, and that the deadline for compliance has been extended in this area to 2015. The issue of derogation is still under negotiation in Europe and it is anticipated that there will be strict guidelines on where it can and cannot be applied. The proposal circulated by the European Parliament on this issue of derogation suggested:

*"However, where Member States have taken all reasonable measures the Commission will propose that Member States be allowed to delay the attainment date in affected zones where limit values are not yet complied with, if certain objective criteria are met. Any extension will have to be notified to the Commission"*

33. Hillingdon believes it is wrong to make reference to, and assume a derogation is in place. Hillingdon contest that the grounds for granting a derogation will not be met because the UK Government has not "taken all reasonable measures" in this crucial area around Heathrow. A derogation should not be sought at the same time as an increase capacity at Heathrow as a) the modelling has confirmed that there remain predicted exceedences even after 2015 and b) the Government is proposing an

increase in capacity via mixed mode which would increase these exceedences still further. This point is confirmed in Appendix 2 Air Quality Review paragraph 4.6.

### **Lack of Scientific Evidence for Confidence in the Air Quality Predictions The Air Quality Model**

#### Ensuring Confidence in the Results

34. In order to understand the change from predicted exceedences of the EU limit, as in the previous Government documents, to no predicted exceedences of the EU limit, as in this consultation, the assumptions used for future emissions and future technology changes need to be challenged to ensure they are robust. The CERC Air Quality Study Report, page 52, makes reference to the fact that it is not just the model performance that determines the accuracy of the result but also the accuracy of the model inputs. Examples of these factors are: quantitative and temporal source data, emissions factors used to calculate traffic emissions from traffic data, meteorological data etc. This, then, requires the underlying technical documentation accompanying the consultation document to be carefully reviewed in order to ascertain how these variables have been accounted for.

#### A Population Close to Exceedence

35. The consultation document, plus the accompanying technical reports, paint a picture of no exceedences in future years with a 3<sup>rd</sup> runway in operation. Detailed questions from the 2M group to the DfT during the consultation process have revealed that in fact there are large numbers of properties close to the EU limit value even as far in the future as 2030.

36. In Table 3.7 of the “Population Exposure to Air Pollution Report” - Atkins 2007, results are supplied for properties exposed to pollution levels above 40ug/m<sup>3</sup>. A request made by 2M, on behalf of their appointed consultants, to expand this table to show properties in the bands 38-38.9ug/m<sup>3</sup> and 39-39.9ug/m<sup>3</sup> resulted in the following information, reproduced below:

Contour band	2015 SM	2015 MM	2015 MMrd	2030 R3T6 H
	No. Properties	No. Properties	No. Properties	No. Properties
38-38.9	126	144	116	115
39-39.9	75	93	21	21
40-41.9	22	27	0	0
42-43.9	0	0	0	0
44-45.9	0	0	0	0
46-47.9	0	0	0	0
48-49.9	0	0	0	0
50-59.9	0	0	0	0
60-69.9	0	0	0	0
<b>Total Exceeding EU Limit Value</b>	<b>22</b>	<b>27</b>	<b>0</b>	<b>0</b>

37. As can be seen the number of properties exposed to levels just below the 40ug/m<sup>3</sup> is significant. Also the number of properties in the 38ug/m<sup>3</sup> - 38.9ug/m<sup>3</sup> contour has remained relatively static from 2015-2030. The importance of this population so close to the EU limit is explained in the following section concerning model verification, uncertainties, sensitivities and trend analysis and is explored in depth in Appendix 2 Air Quality Review paragraph 4.47-4.50.

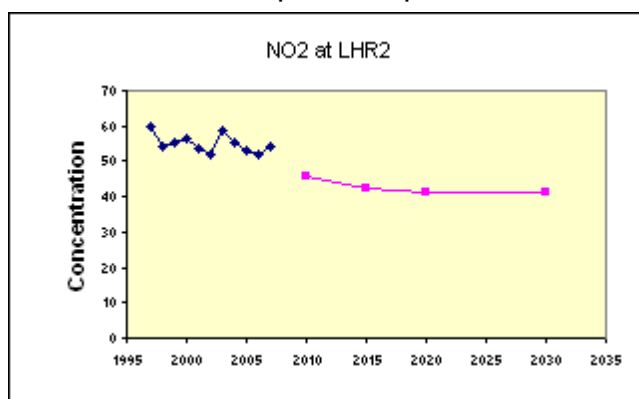
#### Model Verification

38. Model verification is the process by which model predictions are compared with measured data in order to lend confidence to the performance of the model. There is

evidence to suggest that although the model performance for the base case in 2002 is within expected uncertainty bands, there is the potential that the model is systematically under-predicting nitrogen dioxide concentrations by 4.4%. This implies that properties identified by the model at levels about 38ug/m<sup>3</sup> nitrogen dioxide could in fact be experiencing levels of 40ug/m<sup>3</sup>. Given the evidence in the expanded Table 3.7 above this means that the Government's assertion that there will be no relevant exposure with the expansion options for Heathrow, including a 3<sup>rd</sup> runway, is seriously in doubt. Further evidence for this conclusion is given in Appendix 2 Air Quality Review paragraph 4.25-4.30.

### Over-optimistic Trends in Nitrogen Dioxide

39. Downward trends in nitrogen dioxide levels have seen a levelling off in recent years, especially in urban areas. Despite this trend, the modelling in the consultation report has predicted that the air quality monitoring station close to the Northern Runway (LHR2) will see a drop in concentrations from 54ug/m<sup>3</sup> in 2007 to 45.7ug/m<sup>3</sup> in 2010 (figure 3.4 Demonstrating Confidence in the PSDH Air Quality Work). This data is presented below, taken from Appendix 2 Air Quality Review, figure 3. The blue line represents measured data, the pink line predicted data.



40. Evidence in Appendix 2 Air Quality Review paragraph 4.37-4.40 explores this issue further and concludes that there is no strong evidence to suggest a decline in concentrations over the last 11 years of monitoring data from this monitoring station. In fact, the concentration of nitrogen dioxide in 2007 is the same as it was in 1997. There is also no evidence from airport trend records, or regional trend records, to support such a large reduction in such a short time period ie 2007-2010. Without substantial supporting evidence this suggests an over-optimistic prediction in declining NO<sub>2</sub> concentrations from the airport and casts doubt on either the modelling parameters used or data inputs into the process. It does, however, give confidence to the evidence from the model verification above ie that the model is under-predicting nitrogen dioxide.

41. Given the evidence of an over-optimistic downward projection of nitrogen dioxide concentrations in a location close to one of the major emission sources ie aircraft, Hillingdon believe that Government should reassess the inputs into the modelling process to establish how this occurred. The level of reduction predicted is wholly inconsistent with the empirical evidence to date and suggests an error in either the modelling parameters or the input data. Unless this issue is examined further, and is resolved, there cannot be confidence in the air quality modelling results.

## Uncertainties in Future Year Assumptions

42. The expected attainment of the EU limit values in future years is principally driven by expected reductions in road traffic emissions and trends towards cleaner aircraft. Any assumptions made on these two issues are therefore vital.

43. Hillingdon challenge the validity of the Government's assumptions used in the modelling process. The following paragraphs illustrate examples of assumptions that need to be challenged. Please note this list is not exhaustive, further details can be found in Appendix 2 Air Quality Review and Appendix 3 Surface Access Review.

### Future Road Vehicle Emissions

44. The Surface Access Emissions Review, Appendix 3, raises over 47 separate queries that would need to be addressed before this key input could be appraised appropriately. Examples, and their potential significance are outlined below.

### Emissions Factors

45. There is a degree of uncertainty associated with placing reliance on assumptions used for future road vehicle technology, including aspects such as future emission standards such as Euro VI, for which there are currently no agreed emission factors in place by which to assess their operation on the road. The documentation does not make it clear as to what factors have been used.

46. The lack of transparency on this issue is illustrated in the Surface Access report by BAA published as part of the consultation. The final paragraph states:

*“Well into the project, sufficient information became available to allow the assumption of expected future vehicle emissions standards across all vehicle types beyond those in published material”.*

47. The burden of proof with regard to what has been used in the air quality modelling process lies with Government. Using information *“beyond those in published material”* without any supporting information is not compatible with an objective consultation process and gives Hillingdon little faith in its outcome.

48. In addition, well-documented problems with previous Euro emission standards and emissions factors illustrate the importance of this issue. See, for example, the following from the DfT website:

*“For **NOx**, the Euro II and Euro III factors for diesel LGVs are higher than currently used in the NAEI, particularly at high speeds. We propose an increase in the current emission factors used for both Euro II and III LGVs. Our recommendations for Euro IV LGVs lead to reduced emission factors at low and medium speeds, but higher emission factors at high speeds than had previously been estimated. The changes would lead to an overall increase of about 2.5% in the estimates of UK NOx emissions from road transport in 2010, with smaller overall increases in 2015 and 2020.”*

49. In addition, Appendix 3 Surface Access Emissions Review Chapter 5, paragraph 11 explores the issue of the over-optimistic use of emission factors in the Airport Emissions Inventories compared to the data used in European sources.

50. Hillingdon believe it is poor science to have not included sensitivity studies around vital inputs such as future emission standards, especially given the evidence of previous inaccuracies. This is corroborated in Appendix 2 Air Quality Review paragraph 4.24. Further capacity increases at Heathrow should be dismissed until such important issues are independently reviewed and tested.

#### Future Road Vehicle Fleet Mix Assumptions

51. The assumptions made, and the emissions associated with, variables such as traffic flows, vehicle speeds, congestion, types of vehicles in the fleet mix, and the traffic impacts of future scenarios are vital inputs to an air quality model. Given the large reduction in emissions predicted in this document from this source, the assumptions used need careful scrutiny. An example from the Surface Access Emissions Review, Appendix 3 is given below to highlight the importance of this issue.

52. Chapter 5 details a sensitivity analysis for a change in assumed road traffic flow and its potential impact on air quality concentrations. The analysis shows that small increases in assumed traffic flows ie increases of just 1,000 traffic movements on a busy road such as those around Heathrow, is enough to increase the levels of concentrations at a receptor point, from 39.9ug/m<sup>3</sup> to 40.3ug/m<sup>3</sup>. This pattern of increasing concentrations also occurs when testing the data with decreasing speeds.

53. Given the high traffic volumes on roads surrounding Heathrow, the increasing congestion and hence tendency towards lower speeds and large numbers of residential receptors hovering close to the EU limit, the assumptions used for such key variables as those illustrated above will be completely influential in determining the final results of the air quality modelling.

54. Requests were made to the DfT for the information on the traffic flows split by cars, light goods vehicles, heavy goods vehicles and buses, in accordance with information given in the BAA Surface Access Report, along with the corresponding traffic speeds. This information request was refused so the ability to scrutinise this data has not been permitted.

55. By not providing access to this data the DfT has denied Hillingdon the opportunity to scrutinise a vital source of emissions data. Hillingdon has no faith with the Government's assertion that the EU limit can be met with any degree of confidence.

56. In addition, a recommendation of the Air Quality Technical Panels Report suggested that future technologies such as selective catalytic reduction may need careful assumptions made with regards to increasing emissions (ref page 28 of doc). No evidence has been supplied that this has occurred and no future road fleet mix has been provided to allow an independent review of the alternative technologies in place and the assumptions used.

57. Appendix 3 Surface Access Review details many assumptions that may have a significant effect on predicted pollution emissions, Hillingdon believe that given the sensitivity of the variables in road traffic assumptions to increases in air pollution concentrations, as demonstrated above, robust evidence for the assumptions used should have been provided as part of the consultation. Alternatively this information, given its prime importance, should have been disclosed for independent scrutiny. In the absence of these Hillingdon can have no confidence in this vital part of the inputs

to the air quality work and therefore no confidence that the EU limits are capable of being met in any of the future expansion scenarios.

#### Future Aircraft Fleet

58. Assumptions have been made about future aircraft fleets and technology that have included aircraft not yet in operational circulation or, in some cases, not yet built. The Emissions Inventories presented as part of the consultation show additional emissions from this source in future years due to the increase in aircraft movements, despite the predicted improvements in aircraft fleet. No evidence has been supplied of an independent, peer-reviewed audit of this future fleet, despite its key importance to future air quality, and the fact that this was a recommendation of the Air Quality Technical Panels Report (page 22). There is no degree of transparency about what was provided by industry, manufacturers and airlines and, critically there have been no sensitivities performed. This concern is reiterated in Appendix 2 Air Quality Review paragraph 4.9 - 4.13.

59. Evidence supplied by the DfT during the consultation process, responding to a request from the 2M group for evidence of a peer-reviewed future fleet, was inadequate. No evidence has been supplied that gives confidence in the accuracy of the future aircraft fleet.

60. Hillingdon believe that a key recommendation of the Air Quality Technical Panels regarding the independent scrutiny of this key issue has not been adhered to. A rigorous scientific and independent approach, as recommended by the Air Quality Technical Panels, should have been used to inform the future aircraft fleet given its importance with regards to the air quality modelling process. This has not occurred. There is also no mechanism identified by the DfT that will ensure airlines, using an expanded Heathrow, will adhere to this fleet mix. Without this there can be no confidence in any future air quality results.

#### **Sensitivity Studies**

##### Recognised Uncertainties in the Document

61. The Government suggest that there are remaining uncertainties inherent in the modelling, paragraph 3.79, that the intensity of the NO<sub>x</sub> emissions may be greater or lesser than predicted but that NO<sub>2</sub> concentrations are not likely to be significantly different. Consultees are then left to "*consider the extent to which uncertainties might affect them*". There are, however, no sensitivity studies, to allow consultees to make such a consideration and no evidence supplied to support this statement.

62. Hillingdon believe it is inadequate, in a consultation, to expect consultees to consider how they might be impacted in the future, and how the uncertainties affect them, when the evidence to help them reach a decision has not been provided.

63. To be able to remain confident of meeting and complying with the EU limits, and in line with the precautionary principle to demonstrate confidence in their conclusion, Hillingdon believe that Government should have provided evidence of sensitivity tests especially on the key modelling inputs and assumptions. A margin of error that could give rise to predicted exceedences should have been presented. The evidence provided by Hillingdon has demonstrated that the margin of error from compliance to non-compliance is extremely small and can be affected by errors in

many uncertainties and assumptions inherent in the process. This should have been addressed.

#### Future Meteorological Conditions

64. Possible future meteorology and atmospheric chemistry changes due to climate change have not been appropriately taken into account. Higher future ozone concentrations can result in increased ground level concentrations of nitrogen dioxide. The consultation's technical documentation (Demonstrating Confidence in the PSDH Air Quality Work, Atkins) recognises the uncertainty involved in this issue yet makes no recommendations to resolve it. Sensitivity studies into the effect of changing meteorology due to climate change should have been performed. It is a recommendation of the recent AQEG report on 'Air Quality and Climate Change: A UK Perspective' that any impact analysis of policies or specific development should consider this aspect. Without this, Government cannot be confident of the future air quality. This issue is examined in detail in Appendix 3 Surface Access Emissions Review section 2.3.1 paragraph 3. In addition, Appendix 2 Air Quality Review paragraph 4.42-4.45 confirms that the view taken within the consultation documentation of the need to look no further at this issue of meteorological conditions is wholly unsubstantiated.

65. Given the importance that meteorological conditions have on the concentrations of ground level air pollution, plus the evidence of the impact of climate change on future weather patterns, sensitivity tests should have been performed with regard to this aspect. Hillingdon believe that without these, the Government cannot be confident in their future air quality predictions.

66. Instead of sensitivity tests, as were provided with the technical documentation accompanying the original SERAS consultation, consultees are presented with relatively meaningless tables (examples as in figures 13 and 14 Adding Capacity) with no way of assessing what actual data was put into the modelling process. Sensitivity studies would help to assess the uncertainties related with the modelling process and its outcomes especially whether the Government are correct to assert that they were confident in the outcome of the air quality modelling process.

67. Hillingdon assert that without sensitivity tests performed on the assumptions made on key inputs to the air quality modelling process, no level of confidence can be placed on the final results. This view is confirmed in Appendix 2 Air Quality Review paragraph 4.46-4.50 and in Appendix 3 Surface Access Emissions Review Exec Summary paragraph 4.

#### Control Mechanism

68. It is important to remember that the EU limit in question is an absolute set limit. The document gives no indication on any potential control mechanism that could be put in place, and be effective, to ensure that the air quality constraint (ie the EU limit) is both met and maintained in future years. It leaves this crucial issue to the BAA, local authorities and the Highways Agency at the time of any planning application (paragraph 3.186) none of whom have overall control of the sources of emissions. It is hard to reconcile how the Government can state they are confident of achieving an environmental limit and yet suggest no control mechanism to ensure this remains the case. Hillingdon would contest that not ensuring this issue is adequately addressed is a flaw in the document and does not allow Hillingdon to be reassured that this crucial environmental limit will be controlled.

69. As the Government have not applied the precautionary principle to this process, ie no sensitivity studies carried out into the crucial model inputs, the Government must outline how they intend to ensure the key crucial issues which underpin their analysis, (for example, the future road fleet mix and future aircraft fleet mix) will be adhered to. The expansion of Table 3.7 from the Population Exposure Report, as detailed previously, indicates how close properties are to the EU limit, even as far ahead as 2030. Unless the **exact** conditions as portrayed in the inputs to the air quality modelling process occur in reality, then the exceedences could be far more widespread. Examples have shown how even a simple adjustment in traffic volumes or speed can have devastating consequences with regard to exceedences of the EU limit value.

70. Further evidence of this is given in Appendix 2 Air Quality Review paragraph 4.2 – 4.4 where concerns are raised as to how a three runway Heathrow would operate with regard to aircraft movements, the MLD or MDL approaches as outlined in the consultation document. Without confirmation of the final operation the actual air quality impacts cannot be accurately gauged on the nearby residential locations. The defined mode of operation, including the airspace design should have formed part of this consultation. Without it the final true impacts cannot be assessed.

71. Potential surface access and mitigation measures for air quality improvements are referred to within the consultation documentation but without an accompanying assessment of any of these measures with regard to emission improvements. This allows no conclusions to be drawn as to their potential use. This concern is raised within Appendix 2 Air Quality Review paragraph 4.5 and again in Appendix 3 Surface Access Emissions Review paragraph 5.2.4. This also raises the issue of the impact of any potential measures put in place to aid the Heathrow area that could, potentially, be at the expense of other areas in the sub-region. The inability to present a thorough, properly assessed surface access strategy is a critical omission from this consultation.

## **Air Quality Conclusion**

72. Hillingdon do not believe that any future expansion of Heathrow as detailed in the various capacity scenarios in this consultation can take place and maintain relevant locations within the EU limit value. Hillingdon has presented evidence that shows that the stated Government confidence in meeting this key test is clearly misplaced and the capacity increases, as outlined in this documentation, should be dismissed.

73. In addition, the Government have given no indication of how it can remain confident in future years. Without a robust, effective, mechanism defined, with clear responsibilities and controls in place with appropriate legal powers, where applicable, the Government cannot be confident that this environmental limit can be adequately controlled. Until this vital issue of a proper control is defined, and able to be monitored, then the options for capacity increases should be dismissed.

## NOISE

### ANASE and the noise contour limit

#### Noise contour limit

74. The Government's support for further development of Heathrow by adding a third runway and by exploring the scope for making "better" use of the existing runways is conditional on meeting strict limits on air quality and noise, and on improving public transport access to the airport. The noise limit is stated in its original form in paragraph 11.53 of the Air Transport White Paper (ATWP) "The Future of Air Transport" published in 2003 as follows:

*"We believe that development of Heathrow should be subject to a stringent limit on the area significantly affected by aircraft noise, with the objective of incentivising airlines to introduce the quietest suitable aircraft as quickly as is reasonably practicable. The limit will need to be reviewed at intervals to take account of emerging developments in aircraft noise performance. Specifically for Heathrow, we propose that any further development could only be considered on the basis that it resulted in no net increase in the total area of the 57 dBA noise contour compared with summer 2002, a contour area of 127 sq.km."*

#### Terminal 5 public inquiry

75. The Inspector at the Terminal 5 public inquiry accepted that there were deficiencies with using the  $L_{Aeq,16h}$  noise index to set noise policy. In his main report published in 2001, the Inspector stated at paragraph 34.4.42:

*"The measure of the noise climate used by the Government to test the success of its policy is the  $L_{Aeq,16hour}$  index. This was the subject of severe criticism much of which I consider to be well-founded. It does not reflect the operation of runway alternation which is a key feature of Heathrow (para 21.3.30) nor does it give any indication of the number of times activities are interrupted by passing aircraft (para 21.3.31). More significantly I believe that it fails to give adequate weight to the number of aircraft movements (para 21.3.34). Many local residents are unconvinced by the Government's argument that the noise climate has improved. They believe that it has become worse over the last 5-10 years and this appears to be a reflection of the substantial increase in movements over that period (para 21.3.34)."*

76. The Inspector also comments on the adequacy of the original Aircraft Noise Index Study (ANIS) carried out in 1982 and reported on in 1985 which led to the adoption by the Government of the  $L_{Aeq,16h}$  noise index. Thus, paragraph 34.4.43 of the Inspector's report states:

*"Even the Department recognised the deficiencies of the  $L_{Aeq}$  system (para 21.3.32-33). They also accepted that it is difficult to establish the true relationship between the noise of individual events and their number and that it would have been useful if further social surveys had been carried out (para 21.3.35). The survey on which the use of the  $L_{Aeq,16hour}$  is based was carried out in 1982 and the relationship between the  $L_{Aeq}$  and community annoyance was statistically weak even at that time (para 21.3.32)."*

77. The Inspector recommended that Terminal 5 should be built subject to a noise contour limit and a limit of 480,000 on the number of air transport movements (ATMs) per year. He recommended an ATM limit in addition to a noise contour limit for several reasons including (a) earlier forecasts had underestimated the number of aircraft movements Heathrow could handle, and (b) he had formed the view that the  $L_{Aeq,16h}$  noise index does not take sufficient account of the noise effects of increasing the number of aircraft movements.

78. The Inspector recognised that Terminal 5 would enhance the attractions of Heathrow still more and could make it difficult to resist future proposals for development there. Paragraph 98 of the Inspector's summary report gives his unequivocal view that a third runway at Heathrow would be totally unacceptable:

*"Nevertheless, I agree with BAA that the evidence placed before me demonstrates that a third main runway at Heathrow would have such **severe and widespread impacts on the environment as to be totally unacceptable.**"* (emphasis added)

79. It should be noted that the Terminal 5 Inspector, Mr Roy Vandermeer, has recently confirmed publicly that he is not convinced by arguments for Heathrow's expansion.

#### Terminal 5 permission

80. The Government authorised Terminal 5 subject to the noise contour limit and ATM limit recommended by the Inspector. The authorisation letter of November 2001 made it clear that the Government was applying the ATM limit as a precautionary measure and would not rely solely on the noise contour limit for mitigating future air traffic noise at Heathrow:

*"59. In accepting the Inspector's recommendation for an ATM limit of 480,000 per year, the Secretary of State notes the reservations expressed by the Inspector in his conclusions at section 3 of chapter 21 of his report about the Leq noise index. The Secretary of State further notes that this was one of the Inspector's reasons for recommending in chapter 21 of his report an ATM limit as well as a noise contour limit. The Secretary of State recognises that the number of flights handled by Heathrow, which is by far the busiest UK airport, has risen considerably since the empirical work underlying the Leq index was undertaken.*

*60. In the light of the Inspector's views on the adequacy of the Leq index, **the Secretary of State thinks it right to adopt a precautionary approach.** As noted above, he accepts the Inspector's recommendation for a condition limiting ATMs to 480,000 per year. He does so on the basis of the Inspector's concerns about noise, particularly the weighting of the number of aircraft movements relative to noise within Leq. He notes the Inspector's views expressed in paragraph 32.5.41 of his report that the ATM limit would have benefits in terms of other factors such as surface access, air quality and public safety but the Secretary of State does not consider it necessary to express a conclusion on these matters. The Secretary of State has already announced his intention, independently of Terminal 5, to conduct a new study on aircraft noise and the perception of people subject to it. On 8 May 2001, in response to a Parliamentary Question asking the Secretary of State what plans he had to*

*carry out a new study to update the Aircraft Noise Index Study of 1985, Mr Bob Ainsworth, then Parliamentary Under Secretary in the Department of the Environment, Transport and the Regions, said: “My Department is to carry out a major study to reassess attitudes to aircraft noise. **This new study underlines the Government’s commitment to underpin our policy on aircraft noise by substantial research that commands the widest possible confidence**”. It is envisaged that the results of this study will help to show whether the Leq index does in fact have the weaknesses suggested by the Inspector. The results would also inform any future consideration of the ATM condition.” (emphasis added)*

81. Thus, the authorisation letter recognised that a “precautionary approach” was appropriate in view of the Inspector’s concern about the adequacy of the Leq noise index, and accordingly imposed the recommended 480,000 ATM condition. Also, the major new study to re-assess attitudes to aircraft noise was intended to “underpin our policy on aircraft noise” and “inform any future consideration of the ATM condition”.

#### The ANASE study

82. The new study of aircraft noise was carried out as the ANASE study (Attitudes to Noise from Aviation Sources in England). Although the ANASE study was commissioned by Government in 2001, its findings were not released until November 2007 shortly before the launch of the current consultation. The main findings of the study included:

- (i) People are more annoyed by all levels of aircraft noise than they were in 1985, when the last major aircraft annoyance study (the ANIS study) was carried out. Levels of annoyance previously believed to occur at a noise level of 57 dB are now occurring at approximately 50 dB.
- (ii) There is no identifiable threshold marking the onset of significant community annoyance. Even relatively low levels of aircraft noise can cause some annoyance, which rises as the noise level increases.
- (iii) The study provides indicative evidence that people are more concerned about numbers of aircraft (and slightly less concerned about the noise level of individual aircraft) than the present  $L_{Aeq,16h}$  indicator assumes.

#### Dismissal of ANASE findings

83. The implications of the ANASE study for the proposed expansion of Heathrow are considered in paragraphs 3.28 to 3.41 of the consultation. Paragraph 3.32 recognises that the key findings of the ANASE study are (i) it is highly probable that annoyance with a particular level of aircraft noise is higher than found when the ANIS study was carried out in the 1980s, and (ii) there is no threshold noise level at which there is an “onset of significant community annoyance.”

84. Paragraph 3.33 refers to scrutiny of the ANASE study by peer reviewers appointed by the government who suggested “further analysis, detailed revisions and improvements to the drafting.” On the basis of the opinions of a small number of peer reviewers chosen by the Government, the Government seems prepared to dismiss the detailed findings of the ANASE study. This conveniently ignores the views of others and also overlooks the fact that the original ANIS study was not peer reviewed.

85. In fact, the ANIS study (DR Report 8402) was itself subject to much criticism at the Terminal 5 public inquiry for reasons including:

- (i) It combined results from Heathrow having segregated alternation use of two runways with results from Gatwick and other airports having mixed mode use of a single runway.
- (ii) Noise exposure measurements at Heathrow from days of different mode operation were “stitched” together to form complete days of one mode; noise measurements were also “stitched” together to fill gaps in measurement periods.
- (iii) ANIS unable to measure response reactions to runway alternation; exclusion of Cranford site.
- (iv) Sites at around 57 dB  $L_{eq}$  were systematically excluded, possibly resulting in false inferences about significance of 57 dB.
- (v) Original ANIS relationship was with 24 hour  $L_{eq}$ , subsequently changed to relationship with 16 hour  $L_{eq}$ .
- (vi) Use of cross sectional rather than longitudinal social surveys.
- (vii) Exclusion of aircraft LAX sound exposure levels for aircraft noise events below 67 dB  $L_{Amax}$ .
- (viii) Use of manual measurement approximations to determine LAX because equipment could not directly integrate; attended and unattended noise equipment differences of up to 2.5 dB.
- (ix) Noise exposure levels in common noise areas varied by 3 dB or more.
- (x) ANIS study had become uncalibrated with passage of time because of changes in people’s reactions and aircraft traffic.

86. Paragraph 3.34 asserts that the Government’s belief that the validity of the noise contour test set in the White Paper (i.e. size of the 57 dB  $L_{Aeq,16h}$  noise contour) remains valid in the light of the ANASE findings. The view is expressed that the ANASE study’s conclusions offer no reason to change policy in relation to the noise contour test. This is totally illogical in view of the government’s stated acceptance that the ANASE study shows (i) increased annoyance at a particular level of aircraft noise, and (ii) 57 dB  $L_{Aeq,16h}$  no longer represents the onset of significant community annoyance.

#### Importance of the ANASE findings

87. The ANASE findings are of direct relevance to the noise limit for expansion, i.e. the size of the 57 dB  $L_{Aeq,16h}$  noise contour. On the basis of the ANIS study carried out in the 1980s, the Government has for many years used an aircraft noise level of 57 dB  $L_{Aeq,16h}$  to indicate the onset of significant community annoyance. The ANASE study provides clear evidence that a similar level of annoyance occurs at much lower noise levels.

88. The ANASE findings also indicate that use of the  $L_{Aeq,16h}$  noise index does not give sufficient weight to numbers of aircraft. This is of particular importance given the increase in numbers of aircraft numbers envisaged with the proposed expansion of Heathrow. Increasing the number of aircraft movements by around 50% is a central issue in the present consultation.

89. The ANASE findings justify the Terminal 5 Inspector’s concerns about the validity of the  $L_{Aeq,16h}$  noise index, the importance of numbers of aircraft movements, and that the ANIS study had become uncalibrated and was no longer valid.

90. The Government considers the ANASE results on monetary valuation of aircraft noise, which give high estimates, unreliable. Consequentially, the impact assessment in Annex B of the consultation paper uses monetary values for road and railway noise,

even though studies have shown that people are more annoyed by aircraft noise than by similar levels of road or railway noise. This means that the monetary values for aircraft noise used in the impact assessment are almost certainly too low. Also, costs are only applied to noise levels above 57 dB.

91. The ANASE study also has an important bearing on the original SERAS consultation which led to the current proposal to expand Heathrow. Thus, one of the key findings of the ANASE study is that annoyance from aircraft noise is greater than previously thought according to the ANIS study. If this had been taken into account in the SERAS consultation, expansion of Heathrow may not have been chosen with one of the other expansion alternatives such as at Gatwick or Stansted being preferred. It is shown in the “Other noise issues” section below that current noise impacts at Heathrow are many times greater than at Gatwick and Stansted. Also, adding a third runway at Heathrow would be akin to adding a whole new airport since ATMs for the third runway would be higher than currently at Stansted, and not far short of Gatwick’s. Given that aircraft noise is a primary issue and that more residents are affected by aircraft noise at Heathrow than other potential runway sites (by a factor of at least 10), it is probable that Heathrow would not be judged the most sustainable overall option.

### “Using sound science responsibly”

#### The ANIS and ANASE studies

92. When commissioning the ANASE study, the Government accepted that the results of the ANIS study could no longer be relied upon. This is clear from the Government statement that the new study would “underpin our policy on aircraft noise” and “inform any future consideration of the ATM condition.” The importance of the ANASE study to the proposed expansion of Heathrow is obvious. It is therefore totally unacceptable for the Government to seek to make decisions on large-scale expansion of Heathrow without the benefit of current research on aircraft noise.

93. Paragraph 5.47 of Annex B of the consultation details the fifth principle of sustainable development as:

*“ensuring policy is developed and implemented **on the basis of strong scientific evidence**, whilst taking into account scientific uncertainty (through the precautionary principle) as well as public attitudes and values.”* (emphasis added)

94. Hillingdon does not consider that the Government’s assessment of expanding capacity at Heathrow is being undertaken on “the basis of strong scientific evidence” since it has recognised that ANIS study is no longer valid but has dismissed the findings of the more recent ANASE study. Until the results of further research are available, Government should adopt a precautionary approach in making any decisions about expanding Heathrow. On this basis, there needs to be a reassessment of policy on aircraft noise and of the Heathrow noise condition. This would inevitably set a more stringent noise condition for any expansion at Heathrow.

95. Hillingdon is also concerned that there is no evidence that the Government’s proposals to expand capacity at Heathrow have taken account of important recent studies concerning the effects of noise on health and on school children.

### Noise and health

96. In 2000, the World Health Organisation published the document “Guidelines for Community Noise”. In 2003, a World Health Organisation working group was set up to investigate the burden of disease from environmental noise. Preliminary findings confirm that heart disease can be triggered by long-term exposure to excessive noise. A report published in December 2007 (Environmental Health Perspectives, Vol 116, Number 3) gives findings of the HYENA study into Hypertension and Exposure to Noise near Airports. The study found excess risks of hypertension related to long-term noise exposure, primarily for night-time aircraft noise and daily average road traffic noise. The European Heart Journal recently reported further findings of the HYENA study showing night-time noise from aircraft or road traffic can increase a person’s blood pressure even if it does not wake them.

### Noise and school children

97. The 2001 journal Psychological Medicine reports details of the West London Schools Study led by researchers at the University of London. This built on previous field studies which indicated that children’s cognitive performance is impaired by chronic aircraft noise exposure. The study found that noise exposure was associated with impaired reading and raised annoyance after adjustment for confounding factors. The Lancet (Vol. 365, June 4, 2005) reports findings of the RANCH (road traffic and aircraft noise exposure and children’s cognition and health) project. This project was set up to investigate the effects of exposure to aircraft and road traffic noise on the cognitive performance and health of children. The findings of the study indicated that aircraft noise acting as a chronic environmental stressor could impair cognitive development in children, specifically reading comprehension.

### **Validity of noise contour limit**

98. Hillingdon fundamentally disagrees with the Government’s view on the continuing validity of the noise contour limit. The noise contour limit is neither appropriate nor adequate as a noise control. It is considered illogical to use a noise contour from year 2002 to determine expansion issues affecting noise levels over the next 25 years and beyond.

### Issues with the 2002 Contour

99. Even if a noise contour limit were appropriate, it is considered perverse to continue using the contour area from 2002 when the most recent available contour for 2006 has a smaller area. A significant reduction in contour area occurred between 2002 and 2006, largely due to the retirement of Concorde in 2003. This demonstrates that choice of the contour size in year 2002 is both artificial and arbitrary. If the ATWP had been published in 2007, would the contour limit have been set at the 2006 level? If the limit can be “reviewed at intervals” to take account of developments in aircraft noise performance, why should it not be reviewed to relate to the 2006 contour size?

100. Paragraph 3.8 of the Bureau Veritas report in Appendix 4 points out that, due to runway maintenance issues, the pattern of runway usage in 2002 was unusual. This resulted in the arrival noise lobes of the 2002 noise contour to the east of the airport not being evenly distributed between the northern and southern runways. The contents of the Bureau Veritas report are incorporated in Hillingdon’s response.

### The meaning of the noise contour limit

101. Paragraphs 3.12 to 3.21 of the Bureau Veritas report consider the meaning of the noise contour area limit proposed in the ATWP published in 2003. It is argued that, because the primary effect of aircraft noise is on people, the area limit could just as well have been expressed as a limit on the number of people at a given level of annoyance. The Bureau Veritas report estimates the number of people highly annoyed in the noise contour area using noise annoyance response relationships taken from the ANIS study published in 1985, and the more recent ANASE study published in 2007. As the report notes, the government have agreed that the ANASE report shows that people are more annoyed by all levels of aircraft noise than they were in 1985, when the ANIS study was carried out. Paragraph 3.19 of the Bureau Veritas report concludes that the noise contour limit is no longer appropriate as it will not secure the same level of noise impact on people as was envisaged at the time of the ATWP.

102. A noise contour limit is totally inadequate for assessing the proposed change from segregated mode to mixed mode. If there were the same number of flights, the contour size would be identical even though the experience of people on the ground would be completely different. Hillingdon believes that the loss of noise respite periods with mixed mode would be a significant adverse noise impact not reflected in the noise contours.

### Noise contour limit as a noise control

103. The noise contour limit is not an adequate means of noise control because it incorporates all the inherent shortcomings of the  $L_{Aeq,16h}$  noise index, and is not sensitive to a number of important noise issues. It does not cover noise in the night, and does not reflect the benefits of runway alternation. It ignores the noise protection provided by the Cranford agreement. It ignores airport ground noise and road traffic noise. Also, a noise limit in the form of an average mode  $L_{Aeq,16h}$  noise contour conceals large local noise impacts, such as large increases in aircraft noise in Hillingdon borough with a third runway. Furthermore, the noise contour totally ignores noise impact in areas outside the 57 dB  $L_{Aeq,16h}$  noise contour. The ANASE study suggests that there is significant community annoyance at lower noise levels, and Hillingdon believes that this is consistent with reports of complaints about aircraft noise from areas outside the 57 dB noise contour.

## **Meeting the noise contour limit**

### Noise contour predictions

104. The noise contour predictions referred to in the consultation are contained in the supporting technical document ERCD0705. Predicting noise contours in 2015 with mixed mode, and in 2020 and 2030 with a third runway, is a complex process relying on a large number of assumptions relating to traffic forecasts, aircraft fleet mix, aircraft noise emission levels, and aircraft flight paths.

105. Paragraphs 3.25 to 3.30 of the Bureau Veritas report discuss the margin for error of the noise predictions. Reference is made to paragraph 43 of Annex E of the consultation which states that validation by noise measurement showed that noise predictions are accurate to +/- 1 dB Leq within the 57 dB(A) Leq contour. The Bureau Veritas report shows that this inherent margin of error means that there is no guarantee that the noise contour limit will be met for 2015 with mixed mode (540,000

ATMs), 2020 with third runway (605,000 ATMs), or 2030 with third runway (702,000 ATMs).

106. The noise contour prediction margin of error of +/- 1 dB relates to noise modelling accuracy for a current or retrospective year for which there should be a good knowledge of modelling input data. For noise contour predictions forecast many years into the future, the noise prediction margin for error would be very much greater than +/- 1dB. This is because there will inevitably be errors in assumptions on modelling input data for the future years. For example, a large proportion of the aircraft types assumed to form part of the fleet mix in 2015, 2020 and 2030 are not yet in service, or even in production. Table 26 of the Bureau Veritas report shows that the proportion of daily movements by unknown future aircraft types is 85% with a third runway in 2020 and 2030.

107. Hillingdon does not consider that the Government has substantiated its view that aircraft will get so much quieter between 2002 and 2030 that around 50% more aircraft can be accommodated within the same 57 dB contour area. Paragraph 3.83 of the consultation refers to a “downward trend” in aircraft noise emissions which is said to be driven by action within the International Civil Aviation Organisation. This organisation is stated to have “progressively tightened aircraft noise certification standards since their introduction in 1971”. It is not mentioned that the last new aircraft noise standard, Chapter 4, was very much less stringent than many European countries were demanding.

108. The ERCD0705 report does not set out what future tightening of international standards would be necessary to give confidence that quieter aircraft would be brought into service. It is noted that the traffic forecasts used in the modelling scenarios were provided by the airport operator, without independent audit. Although the Department for Transport led “Project for the Sustainable Development of Heathrow” included panels of independent experts in its initial stages, there has been no evident independent audit or peer review of the assumed aircraft retirement programme, future fleet mix or technology change assumptions used in ERCD0705.

109. Hillingdon is therefore concerned that the noise contour predictions in ERCD0705 are unduly optimistic. Hillingdon has used the noise contour predictions in this response subject to this caveat. The use of these contour predictions does not imply that it is accepted that the average mode  $L_{Aeq,16h}$  noise contours give a full and sufficient measure of noise impacts.

#### Meeting the contour limit with a third runway

110. Hillingdon notes that the predicted contour areas in 2020 and 2030 are only 0.3 sq km and 14.1 sq km less than the noise limit area of 127 sq km. There is evidently no margin for error despite the inherent uncertainties in making the noise predictions. In fact, the predicted contour area of 126.7 sq km for 2020 is already 0.1 sq km larger than the “standard” noise contour area of 126.6 sq km for 2002. Hillingdon has explained above its doubts about predictions so far into the future. These concerns are supported by the information on historical trends in aircraft noise source reduction in Figure 2.1 of the ERCD report. This suggests that the main technological reductions in aircraft source noise levels have already been achieved, and that further technological improvements will only deliver small source noise reductions. For these reasons, Hillingdon is very sceptical that the noise contour limit can be met. We note

the proposal to carry out work to satisfy the planning authorities that use of the airport would be managed in the 2020-2030 period to ensure the contour limit is adhered to.

#### Meeting the contour limit with mixed mode

111. The noise contour predictions for mixed mode operations contained in the consultation document relate to full mixed mode with 540,000 ATMs in years 2015 and 2030. Hillingdon has explained above its doubts about the accuracy of noise contour predictions projected so far into the future. The main concern is that the replacement programme for existing aircraft and the level of source noise reduction for future aircraft types are overly optimistic. It is also noted that the predicted noise contour area for 2015 with full mixed mode is only 1.5 sq km within the contour limit area of 127 sq km.

112. For these reasons, Hillingdon is sceptical that the noise contour limit can be met with full mixed mode operation at 540,000 ATMs. It is, however, accepted that mixed mode operation with no increase in aircraft movements may meet the noise contour limit. This is because changing from existing segregated mode operation with alteration on westerlies, to mixed mode operation (without a movements increase), would have only small effects on contour area.

113. Even if a third runway or full mixed mode could meet the noise contour limit, provision of either would breach noise policy and the ATM limit. Most importantly, noise impacts in Hillingdon borough with a third runway or mixed mode would be unacceptable. These issues are explained below.

### **Breaches of noise policy**

#### Daytime noise policy

114. Paragraph 11.52 of the 2003 ATWP sets out the Government's policy on daytime aircraft noise at Heathrow:

*“Daytime noise impacts at Heathrow are many times worse than at any other airport in the UK, despite significant improvements in the noise climate over many years. The Government's policy – reaffirmed in the consultation document – is to take all practicable steps to **prevent any deterioration** in the noise climate at Heathrow, and to continue to do everything practicable to **improve it over time**” (emphasis added)*

115. Table 1 below gives contour areas from Tables 6 and 9 of the consultation, and from published ERCD data for 2006. In Table 1, base case and Option 3 are as described in Table 3 of the consultation. Thus, base case assumes the airport continues as now and within existing limits, including the 480,000 ATM limit. Option 3 involves full mixed mode at 540,000 ATMs from around 2015, followed by third runway with 605,000 ATMs in 2020 rising to 702,000 ATMs in 2030.

Table 1  
Area (sq km) of 57 dB L<sub>Aeq,16h</sub> noise contour  
in present and future years

Year	2002	2006	2015	2020	2030
Base case	126.6	118.7	119.8	N/A	77.0
Option 3	126.6	118.7	125.5 mixed mode	126.7 third runway	112.9 third runway

116. As Table 1 shows, the size of the “standard” noise contour was 126.6 sq km in 2002. It subsequently shrank to 118.7 sq km in 2006 (latest year for which data available), due mainly to the retirement of Concorde in autumn of 2003.

Contour areas without expansion

117. For the base case, Table 1 shows that there would be significant reductions in contour area without mixed mode and a third runway. These reductions would be delivered as aircraft in the existing fleet are gradually replaced by less noisy aircraft. Without expansion, the size of the contour area would shrink from 118.7 sq km in 2006 to 77.0 sq km in 2030. Without mixed mode and a third runway, the Government could reasonably claim to be delivering its policy of preventing any deterioration in the noise climate, and improving it over time.

118. It should be noted that reductions in noise contour area over time are not dependent on any proposed expansion at Heathrow. This is confirmed by paragraph 3.83 of the consultation, which states that the downward trend in noise emissions of individual aircraft is driven by action within the International Civil Aviation Organisation.

Contour areas with expansion

119. Table 1 gives contour area in 2006 as 118.7 sq km. With mixed mode, this would increase to 125.5 sq km in 2015; with a third runway, it would increase further to 126.7 sq km. Therefore, introduction of both mixed mode and third runway contradict the government’s stated policy: firstly to prevent any deterioration in the noise climate, and secondly to improve it over time.

Impact assessment guidelines

120. Paragraph 2.3 of Annex B of the consultation contains guidance on impact assessment at a future year by comparison of impact “with” and “without” the development. Tables 2 and 3 below give assessments in this form.

Table 2  
Area and population for 57 dB L<sub>Aeq,16h</sub> noise contour  
With and without third runway

	Year 2030	
	Two runways 480,000 ATMs	Three runways 702,000 ATMs
Contour area (sq km)	77.0	112.9
With minus without	35.9 sq km	
Population (thousands)	142.2	205.7
With minus without	63.5 thousand	

121. Table 2 shows that the third runway would increase the area of the 57 dB noise contour by 35.9 sq km in year 2030, on a “with and without” basis. Also, a third runway would increase population in the 57 dB contour by 63,500 above what it would otherwise be.

Table 3  
Area and population for 57 dB L<sub>Aeq,16h</sub> noise contour  
With and without mixed mode

	Year 2015		Year 2030	
	Segregated mode 480,000 ATMs	Mixed mode 540,000 ATMs	Segregated mode 480,000 ATMs	Mixed mode 540,000 ATMs
Contour area (sq km)	119.8	125.5	77.0	91.1
With minus without	5.7 sq km		14.1 sq km	
Population (thousands)	261.9	274.0	142.2	181.1
With minus without	12.1 thousand		38.9 thousand	

122. Table 3 shows that full mixed mode would increase the area of the 57 dB noise contour by 5.7 sq km in year 2015, and by 14.1 sq km in 2030, on a “with and without” basis. Also, full mixed mode would increase population in the 57 dB contour by 12,100 in 2015, and by 38,900 in 2030, above what it would otherwise be.

123. This form of assessment clearly demonstrates the serious worsening of noise impact on a “with and without” with either third runway or mixed mode. It highlights the improvements in noise impacts that would be lost to residents who should be benefiting from the reduced noise levels of future quieter aircraft. It shows that the expansion proposals breach the Government’s policy to do everything practicable to improve the noise climate over time.

124. Hillingdon considers that mixed mode and the third runway are incompatible with the Government’s stated policy for daytime noise to prevent any deterioration in

the noise climate at Heathrow and to continue to do everything practicable to improve the noise climate over time.

#### Night-time noise policy

125. The Government has made a commitment to “bear down” on noise from night flights at Heathrow (paragraph 3.12 of 2003 ATWP). Also, paragraph 3.12 of the Government’s 2004 consultation “Night Flying Restrictions at Heathrow, Gatwick and Stansted” commits the Government to take account of the World Health Organisation “Guidelines for Community Noise” in respect of night noise, as long term targets for improving human health.

126. A third runway would inevitably lead to commercial pressure from airlines for additional night slots in order to meet increasing global scheduling demands, particularly from the developing economies in the Far East. Some increase in flights during the night period (2300-0700 hrs) is forecast in Table 7.1 of report ERCD0705. Nevertheless, there is no proper consideration in the consultation of the noise impact of increases in night flights resulting from the third runway. The consultation should have addressed the likely effect of removing the 480,000 limit on the demand for night flights, and the measures that the Government would take in order to meet its commitment to “bear down” on night noise, and meet its commitments on the World Health Organisation guidelines.

127. Hillingdon believes night flights at Heathrow cause serious and widespread noise disturbance to residents, and there should be a long-term aim to end flights in the night period (2300-0700 hrs). In the short term, while night flights continue, there should be an additional control by a strict night noise contour  $L_{Aeq,8h}$  over the night period (2300-0700 hrs) at Heathrow. Future types of aircraft are unlikely to be so quiet that there will not be a continued risk of sleep disturbance.

#### **Breaches of ATM limit**

128. The Terminal 5 Inspector made clear his view that the 480,000 ATM limit was one part of the package of noise controls he considered essential to protect against excessive noise. The Inspector was of the opinion that any increase in ATMs above 480,000 would result in a significant deterioration in the noise climate. In paragraph 90 of his summary report, the Inspector stated:

*“Unless the controls that I have proposed are imposed the impact of Terminal 5 would soon exceed that on which I have based my judgement. **It would rapidly become wholly unacceptable whatever benefits it might bring.**”*  
(emphasis added)

129. The ATMs for the expansion options are given in Table 4 below, together with the exceedances of the 480,000 ATM limit.

Table 4  
Exceedance of 480,000 ATM limit

Expansion option	ATMs per annum	Exceedance	
		ATMs	Percentage
Mixed mode In year 2015	540,000	60,000	13%
Third runway In year 2020	605,000	125,000	26%
Third runway In year 2030	702,000	222,000	46%

130. Table 4 shows that exceedances of the ATM limit are substantial with either mixed mode or third runway. Full mixed mode would result in ATMs in 2015 exceeding the annual movements limit by 60,000, equivalent to 13%. A third runway would result in ATMs in 2030 exceeding the annual movement limit by a massive 222,000, equivalent to nearly 50%. Full mixed mode and third runway would both breach the ATM limit that the Terminal 5 Inspector considered essential.

131. If the 480,000 ATM limit were removed, the only means of controlling daytime noise would be the Terminal 5 noise contour limit. The Terminal 5 ATM limit was specifically introduced due to deficiencies with using the noise contour on its own, yet this is what is now being proposed. Hillingdon believes the 480,000 ATM limit needs to remain. The retention of a clearly enforceable movements limit is of fundamental importance.

132. Paragraph 3.116 of the consultation acknowledges that full mixed mode would require planning permission to relax the current ATM limit of 480,000 per annum. It is surprising that the consultation does not appear to acknowledge that operation of a third runway would also require removal or variation of the ATM limit.

133. Hillingdon believes that any increase in annual aircraft movements above 480,000 would cause a serious and unacceptable deterioration in the noise climate, and must not be permitted.

### **Other noise issues**

#### Use of third runway

134. In the 2002 SERAS consultation, the proposed third runway was 2,000m in length (SERAS paragraph 7.7). This length was said to limit its use to “narrow-bodied aircraft, with few larger than Boeing 757s, operating within a range of 750 km.” (SERAS paragraph 7.26) The runway now proposed is of 2,500m “paved” length. This would allow the third runway to be used by long haul aircraft, and by all types of aircraft except largest 4-engined types. Paragraph 3.27 of the consultation explains how Harlington church spire to the east and the elevated M4/M25 junction to the west limit the runway “operational” length to only 2,200m.

135. Hillingdon questions whether aircraft operational practices may be developed to allow use of the third runway by large 4-engined aircraft. For airspace reasons, the third runway is already designated as “high performance” with a steeper climb gradient. Further improvements in climb performance may enable the largest aircraft to depart from the third runway, especially if lightly loaded. Landings by large aircraft using reverse thrust may be possible, even if departures are not. Also, the lamp-posts

at the motorway junction could be replaced by shorter types, as used on roads near RAF Northolt. There would inevitably be pressure to seek permission to extend the third runway to full length.

Comparisons of Heathrow with alternatives

136. Table 5 below gives a comparison of Heathrow, Gatwick and Stansted airports for 2006 (using data from Table A3 of the consultation, and ERCD reports 0701, 0702 and 0703). ATMs at Heathrow were almost double those at Gatwick, and more than double those at Stansted. Area of the 57 dB noise contour area at Heathrow is more than double that at Gatwick, and approximately 4 times that at Stansted. The differences are even more apparent in terms of population in contour area. In fact, population for Heathrow at 259,000 is of a totally different order of magnitude to the populations of 4,500 and 2,200 at Gatwick and Stansted.

Table 5  
Comparison of Heathrow, Gatwick and Stansted for 2006

	ATMs	Area of 57 dB contour	Population in 57 dB contour
Heathrow 2006	471,000	118.7 sq km	259,000
Gatwick 2006	254,000	46.7 sq km	4,500
Stansted 2006	190,000	29.5 sq km	2,200

137. Table 6 below gives ATMs at Heathrow in 2030 split between the third runway and other two runways, together with total ATMs. ATMs data are taken from paragraph 3.7.1 of report ERCD0705. The table also gives ATMs for Gatwick and Stansted for year 2006 as above. It can be seen that ATMs for the third runway alone in 2030 are higher than Stansted in 2006, and not far short of Gatwick. This shows that adding a third runway with an associated new passenger terminal is akin to adding a whole new airport in terms of ATMs. A similar result would be expected in terms of noise contour area.

Table 6  
Comparison of Heathrow 2030 with Gatwick and Stansted 2006

	ATMs
Heathrow third runway 2030	235,000
Heathrow other two runways 2030	467,000
Heathrow total 2030	702,000
Gatwick 2006	254,000
Stansted 2006	190,000

### Noise insulation

138. Under the 2003 ATWP, the Government expects the airport operator to offer insulation to any residential property which suffers from a noise level of at least 63 dB  $L_{Aeq,16h}$  together with an increase in noise of at least 3 dB. This contrasts with the statutory Noise Insulation Regulations for roads and railways, which require offers of noise insulation with at least 1 dB increase.

### **Air noise impacts with a third runway**

#### Operating scenarios with third runway

139. Paragraph 3.44 of the consultation sets out the proposed operating scenarios with a third runway in addition to the existing two runways. It is stated that the third runway would be used in mixed mode taking a mix of departures and arrivals, while the two existing runways would be used in segregated mode with alternation. Thus at any one time the airport would operate in one of two scenarios:

- MLD operations: mixed mode operations on the new third runway, with the existing northern runway used for landings and the southern for departures (mixed/landings/departures or “MLD”)
- MDL operations: mixed mode on the new third runway, with the existing northern runway used for departures and the southern for landings (mixed/departure/landings or “MDL”)

140. Operation combining MDL and MLD in any one day is referred to as the “hybrid” or “alternating” case, and is stated to be the scenario focussed on in the consultation. In alternating operation:

- the third runway operates in mixed mode throughout the day
- for one half of the day, departures on the north runway and arrivals on the south runway
- for the other half of the day, arrivals on the north runway and departures on the south runway.

141. It appears that alternating operation would be used for both westerly and easterly days of operation. The most severe new air noise impacts in Hillingdon borough would be from aircraft arriving and landing at the new third runway. The highest noise levels from individual aircraft would be experienced to the east and west of the third runway where the aircraft are at low altitude during departure or arrival.

### Aircraft noise footprints

142. Using the FAA Aircraft noise model, INM 7.0, a set of indicative noise footprints has been produced for the N250LH aircraft using the third runway. These have been based on the B767-300 aircraft with the noise level adjustments as shown in Table 2.2 of ERCD Report 0705. The noise footprints are given in Appendix 5 and show SEL footprints in 5 dB steps from 70 dB SEL to 90 dB SEL. Footprints have been produced for westerly arrival, easterly arrival, westerly departure and easterly departure. The footprints reveal high aircraft event noise levels concealed by the average mode  $L_{Aeq,16h}$  noise contours. They show large areas of Hillingdon would be affected by high SEL and  $L_{Amax}$  event noise levels well outside the 57 dB  $L_{Aeq,16h}$  noise contour.

### Arrivals noise in Hillingdon with alternating operation

143. Figures 8a and 8b of the consultation show indicative arrival swathes with MDL and MLD operation respectively. Those figures give daily (apparently 0700 – 2300 hrs) numbers of arrivals for year 2030 with a third runway. Figure 9 gives corresponding data for arrivals in year 2002. These data have been analysed to give Table 7 below showing numbers of arrivals for 2002 and 2030 for westerly and easterly days.

144. Analysis using separate days of westerly and easterly operation as in Table 7 is considered more realistic than using average mode days. This is because whole days of either westerly or easterly operation are common, whereas days corresponding to an average mode split of westerly and easterly operation are unlikely to occur in practice.

Table 7  
Daily arrivals in 2002 and in 2030 with third runway

Runway	Westerly day		Easterly day	
	Year 2002	Year 2030	Year 2002	Year 2030
Third	-	342 (1)	-	343 (1)
North (2)	303 (2)	291.5 (2)	605 (3)	291.5 (2)
South (2)	303 (2)	291.5 (2)	0	291.5 (2)
Total	606	925	605	926

(1) mixed mode; (2) with alternation; (3) no alternation

145. Figures 8a and 8b of the consultation show westerly operation on 76% of days, with easterly operations on the remaining 24% of days. These figures also show that all aircraft arriving on the third runway would arrive from the north. It can be seen that aircraft arriving at and departing from the third runway would overfly areas of Hillingdon borough not previously overflowed by aircraft using the existing two runways. The most severe noise impact from aircraft arrivals would be where arriving aircraft pass low over the borough on their final approach prior to landing at the third runway.

### Numbers of arrivals

146. Table 7 shows that on a typical westerly or easterly day in 2030, there would be 342 or 343 aircraft arriving on the third runway. This number of arrivals over the 16 hours day is equivalent to approximately 21 arrivals an hour. Thus, on average, an aircraft arrival would take place about every 3 minutes.

#### Areas in Hillingdon affected by westerly arrivals

147. Westerly operations would take place on 76% of days. On those days, aircraft would arrive westerly on the third runway at an average rate of one every 3 minutes.

148. Figures 8a and 8b show indicative arrival swathes for these westerly arrivals. These aircraft would land in a westerly direction having approached from east of the airport. The main new areas directly overflowed in the borough with westerly arrivals are in the centre of Harlington. These areas would experience very high noise levels from aircraft flying low on final approach to the third runway. In addition, a number of areas to the sides of the arrival flight paths would be subject to noise from westerly arriving aircraft. Thus, noise from westerly arrivals would also affect Harmondsworth, and southern parts of Hayes and West Drayton north of the M4 motorway. The westerly arrival footprint in Appendix 5 shows the 70 dB SEL footprint covers Harlington and parts of Harmondsworth, Hayes and West Drayton.

#### Areas in Hillingdon affected by easterly arrivals

149. Easterly operations would take place on an average of 24% of days. On those days, aircraft would arrive easterly at the third runway at an average rate of one every 3 minutes.

150. Figures 8a and 8b show indicative arrival swathes for easterly arrivals. Aircraft would land in an easterly direction having approached from west of the airport. The main new area directly overflowed in the borough with easterly arrivals on the third runway would be Harmondsworth. Some areas of Harmondsworth would experience very high noise levels from aircraft flying low on final approach to the third runway. Other areas to the sides of the arrivals flight paths would also be subject to noise from easterly arriving aircraft. These other areas include northern parts of Longford and southern parts of West Drayton. The easterly arrival footprint in Appendix 5 shows the 70 dB SEL footprint covers Harmondsworth and parts of Longford, West Drayton and Harlington.

#### Other Hillingdon arrivals issues

151. It is also apparent from Figures 8a and 8b that the north of the borough would be overflowed by arriving aircraft above 6,000 ft. Because of the relatively high altitude of such aircraft, noise levels from individual aircraft would be much lower than noise levels in the south of the borough from aircraft overflying at low altitude during departure or arrival at the third runway. Nevertheless, noise from individual aircraft overflying the north of the borough would be audible to residents, at least outdoors, and would have an adverse effect on residential amenity.

#### Areas outside Hillingdon affected by arrivals

152. There would be new arrival flight paths for aircraft arriving either westerly or easterly at the third runway. The flight paths for arrivals at the third runway would pass over many areas outside Hillingdon borough not previously overflowed by aircraft arriving at the existing two runways. With westerly arrivals, these newly overflowed areas would include Norwood, Brentford, Chiswick, Hammersmith and Kensington. These are densely populated areas and in areas closer to the airport considerable numbers of residents would be subject to high noise levels from aircraft arriving at the third runway. The newly overflowed areas with easterly arrivals at the third runway would include residential areas in Langley and Eton.

153. Figures 8a and 8b show indicative arrival swathes with a third runway in 2030, while Figure 9 shows indicative arrival swathes in 2002. It is apparent from these figures that airspace within the London area requires a significant redesign to accommodate the growth in traffic with a third runway at Heathrow. In particular, there would be a major redistribution of arrival swathes above 6,000ft. This would result in many new areas further from the airport being overflown by arrivals above 6,000ft. Nevertheless, according to consultation paragraph 3.46, the NATS study into airspace requirements seeks to achieve full CDA with a third runway.

#### Triple arrival streams in night period

154. Paragraph 3.1.2 of the NATS report “Heathrow Runway 3 Capacity” outlines the two core runway operating options of MDL and MLD. It is stated that MDL and MLD would be the two core options during the day period. It is also stated that during the period 0600 – 0645 hrs, all three runways would operate in landing mode. Thus, it is proposed that in the early morning period 0600 – 0645 hrs, there would be three streams of arriving aircraft, with one arrival stream for each of the third runway, existing north runway and existing south runway. This is confirmed in the NATS report “Heathrow Runway 3 Study”, which states in section 3.2.2 that BAA have assumed triple arrival streams between 0600 and 0645 hrs.

155. The period 0600 – 0645 hrs falls in the “shoulder” period 0600 – 0700 hrs which is outside the night quota period 2300 – 0600 hrs. Therefore, numbers of flights at this time would not be controlled by the movements number limit applying to the night quota period in the government’s night flying restrictions. The use of all three runways for early morning arrivals suggests an increase in numbers of aircraft arriving, and the current night flying restriction would not prevent this. The period 0600 – 0645 hrs is within the recognised night-time period of 2300-0700 hrs when people should reasonably expect quiet conditions for rest and sleep.

156. Aircraft arriving on the existing two runways already cause widespread noise disturbance, including sleep disturbance, to residents in the early morning period. Aircraft arriving in the triple arrival streams with a third runway would fly over residential areas. With westerly operations, arriving aircraft in any of the three arrival streams would be flying over densely populated residential areas of west London. Aircraft arriving with easterly operations would also fly over residential areas.

157. The provision of triple aircraft arrival streams in the period 0600 – 0645 hrs within the recognised night time period of 2300 – 0700 hrs is of great concern because it would be likely to increase noise and sleep disturbance to residents. It is considered likely that a third runway would exacerbate noise and sleep disturbance caused to residents in the early morning period 0600 – 0700 hrs.

#### Departures noise in Hillingdon with alternating operation

158. Figures 10a and 10b of the consultation show indicative departure swathes with MDL and MLD operation respectively. Those figures give daily (apparently 0700 – 2300 hrs) numbers of departures for year 2030 with a third runway. Figure 11 gives corresponding data for departures in year 2002. These data have been analysed to give Table 8 below showing numbers of departures for 2002 and 2030 for westerly and easterly days.

Table 8  
Daily departures in 2002 and in 2030 with third runway

Runway	Westerly day		Easterly day	
	Year 2002	Year 2030	Year 2002	Year 2030
Third	-	329 (1)	-	330 (1)
North (2)	319.5 (2)	327 (2)	0	327 (2)
South (2)	319.5 (2)	327 (2)	638 (3)	327 (2)
Total	639	983	638	984

(1) mixed mode; (2) with alternation; (3) no alternation

159. The most severe noise impact from aircraft departures would be where departing aircraft pass low over the borough after taking off from the third runway. Figures 10a and 10b show that all aircraft departing from the third runway would depart to the north. It can be seen that aircraft arriving at and departing from the third runway would overfly areas of Hillingdon borough not previously overflown by aircraft using the existing two runways. Figures 10a and 10b also show westerly operation on an average of 76% of days, with easterly operations on the remaining 24% of days.

#### Numbers of departures

160. Table 8 shows that on a typical westerly or easterly day in 2030, there would be 329 or 330 aircraft departing from the third runway. This number of departures over the 16 hours day is equivalent to approximately 21 arrivals an hour. Thus, on average, an aircraft would depart from the third runway about every 3 minutes.

#### Areas in Hillingdon affected by westerly departures

161. As mentioned, westerly operations would take place on an average of 76% of days. On those days, an aircraft would depart westerly from the third runway at an average rate of one departure every 3 minutes.

162. Figures 10a and 10b show indicative departure swathes for westerly departures. These aircraft would depart in a westerly direction over land to the west of the third runway. Figures 10a and 10b also show that after taking off westerly from the third runway, aircraft would turn to the north to pass generally over the junction of the M4/M25 motorways. The flight path would pass north westerly over Stoke Poges in Buckinghamshire before turning to pass in a north easterly direction over Gerrards Cross, also in Buckinghamshire.

163. The main new area in Hillingdon borough directly overflown by aircraft departing westerly from the third runway would be Harmondsworth, which would experience exceptionally high departure event  $L_{Amax}$  noise levels. Other areas to the sides of the westerly departures flight paths would also be subject to noise from westerly departing aircraft. These other areas include north parts of Longford and south parts of West Drayton. The westerly departure footprint in Appendix 5 shows the 70 dB SEL footprint covers Hayes, West Drayton, and even parts of Uxbridge and Harefield.

164. It is apparent that noise impacts within Hillingdon borough from aircraft departures are greater with easterly departures than with westerly departures. This is partly a consequence of the third runway being located towards the west side of Hillingdon borough. It is also apparent that easterly third runway departures pass over more densely populated areas than westerly third runway departures.

#### Areas in Hillingdon affected by easterly departures

165. As mentioned, easterly operations would take place on around 24% of days. On those days, an aircraft would depart easterly from the third runway at an average rate of one departure every 3 minutes.

166. Figures 10a and 10b show the departure swathes for these easterly departures. These aircraft would depart in an easterly direction over land to the east of the third runway. Figures 10a and 10b show that after taking off from the third runway, aircraft would turn sharply to the north before flying along a generally northerly flight path passing between Hayes and Southall. Further north, the departure flight path passes over Northolt and Pinner.

167. The main new areas in Hillingdon directly overflown by easterly departures from the third runway would be Harlington, Yeading, Eastcote and surrounding areas. Parts of Harlington and south Hayes would experience exceptionally high noise levels from aircraft directly overhead at low altitude after taking off from the third runway. Other areas in the borough to either side of the easterly departure flight path would also be subject to noise from aircraft departing from the third runway. The easterly departure footprint in Appendix 5 shows the 70 dB SEL footprint covers the greater part of Hillingdon borough, reaching as far as Uxbridge, Ruislip and Northwood.

#### “High performance” third runway departures

168. Paragraph 3.46 of the consultation document states that departure routes for a third runway would be designed as “high performance”. Paragraph 6.2.1 of the NATS report “Runway 3 Study” gives the reason for this. It is stated that steeper departure profiles from the third runway are necessary to enable vertical route segregation from main runway departures. Paragraph 8.2.2 of the NATS report states that the third runway minimum departure requirement is a 7% climb gradient. These steeper climb profiles would require increased engine thrust and engine throttle settings, particularly for large aircraft, which would increase noise emissions. It is understood that these increased noise emissions have been taken account of in the noise contour modelling. Nevertheless, large aircraft departing from the third runway and climbing steeply over Hillingdon would produce exceptionally high event  $L_{Amax}$  noise levels not reflected in the average mode  $L_{Aeq,16h}$  noise contours.

#### No dispersion on departure from third runway

169. There is only one departure route from the third runway. Taking off to the west all aircraft fly over Gerrards Cross and north over Harefield. Taking off to the east all aircraft fly over the corner of Hayes and up the east side of the borough (Yeading, Eastcote, Northwood).

170. Figures 10a and 10b show indicative departure swathes in 2030 with a third runway. The departure swathes for the existing two runways split to follow separate SID (Standard Instrumentation Departure) departure routes before reaching 4,000ft, similarly to current practice. For example, in MLD or MDL operation, the departure swathes below 4,000ft for westerly departures from the existing south runway split into six swathes depending on individual nominal SID route. This is not the case with either westerly or easterly departures from the third runway. Thus, there is a single departure swathe below 4,000ft for either westerly or easterly departures from the third runway. The consequence of this is that there would be no dispersal of aircraft departing from the third runway. This would result in a concentration of noise from a continuous stream of overflying aircraft departing from the third runway. This would

tend to concentrate noise from departures in overflowed areas in Hillingdon. This is considered unacceptable and is understood to have been proposed solely to reduce the size of the 57 dB noise contour.

#### No respite periods with arrivals and departures using third runway

171. With a third runway, the existing two runways would revert to alternating use so as to give respite to overflowed areas for half of the day. Since the third runway would operate in mixed mode, there would be no half-day periods of respite from noise of third runway aircraft arrivals or departures. On days of westerly operations, residents to the west of the third runway would experience noise from departures over the whole day, while residents to the east of the third runway would experience noise from arrivals over the whole day. The converse situation would apply during easterly aircraft operations. The absence of respite periods is another factor significantly worsening the impact in Hillingdon of air noise from third runway use.

#### Areas outside Hillingdon affected by departures

172. Figures 10a and 10b show indicative departure swathes with a third runway. Westerly departures from the third runway would overfly new areas of Buckinghamshire, while easterly departures would overfly new areas of Ealing and Harrow boroughs. Noise from third runway departures would be exacerbated by the factors already mentioned. There would be changes to departure SIDs and NPRs for the existing two runways.

#### Changes in noise contours with third runway

173. The air noise impact with use of a third runway can also be illustrated using the average mode air noise contours. Figure 23 of the consultation gives the 57 dB noise contour for year 2002 (466,000 ATMs) and an indicative 57 dB noise contour for year 2030 with a third runway (702,000 ATMs). Comparison of these two contours shows that the 57 dB contour extends much further north in 2030 than in 2002. This means that large areas generally north of the airport are brought within the 57 dB contour due to noise from use of the third runway.

174. In 2002, the 57 dB contour was located slightly south of Sipson village. In 2030 with a third runway, the 57 dB contour would be located slightly north of the Cherry Lane roundabout on Stockley Road. This northward shift of the 57 dB contour means that new areas of Hillingdon are brought within the 57 dB contour.

175. Table 9 below gives estimates of resident properties within the various contours in 2006, and with third runway in 2020 and 2030. For completeness, estimates are also given for full mixed mode in 2015. There would be a relatively small increase in the number of Hillingdon properties in the contour from 2,883 in 2006 to 3,360 in 2015 with mixed mode. However, the number of Hillingdon properties in the contour would approximately treble to 8,914 with a third runway in 2020 compared with 2,883 in 2006. The number of Hillingdon properties falls slightly to 7,118 in 2030 with a third runway. The number of residential properties in the entire contour would fall from 111,509 in 2006 to 101,883 in 2020 with a third runway, and fall further to 86,789 in 2030. It can be seen that while the number of Hillingdon residential properties in the contour increases with a third runway, the number of residential properties in the entire contour area actually decreases.

Table 9  
Estimated number of residential properties within 57 dB noise contour

	Residential properties in entire contour	Residential properties in Hillingdon in contour
2006	111,509	2,883
2015 full mixed mode 540,000 ATMs	117,642	3,360
2020 third runway 605,000 ATMs	101,883	9,554 (8,914)*
2030 third runway 702,000 ATMs	86,789	7,758 (7,118)*

\* numbers in brackets are after subtracting approximately 640 residential properties demolished with third runway

176. The 57 dB contour with a third runway displays two noise contour lobes associated with noise caused by aircraft departing from the third runway. The westerly departure and easterly lobes extend along the westerly and easterly departure swathes respectively of Figures 10a and 10b. The westerly departure contour lobe extends in a generally north west direction over areas including Richings Park and Langley Park. Although there are some residential areas within the westerly contour lobe, the new areas affected are mostly rural and not densely populated. The easterly departure contour lobe extends in a north east direction to cover densely populated areas in south Hayes and Southall. This is another factor increasing third runway noise impact in Hillingdon.

177. Figure 23 shows that the westerly departure contour lobe is much larger in area than the easterly departure lobe. This difference in areas is understood to be a reflection of the fact that westerly departures from the third runway are expected to occur on 76% of days while easterly departures occur on only 24% of days. The difference in contour lobe areas is not due to noise from individual aircraft departures being higher with westerly than with easterly departures. In other words, noise under the easterly third runway departure swathe on days of easterly operation would be similar to noise under the westerly third runway departure swathe on days of westerly operation.

178. Figure 4.2 of ERCD Report 0705 shows noise exposure changes with third runway in 2030 relative to 2002. Areas where noise increases are shaded red, while areas with noise decrease are shade blue. Figure 4.2 clearly shows that areas where noise increases with a third runway are concentrated to the north of the line of the third runway, whereas most areas south of the third runway experience a decrease in noise. In fact, a large part of the red area denoting noise increases is within Hillingdon. This is a reflection of the fact that the third runway is situated in the borough.

179. Table 6 of the consultation gives the areas of the 57 dB noise contour as 126.6 sq km in 2002, and 77.0 sq km for the “do nothing” scenario in 2030. The area of the 57 dB contour area is given as 112.9 sq km with a third runway in 2030. This large

reduction in area from 126.6 sq km in 2002 to 77.0 sq km in 2030 is attributable to the combined effects of changes in numbers of aircraft movements and reduced noise emissions of future types of individual aircraft.

180. Without a third runway, the area of the 57 dB contour would decrease from 126.6 to 77.0 sq km. With a third runway, this reduction in area would not take place since the area would be 112.9 sq km. In effect, the reduction in noise contour area which would have taken place without a third runway has largely been taken up by additional noise contour area caused by noise from use of the third runway.

181. Table 4.10 in the ERCD report gives an analysis of noise changes for 2030 with third runway relative to 2002. According to the report, the noise difference calculations used a cut off value of 57 dB  $L_{Aeq}$  so as to avoid reporting noise changes at lower absolute noise exposure noise levels. Table 4.10 gives areas, populations and households experiencing noise contour increases or decreases in 1 dB bands from 1 to 9 dB. The table shows, for example, that 24.7 sq km and 32.9 thousand people would experience a noise increase of up to 3 dB, while 60.4 sq km and 96.6 thousand people would experience a noise decrease of up to 3 dB. These figures, of course, relate to the whole area surrounding the airport, and not to any particular borough such as Hillingdon.

182. Hillingdon believes that the decision to provide only a single departure route for the third runway is unacceptable. This contrasts with the multiple departure routes from the existing two runways that will operate in segregated mode whereas the third runway would be in mixed mode. Therefore, noise impacts under the new departure route from the third runway will be constant for affected residents.

183. Hillingdon believes this decision was made to limit the size of the 57 dB noise contour to fit the 127 sq km limit. The logical option of limiting the departure routes of the existing runways was not taken for political reasons, i.e. to prevent objections from residents away from the existing Heathrow departure routes who would be adversely affected.

184. Conclusion 8.6 of ERCD0705 states that some areas would experience noise levels in 2030 with a third runway considerably higher than in 2002. The conclusion also states that such effects may be mitigated as part of a future planning application. Hillingdon considers that noise increases with a third runway are unacceptable and cannot be satisfactorily mitigated. With a third runway, tens of thousands more people would be overflowed and newly exposed to aircraft noise.

185. Hillingdon considers that air noise impacts of a third runway would be unacceptable. Many of the most severe air noise impacts of a third runway would be in Hillingdon borough. A third runway would lead to large increases in air noise in Hillingdon in areas newly overflowed by aircraft arriving and departing from the third runway. Aircraft arriving at and departing from the third runway would generate high event noise levels in Hillingdon. Air noise from aircraft departing from the third runway would be exceptionally high. Noise from third runway departures would be exacerbated by the requirement for "high performance" departure, and by provision of a single departure route resulting in a concentration of noise from a continuous stream of overflying aircraft. Also, the third runway would operate in mixed mode without periods of noise respite, unlike the existing two runways which would revert to alternation operation so as to give predictable periods of noise relief. Expansion by

way of a third runway would be permanent, and the noise impacts of a third runway would be permanent.

### **Ground noise impacts with a third runway**

186. The indicative layout in Figure 6 of the consultation shows the proposed layout with a third runway and new Terminal 6. Areas are identified for aprons / ancillary facilities (including aircraft maintenance), and for ancillary facilities (also including aircraft maintenance). Areas for the aircraft stands at the new terminal are shown. The airfield is shown as including two aircraft taxiways passing over the A4 road.

187. The main source of airport ground noise with a third runway and new passenger terminal is likely to be aircraft taxiing. However, there would also be ground noise from aircraft maintenance work (possibly including engine ground running and testing), from airport ground equipment, service vehicles, fixed plant, and from activities at the terminal.

#### Aircraft taxiing noise

188. The majority of aircraft taxiing movements at the extended part of the airport are likely to be between the third runway and the stands of Terminal 6. It is apparent from Figure 6 that taxiways from Terminal 6 to the west end of the third runway would pass very close to Harmondsworth village. During westerly operations, arriving aircraft would taxi from the west end of the third runway to Terminal 6. During easterly operations, a queue of departing aircraft would be likely to form near the west end of the third runway, and aircraft would taxi from Terminal 6 to the west end of the third runway. These activities are likely to produce high levels of aircraft taxiing noise at Harmondsworth village. It is estimated that noise levels in Harmondsworth from aircraft taxiing from the new terminal to the third runway on days of easterly operations could be 65 to 67  $L_{Aeq,16h}$ . Taxiing noise from aircraft using the third runway may also be audible at residential areas on the north side of the M4 motorway, where it would add to existing road traffic noise

189. Aircraft would also taxi between the stands at Terminal 6 and the existing airport, making use of the two taxiway bridges passing over the A4 road. These aircraft would include large 4-engine aircraft unable to use the third runway, and therefore having to use one of the two existing runways in the main part of the airport. This would involve aircraft taxiing close to residential areas at Zealand Avenue and Pinglestone Close in Harmondsworth.

190. Paragraph 8.2.1 of the NATS report "Runway 3 Study" suggests that the third runway's operational length places operational limitations on aircraft such that some heavier aircraft may not be able to use it. It is stated that these aircraft would have to use one of the two existing runways.

191. Section 8.1 of the NATS report relates to ground movements with a third runway and new terminal 6. Paragraph 8.1.5 of the NATS report gives an example of hourly aircraft movements with three runways and a new Terminal 6. During one hour of operation, 24 aircraft arrive on the third runway. Of those aircraft, 15 aircraft travel to Terminal 6 while 9 aircraft travel to the Central Terminal Area. Also, 22 aircraft depart the third runway, with 13 travelling from Terminal 6, and 9 travelling from the Central Terminal Area. Thus, during the hour, 9 aircraft would taxi in each direction between the two parts of the airport.

192. There would also be taxiing noise from aircraft taxiing on the proposed new parallel taxiway close to the north side of the existing north runway.

#### Aircraft maintenance noise

193. The indicative layout shows an ancillary facility (including aircraft maintenance) located immediately to the north west of the Harmondsworth village. A further apron / ancillary facility is located immediately to the south east of the village. The latter facility is also located just to the north of residential areas at Zealand Avenue and Pinglestone Close in Harmondsworth. Aircraft maintenance work, which may include engine ground running and testing, would be carried out at these locations. It is considered that activities at these locations are likely to have a significant noise impact because of their proximity to residential areas in Harmondsworth.

#### Noise from terminal and associated infrastructure

194. According to paragraph 3.18 of the consultation, the new passenger terminal would cater for around 35 million passengers a year. There would be a main terminal building and two remote satellites, and a transport interchange including a rail station. There would also be a multi-storey car park, and possibly a hotel and maintenance and engineering facilities. It is inevitable that all these activities would generate noise adding to the burden of road traffic noise and aircraft noise affecting nearby residential areas at Field Close, Raywood Close and Doghurst Drive in Harlington.

195. Figure 6 of the consultation shows that existing residential areas in Harmondsworth and Harlington would be located between the existing north runway and the third runway. These areas would be close to aircraft taxiways, aprons and other airport operational areas. The northern part of Harmondsworth would be particularly badly affected since it would be surrounded on three sides by airport operational areas.

196. Hillingdon believes that noise from aircraft taxiing associated with use of the third runway and new passenger terminal would have a serious noise impact on many residential areas in Harmondsworth. Noise from use of ancillary facilities, including aircraft maintenance, would add to this burden. Parts of Harlington would be subject to noise from use of the new terminal and associated infrastructure.

#### Road traffic noise impacts with a third runway

197. Figures 5 and 6 of the consultation are indicative maps of the extended airport with a third runway and new passenger terminal. An indicative road and rail layout is shown.

198. Changes to the road layout include re-aligning the M4 spur around the east side of the extended part of the airport. The re-aligned M4 spur would connect to M4 junction 4, itself re-located approximately 700m to the east. There would be a new link road from the relocated M4 junction 4 to Stockley Road to the north. A new roundabout on the re-aligned M4 spur would give direct access to the new terminal. A new link road would connect that roundabout to the A4 road. The A4 road would pass under two taxiways providing access for aircraft from the existing airport to the third runway and new terminal.

199. According to the indicative maps, there would also be changes to the local roads. Land where Harmondsworth Lane and Holloway Lane are currently located

would be lost to make way for the airport extension. New local roads extending around the west and north of the airport extension would replace these road connections. There would also be a new perimeter road extending around the east side of the airport extension.

200. The revised road layout would have the effect of bringing major new sources of road traffic noise close to existing residential areas. The main new road traffic noise impact would be from the re-aligned M4 spur since this road would carry high traffic volumes. Also, the indicative maps show the M4 spur would be very close to a number of residential areas at Field Close, Raywood Close and Doghurst Drive in Harlington. Further north, noise from the re-aligned M4 spur would affect Harlington school situated in Victoria Lane.

201. The re-aligned M4 spur appears to pass through a short tunnel in the region of the east end of the third runway. However, the remainder of the re-aligned M4 spur appears to be mainly at ground level which would afford no noise screening to residential areas.

202. The new link road from the terminal roundabout to the A4 road would also pass close to existing residential areas at Doghurst Drive and Browngraves Road in Harlington. In fact, the residential area containing Doghurst Drive appears to be surrounded on all sides by three busy roads. The new link road from M4 junction 4 to Stockley Road would pass very close to residential areas at Pinkwell Lane and Skipton Drive in Hayes.

203. While the main road traffic noise impacts are believed identified above, detailed consideration of more definitive road layouts may reveal other road traffic noise impacts, including those related to local roads.

204. Hillingdon considers the revised road layout with a third runway and new passenger terminal would have significant road traffic noise impacts at a number of residential areas in Harlington and Hayes. The main road traffic noise impact would be from the re-aligned M4 spur.

## **Noise impacts at schools with a third runway**

### Noise levels at Hillingdon schools

205. Table 10 below gives estimated outdoor aircraft noise levels at those schools in Hillingdon borough nearest to Heathrow. Heathrow Primary school at Sipson is not considered here because it would be demolished to make way for the proposed third runway and new Terminal 6. The estimated noise levels are approximate and based on published average mode aircraft noise contours. The noise contours used for 2006 are the “standard” average mode contours for year 2006 produced for Department for Transport by ERCD. The noise contours used for 2020 and 2030 are the predicted noise contours with third runway as given in Figures 16 and 17 of the consultation.

206. It should be noted that the noise contours relate only to aircraft noise and do not include noise contributions from other noise sources such as road traffic noise. Actual outdoor noise levels at the schools may therefore be higher.

Table 10:  
Estimated current and future  
average mode aircraft  $L_{Aeq,16h}$  noise levels

School	Year 2006 Two runways	Year 2020 Three runways 605,000 ATMs	Year 2030 Three runways 702,000 ATMs
Harlington primary (William Byrd)	< 57 dB	69 dB	68 dB
Harmondsworth primary	60 dB	66 dB	63 dB
Cranford Park primary	< 57 dB	63 dB	63 dB
Cherry Lane primary	< 57 dB	63 dB	60 dB
Pinkwell primary & Harlington Secondary	< 57 dB	62 dB	58 dB
Longmead primary	< 57 dB	58 dB	57 dB

#### Noise criteria for schools

207. Advice on suitable noise levels for schools is given in the document “Guidelines for Community Noise” published by the World Health Organisation in 2000. The document states that in schools, the critical health effects of noise are speech interference and annoyance. It states that background noise levels inside classrooms should not exceed 35 dB  $L_{Aeq}$  during teaching sessions. It is also stated that for outdoor playgrounds, the noise level from external sources should not exceed 55 dB  $L_{Aeq}$ .

208. Building Bulletin 93 “The Acoustic Design of Schools” produced by the Department for Education and Science gives guidance on the acoustic design of new school buildings. The standards are intended to provide acoustic conditions which facilitate clear communication and enable study activities. The recommended upper limit for indoor ambient noise level in a classroom is 35 dB  $L_{Aeq,30min}$ . Research is mentioned showing that teaching can be disrupted by individual noisy events “such as aircraft flyovers”. An additional recommendation is therefore made that indoor noise levels should not exceed 55 dB  $L_{A1,30min}$ . The document states that noise levels in unoccupied playgrounds, playing fields and other outdoor areas should not exceed 55 dB  $L_{Aeq,30min}$  and there should be at least one area suitable for outdoor teaching activities where noise levels are below 50 dB  $L_{Aeq,30min}$ . Use of acoustic screening is mentioned where there is difficulty in achieving these outdoor noise levels. The document is a useful reference although its advice essentially relates to new schools rather than acceptable noise levels at existing schools.

209. There are anecdotal reports that schools under aircraft flight paths have to re-arrange their activities because of aircraft overflights. Also, it is reported that schools affected by aircraft flights at Heathrow are unable to conduct outdoor teaching because the teacher’s voice cannot be heard. These schools are therefore unable to fit in with the Government’s “Growing Schools” initiative. This aims to encourage all schools to use the outdoor classroom, both within and beyond the school grounds, for learning across the curriculum.

210. Hillingdon believes that noise criteria for schools exposed to aircraft noise should be based on outdoor noise levels. This is because outdoor noise levels at a site determine whether indoor noise levels can be met, and whether special sound insulation measures are required. Also, no sound insulation or screening is generally possible with aircraft air noise in order to achieve satisfactory noise levels in school outdoor areas. Hillingdon believes outdoor site noise levels for schools should be no more than 55 dB  $L_{Aeq,30min}$ , and ideally not more than 50 dB  $L_{Aeq,30min}$ . These noise levels apply during the worst runway mode of use of the airport.

#### Assessment for individual Hillingdon schools

211. According to Table 10, Harmondsworth school is already exposed to an estimated aircraft average mode noise level of 60 dB  $L_{Aeq,16h}$ , which is above the suggested noise level of 55 dB  $L_{Aeq,30min}$ . In fact, Harmondsworth school has applied under the Heathrow Noise Fines fund for funding to improve air conditioning. Air conditioning is required to provide cooling and ventilation because windows have to be kept closed to maintain effective sound insulation.

212. According to Table 10, all six schools listed would be above the outdoor noise level of 55 dB with a third runway. The table suggests that aircraft noise levels in 2020 with a third runway would be 69 dB at Harlington school, and 66 dB at Harmondsworth school. These two schools would be particularly badly affected. Furthermore, Harlington school would be additionally affected by new road traffic noise from the re-aligned M4 spur. Some of the schools listed may experience higher noise levels than those given with worst mode runway operation over a 30 minutes assessment period. For example, Cranford Park school is likely to experience higher noise levels during days of easterly operations because it is badly affected by easterly aircraft departures from the third runway.

213. BAA has announced a scheme to insulate schools in order to meet a requirement of the Government's Aviation White paper. Details of the scheme are given in the BAA document "Community Buildings Noise Insulation Scheme". According to that document, insulation for schools is to be made available at or above an aircraft noise level of 63 dB  $L_{Aeq,16h}$ . Hillingdon objects to the proposal for a third runway on noise grounds. In the case of noise impact on schools, Hillingdon's objection cannot be overcome by an offer of sound insulation. Even with sound insulation, it would be very difficult to provide acceptable internal noise levels at some of the schools listed. Also, there would be problems providing adequate cooling and ventilation in classrooms. Noise levels in outdoor areas at the schools would be unacceptable even with sound insulation.

214. Hillingdon considers that the third runway would have an unacceptable noise impact on six schools in Hillingdon borough. The noise impacts would impair the teacher's ability to teach and the children's ability to learn. There is significant concern that the noise impacts would adversely affect children's achievement and performance. Adverse noise impact on schools is one of the reasons Hillingdon opposes a third runway.

#### Cumulative noise effects

215. With a third runway, Hillingdon would be affected by a range of new noise sources including aircraft air noise, airport ground noise and road traffic noise. These noise sources have distinct acoustic features so there is unlikely to be masking of

noise from one source by another. The new noise sources would add to the existing noise burden experienced by many Hillingdon residents.

### **Third runway noise conclusion**

216. The Government can have no confidence that the 57 dB noise contour limit can be met with a third runway at the stated levels of aircraft movements. The noise contour limit is inadequate as a noise control and does not ensure compliance with the 480,000 ATM limit and the Government's noise policy. The contour limit is irrelevant to Hillingdon because it relates to overall contour area and allows contour area in Hillingdon to significantly increase. Aircraft using the new third runway departure and arrival routes would have a serious noise impact on large areas of Hillingdon. New airport ground noise and road traffic noise would add to this serious noise impact. Noise impact with a third runway would seriously harm the quality of life of a large number of residents in Hillingdon and neighbouring areas.

### **Air and ground noise impacts with mixed mode operation**

217. The consultation mentions three options for mixed mode use of the two existing runways. These are (i) full mixed mode adding 60,000 ATMs in 2015, (ii) partial mixed mode limited to certain hours of the day, and (iii) mixed mode within the existing ATM planning cap. Full mixed mode would require a redesign of airspace above London with new arrival and departure routes. For departures, there would be changes to Noise Preferential Routes (NPRs) and Standard Instrument departures (SIDs). Two independent arrival streams would be created.

218. Runway alternation was introduced in 1972 specifically as a noise mitigation measure to provide communities under the flight paths with predictable periods of noise relief. Hillingdon is sceptical that mixed mode would be introduced only as an interim measure until a third runway can be provided. Although the CAA may currently claim that the existing runways would have to revert to segregated mode with a third runway, future improvements in airspace technology may make mixed mode use of all three runways feasible.

219. As far as partial mixed mode is concerned, there appears to be no time period when the loss of alternation would not have a serious noise impact. This is because alternation is likely to be valued at weekends and during the evenings when people are more likely to be at home. Also, alternation during the working day is likely to be valued by schools because this is when children will be attending school. The comments on noise impact below are generally directed to the full mixed mode option.

220. Paragraph 3.107 of the consultation states that an important aim of the consultation is to get a better understanding of the importance people attach to alternation, and the time of day when it is most valued. It is therefore surprising that the consultation questions do not ask people to provide this information. In fact, the consultation makes no attempt to quantify the noise benefits of alternation.

### **Air noise and ground noise in Hillingdon with westerly operations**

221. At present, residents in Hillingdon subject to noise from westerly departures can expect predictable periods of noise relief. For example, residents in Longford can expect relief from departures noise for half the day (either 0700-1500hrs, or 1500-2300 hrs) while westerly departures are from the south runway. With mixed mode

operations, alternation would end so there would be no periods of noise respite with westerlies.

222. With westerlies, residential areas in Longford would be mainly affected by noise from departures using the north runway. However, because of mixed mode operation of the north runway, there may also be some noise from westerly arrivals on the north runway. Because there would be no alternation, residents of Longford would be subject to this noise without respite for the whole day. With mixed mode, the main noise impact at Longford with westerlies is considered to be loss of half-day periods of noise respite currently provided by alternation.

223. With westerlies, residential areas in the Cranford Cross area (situated between Cranford Lane and Bath Road, and accessed via Oxford Avenue) of Harlington would be mainly affected by noise from arrivals on the north runway. However, because of mixed mode operation, the north runway would also be simultaneously used by departing aircraft. The Cranford Cross area would therefore be subject to a combination of departure noise (including start of roll noise), arrivals noise and aircraft taxiing noise. Because there would be no alternation, residents of Cranford Cross would be subject to this noise without respite for the whole day. Residents of Cranford Cross would lose the existing half-day periods of noise respite provided by alternation.

#### Air noise and ground noise in Hillingdon with easterly operations

224. Mixed mode operations would involve easterly departures from the existing north runway. This would require ending the Cranford agreement. According to paragraph 3.130 of the consultation, the Cranford agreement was imposed in the 1950s to protect Cranford, then the nearest residential area to the airport, from the noise of departing aircraft when the airport is operating on easterlies. Although this reference specifically mentions Cranford, there are also parts of Longford to the north west of the airport located even closer to the north runway.

225. "Start of roll" noise is an intrusive and subjectively unpleasant component of departure noise occurring when an aircraft commences its take off run along the runway. Subjectively, start of roll noise takes the form of a loud roaring noise. The noise seems to last an appreciable time because the aircraft is initially stationary. Also, the departing aircraft is often not visible since it is still on the ground. Start of roll noise contains a large low frequency content, which means it is less attenuated by screening of buildings and other noise barriers. It also means its noise impact is not adequately represented by the A-weighting used in noise metrics such as  $L_{Aeq,16h}$ . Start of roll noise is also hidden in average mode  $L_{Aeq,16h}$  noise contours which are an average of noise from westerly departures and arrivals, and easterly departures and arrivals. The predominance of westerly departures over easterly departures would also tend to hide start of roll noise of easterly departures. All these factors tend to increase the impact of start of roll noise well beyond that which might be expected from a consideration of average mode  $L_{Aeq,16h}$  noise contours alone.

226. It is instructive to compare the distances between runway thresholds and nearest residential property for the various runways. For runway 27L, distance from threshold to residential at Cain's Lane, Bedfont, is around 465m. For runway 27R, distance from threshold to residential at Malvern Avenue, Cranford Cross, is around 720m, while distance to residential in Waye Avenue, Cranford, is around 1360m. For runway 09R, distance from threshold to residential at Russell Drive, Stanwell Moor, is around 720m. With mixed mode there would be an additional runway threshold for

easterly departures from runway 09L. For runway 09L, distance from threshold to residential at Bath Road, Longford, would be only 250m.

227. The above analysis shows that residential properties in Longford are very much closer to the adjacent runway threshold than are residential properties in Cranford Cross, Bedfont and Stanwell Moor. Because of this greatly reduced distance, start of roll noise would be much higher in Longford than at the other residential locations.

228. On days of easterly operations, the north runway would be used for a mix of arrivals and departures. Therefore, in addition to the noise of easterly departures discussed above, Longford would also be subject to noise from aircraft arriving easterly on the north runway. Furthermore, Longford would also be subject to ground noise from taxiing aircraft with easterly operations. On days of easterly operations, aircraft departing from the north runway would taxi from the terminal buildings to the west end of the north runway 09L. These taxiing aircraft would generate taxiing noise.

229. Aircraft taxiing noise is known to contain unpleasant tonal components which would be expected to make the noise more disturbing to local residents. Furthermore, it is likely that queues of aircraft would build up adjacent to the west end of runway 09L. The total taxiing noise at any one time would comprise taxiing-type noise from a number of aircraft either travelling to the runway or waiting in a queue prior to take off.

230. Because there would be no alternation with mixed mode, there would be no periods of noise respite. In other words, Longford would be subject to a combination of departures noise, arrivals noise and aircraft taxiing noise without respite for the whole day.

231. In view of all the above factors, Hillingdon believes residential areas in Longford would be subject to unacceptable noise with easterlies comprising aircraft departures noise, including "start of roll" noise, aircraft arrivals noise and aircraft taxiing noise.

232. Residential areas in the Cranford Cross part of Harlington are currently protected from the noise of easterly departures from the north runway. This is because the Cranford agreement prohibits easterly departures from the north runway. With mixed mode operation, this protection would be lost so that there would be easterly departures from the north runway on days of easterlies. On such days, residential areas in Cranford Cross would be subject to high noise levels from aircraft departing easterly from the north runway. On such days, there would also be noise from aircraft arriving on the north runway, possibly using reverse thrust.

233. With mixed mode operation, there would be no alternation and consequently no periods of noise respite. Thus, Cranford Cross would be subject to a combination of noise from easterly departures and arrivals without respite for the whole day. Because of its proximity to the easterly departure flight paths, departure noise levels would be high at Cranford Cross.

#### Quantifying mixed mode air noise impacts in Hillingdon

234. As a way of quantifying some of the effects of full mixed mode operation, estimates have been made of the number of people in Hillingdon exposed to air noise levels of 60 dB or more  $L_{Aeq,4h}$  during a notional evening (1900-2300 hrs.). For current runway use, population at 60 dB or above is estimated at 200 with arrivals on runway 27R, and 3,600 with arrivals on runway 27L, with fewer than 100 during easterly

operations at present. For mixed mode runway use, the population at 60 dB or more is estimated at 6,800 with westerly operations, and 6,000 with easterly operations.

Arrivals noise in areas outside Hillingdon

235. With mixed mode, arriving aircraft would be split between the two existing runways, so that there would be two arrival streams respectively aligned with the two existing runways. Indicative arrival swathes with mixed mode are shown in Figure 19 of the consultation, while arrival swathes for 2002 are shown in Figure 9. Comparison of Figures 9 and 19 shows that arrival swathes above 6,000 ft would be located further out from the airport with mixed mode operation than with current operations. Arriving aircraft nearer the airport would be aligned with the runways and would largely overfly areas already overflowed with existing operations. However, it appears from Figure 19 that arriving aircraft would align with the runways further out to the west or east of the airport such that there would be a concentration of arrivals noise in associated areas.

Loss of noise respite periods with arrivals

236. With full mixed mode operation, aircraft would arrive on the existing two runways throughout the day. There would be no half-day periods of noise respite provided by the current alternation system. On days of westerly operations, residents in overflow areas to the east of the airport would be subject to arrivals noise for the whole day. Conversely, on days of easterly operations, residents in overflow areas to the west of the airport would be subject to arrivals noise for the whole day.

237. Figure 9 gives arrivals numbers for 2002, while Figure 19 gives arrivals numbers for 2015 with mixed mode. These figures suggest total numbers of arrivals on a westerly day and an easterly day for 2002 and 2015 would be as given in Table 11.

Table 11  
Daily arrivals in 2002 and in 2015 with mixed mode

Runway	Westerly day		Easterly day	
	Year 2002	Year 2015	Year 2002	Year 2015
North	303 (1)	354 (2)	605 (2)	354 (2)
South	303 (1)	354 (2)	0	354 (2)
Total	606	708	605	708

(1) with alternation; (2) without alternation

238. Paragraph 3.92 of the consultation states that intervals between arrivals on either runway would increase to around 140 seconds with mixed mode, compared with around 86 seconds as at present. These intervals between arrivals do not seem to correspond exactly with the data in Table 11, and the reason for this is not known.

Westerly arrivals

239. According to Table 11, areas affected by westerly arrivals in 2002 on either the north or south runway would have been overflowed by 303 aircraft during the 8 hrs half day. In 2015 with mixed mode, these areas would be overflowed by 354 aircraft during the 16 hrs day. This shows that the total number of overflying aircraft over the 16 hrs day would increase from 303 to 354. In other words, although the intervals between overflying aircraft would increase, the total number of overflying aircraft in the 16 hrs day would increase. In addition, these areas would totally lose the daily 8 hrs noise respite period provided by the present runway alternation system. It is considered that

mixed mode would have an overall adverse noise impact on areas affected by noise from westerly arrivals primarily because of the loss of half-day noise respite periods.

#### Easterly arrivals

240. According to Table 11, areas affected by easterly arrivals on the north runway would have been overflowed by 605 aircraft during the 16 hrs day. With mixed mode operation in 2015, this would reduce to 354 easterly arrivals during the 16 hrs day. This constitutes a noise benefit with easterlies to the affected areas. Table 11 also shows that areas affected by easterly arrivals on the south runway were not overflowed at all in 2002. With mixed mode operations in 2015, these areas would be overflowed by 354 easterly arrivals during the 16 hrs day. This constitutes a large adverse noise impact for those areas.

241. It is recognised that mixed mode operation with easterlies would represent a redistribution of easterly arrivals noise. Thus, with easterlies, there would be a noise benefit for some areas mainly affected by easterly arrivals on the north runway, while there would be an adverse noise impact for other areas mainly affected by easterly arrivals on the south runway. Nevertheless, the total number of overflying arriving aircraft increase would increase from 605 to 708

#### Loss of Continuous Descent Approach (CDA)

242. Figure 21 of the consultation shows mixed mode approaches. Paragraphs 3.100 to 3.105 of the consultation describe the airspace scheme developed to allow full mixed mode operation giving 540,000 ATMs in 2015. The scheme allows two parallel streams of arriving aircraft, while maintaining the 1000 ft vertical separation for converging aircraft as required by ICAO. The airspace scheme involves northerly arriving aircraft joining the ILS at 5,000 ft, and southerly arriving aircraft joining at 4,000 ft.

243. It is also stated that aircraft using the southern runway would not normally operate CDA. This would apply with both westerlies and easterlies. The overall likely compliance with CDA for all arrivals is stated to be only 34 to 40% compared with around 80 to 85% currently achieved. CDA is an established operating method for minimising noise of arriving aircraft between from around 6,000 ft until the aircraft joins the ILS. The large reduction in compliance with CDA is an adverse noise impact of mixed mode operation. It is also contrary to Government policy to increase CDA compliance.

244. Paragraph 3.103 of the consultation states that aircraft approaching the southern runway would need to be held at 4,000 ft for around eight miles prior to beginning final descent. This reduced flying height would inevitably lead to increased noise levels from arriving aircraft headed for the south runway.

#### Departures noise in areas outside Hillingdon

245. With mixed mode, aircraft would depart from both existing runways throughout the day. There would be no half-day noise respite periods as at present. Figure 11 of the consultation gives departure swathes for 2002, and Figure 20 gives indicative departure swathes for 2015. Comparison of Figures 11 and 20 shows the changes in departure routes which would be necessary with mixed mode. It can be seen that mixed mode would require significant changes in departure routes, involving changes to the areas further from the airport affected by departures noise.

### Loss of noise respite periods with departures

246. The numbers of departures per day as given in Figures 11 and 20 have been analysed to give the total numbers of departures per day in Table 12 below.

Table 12  
Daily departures in 2002 and in 2015 with mixed mode

Runway	Westerly day		Easterly day	
	Year 2002	Year 2015	Year 2002	Year 2015
North	319.5 (1)	372 (2)	0	372 (2)
South	319.5 (1)	372 (2)	638 (2)	372 (2)
Total	639	744	638	744

( 1 ) with alternation; ( 2 ) without alternation

247. With the current system of runway alternation with westerly departures, areas mainly affected by departures from the north runway benefit from half-day periods of noise respite. Similarly, areas mainly affected by departures from the south runway also benefit from half-day periods of noise respite. With mixed mode, these half-day periods of noise respite would end. Table 12 shows there were 320 westerly departures over the 8 hrs half-day from each of the north and south runway in 2002. In 2015 with mixed mode, there would be 372 departures over the 16 hrs day from each of the north and south runways. Total numbers of departures over the 16 hrs day from each of the north and south runway would increase from 639 to 744. In addition, many areas would totally lose the daily 8 hrs noise respite periods provide by the current system of runway alternation. This constitutes an adverse noise impact on areas affected by westerly departures.

248. With easterly operations, there would have been no departures from the north runway in 2002 because of the Cranford agreement. Table 12 shows that in 2015 with mixed mode there would be 372 easterly departures from the north runway over the 16 hrs day. This is clearly a serious adverse noise impact for areas affected by easterly departures from the north runway. This issue is discussed further in relation to the proposal to end the Cranford agreement.

249. Table 12 shows that there were 638 easterly departures from the south runway over the 16 hrs day in 2002. With mixed mode operation in 2015, there would be 372 easterly departures from the south runway over the 16 hrs day. Areas affected by noise from easterly departures from the south runway would therefore benefit in noise terms.

250. It is recognised that mixed mode operation would lead to a redistribution of departure noise on days of easterly operation. Nevertheless, the total number of easterly departures on an easterly day of operation would increase from 638 in 2002 to 744 in 2015 with full mixed mode. Increased air and ground noise associated with loss of the Cranford agreement is considered to be one of the main noise impacts of mixed mode.

251. Mixed mode operation would result in loss of respite periods, loss of CDA, and severe local noise impacts associated with easterly departures from north runway. Departure noise, including start of roll noise, and aircraft taxiing noise in Longford, and general departure noise in the Cranford Cross part of Harlington, would be unacceptably high with easterly departures from the north runway. For these reasons, Hillingdon is totally opposed to mixed mode operation.

## **Noise impacts at schools with mixed mode operation**

252. With existing operations, the worst affected school in Hillingdon is Harmondsworth school. The published average mode noise contours for year 2006 indicate aircraft noise at the school is approximately 60 dB  $L_{Aeq,16h}$ . Indicative noise contours for 2015 with mixed mode are given in Figure 22 of the consultation. These contours suggest that aircraft noise at Harmondsworth school would remain at around 60 dB with full mixed mode.

253. However, with mixed mode, the benefits of alternation would be lost. In segregated mode with alternation, users of the school can expect predictable periods of noise relief during westerly airport operations. These periods of noise relief occur with westerly airport operations when aircraft arrive on the north runway and depart on the south runway. The school day is typically around 9am to 3:30pm, while alternation takes place at 3pm. This means that on around half of days with westerly operations, there are periods of noise relief lasting most of the school day. Also, westerly operations occur on the majority of days. Therefore, alternation provides significant benefits to users of Harmondsworth school.

254. If the current system of runway alternation were replaced by mixed mode operations, the predictable periods of noise relief at Harmondsworth school would be lost. The periods of noise relief would be lost during periods of mixed mode operation.

255. Hillingdon believes runway alternation has significant noise benefits for users of Harmondsworth school because it provides predictable periods of noise respite. Mixed mode operation would require the end of alternation and noise respite periods, and so have an adverse noise impact on Harmondsworth school. Adverse noise impact on schools in Hillingdon and other affected boroughs is one of the reasons Hillingdon opposes mixed mode runway operation. Hillingdon supports retention of the present system of segregated runway use with alternation on westerlies.

## **Mixed mode noise conclusion**

256. The 57 dB noise contour limit is not valid for assessing a change from segregated mode with alternation to mixed mode operation. Mixed mode operation is unacceptable because it would end the half-day noise respite periods given by the existing runway alternation system. There are no periods in the day when mixed mode would be acceptable. Mixed mode is also unacceptable because it would involve easterly departures from the north runway which would have severe noise impacts in Longford, Cranford Cross and Cranford. Loss of the Cranford agreement so as to permit easterly departures from the north runway is unacceptable for the same reason.

## **Cranford agreement**

257. Figures 3.2 and 5.1 of ERCD report 0705 give noise contours for 2015 (480,000 ATMs) respectively with and without the Cranford agreement. For 2015 without the Cranford agreement, segregated operation with alternation on easterlies has been assumed. Comparison of Figures 3.2 and 5.1 shows  $L_{Aeq}$  noise levels in some areas to the north east of the airport increase by more than 3 dB, while  $L_{Aeq}$  noise levels decrease in some areas south east of the airport. Table 14 of the

consultation document summarises changes in population within the various noise contours. The table shows ending the Cranford agreement would reduce the number of people further from the airport exposed to  $L_{Aeq}$  noise levels above 57 dB. However, nearer to the airport, the number of people exposed to higher  $L_{Aeq}$  noise levels (above 60 dB, 63 dB, 66 dB and 69 dB) would increase.

258. Hillingdon recognises that ending the Cranford agreement may have some benefits with easterly operations in redistributing some arrivals noise more fairly between areas affected primarily by noise from arrivals noise on the north runway, and areas affected primarily by noise from arrivals on the south runway. With easterlies, there would also be a redistribution of departure noise to the east of the airport. However, ending the Cranford agreement would have very serious noise impacts in residential areas close to the north runway.

259. The purpose of ending the Cranford agreement would be to allow easterly departures on the north runway. The serious noise impacts of such easterly departures have been explained above (in section on mixed mode). To the north west of the airport, residential areas in Longford would be seriously affected by departure noise because those areas are so close to the north runway. The start-of-roll component of departure noise with a succession of departures throughout the day would be intolerable in Longford. Longford would also be affected by noise from taxiing and queues of aircraft departing easterly from the north runway. To the north east of the airport, residential areas in Cranford Cross and Cranford would be seriously affected by departure noise from overflying aircraft.

260. Paragraph 2.12 of the consultation states that the Cranford agreement was designed to protect the residents of Cranford, close to the eastern end of the north runway, from the high noise levels experienced on the ground from departing aircraft. A footnote states that the Cranford agreement was given in a Ministerial undertaking given in 1952. Hillingdon believes the reasons for imposing the agreement remain valid, and urges the government to honour its commitment by retaining the agreement.

261. Hillingdon recognises that ending the Cranford agreement may have benefits in redistributing the noise from easterly arrivals and easterly departures. However, ending the Cranford agreement would mean easterly departures from the north runway. These departures would have a severe and unacceptable noise impact on residential areas in Cranford, Cranford Cross and Longford. For this reason, Hillingdon is totally opposed to ending the Cranford agreement.

### **Westerly preference**

262. Tables 13 and 14 of the consultation compare the noise impacts of westerly and easterly preference in 2015 with 480,000 ATMs in segregated mode, with and without the Cranford agreement. Paragraph 3.138 of the consultation concludes that switching to an easterly preference generally results in an increase in the population exposed within most noise contours, particularly within the 57 dB contour. Also, according to paragraph 3.139, switching to an easterly preference would similarly increase populations affected with mixed mode in 2015, third runway in 2020, and third runway in 2030.

263. The noise impact of departures from a third runway has been discussed above (in third runway section). It was pointed out that noise impacts are greater with

easterly departures from a third runway, than with westerly departures from a third runway. This is because easterly departures from a third runway would pass over more densely populated areas. This is another reason for supporting retention of westerly preference.

264. Hillingdon accepts that switching from westerly preference to easterly preference generally results in an increase in populations exposed within most contours. Switching to easterly preference would also seriously worsen departure noise impact from a third runway. For these reasons, Hillingdon supports retention of westerly preference.

### **Night time rotation**

265. Paragraph 3.147 of the consultation gives results of an analysis of average annual split between westerly and easterly operations during the night. It is stated that with the previous system of night time westerly preference operating until 2000, average annual split was 89% westerly and 11% easterly. For the years 2003/04 and 2004/05, the current system of night time weekly rotation between westerly preference and easterly preference applied. The average over those two years is given as 70% westerly and 30% easterly.

266. Paragraph 3.148 of the consultation compares the average split (70/30) with the current system of weekly night rotation, with the split (89/11) with the previous system of westerly preference. This comparison shows a 19% reduction in flights operating on westerlies under the new system. Noise impact from aircraft in the relevant part of the night relates to arrivals since there are no scheduled departures at this time. Also, noise from westerly arrivals affects the densely populated areas of London to the east of the airport. The reduction of westerly arrivals in the relevant part of the night as given by the night rotation system is therefore viewed as a benefit.

267. Paragraph 3.146 of the consultation seems to incorrectly imply that midnight to 0600 hrs constitutes the night period. According to consultation paragraph 2.17, the government's night flying restrictions apply during the night period 2300-0700 hrs, while consultation paragraph 2.8 states that the night time rotation system operates from last departure to 0600 hrs. The night time period is accordingly 2300-0700 hrs.

268. Hillingdon believes night flights cause serious and widespread noise disturbance to residents, and there should be a long term aim to end all flights in the night period (2300-0700 hrs). In the short term, while night flights continue, Hillingdon recognises that the system of weekly night time rotation between westerly and easterly preference is beneficial in giving the more densely populated areas to the east of the airport some relief from noise of aircraft landing at night. Hillingdon therefore supports retention of the system of night time rotation.

### **Early morning runway alternation**

269. Paragraph 3.150 of the consultation reports the results of a trial to extend runway alternation for arrival to the period 0600 to 0700 hrs. Under the trial, a system of runway alternation was used for arrivals in the period 0600 to 0700 hrs. However, Air Traffic Control were able to abandon alternation and use a second runway for arrivals if holding stack delays were 10 minutes or more in the period 0600 to 0629 hrs, and 5 minutes or more in the period 0630 to 0700 hrs.

270. Table 15 of the consultation gives results of the trial. Over the two years 2003/04 and 2004/05 of the trial, full alternation was achieved for 13% of days in the period 0600-0629 hrs, and 26% of days in the period 0630-0700 hrs. The corresponding annual average days of full alternation appear to be 46.5 days in period 0600 to 0629 hrs, and 95 days in the period 0630 to 0700 hrs (not 93 days and 190 days as stated in paragraph 3.154). It is reported that the relatively low adherence to alternation was caused by the frequent need to abandon alternation so as to avoid delays with high numbers of arrivals. Consultation paragraph 3.155 and 3.156 state that full or partial alternation in the period 0600 to 0700 hrs means that those living to the east of the airport have some relief from noise of landing aircraft.

271. Hillingdon believes that night flights cause serious and widespread noise disturbance to residents, and there should be a long term aim to end flights in the night period (2300-0700 hrs). In the short term, while night flights continue, Hillingdon recognises that the system of early morning runway alternation currently operating is beneficial in providing areas affected by arrivals noise with days of relief during all or part of the period 0600 to 0700 hrs. Hillingdon therefore supports retention of the system of runway alternation in the period 0600 to 0700 hrs.

## **SURFACE ACCESS**

272. A range of potential surface access options was previously assessed as part of the Project for the Sustainable Development of Heathrow in order to support the air quality issue by ensuring a cut in vehicle emissions. However, now that these appear not to be necessary, only measures to deal with congestion are deemed necessary. The consultation document states:

“As our work has been focused on measures to ensure that the air quality limit values could be met, we have not considered in detail the precise traffic impacts of additional capacity on surrounding communities or the necessary demand management measures to reduce road traffic growth or contain congestion to specified levels... Any work to prepare a planning application to approve growth at Heathrow would need to address such matters, including physical connections to the road and rail networks, and measures to reduce travel by car and increase the use of public transport alternatives.” (paragraph 3.161 Chapter 3 Consultation Document).

273. The background surface access report is therefore of little use. Traffic measures are no longer deemed necessary to deal with the air quality problem and therefore no additional strategic public transport proposals or capacity is proposed specifically to support an expanded airport. Instead measures such as Crossrail and AirTrack are already in progress, and possible increases in capacity on the Piccadilly Line would deal only with existing overcrowding and natural growth – not the four fold increase in peak hour demand predicted with a third runway.

274. The consultation advises that the public transport mode share with a third runway would only increase by 1% as a result of Crossrail and 1% with AirTrack and bus and coach service improvements. The modelling predicts that public transport annual mode share will rise from 36.2% in 2004 to 41.7% in 2030 representing an increase from 15.8 million passengers in 2004 to 38.2 million passengers in 2030. However, London Underground predict a background increase of 50% more passengers on the Piccadilly Line by 2020 but with only a 20% increase in its capacity via the PPP. It is disingenuous for Government to claim that the level of public transport provision is “sufficient to manage the level of forecast demand” and then leave this issue to BAA at the planning stage. The failure to assess traffic impacts and mitigation measures means that further options such as road pricing are likely to be needed once congestion becomes acute. Such measures are already under consideration by the Highways Agency to deal with existing congestion and the major increase in traffic from Terminal 5.

275. Hillingdon considers that these difficulties highlight the error of adding a major traffic generator into the middle of the most congested part of the national motorway system. Measures necessary to deal with the resulting congestion on the road network such as high cost road pricing and other measures will have adverse impacts on local communities.

276. The lack of any new strategic public transport initiatives linked to expansion is a major lost opportunity. It is likely that history will repeat itself with public transport investment lagging ever further behind airport expansion. The Aviation White Paper’s

requirement of improving public access to Heathrow has already fallen at the first hurdle.

## LOCAL IMPACTS

277. The current consultation proposes a drastically increased land take in comparison to the plan published in the 2003 Aviation White Paper. It also proposes a significantly increased land take compared to the BAA Interim Master Plan 2005 which itself incorporated all 4 options proposed by BAA in its SERAS submission. The original White Paper consultation (SERAS) proposed the demolition of about 260 residential properties. Those in the BAA Interim Master Plan 2005 involved about 700. No indication is given of the new total, and the layout plans are indicative, but it is clear that more demolition of residential properties – as well as commercial properties – is required to make way for the proposed road system.

278. In addition to land take, the number of flights has increased to around 702,000 up from the 655,000 in the SERAS consultation (Table 7.1 SERAS South East Consultation Document July 2002). It has not been possible to ascertain accurate passenger forecasts for this level of flights but clearly the passenger throughput is many millions more than it was at the time of the SERAS consultation. There will consequently be a range of knock on implications in terms of subsequent urbanisation, regional development pressures, employment and housing pressures, none of which has been objectively assessed.

279. No information is provided about the size of the additional land area involved. However, it amounts to tens of hectares and potentially hundreds. Indeed, there is now no commercially useable land adjacent to the new boundary of the airfield that is not proposed to be fully utilised. This entire additional land take is designated Green Belt. The detailed impacts of this additional land take are detailed below:

### Harmondsworth and the Great Tithe Barn

280. Hillingdon notes that the field adjacent to the Great Barn at Harmondsworth is proposed to be incorporated within the development as “Ancillary Facilities (Including aircraft maintenance)”. This area is shown to be outside the airport boundary.

281. This proposal is considered to be one of the clearest failures of the consultation. It demonstrates a total ignorance of local issues and the comparative domination of the aviation industry. The Great Barn is a Grade I listed Scheduled Ancient Monument. It is one of the finest surviving examples of a medieval tithe barn in Britain and the boundary of the Heathrow option was specifically amended in the 2003 Aviation White Paper, with the proposed runway repositioned 100m to the east to enable retention of the Barn and adjacent church.

282. The Impact Assessment makes minimal reference to the huge environmental impact of the proposed Third Runway on the special character and appearance of Harmondsworth Conservation Area, or the historic settings of the fifteen listed buildings, grouped around the mediaeval High Street. This historic settlement grew up at the gate of the Benedictine Priory, which was sited on the land to the west and south of the Tithe Barn, now an Archaeological Priority Area.

283. The Priory was built in the 12<sup>th</sup> century, and the parish Church, which would have been part of this monastic site, retains some 12<sup>th</sup> century fabric. Harmondsworth’s origins are earlier even than that however. There is evidence for Saxon settlement in the field to the west of the Barn, and the village had been

established by the time of the Domesday Book (1086). Although the Priory was demolished at the Reformation, the great Priory Barn, built to store the dues owed by the Priory's tenants, has of course survived, still in its farmyard, although the post-reformation Manor House was replaced in the 18<sup>th</sup> century by Manor Court.

284. Whilst the Tithe Barn would not physically be destroyed by the runway, the boundary would be only four or five metres to the north, with all the resulting noise, vibration and visual intrusion. The newly proposed ancillary area for aircraft maintenance in the field to the west of the barn would be just as damaging. Built within metres of the Barn, it would occupy the historic heart of Harmondsworth and completely destroy any historic continuity, context and setting surviving to the Tithe Barn after the building of the Runway to the north. The Council is currently in the process of compulsorily purchasing this field for use as public open space. One of the key reasons given by the Secretary of State for confirming the compulsory purchase order on 11 February 2005 was the protection of this site from potential development as a touring caravan site!

285. Of the fourteen other listed buildings in Harmondsworth, the Church is particularly significant, being early mediaeval and listed Grade II\*. Adjacent to this is the Sun House, a very interesting and substantial 15<sup>th</sup> century timber-framed listed building, which could well have been the mediaeval Church House. The relationship between the site of the Priory, the Tithe Barn, the Church, and the Church House, is particularly important, and unique in Greater London.

286. The viability of the structures and future uses of the buildings in this unique historic settlement, surrounded on three sides by Heathrow, and exposed to very high noise and vibration levels would be severely in doubt, and the setting of this settlement, so important and so rare, would be decimated.

287. Attached at Appendix 6 is the latest Harmondsworth Conservation Area Appraisal Document which was adopted by the Council in March 2007.

#### Additional runway length

288. The additional 500m-runway length results in the proposed runway extending significantly further to the west and east compared with that shown in the Aviation White Paper and the BAA Interim Master Plan 2005. To the west this increased length further removes any vestige of an appropriate setting to the northern boundary of the listed Tithe Barn and St Mary's Church and graveyard in Harmondsworth Village. Their northern settings will be more dominated than previously by aircraft, particularly at the start of roll on easterly take offs. Further areas of Harmondsworth Moor Park, including the Duke of Northumberland's River and the River Colne will be culverted and their nature conservation value severely affected.

#### Additional land outside the boundary of the expanded airport

289. Unlike the 2003 Aviation White Paper and BAA's Interim Master Plan 2005, additional land take is now shown at the western end of the proposed runway. As far as is known, this is the only land proposed for directly related airport development that is outside the boundary of the proposed expanded airport. It is proposed for "Ancillary Facilities (Including aircraft maintenance)". Such facilities are not site specific and can be located elsewhere around the airport. Part of this land includes the Saxon Way Industrial Estate on Moor Lane which is already in commercial use. However, this industrial estate is surrounded by two rivers – the River Colne and the Duke of

Northumberland's River and by public open space within Harmondsworth Moor Park. The rivers are designated nature conservation sites on the Hillingdon Unitary Development Plan Proposals Map and are within the Colne Valley Regional Park. This area is therefore a high value natural environment that should not be developed as proposed. Alternative locations can and should be identified.

#### Land West of Terminal 5

290. Figure 5 in Chapter 3 of the main consultation document shows, with a hatched black line, "Other White Paper identified land". There is no further reference to this land anywhere in the consultation. This proposal is a hangover from the 2003 Aviation White Paper when no 6<sup>th</sup> terminal was proposed and extra aircraft were proposed to use the existing terminals at Heathrow. In that scenario, this additional land was identified to support additional passenger numbers using Terminal 5. This justification no longer applies. There is no requirement for additional land west of Terminal 5 to support airport expansion. It is therefore necessary to delete this land from the proposals especially due to its location within the sensitive Colne Valley Regional Park with rivers and sites of nature conservation value affected.

### **New Roads**

#### Western Link

291. The loss of Holloway Lane will cut the villages of Harmondsworth and Longford from access to local facilities in West Drayton such as shops, schools and healthcare. The rationale for a replacement northern link road is acknowledged. However, there is no justification provided, for the proposed link road between the A4 junction with Stanwell Moor Road and the extended Moor Lane. This new road would cut through Harmondsworth Moor Park requiring a new bridge across the Wraysbury River and decimating a large area of the Park which is acknowledged as a significant nature conservation resource. Given that large parts of this park will be lost to the runway itself it is considered unacceptable to unnecessarily develop other parts of the park. It is considered that the existing Tarmac Way / Moor Lane route could be upgraded as an alternative. No information / justification has been provided for these detailed proposals.

#### Stockley Road

292. Similarly it is considered that the proposed diversion of Stockley Road across open Green Belt land and the Shepiston Lane Cemetery should be deleted. It would also bring road traffic noise to residential properties in Pinkwell Lane and Skipton Drive, Hayes. The existing Stockley Road would remain in place as a single carriageway road. It is therefore considered essential to assess the alternative option of upgrading Shepiston Lane to a dual carriageway with alterations to the existing Stockley Road / Shepiston Lane Roundabout junction and the proposed new M4 Motorway Spur junction. No information / justification has been provided for these detailed proposals.

#### M4 Spur Road

293. To the east, the additional runway length has resulted in the proposed M4 Spur Road being relocated further east adjacent to residential areas within Harlington. It is not clear from the small-scale plan provided how many properties in Old Farm Close and Raywood Close Harlington will require demolition – but several certainly will.

294. The impact from this new M4 Motorway Spur Road is significantly greater than that indicated on the BAA Interim Master Plan 2005 where drawing No. 4 shows the eastern boundary of the proposed airfield (and hence new M4 Spur Road) significantly further from the residential properties of Harlington and requiring no property demolitions in Harlington.

295. The Indicative Third Runway Layout plan illustrates a grade separated motorway junction at the point where the proposed link road between this new grade separated roundabout and the A4 is proposed. It can be anticipated that this roundabout will be elevated as with the similar Welcome Roundabout at the Terminal 5 site. If not then the main motorway carriageway itself would be elevated. The visual and noise impacts of this proposal would be very substantial and significantly detrimental to nearby residential properties. Similarly the southern section of the proposed M4 Motorway Spur Road, its access ramps and the new road between the grade separated roundabout and the A4 will be very close to residential properties and will have significant adverse noise, vibration and visual impacts for residents in Browngraves Road, Harlington, Bolton's Lane, Chestnut Close, Doghurst Drive and adjacent roads.

#### High Street Harlington

296. Figure 5 in Chapter 3 of the main consultation document indicates the dualling of 200m of Harlington High Street northwards from its junction with the A4. Given that only one office building, one hotel and several residential properties would have direct access to this widened road it has to be assumed that its sole purpose is to provide increased capacity and queuing space for vehicles using the Harlington Corner Junction on the A4. This illustrates the problems that will be caused on local roads by the additional traffic generated with a third runway. In this case that traffic is destined to pass through the village of Harlington to the detriment of the free and safe flow of traffic and the amenities of local residents.

#### Major Landscaping

297. It is noted that only 1 area of major landscaping is proposed along the south western boundary of the airfield. It is considered vital that some form of strategic landscaping / sound attenuation is provided to those remaining residential properties in Harmondsworth Village that would directly adjoin the airfield at a point close to the runway. Conditions at this location will be intolerable.

298. It is noted that the boundary demarcation along this boundary, as shown on Figure 6 in the consultation document is different from that shown along other parts of the airport boundary but that no explanation is provided. This error needs to be corrected.

299. No account or assessment has been taken of the massive construction impacts that will be in very close proximity to adjacent residential areas. No account has been taken of the need for or visual impact of an air traffic control tower that is certain to be required and which will be visible from a wide area.

#### Mineral Reserves

300. The area of land that would be affected should a third runway be developed contains a high proportion of the remaining sand and gravel reserves in West London. Sites within the area are currently operative, and the area includes a large number of worked, filled, restored and virgin sites. In addition, such a project would consume

huge quantities of aggregate, particularly if large-scale replacement of former infilled sites were required. As the proposed development would sterilise a large portion of London's remaining strategic reserves, sourcing aggregate could prove to be extremely difficult, and lead to severe environmental damage and disturbance over a wide area as less appropriate and/or inappropriate alternative locations are sought to supply replacement aggregate for London. The environmental impacts that would result include increased green house gas emissions. Attached at Appendix 7 is a separate assessment of the current provision of mineral reserves in the borough prepared as part of the Council's LDF work programme. It highlights these problems and demonstrates the need for this impact to be assessed.

### Public Safety

301. No obvious account has been taken of the public safety zones which encompass more development now that the runway is proposed to be 500m longer. Their impact on the M25 and on Harlington should have been assessed in detail.

302. Provision of a third runway at Heathrow substantially increases the risk to individuals living in the vicinity of the flight paths of the proposed runway. The high density of population in the vicinity of Heathrow and across west and central London, combined with the increase in the number of aircraft movements that a third runway would allow is predicted to cause a significant increase in safety risk. Therefore a further runway at Heathrow should be rejected outright on safety grounds, as safety in the transport industry should be the number one priority.

303. The significant 1:100,000 contour is defined as an area within which a person remaining in the same location for a period of a year would be subjected to a 1 in 100,000 risk of being killed as a result of an aircraft accident. It is an area within which most new development is constrained on safety grounds. Policy advice in DfT Circular 1/2002 states that the basic policy objective is that:

*"there should be no increase in the number of people living, working or congregating in Public Safety Zones and that, over time, the number should be reduced as circumstances allow."*

304. The area within the 1:100,000 PSZ for the proposed third runway has a population of around 2,000 and 2 places of worship. This represents a substantial increase in the number of local residents who would be exposed to a new safety risk. Also, parts of the highly trafficked M25/M4 junction and M4/A312 motorway junctions would also fall within the PSZ. Relevant Government Circular guidance states that density of occupation of a six-lane motorway is similar to that of a housing development and that such transport infrastructure should not be permitted within Public Safety Zones.

305. The critical point is that this site is within Greater London and is heavily urbanized unlike the other potential sites that are rural and/or have flight paths mainly over water. The greatly increased safety risk at Heathrow, compared to other potential sites, must be accorded significantly greater weight.

### Health Impact Assessment

306. There has been no health impact assessment at this stage. It is hard to see how a policy decision of this magnitude can be taken without one. Examples of the

potential impacts have been provided by the Hillingdon PCT in their separate consultation response.

307. Hillingdon believe it is inconceivable that such an important issue such as a full health impact assessment is not included with this consultation. The results of the costs involved should have formed an integral part of the assessment.

### Comparison of Local Impacts

308. The key issue is that neither the development itself or the local impacts have been assessed objectively in relation to any alternatives but are presented as a fait accompli. Such an approach is unacceptable and makes a complete mockery of the SERAS assessment which was undertaken as an objective analysis of the costs and benefits of providing additional runway capacity. Specifically it compared alternative sites for new runways in South East England. The following table, prepared at the time of the SERAS consultation, provides a quick comparison with the impacts of the White Paper proposals. It includes: Heathrow with a third runway; the 3 runway option at Stansted; the new airport at Cliffe; and a second runway at Gatwick. No comparable assessment has been made of the impacts of the revised new Heathrow third runway, a situation that is unacceptable. It is not possible to obtain directly comparable data from the limited information in the Appendix B Impact Assessment.

**Land take from airport development**

	<b>LHR+1</b>	<b>STN+3</b>	<b>Cliffe</b>	<b>Gatwick</b>
<b>Residential</b>	261 dwellings Medium Adverse	226 dwellings Medium Adverse	777 dwellings High Adverse	430
<b>Commercial</b>	18ha Low Adverse	Negligible	24ha Low Adverse	
<b>Public buildings</b>	2 buildings Low Adverse	1 building Low Adverse	3 buildings Medium Adverse	
<b>Agricultural land</b>	288ha High Adverse	1179ha High Adverse	2022ha High Adverse	260ha
<b>Recreational land</b>	63ha Low Adverse	747ha Encroachment High Adverse	13ha Footpath, Medium Adverse	
<b>Green Belt</b>	228ha Encroachment High Adverse	None	None	530ha

309. Now that the environmental and community costs of providing the third runway at Heathrow are so much greater than those in the 2003 Aviation White Paper, having been consistently increased in terms of their scale and impacts, it is essential that a reappraisal of the SERAS options and any alternatives be carried out.

## **OTHER ISSUES**

### **Broken Promises**

310. There has been a long history of broken promises concerning Heathrow's expansion. It is not proposed to repeat them here but they are indicative of the scepticism with which the current proposals are widely viewed. There are no undertakings whatsoever that the length of the proposed runway will not be increased for a second time or that flight numbers will not exceed the 702,000 flights now proposed. Without a limit it is inevitable that financial requirements will dictate that every spare element of capacity is fully utilised. Already Heathrow's runways are close to capacity causing regular congestion and delays. Yet the only response is to seek more capacity rather than providing some spare capacity to build resilience into the system. The likely congestion at Heathrow with 3 runways, as opposed to the current 2, will be significantly greater and lead to greater passenger delay and frustrations. At the 22 January 2008 London Assembly Environment Committee, Stephen Nelson the current Chief Executive of BAA, would not rule out the need for a 4<sup>th</sup> runway and 7<sup>th</sup> terminal. Similarly, no means of control is proposed to ensure that the noise and air quality limits can be controlled if exceeded.

311. It is noted that at paragraph 3.25 of the consultation it is claimed that the longer runway would not affect the forecast mix of short-haul and long haul traffic across the airport as a whole (following the increase in the length of the runway by 500m). However, Heathrow is a unique airport and it is considered inconceivable that valuable slots capable of receiving larger aircraft would not be utilised by larger aircraft but instead continue to be used by smaller ones. It is therefore probable that the fleet mix assumptions underlying large elements of the consultation are fundamentally flawed.

### **Resilience and Hubs**

312. Much emphasis is placed on the resilience benefits of additional capacity in times of adverse weather, security or other disruptions (up 15% since 2002) leading to more fuel burn, delay and congestion. However, no mechanism is proposed to prevent either the current airport or an expanded one from becoming full to capacity and beyond. Once expanded, the airport would inevitably be used to its full capacity for commercial reasons. Disruptions from weather, security and other sources will cause exacerbated problems as many more flights with greater passenger capacities will be disrupted. This will lead to worse traffic congestion on surrounding roads and greater numbers of passengers being disrupted. It is Hillingdon's belief that the benefits of spreading capacity (and therefore risk) across all London Airports has been ignored. Airport development should be more evenly spread across the South East region, enabling a flexible London hub system to operate. This would relieve demand on congested surface access routes and promote competition. Dispersion of capacity will spread regeneration benefits, reduce travel requirements and spread demand for ancillary development.

### **RAF Northolt**

313. The consultation confirms that there will be some loss of airspace flexibility at RAF Northolt with either the third runway or mixed mode at Heathrow. It is stated:

“commercial movements at Northolt would reduce available capacity on a third runway, one-for-one. In any trade-off between commercial operations at Northolt and providing additional capacity at Heathrow, the greater economic benefits of the latter would be a material consideration in any Government assessment of their relative merits.” (Paragraph 3.49 of Chapter 3).

314. However, there is no certainty concerning this issue and it is possible that a technical solution may yet overcome this problem. It cannot therefore represent a positive benefit that would improve the currently poor noise environment around RAF Northolt.

## **Climate Change**

315. The climate change impacts associated with the options for expansion are given little regard despite the Government’s recent publication ‘Planning for Climate Change’. A third runway is estimated to produce approximately 3.0million tonnes of carbon a year and although the increase is acknowledged in the consultation report there are no control measures suggested as to how this will be mitigated or addressed. The Government states that it is “committed to ensuring that aviation reflects the full costs of its climate change emissions” however this statement is meaningless given that there are no policies in place to ensure this is the case. The Government refer to the inclusion of aviation in the EU emissions trading scheme (EU ETS) as a means of addressing the climate change impacts but there are no agreements for this in place and negotiations are still underway in Europe, suggesting that implementation is still some way in the future. In addition, the EU ETS only covers carbon dioxide emissions and it is widely accepted that aviation creates other non-CO2 climate change emissions, which contribute to global warming. If aviation is included in the EU ETS in the future, these additional emissions will still not be accounted for and addressed.

316. For the above reasons, Hillingdon believe that the Government have not demonstrated any commitment to addressing the climate change impacts associated with expansion at Heathrow. The only policy the document refers to (EU ETS) is a) not in place, and b) will not address the full range of climate change emissions associated with aviation.

317. Climate change costs from additional traffic generated on the road network have simply been ignored in the Impact Assessment. Therefore the claimed £4.8bn carbon cost estimate for the third runway up to 2080 is misleading and significantly underestimates the climate costs of expansion. (Paragraph 2.24 Impact Assessment).

318. Measures to constrain demand for flying rather than relying on a non existent emissions trading scheme are needed. The obvious measures are levying VAT on aviation and duty on aviation fuel. If such measures were coupled with restrictions on short haul flights from Heathrow, that could be made by rail instead, then the third runway would not be needed. Indeed, alternatives to air transport, such as high speed rail, have not been adequately considered. Government has not seriously considered the potential for the development of high speed rail links within the UK, which would reduce the number of domestic and near European flights, freeing up capacity at Heathrow and obviating the need for a third runway.

## Consultation Inadequacies

319. There are 14 technical documents accompanying the consultation which concentrate on the noise and air quality tests set out in the Aviation White Paper. There is only one technical document on surface access and none on local impacts. These technical documents have been prepared in private over a considerable period of time principally overseen by the Department of Transport and BAA. Independent access has been denied. The consultation only allows 14 weeks to respond and places local authorities in a disadvantaged position seeking to appoint specialist consultants to analyse complex technical matters. Requests to the Aviation Minister for an extension of time have been made by 2M Group representatives and others but have all been refused. The restricted timescale favours BAA the airport operator which has a vested financial interest in the consultation and has had unrestricted access and influence over the consultation in the lead up to its publication.

320. Borough residents within the existing and proposed 57dBA noise contour were mailed a summary version of the main consultation document (a total of 10,100) residents but those within the 50 to 57dBA contours should also have been consulted as they will be adversely affected by new air noise. The summary version of the consultation is considered very limited and the questionnaire biased. The majority of the information is highly complex and likely to be unintelligible to those without existing knowledge of Heathrow and civil aviation. Equally on those issues of particular local concern such as loss of communities there is minimal information, and what there is, is presented in the Impact Assessment in a way that prevents objective assessment especially of any alternatives.

## Restricted Scope of Assessment

321. The Consultation Document and supporting background information 'take for granted' that the decision to provide a third runway at Heathrow has already been taken. It states in the introduction that the consultation document reports on the outcomes of the Project for the Sustainable Development of Heathrow work and invites views on:

- the physical layout proposed and whether the environmental conditions can be met;
- mixed mode operations;
- review of operating procedures including the Cranford Agreement
- night-time rotation and the early morning alternation trial

322. The consultation questions relate to these detailed issues and do not allow comment on whether the third runway should be permitted in principle. The only consultation information relating, in part, to the principle of the development is contained within the Impact Assessment at Annex B of the Consultation Document. However, this document, whilst providing some useful information about costs and benefits, merely assesses each of the 3 options for providing new capacity against a base case. It states:

*"This Impact Assessment (IA) assesses whether the Government should support one or more of the possible sequencing options for adding capacity at Heathrow airport against the criteria set out by the Impact Assessment Guidance<sup>30</sup>. The economic case for Government supporting additional capacity at Heathrow airport was set out in the ATWP and the environmental and*

*surface access requirements are discussed in the main consultation document. The IA takes both positions as given and seeks to present, as far as possible, a factual assessment of the potential impacts of the possible sequencing options which may be available to the airport operator, subject to the outcome of the current consultation and future planning applications.” (Paragraph 1.1 Impact Assessment).*

323. Accordingly, the Impact Assessment has not considered the principle of the third runway. Hillingdon considers that a Strategic Environmental Assessment is a statutory requirement that should have been carried out as an integral part of the consultation. To do so would have required a comparison with alternative options which has not been undertaken. Hillingdon says such an assessment must be carried out.

#### Bias

324. Hillingdon considers that the Impact Assessment cannot be judged to be independent because it has been prepared by Government which is itself committed to a policy of expanding Heathrow, including provision of a third runway. Although it is possible to attach monetary values to such matters as development costs, climate change and traveller benefits, it is not possible to monetise eg the loss of the community of Sipson.

#### Noise Value

325. Similarly, the monetised cost of aircraft noise for the third runway ranges from £212m to £328m but only includes noise over 57dBA. (Paragraph 2.26 Impact Assessment). This assessment contradicts the findings of the recent ANASE study into aircraft noise that found adverse impacts on residents at much lower noise levels than 57dBA.

#### Tourism Expenditure

326. An example of the biased nature of the Impact Assessment is that tourism expenditure is not taken into account. Heathrow expansion would result in British tourists spending much more money abroad than would be spent by foreign tourists visiting Britain. However, because it is claimed that the calculations are preliminary, they have not been included in the monetised assessment. (Paragraph 5.38 Impact Assessment).

#### Employment

327. 8,000 additional jobs at Heathrow are predicted by 2030 via the addition of the third runway although total numbers will be less than now due to efficiencies. This is expressed as a positive but no assessment is made of the negative impact of the long distances that many workers at Heathrow have to travel daily to get to work. Hillingdon has greater concerns associated with so many local jobs being reliant on a single source of employment which is due to expand substantially with the opening of Terminal 5 in 2008.

#### People Impacts

328. What is very clear from the Impact Assessment is that the environmental impacts of the third runway are excessively high, especially in terms of the loss of the community of Sipson and new noise impacts affecting hundreds of thousands of residents. These issues confirm the original mistake of supporting, for purely commercial reasons, the expansion of Heathrow to provide the equivalent of a new

Gatwick Airport within Greater London. There are far superior locations for such new runway and terminal capacity that will also serve London and the South East as well as providing for hub operations but with comparably negligible noise and community impacts. Hillingdon believes it is imperative that Government reassesses its decision to expand Heathrow and bases its aviation policy on sustainable principles and not commercial expediency.

## **Economics**

329. Hillingdon as part of the 2M group wants Government to order a completely independent study of the economic impact of Heathrow, not one that is part funded by the aviation industry. This would be a study looking at the effects on other sectors of the economy if people, who would otherwise have travelled to or from Heathrow, made their journeys by other routes – for example rail or via other London airports.

330. There has never been a thorough, independent analysis of the costs and benefit, of who wins and who loses. Expanding Heathrow is clearly highly profitable for its Spanish owners especially as they have a monopoly of the capital's 3 main airports – Heathrow, Gatwick and Stansted. However, this business case for expansion has simply not been tested against the equally important long-term needs of London's economy. Indeed a London Chamber of Commerce survey in 2006 found 78% of firms opposed to expansion.

331. The Impact Assessment claims net benefits of £4.4bn to £5.2bn for the third runway but mixed mode operation, with fewer implementation costs, would generate £5.4bn to £6.2bn. Similar claims in the past have been consistently challenged as being calculated differently from Treasury guidance and common sense, such as excluding the loss of expenditure from British tourism abroad while the UK runs a current tourism deficit of £18bn. A recent report from Dutch consultancy CE Delft commissioned by HACAN Clear Skies highlights a number of discrepancies including the low level of taxation of the aviation industry, such as the £9bn exemption from VAT. A copy of the CE Delft report is attached at Appendix 8 and is endorsed.

332. Specifically the report confirms that the original and updated Oxford Economic Forecasting (OEF) reports incorrectly assess the impact on direct, indirect and induced employment and therefore the additional runway's contribution to GDP. If airport capacity were not expanded, people would find jobs elsewhere in the economy, possibly at lower wages, but still giving rise to indirect and induced employment. Therefore the employment figures provided cannot be used to substantiate a claim for expanding runway capacity.

333. The OEF report details how aviation supports other parts of the economy, but it does not account for economic activity which would happen without aviation. In any event, the benefits are poorly expressed compared to levels of trade. Critical to the calculation of economic benefit is the additional business passengers generated by expansion of capacity. OEF assumes high numbers of additional business passengers. For mixed-mode operation, for example, DfT's own estimates are 0.5 million by 2015 whereas OEF assumes six times as many i.e. 3 million. OEF estimate the economic impact to be about £400 per additional business passenger, or £120 over all passengers. This compares to a consumer surplus of about £30 per passenger based on the DfT's own estimates of economic impact. It is implausible that the economic impact is many times greater than the value passengers

themselves derive from flying. Although not always stated explicitly, OEF's estimates of economic impacts are often upper limits, so they indicate the maximum economic impact and not the most likely or plausible outcome.

334. The overriding justification for expanding Heathrow – as opposed to elsewhere – are the claimed economic benefits that would result. Accordingly, it is considered essential that a fully independent study is undertaken, ideally following the same procedure as with the PSDH air quality panels that were demonstrably independent and transparent. The economic study should examine the actual benefit to the economy provided by the 35% of transfer passengers at Heathrow and the perceived benefit of extra employment in an area that is effectively overheating economically and at a time when the majority of new jobs are being filled with migrants to the UK. The subsequent costs of housing and educating new workers, the health service costs of extra workers and their families and of health tourism via Heathrow should be assessed. Hillingdon Council and its Primary Care Trust already face financial costs for dealing with passengers entering the UK via Heathrow. These costs need to be assessed.

335. For LB Hillingdon Council the current unfunded costs of Heathrow are set out below. However, no account whatsoever has been taken of these unfounded costs or the additional costs that would fall on the Council.

- Shortfall on unaccompanied asylum seeking children care leavers grant - £6 million (£3.7 million in 2008/09 budget)
- Non-unaccompanied asylum seeking children looked after children referred from Heathrow - £0.6 million
- Failed habitual residents returning from abroad via Heathrow - £0.25 million
- Environmental Protection Unit - £81k
- Trading Standards work at Heathrow - £10k
- Imported Food / Port Health / Environmental Health - £292k

Total - £7.2 million

Extra unfunded costs of Terminal 5:

- Business rates collection (extra 4 staff) - £120k (funded by extra cost of collection grant from 2009/10 onwards)
- Trading Standards - £36k
- Imported Food / Port Health / Environmental Health - £120k

Total - £0.3 million

## **PUBLIC SUPPORT AGAINST HEATHROW EXPANSION**

336. The Council has undertaken an analysis of the results received so far from its own postcard and online poll:

Postcard distributed to all households (107,000).

No. of postcards returned	<b>15,400</b>
Those saying NO to Heathrow expansion	14,431 <b>(94%)</b>
Those not opposed to the expansion	969 <b>(6%)</b>

<b>Those saying NO citing:</b>	
Increased noise	13,707
Increased pollution	13,823
Destruction of local homes	14,213

### **Online Poll**

<b>Online Poll – do you support Heathrow expansion?</b>	
No. of hits	273
% YES	19%
% NO	81%

337. These results clearly demonstrate the vast majority of residents from across the whole borough are opposed to Heathrow expansion. The postcard response forms received from residents were delivered to the Department for Transport prior to the close of the consultation.

## CONCLUSIONS

338. The consultation process has been inadequate for a number of reasons including:

- Insufficient information provided or in some cases, following requests for additional information, denied.
- Insufficient independent information such as fleet mix and surface access assumptions which have been provided by the aviation industry itself.
- Inadequate public consultation limited to the 57db noise contour when it is known that annoyance is caused to residents that are well below this level.
- Outcome of the third runway consultation is already pre-determined plus consultees' questions are biased.

Government should address these issues and re-consult.

339. The whole issue of expansion at Heathrow should be re-assessed now the potential impact is so much greater than at the time of the Aviation White Paper in 2003:

- Loss of 700 homes,
- air quality; noise
- water,
- biodiversity,
- community cohesion,
- heritage
- mixed mode,
- 6th Terminal,
- new roads,
- longer runway

Government should address these issues and re-assess Heathrow expansion in comparison with less damaging expansion at other airport locations in South East England.

340. The Aviation White Paper's 3 environmental tests have not been met. Key evidence has been denied, insufficient sensitivity testing has been performed on assumptions used, no account has been taken of future meteorological conditions, the air quality model is under-predicting, over-optimistic assumptions have been made on key inputs. Government have not proved that they can be confident of meeting the EU air pollution limits.

341. Surface Access has simply been "dropped" yet the projected congestion is overwhelming, not just on the roads but on public transport.

342. Strategic Environmental Impact Assessment is wholly inadequate. Climate change impacts will not be mitigated by any of the measures indicated in the document, whilst the weight of environmental costs totally outweigh the economic

benefits which are mainly to users of the airport (passengers and airport operator, airlines and associated businesses).

343. The rationale for expansion is based upon flawed economic arguments. The Government must address this key issue before any further decisions are taken on expansion at Heathrow. No independent peer review has ever been undertaken on this aspect. This is totally unacceptable given the vast impacts on Hillingdon and the majority of London and surrounding areas while the sole benefit is the claimed economic advantage.

344. The ANASE study has been discounted despite clear evidence that noise nuisance is now much more annoying for residents than previously thought.

345. The folly of inserting an equivalent of Gatwick Airport into Greater London, where its noise would impact on hundreds of thousands of residents, must be halted.