LAA/5/A

APP/L2250/V/10/2131934 & APP/L2250/V/10/2131936

SECTION 77 TOWN AND COUNTRY PLANNING ACT 1990 – REFERENCE OF APPLICATIONS TO THE SECRETARY OF STATE FOR COMMUNITIES AND LOCAL GOVERNMENT

TOWN AND COUNTRY PLANNING (INQUIRIES PROCEDURE) (ENGLAND) RULES 2000

PROOF OF EVIDENCE OF
Mr RICHARD PERKINS BEng(Hons) CEng MIOA

NOISE

In respect of:

Planning Application Reference:	Y06/1647/SH (New Terminal Building)
Planning Application Reference:	Y06/1648/SH (Runway Extension)

relating to land at London Ashford Airport, Lydd, Romney Marsh, Kent, TN29 9QL

PB 125 YEARS

LYDD London Ashford Airport

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1 INTRODUCTION

1.1 Qualifications and Experience

1.1.1 I am a Chartered Engineer and a Member of the Institute of Acoustics. I have a Bachelor of Engineering Degree in ElectroAcoustics from Salford University and I have 16 years' experience in the field of noise and vibration. I am a Technical Director in the Environment Business Unit of Parsons Brinckerhoff Ltd at Queen Victoria House, Redland Hill, Bristol.

1.1.2 I have worked as the noise and vibration technical lead on a number of large transportation and infrastructure projects involving roads, rail, airports and various industrial and commercial buildings. I have prepared and given evidence in several Public Inquiries for transportation and wind farm schemes, and have undertaken noise assessments for airports in the UK and worldwide.

1.2 Scope of Evidence

1.2.1 My evidence covers all of the noise and vibration matters in connection with the Applications.

1.3 Involvement with the Scheme

1.3.1 I have had responsibility within Parsons Brinckerhoff Ltd for the noise and vibration assessment of the Applications since 2004 involving the collection of the baseline noise data, the preparation of noise contour plots, the preparation and submission of the Environmental Statements **(CD1.14 to CD1.19)**, and the production of the Supplementary Information **(CD1.24c, CD1.34a, CD1.41a and CD1.41b)**.

1.4 Structure of Evidence

1.4.1 Chapter 2 provides an overview of the acoustic terms and parameters used in the assessment of noise of airport schemes. I describe the scales and indices used, the reasons why they are used and how they assist to evaluate and understand the noise effects of the proposals pursuant to the Applications.

1.4.2 In Chapter 3, legislation and guidance applicable to the noise effects of airports are described, together with noise significance criteria.

1.4.3 In Chapter 4, the methods for the calculation of airborne noise, ground noise, road noise, construction noise, vibration from road traffic and vibration from construction activities are described and how they have been applied to the Applications.

1.4.4 Chapter 5 describes the Baseline conditions.

1.4.5 In Chapter 6, the effects of the Applications on the residents that live in the area are described, as well as the number of properties covered by the airborne noise contours, together with a review of the likely effects due to the construction noise on the closest residential receptors, road traffic noise effects and construction vibration effects. This draws together the evidence submitted as part of the Applications, particularly CD.1.41a and CD.1.41b.

1.4.6 In Chapter 7, I review and address comments raised by Rule 6 Parties. If any more detailed or additional comments are raised subsequently I will deal with these by way of rebuttal evidence if required.

1.4.7 In Chapter 8, I review the various assessments made by Parsons Brinckerhoff Ltd on behalf of London Ashford Airport Limited (the "Applicant"), and the comments raised by the Rule 6 parties, and give my conclusions on the noise and vibration effects of the Applications.

2 NOISE AND VIBRATION

2.1 Noise and its Units

2.1.1 Sound is the sensation produced through the human ear as a result of fluctuations in the pressure of the air. It is a form of energy that travels outwards from a noise source in a series of waves. The waves have two characteristics, namely sound pressure and frequency. These are perceived by the human ear as loudness and pitch.

2.1.2 The range to which the human ear responds to sound pressure or loudness is very large; the sound pressure level at the threshold of pain is over a million times that of the quietest audible sound. For convenience, therefore, a logarithmic scale of decibels (dB), based on a reference level of the lowest audible sound is normally used. The audible range of sounds is then conveniently covered within the range 0 dB (the threshold of hearing) to 120 dB (the threshold of pain).

2.1.3 Frequency or pitch refers to the rate at which pressure fluctuations occur and is expressed as cycles per second (Hz). The human ear is most sensitive to frequencies between 1,000 and 5,000Hz, but can detect sounds in the range of 20 to 20,000Hz.

2.1.4 The response of the human ear is not constant over all frequencies. It is therefore usual to weight the measured frequencies to approximate the human response. This is achieved by using an 'A' weighted decibel reading, dB(A), which gives one of the best correlations with the perceived noisiness of aircraft, ground and traffic noise.

2.1.5 There are several descriptors used to describe noise levels. In this proof I will be using the following:

- $L_{Aeq,T}$;
- L_{Amax};
- $L_{A90,\ T}$;
- $L_{A10,T}$;

2.1.6 The $L_{Aeq,T}$ is the Equivalent Continuous Sound Level, in dB. This represents the hypothetical steady sound that contains the same amount of sound energy as the fluctuating noise of aircraft activity over a defined time period. Several different values for T will be used to illustrate different effects.

2.1.7 The L_{Amax} is the instantaneous maximum noise level for an event or within a given time period. It is used to illustrate whether an event is likely to attract attention.

2.1.8 The $L_{A90,T}$ noise level is defined by the A-weighted sound pressure level of the ambient noise exceeded for 90% of a given time interval, T. This provides a measure of the lower levels of a fluctuating noise and is normally defined separately for day and night-time periods. It is often referred to as the background noise level.

2.1.9 The $L_{A10,T}$ noise level is defined by the A-weighted sound pressure level of the ambient noise exceeded for 10% of a given time interval, T. This provides a measure of the upper levels of a fluctuating noise and is normally defined over an 18 hour period to describe traffic noise. Hourly averages for T can also be used to show short term traffic noise effects.

2.1.10 In order to provide a clearer picture of the noise impacts of the scheme pursuant to the Applications, some of the data will be presented using various values of T. However, it should be noted that Noise Guidance and Legislation uses specific values of T in certain situations, and not all the data presented will be comparable with guidance or regulatory thresholds.

2.2 Noise Sources

2.2.1 The main potential sources of noise and vibration associated with Airport operations for these Applications are from Airborne Aircraft, ground operations, increased road traffic noise, and construction operations.

Aircraft Noise

2.2.2 For the purposes of assessing noise, an aircraft is considered to be airborne when it is off the ground, or in the process of a landing or a take off. When landing, the aircraft is considered to be airborne to the point when the aircraft has completed landing, braking and has decelerated to taxiing speed. On take-off, the aircraft is considered to be airborne when it starts to accelerate on the runway (start of roll).

Ground Noise

2.2.3 Ground noise is made up of all other activities not associated with airborne aircraft, and includes taxiing aircraft, engine testing, (particularly of larger aircraft), other ground vehicles and two types of power units, Auxiliary Power Unit (APU) and Ground Power Unit (GPU).

2.2.4 An aircraft APU refers to a small engine or generator used to power an aircraft's primary systems when on the ground, often located at the tail of the larger aircraft such as the Boeing 737 or Airbus 320.

2.2.5 An aircraft GPU is similar to an APU, except it is external to the aircraft, effectively allowing the aircraft to 'plug in' to this power source rather than run its APU.

Road Traffic Noise

2.2.6 The roads surrounding the Airport would experience an increase in traffic volumes as a result of the scheme pursuant to the Applications. Noise from roads will vary depending on several factors such as traffic volume, vehicle speed, the road gradient, and the road surface. Traffic noise experienced at receptors will also be influenced by distance, the nature of the intervening ground surface and the presence of obstructions.

2.2.7 Road traffic noise is not constant but varies from moment to moment. However, for assessment purposes it is necessary to arrive at a single figure estimate of the overall noise level. The index adopted by the Government to assess traffic noise is $L_{A10,18hour}$ defined between 06:00 and 24:00.

Construction Noise and Vibration

2.2.8 During the construction period, properties may experience temporary noise due to construction activities. Construction noise at various levels includes activities such as vehicle movement, excavation and the use of compressors.

2.2.9 Some construction activities can be a significant source of ground-borne vibration, which has the potential to cause concern at the nearest receptors.

2.3 Summary of Noise and Vibration

2.3.1 In this section I have explained how sound is perceived, the various parameters I will be using to describe the noise effects of the scheme pursuant to the Applications, and the various noise sources that would contribute to the predicted change in noise climate.

3 LEGISLATION, GUIDANCE AND SIGNIFICANCE

3.1 Plans and Policies

3.1.1 This chapter sets out the policy framework for the environmental assessment of the scheme in respect of noise and vibration.

3.1.2 At the national level, the Government makes policies which indicate the way projects should be developed and how environmental issues should be addressed when considering new airports. Significantly, such Government guidance seeks to integrate the consideration of transport proposals with other policy considerations, such as landscape, agriculture and nature conservation policies.

3.1.3 At the regional level, guidance provided by Government and the regional planning bodies contain statements about the role of airports in regional development.

3.1.4 At the local level, Government is currently committed to a plan-led system for the control of development and consideration of development proposals. As a result, proposals for development in the scheme corridor are determined in accordance with the Regional Spatial Strategy for the South East (**CD7.1**) and the Shepway District Local Plan (**CD7.5**).

3.1.5 Planning Policy Guidance Note 24 - Planning and Noise (**CD6.13**) (PPG24) notes that noise can have a significant effect on the environment and on the quality of life enjoyed by individuals and communities. As such, it seeks to achieve separation of noise generating activities from the most sensitive receptors, in particular residential areas.

3.1.6 The Government has also considered the strategic importance of airports and sets out their future development in "The Future of Aviation White Paper" (**CD5.24**) and "The Future of Air Transport Progress Report" (**CD5.25**). The guidance provided in these documents is considered in the next section.

3.2 Legislation and Guidance

PPG24 (**CD6.13**)

3.2.1 PPG24 is the current planning guidance in England for noise. On the subject of aerodromes, it states that for aircraft noise, '*daytime levels (07:00-23:00) should be expressed in terms of noise exposure contours*

in $L_{Aeq,16hr}$'. However, it goes on to state that for small aerodromes, 'local planning authorities should not rely solely on L_{Aeq}'.

3.2.2 As well as the day average for a year (annual average) and the summer period (summer / upper parameter), consideration is also given to the single event short term average $L_{Aeq,30min}$, and the maximum level, L_{Amax} for proposed new aircraft types that would use the Airport.

3.2.3 The conventional method to present noise from an airport, as stated in PPG24, is to create noise contour maps. Daytime noise is averaged over a 16 hour period from 07.00 to 23.00. Night time noise (23.00 - 07.00) is averaged over an 8 hour period from 23.00 to 07.00.

3.2.4 PPG 24 also states that *"60 Leq dB(A) should be regarded as a desirable upper limit for major new noise sensitive development".* This threshold applies for the 16 hour daytime average.

3.2.5 PPG 24 considers that for new development during the night, (23:00-07:00 hours) *"Sites where individual noise events regularly exceed 82 dB $L_{Amax\ (slow)}$ several times in any hour should be treated as being in NEC C"* The NEC C category would normally indicate that planning permission would not be granted, so I consider that this threshold is significant in that new developments would not normally be granted with more than two noise events in any hour.

3.2.6 For other noise sources, PPG24 prescribes the use of the guidance documents and British Standards listed in Table 1.

Table 1: Guidance Documents and Standards from PPG24

Road Noise	Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 7; Traffic Noise and Vibration Department of Transport; Calculation of Road Traffic Noise (CRTN) 1988
Environmental Noise	BS 7445: 2003 'Description and Measurement of Environmental Noise', Parts 1 to 3
Construction Noise & Vibration	BS5228: 2009 Parts 1 & 2 'Noise / vibration control on construction and open sites'
Industrial Noise	BS4142: 1997 'Rating industrial noise affecting mixed residential and industrial areas'
Noise Levels in Buildings	BS8233: 1999 'Sound Insulation & Noise Reduction for Buildings

3.2.7 It is common practice to use the latest versions of British Standards where they have been updated, and the latest versions are quoted in Table 1.

3.2.8 The use of a 16 hour average to describe a series of noise events, as is the case for aircraft noise, is often criticised for masking the impact of the noise. It does though remain the one descriptor for which Government Guidance is published to enable determination to be made on the significance of the daily noise exposure at airports.

The Future of Aviation White Paper (**CD5.24**)

3.2.9 The Government White paper published in 2003 sets out the current policy in respect of noise at airports in England.

3.2.10 The current thresholds of annoyance quoted in this document are based on the Aircraft Noise Index Study (ANIS) which was reported in 1985. The study related levels of community annoyance to average daily noise levels (LAeq,16hr) and suggests that the onset of significant community annoyance occurs at 57 dB, moderate community annoyance occurs at 63 dB, and high community annoyance at 67 dB.

3.2.11 The DfT more recently commissioned the Attitudes to Noise from Aviation Sources (ANASE) study, which reported in November 2007

with widespread criticism of the methodology used. However, since there was no significant step change in the relationship between noise level and annoyance / monetary valuation, the current thresholds (from the ANIS study) would still be suitable to provide a benchmark at which disbenefits would occur. Additional work has been recommended to explore further the trends highlighted by the ANASE study, and thus I have given no weight to the findings of this study

The Future of Air Transport Progress Report (**CD5.25)**

3.2.12 The Future of Air Transport Progress Report reports progress being made in relation to noise insulation schemes, noise control schemes, relocation assistance and the cessation of night flights at many airports across the UK. The Applications at the Airport in terms of mitigation go as far, if not further, than mitigation being offered at other UK airports.

Regional and Local Plans **(CD7.1 & CD 7.5)**

3.2.13 Support for the expansion of the Airport is provided at both the regional and local level through policy T9 of the South East Plan and saved Policy TR15 of the Shepway District Local Plan 2006, which states that "*The District Planning Authority will permit proposals for the expansion of facilities at Lydd Airport directly related to the commercial and recreational flying use provided there would be no significant impact upon the internationally important wildlife communities in the Lydd/Dungeness area. Regard will also be given to the likely effect of proposals on other special features in the area, particularly the power station*."

3.2.14 Other policies give regard to the careful balancing of environmental impacts against the benefits of a scheme, in particular to minimise noise impacts, and to separate noise producers from noise sensitive areas. The Applications do not conflict with these policies.

3.2.15 Mr Sean McGrath will deal with planning policy in his Proof of Evidence **(LAA/14/A)**.

3.3 Magnitude of Impact and Significance Criteria

3.3.1 Most people are able to distinguish a change of 1 dB(A) in a pure continuous tone, but changes in a fluctuating sound, such as transportation noise, are not so easily perceived. A change of about 3 dB(A) represents the threshold when, in the long-term, changes in traffic noise levels (as distinct from steady sounds) would be perceived. A difference of 10 dB(A) corresponds to a 10 fold increase in sound energy which corresponds to an approximate subjective doubling in

loudness. Doubling the energy level (for example the volume of traffic) increases the noise level by 3 dB(A).

Airborne Aircraft (Fixed Wing)

3.3.2 With reference to onset of significant community annoyance levels in the ANIS study, in the context of the situation at London Ashford Airport (the "Airport"), and considering its locality, the following significance thresholds for $L_{Aeq,16hr}$ have been adopted for the purposes of this assessment:

- 57 dB is a minor impact;
- 63 dB is a moderate impact; and
- 69 dB is a severe impact.

3.3.3 A comparison of the change in average noise levels has been made at a number of locations around the Airport boundary. The impact of noise changes in the steady state levels at each property is considered to be as follows:

Table 2 - Magnitudes of Impact for Noise Changes at receptors

Noise Change (dB)	Level of Impact
0.1 - 2.9	Negligible
3.0 - 4.9	Slight Impact
5.0 - 9.9	Moderate Impact
10.0 and more	Substantial Impact

3.3.4 It is also appropriate to consider the instantaneous or peak noise level that would impact upon the noise sensitive receptors. Whilst the $L_{Aeq,16hour}$ is the accepted noise metric of the Civil Aviation Authority ("CAA"), in this case, where relatively few aircraft movements are anticipated in one day, it is unlikely to give a representative indication of the noise level that would actually be heard on the ground.

3.3.5 Hence consideration is given to the Sound Exposure Level (SEL) of an aircraft flyover event. This is defined as the sound pressure level which, if occurring over a period of one second, would contain the same amount of acoustic energy as the sound event in question. It is useful for events such as aircraft "fly-overs" or train "pass-bys" as it gives a closer indication of the magnitude of the instantaneous noise levels experienced during such events. The Integrated Noise Model (INM)

software contains a database of SEL levels for aircraft at different payloads.

Ground Operations

3.3.6 The likelihood of complaints from ground operations is assessed by reference to BS4142: 1997. The noise from ground operations (measured in $L_{Aeq,T}$) is corrected for acoustic features (such as tonality) to produce a "Rating Level" from which the background noise level (measured in $L_{A90,T}$) is subtracted. A difference of around +10 dB or more indicates that complaints are likely. A difference of around + 5 dB is of marginal significance. If the rating level is more than 10 dB below the measured background noise level then this is a positive indication that complaints are unlikely.

Road Traffic Noise

3.3.7 With reference to the guidance contained within the Design Manual for Roads and Bridges, an increase in road noise of greater than 3 dB is taken to represent a slight or marginal impact.

The Effects of Noise on Schools

3.3.8 The World Health Organisation's 1999 document 'Guidelines for Community Noise' (Appendix 4 Extract NV06) suggest acceptable noise levels in a variety of situations, although I would add that this guidance is aimed at national governments in setting their local noise policies. A noise level of 55 dB(A) is suggested for an outdoor area in a school. This is mirrored in UK guidance within Building Bulletin 93 'Acoustics in Schools'.

3.3.9 The reported effects on children's cognitive development occur at much higher levels of aviation noise than that likely to occur at the Airport. This is based on the most objective evidence available at present, representing the possible onset of adverse learning effects as reported in the RANCH study (Appendix 4 Extract NV07). I have therefore adopted criteria of an increase of 5dB in the equivalent continuous sound pressure level (LAeq) for aircraft noise levels which start above 50 dB(A) in the Baseline (i.e. current) scenario as being a slight or marginal impact on schools.

Noise and Wildlife

3.3.10 The effects of noise disturbance on wildlife are considered in the Proof of Evidence of Roy Armstrong (**LAA/7/A**).

Construction Noise

3.3.11 British Standard 5228 has been updated since the production of the Environmental Statement. The latest 2009 version of the standard includes a similar methodology to the previous version with an updated database of noise levels, and does not alter the previously reported calculations. However, more detailed guidance has been provided to enable noise limits to be developed, which alters the significance criteria in a low noise environment by 5 dB from that adopted in the previous assessments in **CD1.41a** and **CD1.41b**.

3.3.12 In accordance with BS5228:2009-Part 1 **(CD8.10)**, the new criteria I have adopted for construction noise significance is 65 dB(A).

3.4 Summary of Legislation, Guidance and Significance

3.4.1 In this chapter I have listed legislation and guidance relevant to this Inquiry to enable assessment of the noise and vibration impacts of the Applications.

3.4.2 I have explained that the main national planning guidance for noise and vibration is PPG24, which includes reference to a number of British Standards and recognised methodologies to predict and assess noise and vibration from aircraft, ground activities, road traffic and construction activities.

3.4.3 I also set out the significance criteria that I have adopted to determine the overall significance of the Applications.

4 METHODOLOGY

4.1 Study Area and Receptors

4.1.1 The study area is taken to be an area within 10km of the Airport. It is acknowledged that aircraft directly related to the Airport will fly further afield than this, but flight paths and heights are less certain the further away from the airfield they are, and noise predictions in these circumstances too variable to derive meaningful results.

4.1.2 The study area is a mixture of residential, with a scattering of industrial estates, commercial receptors (such as shops in Lydd Village) and community facility receptors (such as churches, schools, and recreational areas).

4.2 Mitigation Strategies

Mitigation for Airborne Noise

4.2.1 The Applicant will implement the International Civil Aviation Organisation (ICAO) detailed guidelines for a 'balanced approach' to managing aircraft noise described in Appendix 16.2 Annex F to **CD1.41a**.

4.2.2 The Applicant will develop a Noise Management Plan (secured by section 106 agreement) to comply with the balanced approach requirement. This will need to balance the needs of the Airport with the concerns of the local affected residents. The following mitigation measures are proposed at the Airport (secured by the section 106 agreement), which incorporate some of the principles of the balanced approach requirement.

4.2.3 There will be no scheduled flights between the hours of 23:00 and 07:00.

4.2.4 The Airport operators will introduce a penalty system to fine pilots using excessive thrust when departing or arriving at the Airport. The money from these fines will go into a community fund to benefit the local area.

4.2.5 The Airport will provide permanent external noise monitoring stations, in order to quantify and monitor noise levels close to the nearest affected sensitive receptors due to the Airport operations. Appropriate monitoring positions will not be unduly influenced by other noise sources and will be agreed in consultation with the local authority.

4.2.5.1 Land-use planning and management policies: this covers a wide range of options regarding the appropriate location for ground operations to take place, ensuring that nearby sensitive receptors are not subject to unnecessary amount of noise due to taxiing aircraft, engine testing, and other sources of ground noise.

4.2.5.2 The Airport will establish clear lines of communication with local residents, such that concerns regarding noise from Airport operations can be addressed, in the first instance, directly to the airport.

4.2.6 The airport will adopt the preferential flight paths over the restricted Ministry of Defence D044 danger area to avoid the populated areas in Lydd whenever possible. Based on 2008 data, this will be possible for all flights before 08.30, and for 37% of days, therefore at least a third of the time.

4.2.7 In addition to the noise mitigation measures outlined above, the Applicant has offered corporate commitments for the provision of noise insulation and voluntary purchase of properties.

4.2.7.1 The Noise Insulation Scheme would provide 100% of the costs of secondary glazing or 50% of the costs of double glazing (both up to a maximum of £5,000.00) for eligible properties within the 60 dB $L_{Aeq,16hr}$ or more noise contour.

4.2.7.2 Under a scheme known as the "Five Communities Scheme", the Applicant would undertake voluntarily to purchase residential properties in the five communities of Lydd, Lydd-On-Sea, Greatstone-On-Sea, Littlestone-On-Sea and New Romney in the event that they fall within the 66 dB $L_{Aeq,16hr}$ or more noise contour in the future.

Mitigation for Ground Noise

4.2.8 The Airport will adhere to a Noise Management Plan (secured by section 106 agreement) to minimise noise impacts from ground operations.

Mitigation for Road Traffic Noise

4.2.9 No mitigation for road traffic noise is considered necessary or appropriate nor is proposed as part of the scheme pursuant to the Applications since no significant impacts are predicted.

Mitigation for Construction Noise & Vibration

4.2.10 The Airport will ensure the appointed contractor will undertake all activities in accordance with the best practice guidance in BS5228:2009 (**CD8.10**).

4.3 Prediction Methodologies

Prediction of Noise from Airborne Aircraft

4.3.1 Noise contour maps have been generated for a number of different scenarios using the INM model. INM calculates and plots contours showing the daily equivalent continuous noise level ($L_{Aeq,16hr}$) on the ground due to the movements of airborne aircraft. This is based on the information contained in the database and data input to the model, such as the number and types of aircraft anticipated for use, the number of movements of each of those aircraft during the time period, and the anticipated flight paths for take off and landing.

4.3.2 Each contour on the noise contour map links areas on the ground likely to experience the same noise level, due to the airborne aircraft activity, in increments of 3dB. It is standard practice only to show the 57dB(A), 63dB(A) and 67dB(A) contours (which correspond to the onset of significant, medium and high community annoyance during the day respectively).

4.3.3 However, in order to illustrate the areas affected to a lesser extent by airborne noise, noise contours have been calculated and presented down to 45dB(A). It should be borne in mind that the modelling algorithms can become increasingly inaccurate at the lower noise exposures.

Description of Air Operations

4.3.4 The runway at the Airport has two orientations; Runway 03 is used when aircraft take off or land toward the North (on a heading of 030 degrees) whilst Runway 21 is used when aircraft take off or land toward the South on a heading of 210 degrees to magnetic North. The modal split refers to the percentage of movements using either runway. Airport operations are described in the Proof of Evidence of Tim Maskens **(LAA/3/A)**.

4.3.5 In order to calculate the noise contours, a “fleet mix” is created from the aircraft movements recorded (or predicted) at the Airport. It is normal to consolidate the large number of different aircraft types down to a manageable number using a worst case substitution of aircraft.

4.3.6 Types of aircraft that use (and are predicted to use) the Airport are grouped into 4 main types.

4.3.6.1 **Group 1** aircraft include public transport jets such as B737, A320;

4.3.6.2 **Group 2** aircraft include regional public transport jets, turboprops and large executive jets;

4.3.6.3 **Group 3** aircraft include small executive jets and air taxi turboprops and

4.3.6.4 **Group 4** aircraft include all light general aviation aircraft, all below 5700kg take off weight.

4.3.7 The aircraft noise modelling software also allows for the substitution of equivalent aircraft in cases where the specific aircraft proposed for use at the Airport is not contained within the software database.

4.3.8 For the purposes of modelling airborne noise, a set of typical flight paths have been created, which are reproduced in Figures NV01 to NV03 (Appendix 1). A couple of typographical errors have been corrected from Figures 16.1 and 16.2 that appeared in **CD1.41a and CD1.41b**. Specifically, the labelling for the group aircraft has been corrected for flight paths FP3, FP4, FP11, and FP12. This does not affect the accuracy of the noise contour maps reported. The assignment of each aircraft movement to each flight path for each scenario is provided in Appendix 3 of this proof.

4.3.9 It is again noted that the approach and departure flight paths used in the model represent the likely scenarios for most aircraft. They are not intended to represent the precise route all aircraft will follow, as this can depend on, for example, weather conditions. To account for this variability, dispersion tracks are used in the noise model.

4.3.10 Modelling assumptions have been agreed with Shepway District Council's noise consultants, Bureau Veritas, and the noise contour outputs have been validated by them to a sufficient level of accuracy for the purposes of this Inquiry.

Rotary Wing Aircraft

4.3.11 It is proposed that if planning permission is granted for the Applications, that aircraft (fixed wing) movements are capped at 40,000 per annum (excluding emergency and governmental activities and the Air Show). Notwithstanding that helicopters account for 6.6% of the Airport's current movements, it is proposed that helicopter movements are capped to a figure below 6.6%, at 2,000 movements per annum (excluding emergency and governmental activities and the Air Show). There would also be a restriction on movements in the night period (2300 to 0700) (excluding emergency and governmental activities). These restrictions are contained in the proposed planning conditions.

4.3.12 It is also proposed that a preferential flight path of all helicopters is imposed (excluding emergency and governmental activities and the Air Show) as illustrated in **CD1.41a Figure 16.29**. The cap on movement numbers and the use of a noise preferential flight path is sufficient to mitigate helicopter noise at the Airport.

Modelled Scenarios

4.3.13 A number of scenarios have been considered to examine the potential noise impacts of the scheme pursuant to the Applications. The Environmental Statements **(CD1.14 & 1.17)** and Supplementary Information Assessments **(CD1.41a and CD1.41b)** considered the following scenarios:

- A Baseline scenario in 2005 based on actual movements;
- A Future Baseline scenario for increased operation of the existing Airport to 300,000 passengers per annum ("ppa");
- A Future Development scenario with the runway extension to 300,000 ppa; and
- A Future Development scenario with the runway extension and new terminal building to 500,000 ppa.

4.3.14 Within each of the above scenarios, additional scenarios considered the annual average day and a summer average (also called Upper Parameter) day with 70% of aircraft operations using Runway 21 and 30% using Runway 03 for takeoff and landing operations, as was the case in 2005, and still is currently.

4.3.15 Further scenarios were also provided to give a “sensitivity test” to illustrate the operational scenario where aircraft fly in a particular mode. These are:

4.3.15.1 Scenario 1 represents a day when all aircraft use Runway 21 for takeoff and landing operations. This would occur in practice when the wind is from the southwest.

4.3.15.2 Scenario 2 represents a day when all aircraft would use Runway 03 for takeoff operations (apart from those in Group 1 - see paragraph 4.3.5 above - which would continue to land using Runway 21). This would occur in practice when the wind is from the north.

4.3.15.3 Scenario 3 represents a day when flight paths over DO44 are available to be used, avoiding the village of Lydd (see paragraph 4.2.2.6 above).

4.3.16 A revised fleet mix has been prepared as part of the Socio-Economic evidence which updates the Airport growth projections using information for 2010. This information is presented in the Proof of Evidence of Ms Louise Congdon on Socio-Economics (**LAA/4/A**).

4.3.17 I therefore present as part of my proof a number of updated noise contour maps for the new scenarios representing "Lower Growth" and "Higher Growth" (as explained in Ms Congdon's Proof) at the Airport as follows in Table 3:

Table 3 – New Modelled Scenarios

Future Baseline 300,000 ppa	Annual Average	70/30 Modal Split	NV04
	92day Upper Parameter	70/30 Modal Split	NV05
	Annual Average (Night)	70/30 Modal Split	NV16
Future Assessment 300,000 ppa with runway extension	Annual Average	70/30 Modal Split – "Lower Growth"	NV06
	92 day Upper Parameter	70/30 Modal Split – "Lower Growth"	NV07
	Annual Average	70/30 Modal Split – "Higher Growth"	NV10
	92 day Upper Parameter	70/30 Modal Split– "Higher Growth"	NV11
Future Assessment 500,000 ppa with new terminal building and runway extension	Annual Average	70/30 Modal Split – "Lower Growth"	NV08
	92 day Upper Parameter	70/30 Modal Split – "Lower Growth"	NV09
	Annual Average	70/30 Modal Split – "Higher Growth"	NV12
	92 day Upper Parameter	70/30 Modal Split– "Higher Growth"	NV13
	Annual Average	Scenario 1	NV14
	Annual Average	Scenario 2	NV15

4.3.18 I have also updated the L_{Amax} contours for the BAE146 aircraft for runway 03 and 21 departures in order to correct the flight path assignment for a runway 21 departure as published in the Runway Extension Environmental Statement (**CD1.17**). These are shown in

Figures NV19 & NV20 respectively. New L_{Amax} contours for the Gulfstream 550, the largest aircraft in current use at the Airport, are shown in Figures NV21 & NV22 for runway 03 and 21 departures respectively. For completeness, the L_{Amax} contours for the B737 are reproduced in Figures NV17 & NV18 for runway 03 and 21 departures respectively.

Prediction of Noise from Ground Operations

4.3.19 Noise levels at the location of the nearest sensitive receptors associated with the ground operations of the Airport are predicted using the methodology of International Organization for Standardisation (ISO) 9613 Acoustics — Attenuation of sound during propagation outdoors". The likelihood of complaints from ground operations noise is assessed in accordance with BS4142:1997. The ground noise $L_{Aeq,T}$ is corrected for acoustic features (such as tonality) to produce a “Rating Level” from which the background noise level $L_{A90,T}$ is subtracted.

Prediction of Road Traffic Noise

4.3.20 I have assessed the change in road traffic noise by predicting the traffic noise levels with and without the scheme pursuant to the Applications. The significance of the noise from development traffic is assessed with reference to Design Manual for Roads and Bridges, which states that an 'overnight' increase in traffic flow of 25% (all other factors staying equal, i.e. speed, etc) would produce an increase in traffic noise of 1 dB or less. A change of less than 1 dB is considered to have a negligible impact. Over a long period, the smallest perceptible change in noise is 3 dB.

Prediction of Construction Noise

4.3.21 Construction noise predictions have been made based on the methodology outlined in BS 5228: 2009 'Noise and vibration control on construction and open sites' in conjunction with general information regarding proposed activities (**CD8.10**).

4.3.22 The magnitude of the effect of construction noise has been predicted in accordance with the principles of BS5228, using a number of variables, including the noise generated by plant or equipment used on site, the period of time site plant is operational, the distance between the noise source and the receptors, and the level of attenuation likely due to ground absorption, air absorption and barrier effects.

4.4 Summary of Key Points – Methodology

4.4.1 I have set out in this chapter the study area that I have considered, the mitigation measures proposed by the Airport to limit the noise impacts, and the methodologies that I have used to predict the noise impacts of the Applications. I have considered the main potential noise sources of airborne aircraft, ground operations, and road traffic noise which would be permanent impacts and construction operations which would be temporary.

4.4.2 I have also introduced the new modelling undertaken to reflect the 2010 socio-economic evidence in Louise Congdon's Proof of Evidence **(LAA/4/A)**.

5 BASELINE NOISE

5.1 I have quantified the existing noise climate in the areas surrounding the Airport by way of a baseline noise survey and the production of noise contours for the following baseline Scenarios presented in CD1.41a:

- Annual Average (70/30 Modal Split);
- Daily (Scenario 1);
- Daily (Scenario 2);
- Upper Parameter (70/30 Modal Split);
- Daily Upper Parameter (Scenario 1); and
- Daily Upper Parameter (Scenario 2).

5.2 Baseline Noise Survey

5.2.1 Two surveys were undertaken to quantify the baseline noise climate surrounding the Airport: unattended monitoring in February 2005 and attended monitoring in March 2006. A further survey was undertaken in 2007, to acquire data during a mock landing, taxiing and departure of a Boeing 737-300 aircraft.

5.2.2 The Airport experiences a seasonal variation in airport activity. Of the movements seen during 2005 (a movement being either a landing or a take-off), 30% of those were in the three summer months of June, July and August.

5.2.3 Table 4 states the locations selected for the unattended monitoring and the spot measurements. These locations are shown in Appendix 16.2, Figure 1 of **CD1.41a**. Positions were chosen to represent centres of population surrounding the Airport in all directions. The ILS approach path for larger aircraft was taken into consideration when selecting monitoring positions at increased distance from the Airport. Following liaison with Shepway District Council, the locations of existing noise sensitive receptors were also considered.

Table 4 - Monitoring Locations

Position	Description
Unattended Long Term Monitoring	
M1	Garden of 25 Oakham Drive, Lydd.
M2	Homeleigh Farm, Dungeness Road.
M3	40 Seaview Road, Greatstone.
M4	'Owlers', Church Lane, New Romney.
Attended Spot Measurements	
P1	Robin Hood Lane, Lydd.
P2	Homeleigh Farm, Dungeness Road.
P3	Pleasance Road South, Lydd-on-Sea.
P4	Corner of Williamson Road / Taylor Road.
P5	Greatstone Primary School, Baldwin Road.
P6	Dunes Road, Greatstone.
P7	Coast Road, Littlestone on Sea.
P8	Church Road, New Romney.
P9	Coast Drive, St Mary's Bay.
P10	Mill Road, Dymchurch.

5.2.4 The summary in Table 5 shows the range of $L_{Aeq,1hour}$ and $L_{A90,1hour}$ values obtained at each unattended monitoring location during the daytime and night-time. Values are rounded to the nearest whole decibel.

Table 5 - Summary of unattended monitoring data

Location	Day time		Night Time	
	$L_{Aeq,1hour}$	$L_{A90,1hour}$	$L_{Aeq,1hour}$	$L_{A90,1hour}$
M1 - Oakham Drive, Lydd	43-55	33-47	37-50	30-46
M2 - Homeleigh Farm	46-62	39-56	45-65	36-59
M3 - Seaview Road, Greatstone	38-59	32-43	38-48	36-41
M4 - Church Lane, New Romney	40-60	34-47	30-53	22-45

5.2.5 The noise data presented in Table 5 demonstrates that noise levels around the Airport are fairly low, and are typical for this type of area. The noise climate consists of a variety of sources including road traffic noise, aircraft noise from existing activities at the Airport, farming activity, plant noise from Dungeness Power Station, military firing noise and localised commercial activities.

5.2.6 Table 6 provides a summary of the range of recorded $L_{Aeq,T}$ and $L_{A90,T}$ during the daytime and night-time at each spot measurement location.

Table 6 - Summary of the range of recorded $L_{Aeq,T}$ and $L_{A90,T}$ during the daytime and night-time at each spot measurement location

Position	Range of Recorded Daytime Levels		Range of Recorded Night-time Levels	
	$L_{Aeq,10mins}$	**$L_{A90,10mins}$**	**$L_{Aeq,5mins}$**	**$L_{A90,5mins}$**
P1	52-67	40-48	33-53	31-43
P2	49-72	38-47	33-55	32-42
P3	45-54	40-45	45-49	41-45
P4	44-53	36-43	33-50	32-44
P5	44-51	38-45	35-56	32-46
P6	40-59	38-44	38-48	34-47
P7	49-59	43-54	43-57	41-56
P8	41-55	35-46	36-50	34-42
P9	49-53	47-50	46-49	42-45
P10	47-57	41-47	40-50	37-48

5.2.7 In the following assessments, I have chosen to use the lowest recorded background noise levels in order to provide a likely worst case assessment of potential noise impacts.

5.3 Baseline Noise Models

5.3.1 An INM computer noise model was created using the flight paths in Appendix 1 Figures NV01 to NV03, and the consolidated fleet mix in Appendix 3 Tables NV05-1 to NV05-12. A correction to the column heading for FP5 & 6 which should be reversed for the baseline data in Appendix 16.4a of **CD1.41a & CD1.41b** is noted. This error does not

affect the output of the noise contour maps previously reported in **CD1.41a & CD1.41b**.

5.3.2 The reported calculations for areas, property counts and specific property noise levels in **CD1.41a** are reproduced in Appendix 2 Table NV01.

5.3.3 The majority of current usage is from business and general aviation flights and the aircraft currently in use are small and do not give rise to a wide spread of noise levels.

5.3.4 In the baseline case, all properties are currently subject to annual average aircraft noise levels of less than 54 dB(A). The majority of these properties are located in Lydd and New Romney.

5.3.5 In order to consider the situation where the Airport is operating in a certain way on any particular day, rather than the summer or annual average, two scenarios have been run as a sensitivity test. A day with Scenario 1 operations alters the noise contour shape such that a greater area of Lydd is covered by the noise contours. Conversely, a day with Scenario 2 operations alters the noise contour shape such that a greater area of New Romney is covered by the noise contours. This is illustrated in **CD1.41a** Figures 16.4 & 16.5 respectively.

5.3.6 I would note that on any particular day, noise levels at a given location could be higher or lower than the summer or annual average scenarios. Since this is factored into the annual or summer average, and given that the air noise is below the level at which the onset of significant community annoyance starts, this is of no significance.

5.3.7 When the summer average day (upper parameter) is compared to the annual average day, the shape and areas covered by the noise contours are very similar to that described in the annual average scenarios, although the areas covered by the contours cover a 5 – 10% greater area. This demonstrates that a larger proportion of the annual noise dose is received in the summer months, but with a corresponding reduction in the noise dose in the winter months. I do not consider this to have any significance, as nearly all airports in the United Kingdom have more summer flights than winter flights.

5.4 Future Baseline Environment (Future Baseline Noise Conditions)

<u>Airborne Aircraft: Daytime (07.00-23.00 hrs)</u>

5.4.1 This part of my proof discusses the situation if the Airport were to expand its operations without any improvements to the existing runway

infrastructure, i.e. a “no development/fallback scenario”. The fleet mix for the fallback scenario is detailed in Appendix 3 Table NV05-1 and NV05-2 of this proof. The number of movements would nearly double from the Existing Baseline.

5.4.2 Figures NV04 and NV05 of Appendix 1 show the annual average and summer average noise contours for the fallback scenario respectively. The calculations for areas, property counts and specific property noise levels are reported in Appendix 2 Table NV02. Comparisons of the fallback scenario data with the baseline is presented in Appendix 2 Table NV04-1.

5.4.3 When comparing the Annual Average Future Baseline to the Existing Baseline, it can be seen that for properties closer to the Airport (M1, M3, M4, P1, P2, P4, P5, P6, & P8), slight to moderate noise increases of between 1.9 and 6.6 dB(A) would be experienced at individual properties, those closest to the flight paths experiencing the largest increases. For properties further away from the Airport, (P3, P7, P9, & P10), negligible increases of between 0.1 and 1.9 dB(A) would be experienced at individual properties. No properties would be above 57 dB(A), therefore I consider that the noise impact in the fallback position would be of minor significance overall.

Airborne Aircraft: Night time (23.00 - 07.00 hrs)

5.4.4 At present, the Airport has no restriction on night flights, and therefore as part of the fallback scenario, I have given consideration to the potential for night freight operations. Figure NV16 illustrates the annual average night time noise contour reflecting two movements of a BAE146 per night, 6 days a week.

5.4.5 At night time, sleep disturbance is the main effect to be avoided. This is more influenced by single event levels than a continuous noise. I have therefore given consideration to the maximum noise levels for this aircraft which is illustrated in Figures NV19 and NV20. These show that L_{Amax} levels of approximately 85 dB(A) would be experienced at Dunes Road for a runway 03 departure, and approximately 87 dB(A) would be experienced at Homeleigh Farm for a runway 21 departure.

5.4.6 It is likely that any night movements could be sufficient to wake residents in the closest properties to the flight paths and give rise to complaints, but their low numbers would not be sufficient to trigger the multiple event thresholds in PPG24 for new residential dwellings, as stated in paragraph 3.2.5, and therefore the impact would not be significant.

Ground Operations

5.4.7 Ground operations in the Future Baseline would be largely as currently experienced, with an approximate doubling of movements. With the distances involved (the nearest sensitive receptor being approximately 850m away from the runway or the stand apron) I do not consider it likely that this change in ground movements on the airfield will lead to significant increases in noise level at the location of the nearest sensitive receptors.

Increased Road Traffic Noise

5.4.8 I have assessed the noise change as a result of increased traffic flows in the future baseline scenario by comparing the daily traffic flow data for each road segment. This assessment is reported in Table 11 of **CD1.41a**.

5.4.9 Increases in traffic flow due to the future baseline conditions are not expected to increase by more than 25% at any of the AADT traffic count locations on public roads. An increased impact from vehicle noise (and therefore vibration) is unlikely.

5.4.10 I have also considered the likelihood that increased traffic flows are related to movements of the larger Group 2 aircraft, and could generate peak flows in any hour of the day during operating hours. I undertook a sensitivity test to evaluate the likely worst case noise impact of 60 additional vehicles in any one hour against the hourly flows for the B2075. The results of this assessment are presented in **CD1.41a**.

5.4.11 The noise change as a result of a peak one hour flow between the hours of 8am and 9pm would be less than 1 dB, which is insignificant. The highest noise impact would occur between 1am and 7am where the increase in traffic noise levels would be 4-6 dB(A), which is considered a significant increase. During the periods between 9pm – 1am and 7am – 8am, the increase in noise level would be between 1-3 dB(A) which is considered to be of marginal significance.

5.4.12 Night Flights would be permissible in the Future Baseline scenario, although it is unlikely that this will consist of passenger flights. I therefore consider it to be unlikely that any significant levels of road traffic noise would be generated by the Airport activity at night.

5.5 Summary of Key Points for Baseline & Future Baseline

5.5.1 I have quantified the existing baseline noise climate around the Airport, which I consider to consist of traffic noise, military noise, industrial and

commercial noise and intermittent noise from the existing Airport activities. No properties are exposed to aircraft noise levels above 57 dB(A), the threshold for significant community annoyance.

5.5.2 I have also considered the likely noise climate for the "no development/fallback scenario (or Future Baseline) if the Airport were to increase flight numbers with its existing infrastructure with an almost doubling of aircraft movements. This would result in moderate noise increases for some properties, No properties would be exposed to daytime aircraft noise levels above 57 dB(A), the threshold of significant community annoyance.

5.5.3 I consider the potential for night flights to operate at the Airport, and conclude that it could lead to a number of properties being affected by sleep disturbance which could give rise to complaints.

5.5.4 The increase in ground noise in the Future Baseline Scenario is insignificant, and the potential traffic noise increase is overall negligible, but with the potential for slight impacts in individual hours between 1am and 7am.

6 EFFECTS OF THE SCHEME PURSUANT TO THE APPLICATIONS

6.1 Airborne Noise

Airborne Aircraft: Daytime (07:00 – 23: 00hrs)

6.1.1 This part of my proof discusses the situation where the Airport is able to expand to its current capacity of 300,000ppa with the runway extension and 500,000ppa with the runway extension and new terminal building ("Future Assessment conditions"). This proof of evidence also introduces the new calculations for the “Lower Growth” and “Higher Growth” scenarios based on the fleet mix detailed in Appendix 3 Tables NV05-3 to NV05-12).

6.1.2 The air noise contours for the new data is presented in Figures NV06 to NV13 for the two development scenarios (Runway Extension and Terminal Building) annual average and summer average for both the “Lower Growth” and “Higher Growth” scenario respectively.

6.1.3 The corresponding calculations of contour areas, property counts and individual property assessments are reported in Appendix 2 Tables NV02 & 03, and the data is compared in Tables NV04 of Appendix 2.

Future Assessment (Runway) vs Existing Baseline

6.1.4 I have compared the noise impact of the Runway Extension in operation with 300,000ppa against the Existing Baseline scenario. The number of movements at the Airport would almost double. The majority of properties would experience negligible or slight noise increases, with a minority experiencing moderate noise increases. Overall, no properties would fall within the 57 dB(A) contour, therefore I consider that the noise impact of the Runway Extension when compared to the Existing Baseline would be of minor significance.

Future Assessment (Terminal) vs Future Assessment (Runway)

6.1.5 I have also compared the noise impact of the Terminal Building in operation with 500,000ppa against that with the Runway Extension scenario. The number of movements at the Airport would remain the same, although some Group 1 aircraft would replace Group 2 aircraft. All properties would experience a negligible noise increase. Overall, with only one property (Homeleigh Farm) in the annual average, and three properties in the summer average falling within the 57 dB(A) contour, I do not consider that the noise impact of the Terminal Building

scenario when compared to the Runway Extension scenario would be significant.

Future Assessment (Terminal) vs Existing Baseline

6.1.6 The noise impact of the Terminal Building in operation with 500,000 ppa has been compared to the Existing Baseline scenario. The number of movements at the Airport would almost double. The majority of properties would experience slight noise increases, with a minority experiencing moderate noise increases. Overall, with only one property (Homeleigh Farm) in the annual average, and three properties in the summer average falling within the 57 dB(A) contour, I consider that the noise impact of the Terminal Building scenario when compared to the Existing Baseline would be of minor significance.

Future Assessment (Runway) vs Future Baseline ('No development/Fallback' scenario)

6.1.7 The noise impact of the Runway Extension in operation with 300,000ppa has been compared with the no development/fallback scenario. The number of movements at the Airport would be approximately the same, although there would be more Group 1 aircraft with the Runway Extension scenario. All properties would experience negligible noise increases. Overall, no properties would fall within the 57 dB(A) contour. I do not consider that the noise impact of the Runway Extension when compared to the Future Baseline would be significant.

Future Assessment (Terminal) vs Future Baseline (('No development/Fallback' scenario))

6.1.8 The noise impact of the Terminal Building in operation with 500,000ppa has been compared to the no development/fallback scenario. The number of movements at the Airport would be approximately the same, although there would be more Group 1 aircraft with the Terminal Building scenario. The majority of properties would experience negligible noise increases. Overall, with only one property (Homeleigh Farm) in the annual average, and three properties in the summer average falling within the 57 dB(A) contour, I consider that the noise impact of the Terminal Building when compared to the Future Baseline would be of minor significance.

Airborne Aircraft: night time (23:00 – 07:00hrs)

6.1.9 A wholesale ban on night flights (excluding emergency and governmental activities) has been offered as part of the Applications. Therefore, there would be no noise impacts at night with the

development proposed in the Applications. This can be contrasted with the no development/fallback scenario in which night flights may occur.

Discussion of Aircraft Noise Changes

6.1.10 The above section describes the relative change between the two development scenarios (Runway Extension and Terminal Building), as compared to the Existing Baseline, and the Future Baseline of the no development/fallback scenario. I observe from the data that whilst a minority of properties would experience moderate noise increases, the overall impact is only of minor significance for three properties. The ban on night flights should also be a welcome benefit for neighbouring properties.

6.1.11 I also observe that there is little difference between the new "Lower Growth" and "Higher Growth" scenarios in terms of noise impact, and the data for these updated scenarios is marginally lower than that reported in the Supplementary Information **(CD1.41a and CD1.41b),** which I consider to represent the worst case noise impacts of the Applications.

6.1.12 It should also be noted that increases in movements at the Airport in any scenario would happen gradually over a number of years, resulting in a more gradual increase in the noise levels over time so that in reality the perception of any noise effects will be reduced even further.

6.1.13 Aircraft noise levels at Greatstone Primary School are currently below 45 dB(A), and would increase to 46 dB(A) in the fallback position, 48 dB(A) with the runway extension, and 50 dB(A) with the terminal building. Whilst the noise change is considered to be a moderate increase, aircraft noise levels would only increase to the level at which the RANCH study considers to be a low level of aircraft noise, and no effects on children's cognitive performance could be observed. I therefore consider the noise change at Greatstone Primary School to be of negligible significance.

6.1.14 The Airport is offering a significant and effective mitigation strategy to minimise noise impacts from the Applications, despite the worst case noise effect being of minor significance only to three properties, a level far lower than the majority of airports in the UK. Amongst other things, the use of Flight Paths over the DO44 military area would bring a significant reduction in noise for Lydd Village.

6.1.15 I have also reviewed the Secretary of State's decision for a previous Runway Extension application at the Airport, and the grant of permission in 1992 as identified in the Planning Proof of Evidence **(LAA/14/A)**. I note that the Secretary of State considered then that the

noise impact of the 1992 scheme would not affect residential amenity. This permitted proposal had a larger cap on movement numbers (56,000 as opposed to 40,000 for the current Applications) and was based on noisier aircraft in operation. The current Applications would result in even less noise effects than that development and therefore ought to be even more acceptable.

6.2 Ground Noise

Ground Operations

6.2.1 The ground operations of the proposed larger aircraft, namely the Boeing 737 and A320, will give rise to instantaneous noise levels as aircraft are manoeuvred into parking positions. Such aircraft also introduce Auxiliary Power Units (APUs) or Ground Power Units (GPUs), which represent a continuous noise source at a much lower level.

6.2.2 Having assessed the two main ground operations independently in accordance with BS4142:1997, I note that the noise from APU's and GPU's is marginally above the lowest daytime background noise level, and below the highest daytime background noise level. On balance, I conclude that these noise sources are unlikely to give rise to complaints in practice and is therefore of negligible significance.

6.2.3 I have also assessed the noise from taxiing operations and consider that it is marginally above the lowest daytime background noise level, and below the highest daytime background noise level. On balance I consider that the risk of complaints from taxiing is very small, except for perhaps first thing in the morning or last thing in the evening when background noise levels are likely to be at their lowest, and the wind direction is favourable towards a particular direction. Whilst the actual likelihood of complaints is impossible to predict, from my experience I would not expect a significant number, if any, of complaints to result from this activity.

6.2.4 Ground movements will occur for relatively short periods of time, as the aircraft moves between the runway and the parking area. Hence this does not represent a continuous noise source. The equivalent continuous sound pressure level of this source will be lower than 55dB over a period of time greater than a few minutes.

6.2.5 This noise source does not lead to noise levels in excess of the World Health Organisation general daytime outdoor noise level criterion (as referenced in PPG24), or the BS8233 outdoor steady noise limit. As such, the noise due to these operations is unlikely to be significant during the day.

6.3 Road Traffic Noise

6.3.1 I have again assessed the noise change as a result of increased traffic flows in the future development scenarios by comparing the daily traffic flow data for each road segment. This assessment is reported in Table 16.25 of **CD1.41a** and **CD1.41b**.

6.3.2 Increases in traffic flow due to the future baseline conditions are not expected to increase by more than 25% at any of the AADT traffic count locations on public roads. An increased impact from vehicle noise (and therefore vibration) is unlikely.

6.3.3 I have also considered the likelihood that increased traffic flows are related to movements of the larger Group 1 aircraft, and could generate peak flows in any hour of the day during operating hours. I undertook a sensitivity test to evaluate the likely worst case noise impact of 60 additional vehicles in any one hour against the hourly flows for the B2075. The results of this assessment are presented in Table 16.26 of **CD1.41a**.

6.3.4 The noise change as a result of a peak one hour flow between the hours of 8am and 9pm would be less than 1 dB, which is insignificant. The highest noise impact would occur between 1am and 7am where the increase in traffic noise levels would be 4-6 dB(A), which I consider would be a significant increase. During the periods between 9pm – 1am and 7am – 8am, the increase in noise level would be between 1-3 dB(A) which I consider to be of marginal significance.

6.3.5 Given the proposed ban on night flights, and the proposed opening times for the Airport, I do not consider that significant road traffic flows would be observed in the night hours, and therefore the noise impact from traffic is unlikely to be any more of marginal significance.

6.4 Construction Noise & Vibration

6.4.1 Extension of the runway and construction of the new terminal building pursuant to the Applications have the potential to create noise and vibration for a temporary period of time.

6.4.2 An assessment of the likely noise levels due to construction activities has been calculated at approximately 55 dB(A) at 500m from the construction sites for both the runway extension and the new terminal building.

6.4.3 The nearest sensitive receptor to the runway extension construction site is Greatstone Primary School. However, at a distance of 630m

from the closest section of new runway, the noise levels here would be below the suggested threshold of 65 dB(A), and therefore the impact of construction noise is not predicted to be significant.

6.4.4 The nearest noise sensitive receptors to the terminal construction site are also at least 500m away, so with construction noise levels at less than 55dB(A) at these locations as compared with the significance threshold of 65 dB(A) (para 3.3.12), the impact of construction noise is not predicted to be significant.

6.4.5 The large separation distances between the construction sites and the nearest receptors means that the impact of vibration from construction activities is not predicted to be significant.

6.5 Mitigation Strategies

Mitigation for Airborne Noise

6.5.1 A number of strategies are proposed to minimise the noise impact from the Airport's activities. These include implementing the International Civil Aviation Organisation (ICAO) detailed guidelines for a 'balanced approach' to managing aircraft noise, developing a Noise Management Plan to comply with the balanced approach requirement, no flights between the hours of 23:00 and 07:00 (excluding emergency and governmental activities), the use of noise-abatement operating procedures, installing permanent noise monitoring stations, implementing land-use planning and management policies; and establishing clear lines of communication with local residents.

Mitigation for Construction Noise

6.5.2 In order to minimise potential construction impacts, all construction activities will be carried out in accordance with the recommendations of BS 5228 (**CD8.10**).

6.5.3 In addition, the Construction Environmental Management Plan (CEMP) will contain mitigation measures on working hours which would be agreed with the Local Authority and will be specific to the construction site.

6.5.4 Specific method statements and risk assessments would be required for night working. In order to minimise the likelihood of noise complaints in such eventualities, the contractor would inform and agree the works in advance with the Environmental Health Officer, informing affected residents of the works to be carried out outside normal hours and the residents would be provided with a point of contact for any queries or complaints.

6.5.5 The CEMP will stipulate that all vehicles and mechanical plant used for construction would be fitted with effective exhaust silencers and regularly maintained, and that inherently quiet plant would be used where appropriate; all major compressors would be sound-reduced models fitted with properly lined and sealed acoustic covers which would be kept closed whenever the machines are in use; and all ancillary pneumatic percussive tools would be fitted with mufflers or silencers of the type recommended by the manufacturers; and all ancillary plant such as generators, compressors and pumps would be positioned so as to cause minimum noise disturbance. If necessary, temporary acoustic barriers or enclosures will be provided.

6.6 Summary of Effects

6.6.1 In this chapter I have presented the effects of the Applications from aircraft noise, ground operations, road traffic and construction activities.

6.6.2 Aircraft noise would give rise to only slight noise increases for the majority of properties, and a moderate increase for a minority of properties in the worst case. The effects at Greatstone Primary would be of negligible significance. Three properties overall would experience a minor impact from aircraft noise and even these properties would only just exceed the 57 dB(A) contour.

6.6.3 Ground operations even assuming a worst case scenario for any noise effects are unlikely to give rise to a significant number of complaints.

6.6.4 Traffic Noise impacts would be negligible overall, with only localised impacts occurring between 1am and 7am of minor significance. With the proposed ban on night flights, it is unlikely that significant traffic would be generated in the night period.

6.6.5 Construction activities would be temporary, and due to the large distances between the construction sites and the nearest receptors, I conclude that there will be no construction noise impacts.

6.6.6 A substantial mitigation strategy has been proposed by the Airport to minimise the noise impact of the Applications.

6.6.7 Overall, since the noise impacts are fairly localised and only three properties would experience a minor noise impact, I conclude that the noise impact of the Applications is of minor significance and is certainly not a reason to justify refusal. Moreover, I consider that the strict controls on noise movements and the ban on night flights would be of benefit to neighbouring properties.

7 RESPONSE TO RULE 6 PARTY COMMENTS

7.1 Responses

7.1.1 In this section I address various points made by the Rule 6 parties so far as they relate to noise issues. If any detailed or additional comments are subsequently raised by Rule 6 Parties, I will deal with these in rebuttal evidence if necessary.

RSPB

7.1.2 The RSPB has alleged that "*The applicant has failed to recognise and take into account the impact of increased aircraft traffic on the amenity value of the RSPB Dungeness Reserve and the surrounding area. The frequency of peak noise events is likely to erode the tranquil nature of the Reserve and surrounding area. The RSPB is concerned that this will damage the visitor and educational experience at the Reserve*".

7.1.3 In my evidence I have provided the LAmax noise contour plots for the BAE146 aircraft, and offered additional information in respect of the Gulfstream 550 aircraft which is presented in Appendix 1 Figures NV19 to NV22.

7.1.4 Peak noise levels from a Runway 21 departure may be audible across the reserve if there were no localised noise from other sources at the time. However, I do not consider that the number of additional events over the existing baseline (a doubling of movements) will detract significantly from the noise events already experienced in the area, and there will in fact be no significant increase in the number of movements as compared with the position in the no development/fallback scenario anyway. In any event, none of the proposed larger passenger aircraft will fly over the area to the south east of the Airport, whereas existing small aircraft can already fly over this area at a much lower height, with each event duration considerably longer due to the slower speed the small aircraft are travelling at. I therefore do not consider that the proposed Applications will materially affect the amenity of the RSPB Reserve or the surrounding area, nor do I consider that it will damage the visitor/educational experience at the Reserve.

7.1.5 The effect of noise disturbance on wildlife is considered in the Proof of Evidence of Roy Armstrong (**LAA/6/A**). The effect on tranquillity is considered in the Proof of Evidence of Clive Self (**LAA/10/A**)

Protect Kent (CPRE Kent Branch)

7.1.6 The following comments about the Applications were made by Protect Kent (CPRE Kent Branch): "*We have already commented on noise, but the World Health Organisation has produced new guidelines for night noise. The Government aims to achieve the WHO guidelines and these say that for good sleep, sound level should not exceed 30 dB(A) and should be avoided. We suggest that the airport would find it impossible to operate aircraft with sound levels below 45 dB(A), so no night flights must be permitted. There is also an expanding amount of research showing that noise especially that from aircraft which is tonal and more disturbing than noise from other sources causes significant health problems. With regard to adverse noise effects on the local community, PPS4 (see below) requires protection of the countryside for itself and this includes its tranquillity. Therefore this provides even more weight to the noise objections"*.

7.1.7 In their Statement of Case, CPRE Kent asserted: "*The damaging nature of noise disturbance to physical and psychological health is all too easily undervalued and we will draw on recent European and international policy development, and its translation into English policy and regulation, which identifies the importance of preventing and reducing environmental noise, in particular where exposure levels can result in harmful effects on human health. The World Health Organisation's European Action Plan for Children's Environment and Health calls for children to be protected from exposure to harmful noise at both home and school. We will also present evidence of the detrimental impacts of noise pollution on particularly sensitive local receptors such as the pupils of Greatstone Primary School and residents of Lydd, Greatstone and Littlestone*."

7.1.8 I am aware that the World Health Organisation has recently published new guidelines for night noise, however this document (and others published by the World Health Organisation) are only guidance documents for governments to consider when setting their national noise policies, and have little weight in planning terms once those national noise policies have been set. Current government guidance in England is contained PPG24 as I have reported in Chapter 3 of this proof and this is consistently applied.

7.1.9 I have given consideration to the issue of night flights and these are in fact likely to occur in the no development/fallback position identified in Chapter 5.4 of this proof, rather than with the Applications as the Applications are accompanied by a proposed prevention of night flying of the type set out above, so being of benefit to the local community.

7.1.10 The wholesale ban on night flights (subject only to the emergency/government exception) will be secured by planning condition, eliminating the noise impact from night flights if the Applications were to proceed. As to the effect of the proposals in noise, I have considered this in more detail above and for the reasons I have explained I do not consider there is any basis for refusing the Applications on this ground.. The issue of tranquillity more generally is dealt with in the Proof of Evidence of Clive Self (**LAA/10/A**).

7.1.11 I have addressed relevant European and national legislation and policy regarding noise in Chapter 3 of this Proof of Evidence. I have considered the document "*World Health Organisation's European Action Plan for Children's Environment and Health",* and there is nothing in it which contradicts the significance criteria for assessments of noise that I have adopted in Chapter 4 of this Proof of Evidence. The noise impact at Greatstone Primary has been considered in paragraph 6.1.13 of this proof. For the reasons I have set out above, I do not consider that the pupils at Greatstone Primary School, or the residents of Lydd, Greatstone and Littlestone will be materially adversely affected by noise in consequence of the development proposals.

Lydd Airport Action Group (LAAG)

7.1.12 LAAG has stated: "*New Information - RNAV Flight Paths Lydd Airport has been granted approval by the CAA (August 27, 2009) for new RNAV (GNSS) Area Navigation (Global Navigation Satellite System) instrument approach procedures (flight paths) to both runway 21 and runway 03. LAAG believes the new flight paths necessitate a reassessment of most of the key issues relevant to this planning application (noise, pollution, nuclear safety and the economic benefits)*".

7.1.13 LAAG also assert in their Statement of Case: "*Key aviation information after five consultations remains inaccurate and incomplete. LAAG will demonstrate that in the noise and pollution studies serious flaws remain relating to flight paths, the modal split and baseline movements. In addition, new flight procedures (paths) have been ignored. LAAG contends that these inaccuracies and omissions cast doubt on the validity of the noise and pollution studies.*"

7.1.14 The flight paths are set out in some detail and are addressed in the Proof of Evidence of Tim Maskens **LAA/3/A**. I can confirm that the data contained in the Environmental Statement and Proofs of Evidence are correct, and that the new modelling presented in this proof appropriately considers the noise impact of the Applications based on the relevant flight paths and that LAAG are wrong in suggesting that the RNAV paths alter that assessment.

7.1.15 I consider that the modelling and assessment work undertaken is accurate and the amount of modelling and sensitivity testing of the models undertaken for these Applications has been extensive and the "worst case" scenario in terms of noise effects has been assessed. I do not regard LAAG's criticisms as justified.

Shepway District Council Statement Of Case

7.1.16 On the issue of Noise and Tranquillity, Shepway District Council made the following comments: "*The Council is concerned to ensure any airport expansion proposals do not have any significant noise impacts on the local community and wider area. The Council has fully considered the noise effects of the applications and consider them to be minor overall, though there will be materially significant or moderate adverse effects for some properties near the airport. It is more difficult however to quantify the effect on tranquillity, especially in the Kent Downs Area of Outstanding Natural Beauty, which is some distance away.*"

7.1.17 The Council goes on to comment: "*Overall, whilst the Council considers there would be an adverse noise effect, this is not considered a sufficient reason on its own to recommend refusal of the applications. If necessary the Council expects the applicant to provide further evidence at the inquiry regarding this, and will contribute to this evidence if appropriate. The Council will present evidence regarding conditions and a legal agreement to control and give certainty about the level of noise effects, and welcomes the proposals by the applicant to provide an additional scheme over and above planning conditions and a S106 agreement for those properties most affected ('The Five Communities Scheme')*"

7.1.18 In Chapter 6 I have set out the effects of the proposed scheme pursuant to the Applications. I have noted that whilst for a relatively small number of properties, slight to moderate noise impacts are likely to occur, in terms of overall significance only three properties would be at noise exposure levels that could lead to the onset of significant community annoyance. The issue of tranquillity is addressed in the Proof of Evidence of Clive Self (**LAA/10/A**).

7.1.19 I therefore do not consider that there is any proper basis for refusing planning permission for the Applications on grounds of noise, and I agree with the Council that noise can be adequately controlled with a planning condition to limit the noise impact of the Applications.

8 CONCLUSION

Operational Noise & Vibration

8.1.1 I have examined the potential noise and vibration effects of the proposed runway extension and new terminal building pursuant to the Applications, both in construction and in operation.

8.1.2 I have looked at a number of scenarios to evaluate the range of effects created by an annual average, a summer average (Upper Parameter), and various single mode operations, as well as single event levels. This has been undertaken for the no development/fallback position (Future Baseline) and the proposed developments to 300,000ppa with a runway extension, and 500,000ppa with a new terminal building.

8.1.3 The number of movements would approximately double from that currently experienced in either of the two development scenarios or the fallback position. The differences in noise impact occur as a result of a number of aircraft in each group changing in favour of larger aircraft to deliver more passengers.

8.1.4 In both the Runway Extension and the fallback scenarios, the majority of properties would experience negligible or slight noise increases, with only a minority experiencing moderate noise increases. Overall, no properties would be exposed to annual or summer average levels above 57 dB(A).

8.1.5 In the Terminal Building scenario, a number of properties would experience slight noise increases, but only a minority would experience moderate noise increases. Overall, only one property in the annual average, and three properties in the summer average would fall within the 57 dB(A) contour. These numbers are extremely low in comparison with most airports in the UK and I do not consider these noise effects to justify refusing planning permission on noise grounds

8.1.6 The noise from ground operations would occur at relatively large distances from receptors, and infrequently during the day. I conclude that this is not likely to lead to any significant number of complaints under normal operating conditions.

8.1.7 An increase in road traffic movements as a result of the Applications would result in a negligible increase in noise levels on the roads surrounding the Airport overall, with the potential for only minor noise increases for a few properties between 1am and 7am for short periods of time.

8.1.8 In terms of mitigation, the Airport is offering an extensive range of options such as noise preferential flight paths, no night flights (excluding emergency and governmental activities), and a Noise Management Plan. The Airport has also gone further with a corporate commitment to the noise insulation scheme and the 'Five Communities Scheme' which you would only normally see associated with larger airports.

Construction Noise & Vibration

8.1.9 Construction activities have the potential to increase noise levels at the location of nearby sensitive receptors, however due to the temporary nature of this noise source, and the distances involved, I do not consider that the impact would be significant.

Overall Conclusion

8.1.10 I have considered all of the likely noise impacts from the Applications. The three properties that would be exposed to a noise level of 57dB(A) is extremely small relative to other airports in the UK, and even then is only just on the threshold for significant community annoyance. In addition, the mitigation offered would reduce even further these noise impacts.

8.1.11 I therefore conclude that the noise impact of the proposed runway extension and the proposed new terminal pursuant to the Applications would be of minor significance, and acceptable and there is no proper basis for refusing planning permission for these Applications on noise grounds.