

London Southend Airport

Initial Review of Proposed Environmental Controls

June 2009

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1. Introduction

Scope

- 1.1 Atkins Limited has been commissioned by Southend-on-Sea Borough Council to review the schedule of potential control measures that have been proposed to accompany a Joint Area Action Plan being produced on behalf of Southend-on-Sea Borough Council and Rochford District Council to guide future development at and around London Southend Airport. Atkins has been asked to advise as whether the proposed control measures are appropriate to achieve the environmental safeguards sought by the Council. The findings of the review are presented in this report which can be used to brief Members.
- 1.2 A twofold approach has been undertaken to the review:
- A benchmarking exercise to establish what operational and environmental controls are exercised at comparable airports in the UK including, inter alia, Bristol, Southampton and Norwich, and to assess whether any additional or enhanced measures would be appropriate at London Southend Airport based on experience elsewhere.
 - Using the professional judgement of experienced specialist consultants to provide advice as to the adequacy and likely efficacy of the potential controls identified by the Council. This advice has been provided by Atkins planning, aviation, acoustic and air quality consultants who have considerable international experience of airport planning.

Limitations of Review

- 1.3 The review covers relevant reports and data relating to London Southend Airport which are available to the public. At this stage the study is desk based using the following available core documents:
- London Southend Airport & Environs Study – JAAP Evidence Report, Rochford District Council and Southend-on-Sea Borough Council, June 2008
 - London Southend Airport & Environs - JAAP Preferred Options, Rochford District Council and Southend-on-Sea Borough Council, February 2009
 - A7937 R01A London Southend Airport Runway Extension Study, Bickerdike Allen, November 2008, (Figures 8 – 11 and Appendix A only)
 - Public Safety Zone Mapping (PSZ Map Runway 06 - 2006 Revised SEN, PSZ Map Runway 24 - 2006 Revised SEN)
 - Table of Proposed Controls, Southend-on-Sea Borough Council, 2009
- 1.4 The table of proposed controls is included in the first two columns of the table in Appendix A. The Consultants consider that there may be an error in the proposed cap figure for freight traffic. The cap figure quoted for freight traffic of 52,000 tonnes is approximately a 1,000 fold increase in freight traffic over the 70 tonnes reported as the actual freight level in 2005 by the Civil Aviation Authority (JAAP Evidence Base report, Table 3-1). The JAAP concludes:
- “The master plan makes no reference to the development of freight activity, and York suggests that due to the runway length that this would not be a major source of growth, although there may be opportunities for niche operations”.*
- 1.5 The study has not entailed any environmental impact assessment over and above that which has already been undertaken or is ongoing.

- 1.6 In accordance with a request from Southend-on-Sea Borough Council, the operators of London Southend Airport have not been contacted directly.
- 1.7 It was recognised at commissioning that such an expert review may not provide a definitive view on the environmental mitigation derived from implementing the proposed controls and that further analysis may be required as a second stage of the study.
- 1.8 Some third party studies were not available in time to be utilised for this study. These include full noise mapping and noise reports from Bickerdike Allen and the study into the socio-economic case for the expansion of activities at London Southend Airport which was produced by York Aviation Ltd for the East of England Development Agency in 2005.

2. Benchmarking of Proposed Airport Environmental Controls

Overall Method

- 2.1 A number of airports with similar characteristics to London Southend Airport, in relation to the location of the airport compared to the populated area, the size of the airport, the flight numbers or the types of flight at the airport are included in the study. These airports are:
- London City Airport (located within London built up area)
 - Norwich International Airport (located directly to the north east of Norwich built up area)
 - Bournemouth (located to the north east of Bournemouth built up area)
 - Plymouth City Airport (located within and to the north east of Plymouth built up area)
 - George Best Belfast City Airport (located to the north east of Belfast built up area)
 - Bristol International Airport (located to the south west of Bristol built up area but further away from the built up area than the remainder of the comparator airports considered))
- 2.2 Information on environmental controls at each of these airports was sought from two main sources: the airport websites (George Best Belfast City and Bristol International Airports), and local planning authority planning records available via the internet.
- 2.3 It should be noted that the information is variable and depends on the source, for example some planning decision notices contain just planning conditions, whilst some (Bournemouth and London City) contain a copy (final or draft) of the section 106 agreement. Additionally some information is from masterplans (Bristol International Airport and George Best Belfast City) and the Plymouth City Airport information is from an application predominantly related to new residential development adjacent to the existing airport on decommissioned runway ends and is mainly related to the protection of the new development. Other applications, such as Norwich International Airport and London City Airport, are related to refurbishment or redevelopment of part of the operational airfield and contain additional (Norwich International) or consolidated (London City) planning conditions. Southampton was initially included in the research but there has not been a planning application recent enough to have full details including conditions.

Identified Trends

- 2.4 The results of the comparisons are set out in the table at Appendix A. It should be noted that the information is incomplete as the majority of the research has been concentrated upon implemented masterplans or recent planning applications where controls are in place.

Hours of Operation

- 2.5 There is no generally recurring pattern of hours of operation over the airports considered. However, daytime generally starts at 0600 or 0630. Night time varies more from 2130 at George Best Belfast City Airport to 2330 at Bristol International Airport and Bournemouth. London City Airport has a night time commencement of 2200, whilst Norwich has a night time commencement of 2300.
- 2.6 Although Bristol International Airport, which is furthest away from centres of population, has the latest night time commencement, Bournemouth, which has the same night time commencement time, is closer to a centre of population. London City Airport and George Best Belfast City, which

have the most restrictive times, are both located within their respective overall urban areas rather than on the edge as with London Southend. The restrictions at London City Airport are imposed on public holidays (0900-2200), on Saturdays (0630-1230) and Sundays (1230-2200). It is considered that these restrictions are possible due to the nature of the airport business which is almost entirely passenger (scheduled or private), and based on business flights and travellers going away for the weekend travelling Sunday morning or Sunday evening.

Passenger Flight Times/Night Flying

- 2.7 At the majority of the airports considered night flying restrictions are in place. It should be noted that, although passenger flight times are generally restricted to daytime hours, night flights are not necessarily disallowed during the night time hours. Restrictions may be waived at some airports to allow the passage of aircraft in emergency or requiring safe landing, flights requiring diversion from other airports due to bad weather, where no other suitable airports are available, or flights running late to use the airport. The latter category may be restricted, for example at Norwich International Airport this can only happen with the consent of the Norwich Airport Executive Director. The planning decision for Norwich International Airport requires the reporting of all aircraft movements within night time hours to the Local Planning Authority. Additionally some airports, such as Bristol International Airport, have a quota system for night flights
- 2.8 The operator of Plymouth City Airport imposes Environmental Surcharges per arrival/departure between 2000 and 2100 of £ 86.89, between 2100 and 2200 of £185.30 and between 2200 and 2230 of £243.10 in an apparent attempt to discourage later flights, and anecdotal evidence is that similar differential pricing schemes operate at other airports to encourage landings during the daytime. However, the Consultant has not identified restrictions specifically on passenger flight times, rather than flights as a whole, at the airports considered, beyond the general restrictions on hours of operation set out above.

Aircraft Movements

- 2.9 There is a wide variety of restrictions on total aircraft numbers across the airports considered. George Best Belfast City Airport and London City Airport have an overall cap on annual movements with 48,000 movements at George Best Belfast City Airport and 120,000 at London City Airport. The aircraft movement limits at London City Airport are further broken down and exact movements specified per week day, Saturday or Sunday and specific numbers set out for each of the public holidays through the year. The local planning authority for London City Airport also seeks to mitigate the impact of early flights by conditioning the number of flights Monday to Saturday between 0630 and 0659, (two movements) and further between 0630 and 0645 (six movements). There are various ways of providing a cap on aircraft movements and of deciding how to set the cap, usually based on noise considerations.

Engine Testing

- 2.10 Engine testing restrictions are variable, depending on the airport, but tend to be related to the daytime hours specified above. A planning condition at Norwich International Airport seeks to restrict the running of aircraft engines to designated testing areas. A recent outline planning permission at Plymouth City Airport included several conditions which restricted engine testing including:

“20. Not more than 15 engine tests shall occur from 6.00am to 7.00am in any calendar month of which not more than three shall occur from 6.00am to 6.30am and then only in exceptional circumstances and not more than 120 in any calendar year. Exceptional circumstances shall be defined in writing to be submitted to and approved in writing by the local planning authority before the Engine Testing Bay hereby permitted is used.”

- 2.11 A clause in the section 106 agreement at Bournemouth restricts engine testing to between 0900 and 2030 weekdays and 0900 and 1700 on Saturdays and public holidays, not allowing it at all on Sundays.

Cargo Volume

- 2.12 The Consultant has not identified any specific controls on cargo flights at the airports considered. However, the majority of these airports are predominantly passenger airports, with cargo traffic subject to the same restrictions as passenger flights. As set out in section 1, it is considered that the cap figure may be an error in drafting the table of proposed controls.

Transport Infrastructure

- 2.13 Most airport development is linked to numbers of passengers per annum. Often airport growth is restricted until surface access issues, such as public transport investment, has been undertaken, for example, opening a new railway station or a new or improved bus route. The requirement for new or improved transport infrastructure is generally dependent upon the impact that an increase in passenger numbers will have on local public transport and highway infrastructure.
- 2.14 Within the draft s106 agreement for London City Airport there are requirements for a staff travel plan, a passenger travel plan, the requirement for setting targets for managing impact of staff and passenger road traffic on highway network, a contribution to parking controls in the area, a contribution to improving local bus services and a significant contribution toward the DLR 3 car upgrade project, as well as £50K contribution to a VISSIM modelling study.

Aircraft Height/ Routes to and from the Airport to Minimise Noise Impact

- 2.15 Aircraft routes to and from the airports are generally set out within s106 agreements or planning conditions. It is common for these routes to be enforced through the agreements by which airlines use airports. Bristol International Airport proposes a system of fines for aircraft which do not keep to the proscribed routes and anecdotal evidence is that this is a system used at other airports to ensure that aircraft movements are within the specified routing limits.

Passenger Numbers

- 2.16 Many airports are limited by planning condition on usage, either by aircraft movements, as discussed above, or by passenger numbers, generally expressed as million passengers per annum (mppa). For example, there is a planning condition which limits Bournemouth to a 3 mppa limit, with the condition requiring the operator to submit the annual passenger figures to the local planning authority within a period of three months after the end of each calendar year.
- 2.17 There is no hard and fast rule as to what level of passenger number restriction should be placed on an airport. For example, the limit at Bournemouth is taken from the applicant's Environmental Statement, which assumed 3 mppa as the level at which the effects of the development proposed would be assessed. It is thus considered that a study into the environmental effects of development of the airport would be the most robust way of identifying the passenger number threshold.

Large Aircraft Used For Training Flights

- 2.18 There are no equivalent restrictions on large aircraft training flights at the airports considered.

Air Quality

- 2.19 The benchmarking has indicated that, where considered appropriate to local circumstances, planning conditions or clauses in legal agreements are applied. For example, at London City Airport the section 106 agreement requires air quality monitoring, periodic measurement to be agreed, an Air Quality Action Plan and regular publishing of air quality data. There is a similar requirement in the section 106 agreement at Bournemouth. At Bristol International Airport the operator is committing to a number of measures related to air quality including ensuring that the

development will not result in a breach of National Air Quality Objectives; reducing coaching to aircraft to cut emissions from ground vehicles; the installation of fixed ground power and electric vehicles; and an objective to ensure emissions do not exceed 2007 levels. These issues and the relevance to London Southend Airport are addressed in more detail in the air quality section of this report.

Noise Thresholds

- 2.20 London City Airport has the threshold of 57LAeq 16 hour which is amongst the lowest at UK airports. Under the s106 agreement associated with the most recent application for the site, properties within the 66LAeq 16 hour noise contour will receive a greater level of mitigation, whilst properties in the 69LAeq 16 hour noise contour qualify for property purchase. These issues and the relevance to London Southend Airport are addressed in more detail in the noise section of this report.

Direction of Take Offs and Landings/Public Safety Zone

- 2.21 Issues relating to take offs and landings and the public safety zone are addressed in the operational section of this report.

3. Noise

Overall Method

- 3.1 This present review is confined to the noise control measures proposed in relation to the runway extension. The noise impact of other developments is not considered.

References Used

- London Southend Airport & Environs Study – JAAP Evidence Report, Rochford District Council and Southend-on-Sea Borough Council, June 2008
- London Southend Airport & Environs - JAAP Preferred Options, Rochford District Council and Southend-on-Sea Borough Council, February 2009
- London Southend Airport Runway Extension Study, Bickerdike Allen. November 2008 (limited extract provided for review)
- Bristol International Airport 2006 Operations Monitoring Report (http://www.bristolairport.co.uk/upload/2006_operations_monitoring_report_v2.pdf)
- Night Flights – Bristol International Airport (2009) (http://www.bristolairport.co.uk/upload/night_flying_07.pdf)
- Proposed Noise Controls for London Southend Airport, June 2009

Airport Development Proposals

JAAP Preferred Options Report (JAAP PO)

- 3.2 This report states that the preferred option for the development of London Southend Airport includes an increase in the length of the runway from 1,610 metres to 1,799 metres to allow the use of medium-sized planes with a seating capacity of up to 150 passengers. This will cross the present alignment of Eastwoodbury Lane. This proposal is expected to allow more rapid growth of the airport to a capped passenger capacity of 2mppa.

JAAP Evidence Report (JAAP ER)

- 3.3 An Evidence Report to support the JAAP was prepared on behalf of Southend-on-Sea Borough Council and Rochford District Council in 2008. It includes a study of the potential impacts of noise from operation of the airport, stating that there are a large number of potentially noise and vibration sensitive receptors within and around the boundary of the study area, in particular the residential areas to the south-east of the study area, including Leigh-on-Sea. The Evidence Report makes reference to an Environmental Statement prepared in 2002 in relation to the runway reconfiguration. The ES has not been provided to Atkins for review.
- 3.4 Furthermore, the evidence report makes reference to noise contours prepared by Bickerdike Allen Partners in 2006. Only selected contour details have been provided for review.
- 3.5 The JAAP ER states that the airport can operate 24 hours a day, although normal operation is between 0700 and 2100 hours during the summer and 0800 and 2200 hours in the winter, with the potential to extend these hours at night by arrangement with the airport. It states that the number of flights between midnight and 0600 hours is limited to approximately 20 and there are limits on the duration of engine ground running for maintenance, to between 0700 and 2100 hours.
- 3.6 In relation to noise complaints, information provided by the airport suggests that over the last three years they have totalled about 60 annually, arising predominantly from properties to the south

west of the airport and, to a lesser extent, from properties to the north east and the eastern airport boundary.

- 3.7 The Evidence Report notes that there is potential for significant increases in aircraft noise both in the air and on the ground, but these are not quantified.
- 3.8 The JAAP PO report (p 20) states that expansion is *'only acceptable if it is undertaken subject to environmental constraints which will ensure that the environment of Southend, Rochford and the wider area is not significantly affected.'* However, no significance criteria are discussed or provided.
- 3.9 The report goes on to say that *'controlling aircraft noise is particularly important as the airport is situated close to residential areas. The two local authorities are continuing to work to establish a baseline of noise levels for the airport. In addition, the airport operator will be required to publish an annual Noise Evaluation Statement, the results of which will be set out in the authorities' respective Annual Noise monitoring reports.'*

Planning Policies

- 3.10 The councils propose a number of planning policies (JAAP PO p 21), of which the following relate to noise:
- 3.11 LS1 – *'... both councils will support the growth of the airport to a capacity of up to 2 mppa as proposed in the Aviation White Paper and East of England Plan.'*
- 3.12 LS2 – *'...planning permission for development at LSA will be granted provided it is airport related; results in an aircraft noise impact no higher than an agreed baseline level [not yet stated] and addresses noise matters in any accompanying EIA (to be determined through on-going noise assessment work); contributes towards the road infrastructure needs; and incorporates sustainable transport measures ...'*
- 3.13 LS3 – airport operator required to publish an annual Noise Evaluation Statement. [The scope and contents are not stated.]
- 3.14 LS7 - Planning permission for the runway extension will be supported subject to conditions on:
- the restriction of scheduled passenger flights to between the hours of 06:30 and 23:00 local time Mondays to Saturdays and 07:00 to 23:00 local time on Sundays;
 - the operation of cargo flights, outside the hours specified above, will be controlled by an agreed noise quota;
 - the routing of aircraft on both take off and approach to reduce noise and environmental impact;
 - the operation of helicopters;
 - the restriction on operation of aircraft types for commercial and freight operations to aircraft specified in the ICAO Chapters 3 and 4 of Annex 16 — *Environmental Protection*, Volume I — Aircraft Noise to the Convention on International Airport Civil Aviation (International Airport Civil Aviation Organisation);
 - engine ground running; and
 - aircraft training movements for aircraft with a seating capacity of over 50.
- 3.15 Corresponding conditions apply to the expansion of passenger terminals.

Comparator Airports

- 3.16 The brief requires that noise controls at comparable airports should be considered and compared with those suggested for London Southend Airport. Three airports are suggested in particular,

and these are discussed in this section. However, it should be noted that all airports have unique and often very different circumstances and that, whilst this comparison can illuminate the issues, it cannot be used to decide what should be done at Southend.

Bristol International Airport

- 3.17 Bristol International Airport had 60,000 air transport movements (ATMs) in 2008 and carried 6mppa. This is expected to rise to 86,000 ATMs and 10mppa by 2016. It is, therefore, already a much busier airport than Southend could become even with the proposed developments taking place.
- 3.18 It is understood that the planning consent for development of the airport included the following noise requirement:
- 'Development of a noise action plan setting out measures to be adopted to control and manage noise impact ... including penalties for aircraft breaching noise limits with funds raised incorporated into the Community Fund.'*
- 3.19 The management of noise at Bristol international Airport includes the following:
- A night noise quota system, based on the CAA quota counts;
 - Restrictions on ground running and the use of auxiliary power units (APUs);
 - Noise abatement procedures;
 - Noise monitoring; and
 - A complaints telephone line.
- 3.20 Bristol International Airport produces an annual Operations Monitoring Report which provides statistical information on the operational activities at the airport and their impact. In relation to noise, this report gives statistics on:
- Aircraft types and number of movements;
 - Passenger statistics including numbers and routes;
 - Runway usage;
 - Flight routings and Noise preferential routings;
 - Noise monitoring results at each end of the runway;
 - Noise contour maps and area within each noise exposure band;
 - Noise complaints – number, month, location and subject;
 - Night noise quota usage.
- 3.21 Bristol International Airport states that there is only a limited amount of night flying at the airport to sustain the Royal Mail, easyJet and charter airline operations. Charter operators aim for three or four rotations (departures and arrivals of each aircraft) in every 24 hour period, or in the case of easyJet, between 0600 and 2300 hours. This tends to generate one night arrival by each of the charter airlines and a small number of late arrivals by easyJet aircraft where flights due go beyond 2300 due to slot restrictions or other operational factors at the destination airport.
- 3.22 During the night, the 'noisiest types of aircraft' may not be scheduled to land or take off. Flights that operate during the hours of 2330 and 0600 are subject to a quota count, in which each aircraft is assigned a noise quota according to a system devised and published by the UK Civil Aviation Authority. At Bristol International Airport, planning conditions state that a noise quota of 1260 would be allowed for the summer months (about seven months as defined by the period of British Summer Time), and a noise quota of 900 would be allowed for the winter period of about five months. It should be noted that the noise quota system does not limit the number of night-

time ATMs on any one night. Moreover, a proportion (10%) of unused quota can be carried over to the next season (or borrowed from the next season if there is an excess in the current season).

Norwich International Airport

3.23 Norwich International Airport had 26,072 ATMs in 2008, plus another 10,000 serving the offshore oil and gas industry, predominantly helicopter movements.

3.24 Norwich International Airport is presently reviewing its noise policy. Current controls include:

- An airport curfew applies between 2300-0600 (although the planning consent does not prohibit aircraft movements in these hours, but they must be reported to the Council);
- A surcharge of five times the landing fee is imposed on aircraft arriving outside normal operating hours;
- APUs must be shut down as soon as possible on arriving aircraft and ground power used instead, on departing aircraft, APUs may not be started until 45 minute before departure;
- Ground engine running is prohibited between 2300-0600 except with prior permission from an Airport Director; and,
- A noise monitoring system (Cirrus Research - RASP 2 noise recording program) is in operation and records noise levels at three locations around the site boundary. However, no financial penalties are imposed for noise or track-keeping infringement.

Southampton Airport

3.25 Southampton Airport had 43,900 ATMs in 2005 and carried 1.84 m passengers; this is expected to rise to 62,000 ATMs and 3.05 m passengers by 2015 and 93,000 ATMs and 6 m passengers by 2030.

3.26 Southampton Airport's noise control measures include:

- Noise Preferential Routings, applicable to all aircraft with an maximum take off weight (MTOW) of 5,700 kg or greater;
- Night-time movements restricted to a maximum of 10 per month or not more than 100 in any 12 month period;
- Strict restrictions apply to engine ground running in accordance with a Section 106 Agreement signed with Eastleigh Borough Council; and
- Approval for all engine ground running must be given by the Airport Duty Manager and is subject to a limit of 3 hours per week for all aircraft with a MTOW in excess of 15 tonnes.

Proposed Noise Controls For London Southend Airport

3.27 Atkins was provided with a list of proposed noise controls for London Southend Airport. It is understood that this list was prepared by Southend-on-Sea Borough Council and has been discussed with the operators of London Southend Airport.

CURRENT	PROPOSED
<p>DAY / NIGHT TIME</p> <p>No controls currently, but the airport considers midnight to 0600hrs to be night flights</p>	<p>DAY / NIGHT TIME</p> <p>Daytime flights 0630-2300hrs (from 0700hrs on Sunday) – other times deemed to be night – Member suggestion is for 2230hrs</p>

3.28 Comment: The JAAP ER states that, although the airport can operate 24 hours a day, normal operation is 0700 to 2100 during the summer and 0800 to 2200 in the winter. The UK Government regards daytime as 0700 to 2300. Most airports apply restrictions on flights outside

0700 to 2300. This means that neither the current nor proposed restrictions on operational hours would be as severe as at the comparator airports.

CURRENT	PROPOSED
<p>PASSENGER FLIGHT TIMES No controls currently</p>	<p>PASSENGER FLIGHT TIMES No specific restriction to prevent passenger flights at night</p>

3.29 Comment: all the comparator airports have restrictions on night flights (passenger or otherwise). The proposed control is not consistent with proposed planning condition LS7, which prohibits scheduled night-time passenger flights.

CURRENT	PROPOSED
<p>AIRCRAFT MOVEMENTS No control over total flight numbers</p>	<p>AIRCRAFT MOVEMENTS Suggestion for a total cap</p>

3.30 Comment: There are various ways of providing a cap on aircraft movements and of deciding how to set the cap. Usually, this is based on noise considerations. However, this usually requires careful evaluation of noise contours for the existing and future situations, which are not currently available to Atkins.

CURRENT	PROPOSED
<p>ENGINE TESTING Jet engines allowed until 2100hrs and propeller engine testing until 2200hrs, 7 days a week</p>	<p>ENGINE TESTING Engine testing allowed only 0800-2000hrs, 7 days per week</p>

3.31 Comment: evidence is needed on the noise impact of engine testing, in order to identify what limits are appropriate.

CURRENT	PROPOSED
<p>CARGO VOLUME No controls currently</p>	<p>CARGO VOLUME Limited to 52,000 tonnes per annum</p>

3.32 Comment: evidence is needed on the noise impact of cargo handling, both in terms of aircraft movements and in terms of surface transport implications, in order to set a limit. However, as set out in Section 1 to this report, it is considered that this figure may be an error in drafting the table of proposed controls.

CURRENT	PROPOSED
<p>TRANSPORT INFRASTRUCTURE No requirement to provide anything further at present</p>	<p>TRANSPORT INFRASTRUCTURE Ability to link aircraft movements, passenger numbers & car parking provision to the provision of transport infrastructure</p>

3.33 Comments: Provision of new road links and railway stations could affect surface transport noise, but this is outside the scope of the present study.

CURRENT	PROPOSED
AIRCRAFT HEIGHT No controls currently	AIRCRAFT HEIGHT The provision of a second Instrument Landing System may improve matters, what will the impact of a runway extension be?

- 3.34 Comments: The Instrument Landing System (ILS) will only affect aircraft when landing. In this phase of flight, commercial aircraft will be following the 3-degree glide slope, and since the extended runway will be closer to the housing areas, aircraft will also be lower when landing from the south west.
- 3.35 On take-off, commercial passenger aircraft wish to climb as quickly as possible for safety reasons. However, the southerly extension of the runway may mean that aircraft in this phase of flight will be lower than at present. This will depend on the rate of climb of the aircraft concerned.
- 3.36 Helicopters and light aircraft are not likely to come into the scope of an ILS and will not be affected by it. These will need to be subject to separate controls on height and routings.

CURRENT	PROPOSED
PASSENGER NUMBERS No cap currently, other than operational capacity of terminal facilities	PASSENGER NUMBERS Capped to 2mppa – Member suggestion that passenger growth should be staged

- 3.37 Comments: it is the number of flights and the types of aircraft that affect air noise rather than the number of passengers. In terms of noise impact, there should be no need to cap passenger numbers separately from the number of flights and the types of aircraft permitted to use the airport. There is probably no need to stage the permitted increases – people will notice the new types of aircraft using the airfield, whether or not their introduction is staged.

CURRENT	PROPOSED
LARGE AIRCRAFT USED FOR TRAINING FLIGHTS No controls currently	LARGE AIRCRAFT USED FOR TRAINING FLIGHTS No flying training for aircraft over 50 seat capacity

- 3.38 Comments: flying training of all types is known to be a source of irritation to residents and there may be some benefits from restricting this in some way.

CURRENT	PROPOSED
ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT No controls currently	ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT Most likely fly straight ahead to pre determined point a given distance from airfield – different distance on 06 to 24 to minimise nuisance.

- 3.39 Comments: Minimum noise routes are in operation at some of the comparator airports. Runway 06 will be the predominant direction, which means that most take-offs will be over the populated area of Leigh-on-Sea, whilst the quieter landings will be over the less-densely populated area to the north. Nevertheless, it may be worth considering noise preferential routes after the initial climb-out.

CURRENT	PROPOSED
NOISE THRESHOLDS No direct controls currently	NOISE THRESHOLDS What noise level should be applied for people to get compensatory measures (e.g. double glazing, etc.)?

3.40 Comments: Typical noise insulation thresholds are high and it would be necessary to study the noise contours to see whether any noise compensation would be applicable. Compensation schemes rarely apply to small airports. However, several comparator airports have airport boundary noise limits and a corresponding noise monitoring regime.

CURRENT	PROPOSED
DIRECTION OF TAKE OFFS & LANDINGS No controls currently, but affected by the limitations of only one Instrument Landing System	DIRECTION OF TAKE OFFS & LANDINGS Potential for 50% of night flights and off-peak flights to head out over Rochford, over a 12 month rolling period. Is this realistic given the weather constraints? Also what would happen to the noise mapping if the direction of travel was split?

3.41 Comments: The direction of take-offs and landings is controlled by the runway orientation and wind direction. These are outside the ambit of planning control. It is inevitable that most take-off and landing will be on 06, i.e. from the north east and towards the south west.

CURRENT	PROPOSED
PUBLIC SAFETY ZONE The Public Safety Zone finishes north east of Blenheim School currently and was revised in 2006 to take account of an increase in flights, but not a runway extension.	PUBLIC SAFETY ZONE What will be the impact of a 300m runway extension (westwards)? What will be the impact of an Instrument Landing System at both ends of the runway? Can a new Public Safety Zone be modelled at this time, given the information available?

3.42 Comment: The public safety zone is not a noise issue.

CURRENT	PROPOSED
NIGHT FLYING No controls currently Currently limited by the terms of the lease to 915 movements per month	NIGHT FLYING No helicopter movements at night No aircraft movements to have QC of more than 1 at night Fixed wing aircraft movements limited to 120 per month at night with following exemptions: Emergency service flights Military or aircraft on government business Aircraft which are QC exempt – this includes typical flying club aircraft Police activity (where not covered by i above)

3.43 Comments: the JAAP PO report advises that 'night flights will be restricted through a noise quota system', but details are not provided. The JAAP ER report states that 'the number of flights between midnight and 0600 hours is limited to approximately 20'. Clearly, there is considerable flexibility in operation at present. Limits need to be considered in relation to potential community impact, which is not quantified in the information presented at this time.

Discussion

- 3.44 A great deal of work has been done in relation to noise issues arising from the current and future operation of London Southend Airport. Unfortunately, the JAAP ER, whilst providing information for the general public, is somewhat limited from the point of view of providing information for a technical review such as the present.
- 3.45 Moreover, much of the available information has been assembled to inform the development process and has, therefore, been based on a variety of assumptions, which inevitably are not always consistent.
- 3.46 One example of this is the suggestion in the JAAP PO report that night flights will be restricted through a noise quota system, whilst the proposed noise conditions suggest a limit on number of aircraft movements.
- 3.47 Noise conditions need to be based on clearly measurable or quantifiable factors if they are to be valid, effective and enforceable.
- 3.48 Some factors, such as the definition of daytime and night-time have been agreed nationally and those definitions should be used, although where local circumstances dictate, additional restrictions could be appropriate.
- 3.49 The issue of night flights is one of the most controversial at all airports and needs to be carefully considered in relation to the current and foreseeable operation of the airport: these should not unnecessarily restrict the operation of the airport, but at the same time, it is not usually advisable to request (or grant) permissions for operations that go beyond foreseeable needs. At present, there seems to be some divergence as to whether a night noise quota count (QC) system should be used, or whether there should be a limit on numbers [and size] of aircraft permitted at night.
- 3.50 The QC system was originally devised for London Heathrow, where the largest aircraft operate. It has been severely criticised by some airport action groups. Small aircraft are exempt from the QC count system, and so it will not control the operation of these (or of helicopters) at night. Although it is used at some comparator airports, it may not be appropriate for Southend. A simpler system based on type or weight of aircraft and numbers of flights might be preferable.
- 3.51 Aircraft height is a cause of many complaints at general aviation (GA) airfields, as GA is not restricted by the same operational constraints as commercial aviation. However, GA often does not use ILS and such a system will not deal with the issues. It will be desirable to consider ways of reducing the impact of GA (and flying training) on residential areas around the airport.
- 3.52 In order to be able to make the present conditions definitive, much more data is required. Some examples have been quoted above. Others require a clear understanding of the present noise impact of the airport and how and where and by how much the development of the airport will change this. It is considered that noise conditions should be developed in a full knowledge of this information.
- 3.53 It is probable that most of the required information is already available in some shape or form, so this should not cause unacceptable delay to the planning and assessment process.

Comparison of Proposed Planning Conditions with Proposed Noise Controls

- 3.54 The proposed noise controls are not fully consistent with the proposed planning conditions, particularly those at LS7. Some issues are as follows.
- a) **Hours of operation:** the period 06:30 to 07:00 is regarded as night-time by the Government and flights in this time-window are restricted at many airports;
 - b) **LS7 suggests a quota-count** on night-time cargo flights whereas the proposed noise controls suggest a limit on cargo volume, but not on number of cargo flights (within the

overall cap on night-time flights). This is not consistent. [The limit of night-time flights to aircraft with a QC of 1 or less prevents use of the noisiest aircraft. Unlike a proper noise quota, it is not a limit on the number of flights.]

- c) **Aircraft routing:** the controls do not currently suggest any Noise Preferential Routes - these are proposed in LS7 and used at comparator airports;
- d) **Helicopters:** LS7 proposes restrictions on the operation of helicopters, but the proposed noise controls do not address the operation of helicopters other than to restrict night-time use;
- e) **Aircraft type:** LS7 (and most comparator airports) have limits on aircraft type, but there are none in the proposed controls;
- f) **Ground running:** LS7 suggests limits on ground running, but the noise controls only relate to engine testing – these are not the same thing, as ground running often occurs in addition to engine testing. Additional controls on general ground running are used at many comparator airports and may be required at Southend;
- g) **Training flights:** these are often much more annoying to residents than ordinary flights, and limitations are suggested. This includes training using light aircraft.

Additional Observations Arising from Proposed Planning Conditions

- 3.55 The JAAP Preferred Options report states that expansion is only acceptable if the environment of Southend-on-Sea, Rochford and the wider area is not significantly affected. However, the PO report does not suggest significance criteria, nor demonstrate what conditions would be needed to ensure that they are met. The proposed noise conditions and the proposed noise controls do not, therefore, appear to be based on quantitative analysis of the noise impact of the proposals.
- 3.56 This would appear to be acknowledged by LS2, which states that a ‘baseline level’ is to be agreed and noise matters are to be determined through on-going noise assessment work.
- 3.57 LS3 requires the airport to publish an annual Noise Evaluation Statement. The scope and contents of this document need to be agreed in advance. Bristol Airport publishes an excellent noise statement annually and this could be used as a template.
- 3.58 The issue of night flying clearly needs further analysis so that fair, appropriate and effective controls can be devised.

4. Air Quality

Overall Method

- 4.1 A twofold approach to the air quality review has been taken:
- A benchmarking exercise to establish what operational and environmental controls are exercised at comparable airports in the UK, including, *inter alia*, Bristol, Southampton and Norwich and to assess whether any additional or enhanced measures would be appropriate at London Southend Airport based on experience elsewhere.
 - Using the professional judgement of an experienced specialist consultant to provide advice as to the adequacy and likely efficacy of the potential controls identified by the Council.
- 4.2 The benchmarking is reported in Section 2 and is not air quality specific.
- 4.3 The specialist review covers relevant reports and data relating to the Airport and, at this stage, is desk based. It does not entail any environmental impact assessment over and above that which has already been undertaken or is ongoing. As requested there has been no contact with the operator at this stage.

References Used

- LAQM reports and monitoring datasets for Southend and Rochford
- LAQM Screening Criteria for Airports Final Oct08
- ICAO Airport AQ Guidance Manual (Preliminary 2007) 9889
- Project for Sustainable Development of Heathrow, Report of the Airport Air Quality Technical Panels, July 2006
- London Southend Airport & Environs - JAAP Preferred Options
- London Southend Airport & Environs - JAAP Evidence Report June 2008
- A7937 R01A London Southend Airport Runway Extension Study Nov08

Findings

Surrounding Environment

- 4.4 Mandatory legislative air quality criteria are set in EU Directives that are implemented nationally by The Air Quality Standards Regulations 2007 (SI 2007/64). Air quality is further regulated by the Air Quality (England) Regulations 2000 (SI 2000/928) and the Air Quality (England) (Amendment) Regulations 2002 (SI 2002/3043), which implement the objectives of the national air quality strategy.
- 4.5 Under Part IV of the Environment Act 1995 all local authorities are responsible for Local Air Quality Management (LAQM), the mechanism by which air quality objectives are to be achieved. Under the LAQM regime, a local authority is responsible for regular review and assessment of local air quality, reports on which are published following review by the Department for Environment, Food and Rural Affairs (DEFRA). If an area is identified as being unlikely to achieve an AQS objective and there are sensitive receptors to be exposed over the relevant exposure period, then the local authority is required to designate an Air Quality Management Area (AQMA) and develop an action plan to improve local air quality.

Air Quality in Southend

- 4.6 The main source of air pollution in Southend is road transport on busy road links such as the A127, A13 and A1159. Industrial processes in the borough are not considered to be significant sources.
- 4.7 There are no AQMA in Southend, and so action plans are not required. This position has been reviewed and agreed with Defra in 2000, 2003, and 2005.
- 4.8 There are currently one automatic continuous monitoring station (CMS) and 10 locations using diffusion tubes to monitor Nitrogen Dioxide. Previously there was a CMS on the A1159 Eastern Avenue to the SSE of the airport – this ceased operation in 2003 after no exceedances were found.

Air Quality in Rochford

- 4.9 The main sources of air pollution are road transport, especially the A127 and A130. The proposed new rail station and associated developments at London Southend Airport, whilst not in themselves significant contributors to the pollutants under review, may have an effect on adjacent road traffic flows and resultant air quality. It has been recommended that should planning permissions be implemented for these developments that air quality assessments are carried out by the airport operators.
- 4.10 There are no AQMA in Rochford and so action plans are not required. This position has been reviewed and agreed with Defra in 2000, 2003, and 2004, 2005 and 2006. Most of the post-2004 work has focused on select areas of Rawreth Industrial Estate (particles), Rayleigh High Street (Nitrogen Dioxide), and Rochford Market Square. The latter two are based solely on monitoring.
- 4.11 At present, whilst exceedances were found, AQMAs have not been declared as there are no relevant sensitive locations to be affected by the concentrations experienced. Rochford were required in 2006 to undertake detailed modelling for Rayleigh High Street and Rochford Market Square, which has yet to be completed.
- 4.12 There are currently no automatic monitoring stations and just three locations using diffusion tubes to monitor Nitrogen Dioxide. It should be noted that without co-location the tubes are bias adjusted with generic factors, which come with greater caution. The bias adjusted results indicate that the annual mean objective was exceeded at both Rochford Market Square and Eastwood Road/High Street junction in Rayleigh.
- 4.13 Thus it is a requirement of the planning authority for the airport (Rochford), that a detailed air quality modelling assessment will be required, although this is driven by the impacts of airport growth on road traffic, and not the airport itself.

Airport Operations

Orientation and Receptors

- 4.14 The London Southend Airport is predominantly located within the neighbouring authority of Rochford, close to the border with Southend-on-Sea, and north of the main built-up area of Southend. The airport currently occupies approximately 125ha (310 acres). The runway is on a NE to SW orientation, with most traffic from the airport taking off into the prevailing onshore wind with is from the SW 70% of the time – so from most airport traffic passes over the main built up area of Leigh on Sea. Runway 24 is used for the majority of movements.
- 4.15 Sensitive receptors in the area are predominantly residences, particularly to the NNE at Southend Road and Sutton Road. For air quality, the most probable problem locations for aircraft operations impacts are close to start of roll on the LTO (Landing Take Off cycle). However, secondary receptors of equal importance can be those close to the main surface access route to the airport, which for London Southend Airport is from the A1159 Rochford Road.

- 4.16 The Southend-London mainline railway line runs along the western boundary of the study area. A proposed London Southend Airport Railway Station would be served by this line. Southend Road runs parallel to the railway.

Activity

- 4.17 The airport is considered to be a second tier airport for general and business aviation capacity.
- 4.18 The main airport buildings are to the SSE of the site, with flight clubs to the east of the site, and other operations including police helicopters elsewhere. In 2006 the airport had 30,000 passengers, and 70 tonnes of freight, both associated, in part, with around 39,000 ATM. Flying clubs and flying schools at the airport accounted for around 55% of aircraft movements in 2006.
- 4.19 The Thames Gateway Interim Plan Development Prospectus, CLG, 2006 states that proposals to expand London Southend Airport are being considered and that the airport operator published proposals to increase passenger numbers to one million passengers per annum over the next 4-5 years.
- 4.20 The transport plans state the potential traffic congestion problems that will occur with any expansion of the airport, meaning that air quality impacts are feasible at surface access pinchpoints and not just at the airport itself.

Assessment Criteria

- 4.21 LAQM Screening Criteria for Airports refers to a need to assess airports for air quality purposes only where passenger throughput (or equivalent) exceeds 10mppa or the current annual mean NO_x concentration is above 25µg/m³. Neither of these conditions is, or is expected, to be met associated with the airport emissions of themselves.
- 4.22 With these criteria, all airports exceeding 10mppa would proceed to a detailed assessment for air quality, together with any airports with less than 10mppa, if the background NO_x is also above 25µg/m³ – which is not the case for London Southend Airport.
- 4.23 These criteria apply to airport sources, and not to the roads serving the airport, which need to be considered separately.
- 4.24 It should be noted that the revised screening criteria represent a very conservative approach as they are based on a worst case relationship (excluding Heathrow data). The screening threshold proposed (10mppa) in practice is 50% of the passenger throughput expected to generate 25µg/m³ NO_x (i.e. for precautionary reasons the datasets found a criteria of 20mppa, which has halved), and a 25 µg/m³ contribution (when added to 25µg/m³ background) would still give a NO_x concentration below the level that would lead to an exceedence of the annual mean objective for nitrogen dioxide.
- 4.25 It should be noted that the revised criteria are not those used in LAQM reports for the Rochford and Southend authorities. These used previous criteria of:
- NO₂ - 5mppa passenger equivalents and relevant exposure locations within 1000m of the airport boundary
 - PM₁₀ – 10mppa passenger equivalents and relevant exposure locations within 500m of the airport boundary

Environmental Controls

Operations

- 4.26 Potential controls outlined in previous work include:

- Air quality studies to consider the cumulative impact of the differing isolated developments both within and around the airport site, in order to ensure that the requirements of the relevant policies are met over time.
- The development of a sustainable transport infrastructure, which promotes the use of public transport to minimise the road traffic related air quality sources:
 - a new railway station;
 - the provision of a link road between Nestuda Way and Eastwoodbury Lane to link the airport directly to the A127;
 - good linkages to the proposed park and ride facility adjacent to Nestuda Way; and
 - investment in public transport, walking and cycling

4.27 The potential control measures outlined as part of JAAP show, from the context of local air quality:

- Expansion of the definition of night time flights will reduce the scope for growth of this type of activity. Night time flights can have a disproportionate impact on emissions (relatively) due to the different night time atmospheric chemistry.
- A total ATM cap is a sensible approach, although often a theoretical rather than practical cap in practice. This would also assist in demonstrating robustness in any air quality assessment undertaken in advance.
- Cargo volume limited to 52,000 tonnes per annum. If correct, this would be a nearly 1,000 fold increase in freight tonnage flown compared to a 2006 base of 70 tonnes. There is no overt reference to such a significant increase in freight in the JAAP, so this may be a unit error. If the limit is to 53 tonnes however, this would be less than was flown in 2007. It is unclear whether this control relates to total freight carried; to belly hold freight; or to cargo plane movements only (White Paper expectations for freight growth are associated with the latter). Assuming a cargo limit of 52,000 tonnes per annum, this would be a significant increase in permitted movements and is assumed to have an adverse consequence on air quality, both from numbers of movements, from the aircraft type (cargo planes), and from the operational periods (freight movements are often at night, to meet next day deliveries).
- Passengers per annum capped to 2mmpa – this would keep the second tier airport well below the criteria for an LAQM assessment.
- Increased use of runway 6 for take-offs does not accord with dominance of prevailing wind, and could lead to worsening of air quality in an area already being investigated as at risk (Rochford Market Square).
- Other proposed controls are focused on other disciplines such as noise.

4.28 Consideration should also be given to undertaking simple diffusion tube monitoring at receptors close to the LTO start of roll, and at receptors potentially affected by the runway extension to the SW, and new surface access egresses (such as at Nestuda Way).

4.29 The airport should consider standing instructions avoiding the use of reverse thrust braking except in safety cases, and should seek to avoid use of full thrust LTO (although the latter is an airline operating procedure, it can be enforced by runway slot controls).

Other

4.30 Anecdotal evidence exists of asthma complaints in the immediate vicinity. These may be associated with aviation fuel storage and transfer.

4.31 No part of the study area is designated for nature conservation purposes with consequential air quality impact control needs.

- 4.32 This study is focused on local air quality impacts and does not address greenhouse gases, which are principally being addressed by separate work with EEDA.

Summary

- There are no AQMA and no monitoring data suggesting air quality problems in the immediate vicinity, although Rochford Market Square is reasonably close.
- The airport does not and would not meet the LAQM assessment criteria for airport/aircraft operations impacts – and so of itself is unlikely to require a detailed assessment.
- The primary air quality concern associated with the proposed runway reconfiguration would be in relation to additional road traffic emissions in the vicinity of the airport. A suitable assessment would be required for any application affecting surface access movements from increased airport use, from economic growth in the hinterland, or from the infrastructure improvements required to achieve this.
- A near seven fold increase in maximum mppa equivalents would be expected to impact of local air quality, although the timeframes for such growth are critical in the significance of the air quality impact resulting. Provision of adequate surface access and its impact on air quality will be a key issue to manage.
- There are sensitive receptors reasonably close to the airport, particularly to the LTO start of roll position on runway 24.
- The airport has already committed to detailed assessments of air quality as a condition of new terminal planning permission.
- Air quality studies should consider the cumulative impact of the differing isolated developments both within and around the airport site, in order to ensure that the requirements of the relevant policies are met over time.
- A total ATM cap is a sensible approach, although often a theoretical rather than practical cap – it would help in demonstrating robustness in any air quality assessment.
- Cargo volume limited to 52,000 tonnes per annum. It is unclear whether this control relates to total freight carried, to belly hold freight, or to cargo plane movements only. If correct, this is a 1000 fold increase with a potentially adverse impact on air quality both from numbers of movements, from the aircraft type (cargo planes), and from the operational periods (freight movements are often at night, to meet required delivery times).
- Increased use of runway 6 for take-offs does not accord with dominance of prevailing wind, and could lead to worsening of air quality in an area already being investigated as at risk (Rochford Market Square).
- Conditions should be used to require the operator to undertake simple diffusion tube monitoring at receptors close to the LTO start of roll, and at receptors potentially affected by the runway extension to the SW, and at receptors close to Nestuda Way from which a new surface access egress is expected.
- The airport should consider standing instructions avoiding the use of reverse thrust braking except in safety cases, and should seek to avoid use of full thrust LTO (although the latter is an airline operating procedure, it can be enforced by runway slot controls).

5. Operational Aviation

Background

- 5.1 Until December 2008, London Southend Airport was operated and the lease owned by Regional Airports Limited (RAL). RAL also own and operate Biggin Hill Airport located to the south of London. The main business of RAL is the owning and operating of airports. In particular, Biggin Hill serves the corporate sector and provides a base for flying training.
- 5.2 In December 2008, RAL sold the lease of London Southend Airport to the Stobart Group. The Stobart Group is a logistics company with an historical basis in road transport. In recent years it has expanded its operations to include road/rail transportation of cargo. Stobart also owns and operates Carlisle Airport. The group now intends to add air cargo operations into its logistics portfolio. In a recent statement, the group voiced its intentions to use Carlisle as a northern cargo hub and to develop its air cargo arm at London Southend Airport as a southern hub to serve Europe.

Air Traffic Forecasts

- 5.3 Air traffic forecasts for London Southend Airport were prepared by AviaSolutions in November 2004. These forecasts were then reviewed by York Aviation prior to the issue of the JAAP Evidence report issued in June 2008. Neither the original forecasts nor the York review will have taken into account the purchase of Southend Airport by a cargo operator whose intention is to grow the cargo elements of the airport's business.
- 5.4 Further, neither the forecasts nor the review will have taken into account the likely effects of the current recession and the time that will be need to restore traffic to pre-mid 2008 levels (London Southend Airport's traffic dropped by 11% over 2008 with most of the decrease occurring in the latter half of the year).

The Current Runway

- 5.5 The current runway is 1605m x 37m. The take-off and landing distances, however, are shorter. The reason for this is that, as a condition of licence, the Civil Aviation Authority (CAA) has insisted on the provision of Runway End Safety Areas (RESA) at both ends of the runway. The runway is classified as a Code 3 runway (i.e. 1200m up to but not including 1800m long) and, as such, it is protected by a runway strip which extends 60m past each threshold. The CAA has determined that, for a Code 3 runway, RESA should be 240m long and minimally twice the width of the runway (in this instance 74m). If this cannot be provided, the CAA can insist, as a condition of licence, that aerodrome operators reduce the declared distances for take-offs and landings.
- 5.6 At London Southend Airport, the take-off and landing distances have been restricted (i.e. the thresholds displaced) to accommodate a degree of RESA but, because of the site limitations the full requirement has been waived. Normally the CAA would only allow such a waiver if there were an action plan to provide the full requirement at some determined time in the future. The arrestor bank (which appears to be an earth mound) at the 24 end may be part of a temporary provision in lieu of RESA: it would also serve as a jet blast deflector for aircraft taking-off from runway 24.

The Extended Runway

- 5.7 The runway length is planned to be increased by 300m at the 06 (south west) end of the runway. This would give a total runway length of 1905m. However, it is likely that the CAA will insist that a portion of this runway extension is used to provide greater RESA at both ends of the runway.

- 5.8 At the 24 (north east) end, this would mean that the landing threshold would be displaced by a further c.150m towards the south west. Take-offs would be as before since there is no requirement for RESA behind an aircraft taking off. At the 06 end, take-offs could occur from the end of the runway if a turning pad is provided. The 06 landing point would be determined by the requirement for 300m clear ground (60m runway strip plus 240m RESA) before the threshold in the first instance. However, this could be restricted by high obstacles under the 06 approach path requiring that the threshold is displaced slightly to the north east. Examination of the Aerodrome Obstacle Chart – ICAO, Type A Operating Limitations indicates that this might be the case.
- 5.9 In summary, the proposed runway extension has three purposes. These are to:
- provide increased RESA and thus improve operational safety; and
 - provide extra runway length to widen the range of aircraft types that can use the airport; and
 - improve the range/payload capability of aircraft using the airport.

Noise Contours

- 5.10 Examination of the three noise contours relating to arrivals and departures for runway 24 and departures for runway 06 would tend to confirm that extra RESA will be provided as part of the runway extension scheme and that both the 06 and the 24 thresholds are planned to be moved towards the south west.

Public Safety Zones

- 5.11 Public Safety Zones (PSZ) are provided at all airports where there is a risk probability of 1:100,000 year⁻¹ of individual death. These PSZs reflect the iso-risk curve but for ease of planning are smoothed (usually for single runway operations) into a representative elongated triangle with the base of the triangle located around the relevant runway threshold. This is the case for London Southend Airport. The risk contour is calculated on forecast traffic 15 years into the future and with the specific mix of aircraft and type of traffic foreseen for that time. It is usual to review the size of the PSZ every 7 years. The PSZs do not take into account the societal risk relating to the size of aircraft and the type of accident.
- 5.12 It is not known when the PSZs were established at London Southend Airport: it may well have been post the AviaSolutions forecast of 2004, in which case the risk calculation would normally need reviewing in about 2011. However, the purchase of London Southend Airport by Stobart whose intent is to grow air cargo operations and which intent does not appear to have been allowed for in the current forecasts indicates the need for a further review. Any such review might also attempt to forecast the effects and duration of the current downturn in the aviation market. These revised forecasts could in turn inform a re-assessment of the PSZ boundaries. It should be noted that dedicated air cargo aircraft have a higher probability of an accident during the approach and landing phase of a flight than their passenger carrying counterparts.
- 5.13 Initially, it can be assumed that the size and shape of the PSZ at London Southend Airport will not alter but the effect of moving the runway thresholds post the runway extension, will be to displace the PSZ as well. In the case of the north east PSZ, the base of the triangle will be located around the new 24 threshold which will be c.150m further to the south west and the tip similarly c.150m further south west. In the case of the south west PSZ, the base and tip of the triangle will move in line with the 06 threshold but the amount cannot be specified from the information available.

Comment on Potential Control Measures

Operating Hours

- 5.14 The airport is currently open 24 hours per day. Approach services are provided 0800-2200 during the winter and 0700-2100 during the summer. Aircraft using the airport outside these hours may

be subject to a fees surcharge (AD 2-EGMC-1-6)¹. Shortening the daylight operating times would appear to have the effect of increasing the surcharges to aircraft operating at night.

- 5.15 If the intent is to reduce night time flying, then restrictions on the type of flying and occasions that it can occur would be more appropriate. The prescription of the opening hours, therefore, needs to be linked to restrictions on night flying.

Passenger Flight Times

- 5.16 It may be advisable to reconsider the lack of restriction on passenger flight times. The reasoning behind this is that air cargo aircraft tend to operate during the quieter hours. If there is to be a night flying restriction, this could affect the efficiency of cargo operations.
- 5.17 A majority of airports now restrict flying during the 'quiet hours' and it not unusual to differentiate between arrivals and departures – departures being considerably noisier than arrivals. A restriction such as no arrivals before 0600 and no departures before 0730 with similar conditions during the evening would be quite reasonable for this airport. If this approach is adopted, provision should be made for departing aircraft delayed for technical or weather reasons.

Aircraft Movements

- 5.18 In 2008 there were 37,227 aircraft movements and 44,075 passengers handled at London Southend Airport. The majority of the flying is, therefore, currently small aircraft and flying training with maintenance, repair and overhaul (MRO) and passenger aircraft movements being in the minority. It is likely that the airport plans to expand both its passenger and its cargo business. In these circumstances, if a movements cap is applied, as time passes it is probable that the smaller aircraft (GA and flying training) that will be restricted as they generate less fee income per movement.
- 5.19 If the intent of members is to restrict flying, then any caps would be more appropriately couched in terms of aircraft type and function. For instance:
- X number of passenger and cargo aircraft movement;
 - Y number of GA and flying training movements; and
 - Z number of rotary wing movements.
- 5.20 There should be exemptions to any movements cap, such as emergencies, Government flights and police/HEMS movements.
- 5.21 However, on balance, bearing in mind the scale of the airport, the Consultant does not consider a movement cap appropriate at this stage.

Engine Testing

- 5.22 Currently, ground running of engines for maintenance purposes is restricted (AD 2-EGMC-1-8) to between 0800-2100 (winter) and 0700-2000 (summer). Jet aircraft are restricted to 0800-2000 (winter) and 0700-1900 (summer).
- 5.23 There are a number of MRO and aviation engineering companies currently based at Southend. Most of these will not directly benefit from the runway extension – a further restriction on engine ground running, however, could affect these companies adversely. The flying training and air taxi organisations could also be affected by decreased aircraft availability. Air cargo usually operates during the quieter periods and greater restrictions could again adversely affect delivery performance.

¹ AD 2-EGMC references refer to the Southend Aeronautical Information Publication (AIP)

- 5.24 If ground running of aircraft engines is a major issue locally, it may be considered expedient to restrict this activity further. However, the Consultant considers that some exceptions should be included such as allowing a capped number of ground runs per month to occur at night as previously permitted.

Cargo Volume

- 5.25 52,000 tonnes of air cargo is approximately 2% of the UK market and 3% of the London area airports market. It is, however, nearly a 1,000 fold increase in current annual freight tonnage. Thus clarification is required as to whether the 52,000 figure is indeed correct.
- 5.26 However, c.80% of all air cargo is carried in the luggage compartments of passenger aircraft ('belly hold' cargo) and only 20% in dedicated cargo aircraft. London Heathrow handles 60% of UK air cargo and 80% of the London area air cargo. East Midlands Airport is currently the only UK airport with significant annual tonnage of dedicated air cargo and even then, this equates to less than 20% of Heathrow's volumes.
- 5.27 Under these circumstances, a cargo cap of 52,000 annual tonnes might seem appropriate. However, the business of the Stobart Group is freight carriage, currently by road and rail but its expansion plans call for a break into the air cargo business and an annual air cargo cap might well affect its business development adversely. Under these circumstances it seems somewhat counter productive to impose any air cargo cap.

Transport Infrastructure

- 5.28 It is quite reasonable to request the airport to provide improved transport infrastructure links. Experience has shown that the use of public transport is more effective when directed towards airport staff and airport located industries rather than passengers.
- 5.29 The annual passenger movements at London Southend Airport were 44,075 in 2008. As this number includes arrival and departures, it should equate roughly to the number of annual journeys to and from the airport. The number of employees at the airport is not known but assuming this to be 2,000 (for all activities) about 1 million annual journeys are taken by staff to and from the airport yearly.
- 5.30 Similar schemes at other airports usually include achievement targets i.e. X% of staff and airport workers to travel other than by private car by year Y.

Aircraft Height

- 5.31 The provision of the extended runway will mean that the runway threshold will be moved further to the south. For approaches from the east aircraft will overfly the local area at slightly greater altitude but this will not be significant. For approaches from the west, aircraft will be slightly lower than before but again not significantly.
- 5.32 The provision of the ILS for approaches from the west will improve the accuracy of aircraft approach paths as it will give improved guidance on both height and direction. The ILS slopes are normally set to 3° but the current ILS, for approaches from the East, is set up for a 3.5° approach path. This is almost certainly due to the obstacle environment on the approach path.
- 5.33 A condition on the airport to utilise a 3.5° glide slope for the new ILS would give minor improvements.

Passenger Numbers

- 5.34 The York forecasts for London Southend Airport indicate a high growth scenario passenger movement annual total of 2.6m by the year 2030. It is likely that these forecasts together with those previously derived by Aviasolutions were based on a combination of an increased propensity to fly and the development of new routes to/from Southend. Boeing also issue

passenger forecasts but on a larger scale relating more to countries and large airports rather than small airports. Boeing forecasts relate growth to growth in GDP.

- 5.35 The UK is in recession with currently a drop in UK GDP of about 5% being forecast before returning to slow growth. Air transport is in decline across not only the UK but, with a few exceptions, worldwide. Overall traffic has decreased by some 10% throughout Europe and air cargo by some 24%. Southend has reportedly seen a decrease of some 11% over 2007 performance.
- 5.36 After the 9/11 terrorist attacks in New York, air traffic declined globally but eventually recovered some three years later. The industry then experienced accelerated growth for a short period as in-built pressure returned traffic to expected levels. However, the recovery from recession is likely to take longer and it is not possible at this time to forecast that recovery time – be it 5 years, 7 years or even 10 years.
- 5.37 The York forecasts for year 2007 give a high passenger movement annual total of 854,000 and a low annual total of 179,000. The reality is that in 2008 this total was 44,075. It is considered that an annual passenger movement cap of 2 million passenger movements per annum is unlikely to affect the airport seriously until sometime past year 2030.
- 5.38 On balance, therefore, the movement cap seems reasonable at this time. If traffic grows rapidly, the airport can apply (as London City Airport has done three times successfully) to have the cap revised.

Aircraft Used for Training Flights

- 5.39 At first reading, the restriction of training flights to aircraft with 50 or less seat capacity seems illogical. A medium size air cargo aircraft would have zero seat capacity. The Boeing Business Jet 1 (a modified B737-700) could be fitted with as few as 20-35 seats. The larger corporate jets (fitted with a maximum of 19 seats) would have considerably more impact locally than an ATR-72 which has a seat capacity in excess of 70 but is powered by relatively quiet and modern turboprop engines.
- 5.40 A more reasonable restriction would be based on aircraft Maximum Take-Off Weight Authorised (MTWA) and perhaps by type/size of propulsion unit(s) (turbojet, turboprop, engine power rating).
- 5.41 As the reasoning behind this proposed condition is not known, it is not possible to comment further.

Noise Abatement Procedures

- 5.42 The airport currently has fairly comprehensive noise procedures (AD 2-EGMC-1-8). There can be flight safety issues associated with the development of noise abatement procedures and, therefore, conditions should not be imposed without consultation with the airport and local area air traffic service providers.
- 5.43 Public transport aircraft are not allowed, in the UK, to initiate a turn after take-off below 500ft but other than that, provided there are no other local traffic conflicts (e.g. missed approach procedures) it should be possible to modify the Southend procedures to decrease noise impact in certain areas close to the airport. It is not possible to comment further at this stage other than to iterate that the air traffic service providers should be consulted in the first instance.

Air Quality

- 5.44 Degradation of air quality on an airport comes from both the flying activity and from the other activities at the airport. There is increasing EU and international regulation concerned with the reduction of aircraft engine pollution but this only applies to modern or future aircraft and then in turn to commercial aircraft. The majority of movements at Southend are by aircraft that do not fall into this category. It would not seem appropriate, therefore, to place specific conditions relating to flying other than those already in force by virtue of EU directives.

- 5.45 It may be appropriate to place conditions on other on-airport activities but as the exact nature of these is not known, it is not possible to comment further.

Directions of Take-Offs and Landings

- 5.46 The directions of take-offs and landings are a matter for the local air traffic to determine. To try to impose the use of any one runway against the advice of the air traffic service provider would be regarded as a hazard to flight safety and, in any event, would not be a sustainable condition.
- 5.47 A %age cap on total number of night time movements per year on each runway is likely to have the effect of seriously disrupting air movements as time progresses – if the allowance for one runway is ‘used up’ and the wind is in the wrong direction, then there will be no flying.
- 5.48 It is considered that the airport would quite fairly judge this to be an unacceptable condition. However, if it were enforced, then the noise impact is likely to be less as there would be less flying.

PSZ

- 5.49 PSZs have been discussed above. The ILS will not in itself affect the PSZ but the relocation of the runway thresholds will. In order to model a new PSZ, traffic forecasts which reflect likely traffic both amount, by mix of type and by mix of aircraft type will need to be developed.

Night Flying

- 5.50 Other than the restriction relating to the quota count (QC) number and the number of movements, most of these seem quite reasonable. The Consultant would be inclined to include aircraft emergency landings as permitted – this is a bit tautological as if the airport is open it cannot refuse – so that the council know where they stand.
- 5.51 Movements cap equates to between two and three aircraft per week and for cargo operations this might prove business limiting and, therefore, consideration should be given to raising this cap to say, five aircraft per week but in conjunction with a night flying restriction for passenger flights.
- 5.52 A noise quota count of 1 (QC/1) equates to the noise classification range 90-92.9 EPNdB. The quota count system for limiting noise at airports was introduced to London Heathrow in 1993. The quota counts for aircraft operating are logged and the sum is not allowed to exceed a specified level. At Heathrow and at a number of airports where a quota count system has been imposed, the accepted level is QC/2: this equates to the range 93-95.9 EPNdB. For the more modern aircraft such as the A380 the quota counts are QC/.025 landing and QC/.05 take-off.
- 5.53 Aircraft operating out of London Southend Airport are likely to be of the Boeing 737-400 generation rather than the A380 for some time to come and therefore noisier. Under these circumstances, it would be more reasonable to apply a QC/2 limit for a period (say the next 7 years) before applying a QC/1 limit.
- 5.54 Lastly, consideration should be given to adopting the quota count as a method of restricting the noise nuisance created from night operations.

Appendix A

Table A.1 - London Southend Airport - Potential Control Measures – Benchmarking

A.1.1 The table set out below is a summary of the publicly available information for each airport considered.

CURRENT	PROPOSED	LONDON CITY AIRPORT	NORWICH INTERNATIONAL AIRPORT	BOURNEMOUTH AIRPORT	PLYMOUTH CITY AIRPORT	GEORGE BEST BELFAST CITY AIRPORT	BRISTOL INTERNATIONAL AIRPORT
DAY / NIGHT TIME No controls currently, but the airport considers midnight to 0600hrs to be night flights	DAY / NIGHT TIME Daytime flights 0630-2300hrs (from 0700hrs on Sunday) – other times deemed to be night – Member suggestion is for 2230hrs	PLANNING REF: 07/01510/VAR – Increase of passenger numbers from 73,000 per calendar year to 120,000 per calendar year	PLANNING REF: 05/00697/F – Refurbishment and extension to terminal building	PLANNING REF: 8/07/0065 – Refurbishment and extension of existing passenger facilities	PLANNING REF: 08/01968/OUT – this planning application was an application for refurbishing the airport plus some residential and other development on decommissioned runway to north and south of operational runway	PLANNING REF: No application to date – GBBC proposed controls set out on website http://www.belfastcityairport.com	PLANNING REF: No application to date – controls below based on BIA proposed controls set out on website http://www.bristolairport.co.uk/about_us/our_future/planning_application/commitments_controls_monitoring_and_mitigation.aspx
PASSENGER FLIGHT TIMES No controls currently	PASSENGER FLIGHT TIMES No specific restriction to prevent passenger flights at night	DAY / NIGHT TIME The airport shall not be used for taking off or landing other than between: <ul style="list-style-type: none"> 0630-2200 Monday to Friday inclusive 0900 and 2200 on Bank and Public Holidays. On Saturdays 0630-1230 On Sundays 1230-2200 Total number of flights between 0630 and 0659 should not exceed 6 per day. Total number of flights between 0630 and 0645 Mondays to Saturdays should not exceed two per day.	DAY / NIGHT TIME Daytime 0600-2300	DAY / NIGHT TIME Daytime is between 0630-2230	DAY / NIGHT TIME Daytime is between 0600 - 2330	DAY / NIGHT TIME Day time is between 0600 - 2330	DAY / NIGHT TIME Day time is between 0600 - 2330
AIRCRAFT MOVEMENTS No control over total flight numbers	PASSENGER FLIGHT TIMES No specific restriction to prevent passenger flights at night AIRCRAFT MOVEMENTS Suggestion for a total cap	AIRCRAFT MOVEMENTS The number of factored movements shall not exceed: <ul style="list-style-type: none"> 120,000 per calendar year. 100 per day on Saturdays, 200 per day on Sundays, not exceeding 280 on consecutive days 592 on normal weekdays 132 on 1 January 164 Good Friday 198 Easter Monday 248 May Day Holiday 230 Late May Holiday 230 late August Bank Holiday 100 on 26 December Except in the case of emergency, only conventional take-off fixed wing aircraft (including short take-off and	AIRCRAFT MOVEMENTS	AIRCRAFT MOVEMENTS	AIRCRAFT MOVEMENTS	AIRCRAFT MOVEMENTS Capped at 48,000 annually	AIRCRAFT MOVEMENTS

CURRENT	PROPOSED	LONDON CITY AIRPORT	NORWICH INTERNATIONAL AIRPORT	BOURNEMOUTH AIRPORT	PLYMOUTH CITY AIRPORT	GEORGE BEST BELFAST CITY AIRPORT	BRISTOL INTERNATIONAL AIRPORT
<p>ENGINE TESTING Jet engines allowed until 2100hrs and propeller engine testing until 2200hrs, 7 days a week</p>	<p>ENGINE TESTING Engine testing allowed only 0800-2000hrs, 7 days per week</p>	<p>landing aircraft) but not vertical take-off and landing aircraft (including helicopters) shall be permitted to use the Airport.</p> <p>ENGINE TESTING Engine testing allowed: <ul style="list-style-type: none"> 0630-2200 Monday to Friday 0630-1230 on Saturdays 1230-2200 on Sundays 0900-2200 on Bank and Public Holidays </p>	<p>ENGINE TESTING Limited to 0600 – 2300 Other than the routine servicing of aircraft on turnaround, no aircraft maintenance work which involves the running of aircraft engines shall be permitted except in the area designated as approved for engine testing.</p>	<p>ENGINE TESTING Ground running shall not take place: <ul style="list-style-type: none"> before 0800 or after 20.30 Monday-Friday before 0900 or after 1700 on Saturday and public holidays anytime on Sundays on Armistice Day between 1055 and 1105 or during any other period of remembrance specified by HM Government </p>	<p>ENGINE TESTING ENGINE TESTING BAY (20)Full details of the Engine Testing Bay acoustic attenuation measures including the provision of an entrance gate shall be submitted to and approved in writing by the local planning authority before work begins on the Engine Testing Bay. ENGINE TESTING (21)When the Engine Testing Bay has been completed in compliance with condition 20 no engine testing or other activities shall be carried out on the Airport other than within Engine Testing Bay. No engine testing or other activities shall occur without the entrance gate being fully closed. EARLY MORNING TESTING (22) No engine testing shall occur before 6.00am and after 10.30pm. Not more than 15 engine tests shall occur from 6.00am to 7.00am in any calendar month of which not more than three shall occur from 6.00am to 6.30am and then only in exceptional circumstances and not more than 120 in any calendar year. Exceptional circumstances shall be defined in writing to be submitted to and approved in writing by the local planning authority before the Engine Testing Bay hereby permitted is used. NOISE BUND (23)The Engine Testing Bay shall not be used for engine testing or any other activities until the noise bund has been fully constructed and completed in accordance with the approved plans. NOISE MONITORING (50)To ensure that conditions 20 and 61 are being complied with, monitoring data shall be submitted on a quarterly basis to the local planning authority. These data shall provide details of:- 1. monthly engine test data split for the periods: 6.00am to</p>	<p>ENGINE TESTING The test running of aircraft engines is prohibited between 2230 hours and 0630 hours.</p>	<p>ENGINE TESTING</p>

CURRENT	PROPOSED	LONDON CITY AIRPORT	NORWICH INTERNATIONAL AIRPORT	BOURNEMOUTH AIRPORT	PLYMOUTH CITY AIRPORT	GEORGE BEST BELFAST CITY AIRPORT	BRISTOL INTERNATIONAL AIRPORT
CARGO VOLUME No controls currently	CARGO VOLUME Limited to 52,000 tonnes per annum	CARGO VOLUME	CARGO VOLUME	CARGO VOLUME	CARGO VOLUME 6.30am, 6.30 to 7.00am, and 7.30pm to 10.30pm; and total engine tests for each month. When incidences occur from 6.00am to 6.30am the exceptional circumstances shall be stated; and 2. monthly data showing 8 hour and 16 hour LAeq, data representing day time and night time from the boundary of the airport, and LAeq t, where "t" represents an event, or a combination of events at location/s to be approved in writing by the local planning authority. LA90 data shall be supplied. The format of the data supplied shall have been previously agreed in writing by the local planning authority.	CARGO VOLUME	CARGO VOLUME
TRANSPORT INFRASTRUCTURE No requirement to provide anything further at present	TRANSPORT INFRASTRUCTURE Ability to link aircraft movements, passenger numbers & car parking provision to the provision of transport infrastructure	TRANSPORT INFRASTRUCTURE Requirements in s106 agreement for staff travel plan, passenger travel plan, the requirement for setting targets for managing impact of staff and passenger road traffic on highway network, a contribution to parking controls in the area, a £20K contribution to improving local bus services and £2.5m toward the DLR 3 car upgrade project, as well as £50K contribution to VISSIM study.	TRANSPORT INFRASTRUCTURE The planning conditions require the production of a travel plan, improved pedestrian and cycle links and improved cycle and motorcycle parking.	TRANSPORT INFRASTRUCTURE Prior to occupations need to submit plans of an approved bus service for: <ul style="list-style-type: none"> bus service running at a minimum of hourly intervals commencing at 7am and ending at 7pm or for a minimum of 12 hours a day; suitable covered waiting facilities at the Airport to include Real Time Bus information at locations to be agreed with the Council; publicising the bus services and running times; facilities for transportation of large items of luggage; measures to encourage passengers and staff to use the bus service; submission of quarterly patronage figures to the Council; date for implementation of the scheme if agreed. 	TRANSPORT INFRASTRUCTURE 6.30am, 6.30 to 7.00am, and 7.30pm to 10.30pm; and total engine tests for each month. When incidences occur from 6.00am to 6.30am the exceptional circumstances shall be stated; and 2. monthly data showing 8 hour and 16 hour LAeq, data representing day time and night time from the boundary of the airport, and LAeq t, where "t" represents an event, or a combination of events at location/s to be approved in writing by the local planning authority. LA90 data shall be supplied. The format of the data supplied shall have been previously agreed in writing by the local planning authority.	TRANSPORT INFRASTRUCTURE	TRANSPORT INFRASTRUCTURE Detailed transport assessment prepared & submitted with the planning application. Target of 15 per cent of passengers using public transport at 10 million passengers per annum (up from 10 per cent of 6 million passenger per annum currently). Construction of a £5 million public transport interchange (12,000m ²) with covered pedestrian access to terminal. £1 million earmarked by BIA to improve local roads around the airport, focusing on improvements to the A38. Bristol International Airport to contribute £3 million to sub-regional transport infrastructure, such as the Rapid Transit scheme and the South Bristol Link. Route and frequency improvements to Bristol Flyer express coach service. Integration of Bristol Flyer service with Rapid Transit proposals improving access to and from Bristol City Airport centre. New bus services to Bath and Weston-super-Mare to be introduced as passenger volumes increase. Affordable car parking to

CURRENT	PROPOSED	LONDON CITY AIRPORT	NORWICH INTERNATIONAL AIRPORT	BOURNEMOUTH AIRPORT	PLYMOUTH CITY AIRPORT	GEORGE BEST BELFAST CITY AIRPORT	BRISTOL INTERNATIONAL AIRPORT
AIRCRAFT HEIGHT No controls currently	AIRCRAFT HEIGHT The provision of a second Instrument Landing System may improve matters, what will the impact of a runway extension be?	AIRCRAFT HEIGHT	AIRCRAFT HEIGHT	AIRCRAFT HEIGHT Circuits: <ul style="list-style-type: none"> 1,000ft for circuits between 0600 – 2000 when less than 5,700kg weight; 1,500 ft between 0600 and 2000 when more than 5,700 kg and all Jet Aircraft; 1,500 ft between 2000 and 2330 by all aircraft. 	AIRCRAFT HEIGHT	AIRCRAFT HEIGHT All arriving aircraft approach the airfield at the standard approach angle of three degrees. On attaining a height of 500ft, aircraft taking off over the Lough execute a turn to the left to take the aircraft over water. Only on obtaining pre-defined heights may aircraft turn south over the North Down coastline, i.e. turbo-prop aircraft only turn on reaching 1,500ft and jet aircraft only turn on reaching 3,000ft. Aircraft taking off over the City Airport maintain a straight course until having reached the above heights, when they are then allowed to turn.	AIRCRAFT HEIGHT discourage 'kiss and fly' (the practice of dropping off and picking up friends and relatives, which generates an additional two road trips per passenger) Restrictions on airport vehicles using certain local roads. Introduction of a Code of Practice for the official airport taxi operator in order to reduce traffic through local villages. Comprehensive staff travel plan. Concessionary fares on Flyer bus service for local residents. Use of consolidation centre in Avonmouth for retail deliveries.
PASSENGER NUMBERS No cap currently, other than operational capacity of terminal facilities	PASSENGER NUMBERS Capped to 2mppa – member suggestion that passenger growth should be staged	PASSENGER NUMBERS	PASSENGER NUMBERS	PASSENGER NUMBERS Restricted to 3mppa	PASSENGER NUMBERS	PASSENGER NUMBERS Airlines may offer no more than 2,000,000 seats for sale on flights from the airport	PASSENGER NUMBERS 2mppa (terminal capacity)
LARGE AIRCRAFT USED FOR TRAINING FLIGHTS No controls currently	LARGE AIRCRAFT USED FOR TRAINING FLIGHTS No flying training for aircraft over 50 seat capacity	LARGE AIRCRAFT USED FOR TRAINING FLIGHTS	LARGE AIRCRAFT USED FOR TRAINING FLIGHTS	LARGE AIRCRAFT USED FOR TRAINING FLIGHTS	LARGE AIRCRAFT USED FOR TRAINING FLIGHTS	LARGE AIRCRAFT USED FOR TRAINING FLIGHTS	LARGE AIRCRAFT USED FOR TRAINING FLIGHTS
ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT No controls currently	ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT Most likely fly straight ahead to pre determined point a given distance from airfield – different distance on 06 to 24 to minimise nuisance.	ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT	ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT	ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT Specific routes set out in section 106 agreements.	ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT	ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT Routes across Belfast Lough set out in planning agreement -the majority of flights must operate over Belfast Lough. Currently approximately 55% of flights operate over the Lough.	ROUTES TO/FROM THE AIRPORT TO MINIMISE NOISE IMPACT Routes set out - Penalties levied on airlines that breach noise or track-keeping restrictions

CURRENT	PROPOSED	LONDON CITY AIRPORT	NORWICH INTERNATIONAL AIRPORT	BOURNEMOUTH AIRPORT	PLYMOUTH CITY AIRPORT	GEORGE BEST BELFAST CITY AIRPORT	BRISTOL INTERNATIONAL AIRPORT
AIR QUALITY No direct controls currently	AIR QUALITY What controls are appropriate?	AIR QUALITY Section 106 agreement requires air quality monitoring, periodic measurement to be agreed, an Air Quality Action Plan and regular publishing of air quality data	AIR QUALITY	AIR QUALITY Section 106 agreement states: Within six months of commencement of development need to submit an Air Quality Monitoring Scheme to Council: <ul style="list-style-type: none"> Measures to enhance the Airport's nitrogen dioxide diffusion tube monitoring programme at agreed sensitive receptor locations around the Airport focusing on the areas within or adjacent to the SAC (?) Means to primarily establish a vegetation monitoring programme through permanent quadrants. This will involve comparison between vegetation quality within a control quadrant, located remote to the airport, and vegetation quality within a number of test quadrants Procedures to provide reports from both monitoring programmes will be made available to the Airport Consultative Committee: Council and Natural England Provision of agreed trigger levels and response measures having regard to the levels of impact predicted in the Environmental Statement. 	AIR QUALITY	AIR QUALITY	AIR QUALITY The development will not result in a breach of National Air Quality Objectives. Reduced coaching to aircraft to cut emissions from ground vehicles. Phased installation of fixed ground power and electric vehicles Objective to ensure emissions do not exceed 2007 levels.
NOISE THRESHOLDS No direct controls currently	NOISE THRESHOLDS What noise level should be applied for people to get compensatory measures (e.g. double glazing, etc.)?	NOISE THRESHOLDS The s106 agreement provides for trigger point for sound insulation and mechanical ventilation for homes and noise sensitive premises is the Airport's 57LAeq 16 hour noise contour. This is a much lower trigger level than that which operates at most other UK Airports with noise insulation schemes.	NOISE THRESHOLDS	NOISE THRESHOLDS	NOISE THRESHOLDS The following thresholds are set out in planning conditions associated with the proposed development adjacent to the airport. SOUND INSULATION DWELLINGS AND CARE HOME (15)All dwellings and the Care Home shall be constructed in accordance with BS 8233:1999 so as to provide	NOISE THRESHOLDS	NOISE THRESHOLDS <ul style="list-style-type: none"> Commitment to maintain noise at pre-2006 levels. No relaxation of current night noise restrictions. Penalties levied on airlines that breach noise or track-keeping restrictions. Buildings and noise

CURRENT	PROPOSED	LONDON CITY AIRPORT	NORWICH INTERNATIONAL AIRPORT	BOURNEMOUTH AIRPORT	PLYMOUTH CITY AIRPORT	GEORGE BEST BELFAST CITY AIRPORT	BRISTOL INTERNATIONAL AIRPORT
		<p>Properties in the 66LAeq 16 hour noise contour receive a greater level of mitigation. In the event that properties fall within the 69 LAeq 16 hour noise contour the airport has to make an offer to buy the property at a fair market rate.</p>			<p>sound insulation against externally generated noise. The good room criteria shall be applied, meaning there must be no more than 30 dB LAeq for living rooms (0700 to 2300 daytime) and 30 dB LAeq for bedrooms (2300 to 0700 night-time), with windows shut and other means of ventilation provided. Levels of 45 dB LAf,max shall not be exceeded in bedrooms (2300 to 0700 night-time). Reason: To ensure that the proposed dwellings and Care Home hereby permitted achieve a satisfactory living standard and do not experience unacceptable levels of noise disturbance to comply with policies CS22 and CS34 of the adopted City Airport of Plymouth Core Strategy Development Plan Document 2007. LOCATION OF SENSITIVE ROOMS (16)No sensitive rooms (bedrooms and living rooms) in the dwellings on the new link road and the care home, shall face the operational areas of the airport. Reason: To ensure that the proposed dwellings and Care Home hereby permitted achieve a satisfactory living standard and do not experience unacceptable levels of noise disturbance to comply with policies CS22 and CS34 of the adopted City Airport of Plymouth Core Strategy Development Plan Document 2007. OUTDOOR PRIVATE AMENITY AREAS (18)The development shall be designed so that the noise exposure for outdoor private amenity areas for all dwellings and the Care Home shall not exceed a noise exposure of 55LAeq, dB (16 hour) or such other noise exposure standard which shall have been previously agreed in writing by the local planning authority. Reason: To ensure that the proposed dwellings and Care Home hereby permitted achieve a</p>		<p>walls to shield local residents from ground noise. • Installation of fixed electrical ground power to reduce noise from aircraft on the ground. • Contributions to noise mitigation measures for local residents from Airport Environmental Improvement Fund.</p>

CURRENT	PROPOSED	LONDON CITY AIRPORT	NORWICH INTERNATIONAL AIRPORT	BOURNEMOUTH AIRPORT	PLYMOUTH CITY AIRPORT	GEORGE BEST BELFAST CITY AIRPORT	BRISTOL INTERNATIONAL AIRPORT
<p>DIRECTION OF TAKE OFFS & LANDINGS No controls currently, but affected by the limitations of only one Instrument Landing System</p>	<p>DIRECTION OF TAKE OFFS & LANDINGS Potential for 50% of night flights and off-peak flights to head out over Rochford, over a 12 month rolling period. Is this realistic given the weather constraints? Also what would happen to the noise mapping if the direction of travel was split?</p>	<p>DIRECTION OF TAKE OFFS & LANDINGS</p>	<p>DIRECTION OF TAKE OFFS & LANDINGS</p>	<p>DIRECTION OF TAKE OFFS & LANDINGS When using Runway 26, climb on runway heading to 0.6 nautical miles from the Airport as measured by DME then track of 270° (M), climbing to a height of 2,000 feet before making turns. When using Runway 08, climb on runway heading to 1.0 nautical mile from the Airport as measured by DME then track 075° (M) to 4.1 nautical miles DME before commencing any turn to the south. Northbound departures may commence the turn after passing a height of 2,000 feet.</p>	<p>satisfactory living standard and do not experience unacceptable levels of noise disturbance to comply with policies CS22 and CS34 of the adopted City Airport of Plymouth Core Strategy Development Plan Document 2007.</p>	<p>DIRECTION OF TAKE OFFS & LANDINGS</p>	<p>DIRECTION OF TAKE OFFS & LANDINGS</p>
<p>PUBLIC SAFETY ZONE The Public Safety Zone finishes north east of Blenheim School currently and was revised in 2006 to take account of an increase in flights, but not a runway extension.</p>	<p>PUBLIC SAFETY ZONE What will be the impact of a 300m runway extension (westwards)? What will be the impact of an Instrument Landing System at both ends of the runway? Can a new Public Safety Zone be modelled at this time, given the information available?</p>	<p>PUBLIC SAFETY ZONE GLA concern at the extension of the Public Safety Zone and that it would blight areas earmarked for regenerations.</p>	<p>PUBLIC SAFETY ZONE</p>	<p>PUBLIC SAFETY ZONE</p>	<p>PUBLIC SAFETY ZONE</p>	<p>PUBLIC SAFETY ZONE</p>	<p>PUBLIC SAFETY ZONE</p>
<p>NIGHT FLYING a. no controls currently b. no controls currently c. Currently limited by the terms of the lease to 915 movements per month</p>	<p>NIGHT FLYING a. No helicopter movements at night b. No aircraft movements to have QC of more than 1 at night c. Fixed wing aircraft movements limited to 120 per month at night with following exemptions: i. Emergency service flights ii. Military or aircraft on government business iii. Aircraft which are QC exempt – this includes typical flying club aircraft iv. Police activity (where not covered by i above)</p>	<p>NIGHT FLYING The airport shall not be used for the taking off or landing of aircraft at any time other than between 0630 and 2200 from Monday to Friday inclusive and between 0900 and 2200 hours on Bank Holidays and Public Holidays except: (a) in the event of an emergency, (b) For the taking off or landing between 2200 and 2230 hours of an aircraft which was scheduled to take off from or land at the Airport before 2200 hours but which has suffered unavoidable operational delays and where that taking off or landing would not result in there being more than 400 aircraft movements at the Airport per calendar year between 2200 and 2230 hours or more than 150 such movements in any consecutive three months. Similar conditions apply to</p>	<p>NIGHT FLYING No aircraft shall make use of the extended Airport terminal facilities or associated apron or taxiway to facilitate a take off or landing between 2300 and 0600 hours, except: • In an emergency where there is a risk to life and limb • An aircraft for reasons of safety requiring urgent or immediate landing • Diversion from another airport by reason of bad weather or an accident where, in the opinion of the captain of the diverting aircraft, no other airport is available • Provision of essential safety services to North Sea Oil and</p>	<p>NIGHT FLYING Aircraft will not be permitted to use reverse thrust braking at Night Time except where essential for safe operation of aircraft. No circuit or Training Flights take place at Night Time. The Airport Company will carry out its operations in such a way that the Night Time Quota is not exceeded. No aircraft with a Quota Count value of 8 or 16 will be allowed to arrive at or depart the Airport at Night Time nor shall an Aircraft with a Quota Count Value of 4 be scheduled to arrive at or depart the Airport at Night Time. The above do not apply to: military/police/rescue</p>	<p>NIGHT FLYING</p>	<p>NIGHT FLYING Flights may only be scheduled to operate between 0630 and 2130 hours, but extensions may be granted to operate delayed flights up to midnight.</p>	<p>NIGHT FLYING Number of night flights capped at 4,500 per year. No relaxation of current night noise restrictions – quota system that restricts the cumulative volume of night flights – planning condition from 1995 planning permission for new terminal</p>

CURRENT	PROPOSED	LONDON CITY AIRPORT	NORWICH INTERNATIONAL AIRPORT	BOURNEMOUTH AIRPORT	PLYMOUTH CITY AIRPORT	GEORGE BEST BELFAST CITY AIRPORT	BRISTOL INTERNATIONAL AIRPORT
		<p>Saturdays and Sundays based on the allowed flying hours.</p>	<p>gas installations required to prevent risk to life and/or limb and/or preclude a damaging environmental incident which cannot be operated between 0600 and 2300 hours</p> <ul style="list-style-type: none"> The unavoidable delay to passengers of scheduled and chartered flights. 	<p>missions/emergency oil dispersion operations/diversions of aircrafts due to weather, technical problems, security alert, industrial dispute or onboard emergency/ relief flights for humanitarian purposes/movements suffering unavoidable delay where it would lead to serious congestion at the airport, serious hardship or suffering to passengers or animals/early arrivals of flights scheduled to land after 0600/ medical emergency flights.</p>			