



Submission to the Airports Commission

Criteria for Assessing Options

Stop Stansted Expansion ('SSE') was established in 2002 in response to Government proposals for major expansion at Stansted Airport. We have some 7,500 members and registered online supporters including 150 parish and town councils and local residents' groups and national and local environmental organisations. Our objective is to contain the development of Stansted Airport within tight limits that are truly sustainable and, in this way, to protect the quality of life of residents over wide areas of Cambridgeshire, Essex, Hertfordshire and Suffolk, to preserve our heritage and to protect the natural environment.

Stop Stansted Expansion
March 2013
www.stopstanstedexpansion.com



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1. Introduction

1.1 Our starting point in preparing this submission was the *'Appraisal framework for airports in South East and Eastern regions of England'* published by the Department in 2001 as part of the work leading up to the *'Future of Air Transport'* White Paper ('ATWP'). In particular, we have relied upon the 2001 appraisal framework for defining the aspects of each development option which need to be assessed and the criteria that should be used to enable consistent and effective comparison of the options.

1.2 The purpose of the appraisal framework should be to provide comparable and detailed¹ information and analysis on each of the options but it will not mechanise the decision-making process because the indicators and measures used will be a mixture of monetary values, physical units and elements which are non-quantifiable. Moreover, the non-monetary elements, such as the impacts on local communities and the loss of attractive countryside, will often be of far greater significance than the elements which can be monetized, particularly since such impacts are often irreversible. Considerable care will therefore be required in attaching the relative weights to each of the components in the appraisal. In short, priceless must not be taken to mean worthless.

1.3 The first option to be considered by the Commission should be no airport expansion beyond that currently envisaged in the land-use planning system, i.e. no extra runways, although this may entail making better use of existing runways. If that option was judged to be inadequate in terms of making provision for the projected future level of demand, there would still not be a case for airport expansion unless three further tests were passed:

- (i) whether the provision of additional airport capacity could be reconciled with UK climate change policy objectives and the UK targets for reducing carbon emissions;
- (ii) whether a policy of providing whatever airport capacity was needed to allow the unconstrained expansion of aviation would be consistent with the objective of sustainable development, as defined in the National Planning Policy Framework ('NPPF'); and
- (iii) whether the economic benefits would outweigh the economic, social and environmental disbenefits.

1.4 We will be submitting a separate paper to the Commission on the question of airport capacity in the context of the latest Department for Transport ('DfT') forecasts and this will show that there is ample scope for aviation growth without the need for any additional runways. But even if that were not the case, any proposed new runway development would need to be fully justified having regard to all the relevant economic, social and environmental evidence.

1.5 In view of the scale of uncertainty associated with forecasting the future level of demand for air travel, we suggest that the Commission should adopt a planning horizon of 2030, which is sufficient for the purposes of formulating and implementing policy decisions in relation to airport capacity. The 2003 ATWP attempted to forecast 27 years ahead – to 2030 – and reached the conclusion that the UK needed four new runways to cater for predicted 2030 demand of almost 500 million passengers per annum ('mppa').

1.6 The 2030 forecast has since been revised down to 320mppa and so it is fortunate that none of these proposed new runways were built. Otherwise homes, communities and irreplaceable ancient woodlands, countryside and heritage would all have been lost without justification and there would also have been significant losses for investors. Such are the dangers of pretending that the future demand for air travel can be forecast so far ahead, nor is it even necessary to try to do so: the London Olympics project was delivered within seven years of the decision to award London the 2012 Games and we note also that the planning horizon for local authorities is 15 years ahead. Where it is necessary to consider the period beyond 2030, e.g., for assessing the

¹ The level of detail will need to be at least equivalent to that contained in the *'SERAS Stage 2 Appraisal Findings'*, as published by the Department for Transport, Local Government and the Regions ('DLTR') in April 2002.

commercial viability of an airport investment project, the DfT's demand forecasts should be flat-lined from 2030 onwards.

1.7 For each of the impacts the assessment should show the baseline position, which should be the most recent year for which data is available (we would generally expect this to be 2012), and four development scenarios:

- (i) the 2030 base case – i.e. maximum use permitted by existing planning consents;
- (ii) the 2030 'enhanced base case', i.e. maximum use of airport facilities allowing for some development but excluding new runways;
- (iii) the 2030 development case, i.e. including additional runway options;
- (iv) maximum use of the development case, i.e. ultimate capacity, post-2030.

2. Description of options

2.1 At the earliest opportunity the Commission should publish a summary description of each of the options under consideration, to include:

- Location (existing airport, identified site of new airport);
- General description of option and means of achievement;
- Market demand for the option – from passengers, airlines and businesses;
- Commercial viability of the option – ability to secure private sector funding;
- Additional capacity provided by the option:
 - terminal and apron capacity
 - runway/ATM capacity
 - cargo handling capacity
- Year in which an increment of capacity might be delivered;
- Main attributes (expressed in terms of changes to existing situation where applicable);
- Runway configuration and length;
- Taxiways, aprons, and other infrastructure;
- Overall land area;
- Operating assumptions:
 - load factors
 - plane sizes
 - day, evening and night operations, according to accepted definitions
 - passenger mix – business/leisure
 - UK/foreign
 - domestic/international
 - short/long haul
 - transfer passengers
- Surface access:
 - distance and journey time to/from London and other major population centres
 - new infrastructure requirement
 - new transport services requirement
 - modal split
- Capacity of the local area to support the new jobs, homes and services required;
- Estimated costs and timescale:
 - preparatory costs - e.g. architects, consultants, planning application and legal
 - airport facilities
 - surface access provision
 - other off site works including the provision of power, fuel, water and sewerage
 - mitigation and compensation

3. The sifting process

3.1 The sifting process used in preparation for the 2003 ATWP comprised three stages of evaluation of options for the South East of England – each more detailed than the one before – prior to a short-list being published for public consultation. The Commission's intention to narrow down all the options, in one step, to a short-list by the end of 2013 is, in our view, an

extremely ambitious and challenging objective. There will need to be a rational basis for determining which options are to be taken forward for further consideration and which are to be eliminated, and the Commission will need to be able to explain its basis for selection. There will therefore need to be a defensible assessment of the economic, social and environmental impacts for each option and the Commission will need to ensure that it has sufficient resources at its disposal to undertake this work to the required standard by the end of 2013.

3.2 The short-listed options will then need to be subjected to far more detailed assessment including a Sustainability Appraisal and a Strategic Environmental Assessment ('SEA') before any final recommendations are made.

4. Aspects which need to be assessed and the assessment criteria

4.1 Market demand

4.1.1 As stated in para 1.4, above, we will be submitting a separate paper to the Commission showing that there is ample scope for aviation growth in the UK – including in the South East – without the need for any additional runways. If, however, the Commission concludes otherwise, and is satisfied that all three of the tests referred to in para 1.3 above could be met, the next step would be to examine options at different sites.

4.1.2 In examining potential sites for expansion, the logical starting point is to consider the level of market demand at each site. This will mainly involve consideration of the catchment area of the site and the quality of its surface access links. The DfT has a well-developed set of models for allocating demand between UK airports, principally the Passenger Airport Choice Model ('PACM') and the overarching National Air Passenger Allocation Model ('NAPAM'), and the latest DfT aviation forecasts include projections for unconstrained demand at the UK's 31 main airports (Annex D.8). Having regard to the pressure of time, we would suggest that the Commission uses the DfT's modelling expertise in this area. It should be a relatively straightforward matter for the DfT to re-run its NAPAM and PACM models to include consideration of a new site, as well as considering the underlying market demand for additional capacity at existing airports.

4.2 Commercial viability

4.2.1 Having considered market demand, the next logical step in the sifting process is to consider commercial viability because governments do not build airports or runways, nor do they provide the funding for airports or runways to be built. The funding for any airport development option will be down to the private sector and such funding will only materialise if there is confidence that the investment will deliver a satisfactory rate of return, having regard to the level of risk. It is therefore imperative that the sifting process includes an assessment of commercial viability for each option under consideration. There would be no point including any option on the short-list which was not commercially viable and therefore not deliverable.

4.2.2. The assessment of commercial viability will require:

- a cash flow projection, from the time that expenditure starts to be incurred at the pre-planning stages. Almost all the capital costs will be incurred before the development becomes operational and then starts to deliver a revenue stream, which will take time to build up. For the purposes of the NPV calculations, costs and revenues should be projected for a 30-year period after the development becomes operational;
- revenue estimates – split between aeronautical and non-aeronautical income;
- annual operating costs;
- a consistent assumption for all options for the funding structure (say, 60% gearing) and an assumption for the weighted average cost of capital ('WACC'), which will vary from one option to another since it will reflect site-specific and project risks as well as overall market risk.

4.2.3 The CAA, in its role as economic regulator for Heathrow, Gatwick and Stansted airports, has developed considerable expertise in airport economics and in assessing the required level of return for an airport development project to be commercially viable. We would encourage the Commission to seek the CAA's advice and assistance in relation to this aspect of the appraisal framework.

4.2.4 Finally, on this point, if there is an assumption that airlines and passengers will switch from one airport to another, or to a new airport, it will be very important for the Commission to be clear about the mechanism(s) which will be put in place to make this happen, and the timescale and costs of the transition, including any compensation which will be due as a result.

4.3 Economic impacts

4.3.1 The assessment of economic impacts – some of which will be positive and some negative – should cover the four development scenarios defined in para 1.6 above as well as the baseline position and they should be assessed on a financial NPV basis wherever possible, with costs and benefits considered from the inception of the project to 30 years after it is expected to become operational. However, in view of the scale of uncertainty which we referred to earlier, the national air passenger demand forecast should be flat-lined from 2030 onwards.

4.3.2 Economic impacts should be assessed under the following sub-headings:

- Benefits to UK leisure passengers;
- Benefits to UK business passengers;
- Benefits to UK users of air cargo services;
- Benefits to UK airport operators and UK airlines.

Note that HM Treasury advice is that benefits to non-UK residents and firms should not be included in the assessment of economic benefits to the UK.² Also, as in the case of the 2001 appraisal framework, airport retail and leisure operations should be excluded from the economic analysis on the grounds that any economic case for additional capacity should turn on the provision of air transport services and not for services of related sectors.

4.3.3 The impacts on government taxes and expenditure need to be assessed and here there may be both benefits and disbenefits, for example:

- Government contributions to surface access improvements which the option requires;
- Reduced APD revenues, since APD revenues may well be higher if capacity is tight.³

4.3.4 The assessment needs to consider other potential economic disbenefits, including:

- Impact upon the UK trade deficit on leisure travel and tourism;
- Disbenefits for local homeowners arising from devaluation of their homes with no right of compensation except for those few within the 66 dB LAeq₁₆ noise contour.⁴

4.3.5 Economic regeneration and redistribution effects need to be assessed noting that these should be positive where development is focused on areas of relative economic deprivation and high unemployment but will be potentially negative in areas which currently have high levels of employment and economic prosperity. At the very least there will be an opportunity cost.

4.3.6 There also needs to be an assessment of wider economic impacts, for example, to what extent would increased connectivity improve the productivity of the UK economy and/or make

² HM Treasury Green Book, 2003, updated July 2011, para 5.25.

³ Sensitivity analysis carried out by the DfT indicates that a 30% increase in APD would dampen demand by about 2%, which is the difference between the central constrained and unconstrained forecasts for 2030. If demand cannot be met in full, it would appear logical for the Government to capture the price premium which becomes available, rather than the airport or airline supplier.

⁴ See, e.g.: [http://www.stopstanstedexpansion.com/documents/SSE11a_Proof_Economic_Impacts_\(Housing\).pdf](http://www.stopstanstedexpansion.com/documents/SSE11a_Proof_Economic_Impacts_(Housing).pdf).

the UK a more attractive location for foreign direct investment? These questions should be considered in the context of the number of business flights by UK residents having fallen by 20% between 2000 and 2011 with only one in every eight overseas flights by UK residents in 2011 (the most recent year for which figures are available) being for business purposes.⁵

4.3.7 Finally, in relation to the economic assessment, consideration needs to be given to the cost of carbon. The Committee on Climate Change ('CCC') estimates that a price of £30 per tonne of CO₂ in 2020 and £70 in 2030 will be required if the Government is to meet its overall goal of reducing carbon emissions by 80% by 2050 compared to 1990 levels. This seems a reasonable basis for assessing the economic cost of carbon although the Commission might wish to ask the CCC to refine these estimates and provide further advice regarding the treatment of non-CO₂ greenhouse gas emissions.

4.4 Employment and housing impacts

4.4.1 The assessment of employment and housing impacts should cover the four development scenarios defined in para 1.6 above as well as the baseline position.

4.4.2 The starting point for the assessment of employment and housing impacts will be the number of jobs generated by the development in each of the following categories:

- Direct on-airport: i.e. employment in businesses directly related to the operation of the airport;
- Direct off-airport: i.e. employment in businesses directly related to the operation of the airport but located outside its boundary;
- Indirect: i.e. employment in local firms supplying goods and services to businesses at the airport;
- Induced: i.e. employment supported by the expenditure of employees in the three categories above – the so-called multiplier effect;
- Attracted: i.e. employment created when companies set up their operations in the area because of the presence of the airport.

4.4.3 The predicted number of jobs in each of the above categories should be broken down by type of job by Standard Job Category ('SJC') and by local authority district where the jobs would be generated. Also, in order to compare demand with supply, the assessment needs to consider the availability of employees locally and their level of qualifications, based on a consistent local employment catchment area of (say) a 30-minute travel-to-work geographical zone.

4.4.4 Consideration also needs to be given to the objective of employment sustainability – an objective which is best served where there is a broadly based local economy which is not over-dependent upon a single industry or business. The assessment therefore needs to include an indicator to show the extent to which the economically active population in the locality of the airport would be dependent upon the airport for employment for each development scenario.

4.4.5 Where the local employment catchment area cannot provide the people to fill the additional jobs generated by the development, including jobs created by attracted and consequential development, consideration needs to be given to the requirement for additional housing and the supporting physical and social infrastructure (education, healthcare and other, community services), commercial infrastructure and surface access improvements that would be needed to support the increase in the local population. The environmental impacts of these urbanisation effects should be weighed more heavily in the case of any new airport location and existing airport locations which are currently sparsely populated.

4.4.6 Finally, in relation to the assessment of employment and housing impacts, if the proposal is for a hub airport that would eventually replace Heathrow, the consequences for employment and housing in the Heathrow area, and the wider – including social – consequences of this upon the local community and businesses will need to be assessed.

⁵ 'Travel Trends', Office for National Statistics, 2001 and 2011 editions, Table 3.07. Total business flights - by UK and foreign residents - fell by 17% between 2000 and 2011 (*Ibid*, Tables 2.07 and 3.07).

4.5 Landscape and heritage impacts

4.5.1 There will be some landscape impacts even where a development option does not require an airport to extend beyond its existing boundary and so the assessment of landscape impacts needs to cover the four development scenarios defined in para 1.6 above as well as the baseline position. In each case the key components of the assessment should be as follows:

4.5.2 Impact on land:

- Land required for the construction/extension of the airport
- Land required for related road, rail and other supporting infrastructure
- Land required for associated development e.g. hotels, warehousing, offices etc.
- Land required for consequential development, e.g. housing for new airport employees and related infrastructure in the public services and retail/commercial infrastructure required to support the additional local workforce and population.

There should be a quantitative and qualitative assessment for each of the above impacts and the impact on agricultural land should be separately identified, broken down by (a) higher quality grades 1, 2 and 3a and (b) lower quality grade 3b, and should include an assessment of the impact on agricultural production and income.

4.5.3 Impact on homes and their occupants:

- Number of homes which would need to be demolished to make way for the airport development and the associated and consequential development;
- Number of homes which would become uninhabitable as a result of the airport development and the associated and consequential development;
- Number of people directly affected by the loss of their homes;
- The impact on the fabric and wellbeing of the community from the above (see also para 4.10 below).

4.5.4 Impact on local businesses:

- Number of businesses which would need to be closed down or relocated to make way for the airport development and the associated and consequential development;
- Business premises which would become unviable as a result of the airport development and the associated and consequential development;
- Jobs at risk – i.e. employees at the business premises in each of these categories;
- Consequent loss in production and income.

4.5.5 Impact on 'ancient countryside'⁶ and historic landscape:⁷

Destruction and degradation caused by the airport development and the associated and consequential development and other ripple effects upon:

- Historic villages and hamlets;
- Moated sites;
- Churches;
- Public houses;
- Conservation areas;
- Parks and gardens in the England Heritage Register;
- Village greens;
- Ancient lanes, including 'protected lanes';
- Footpaths;
- Bridleways;

⁶ 'Ancient countryside' (as distinct from planned countryside) has been defined by Oliver Rackham in 'The History of the Countryside', p.416, as 'districts whose fields, woods, roads, etc. date predominantly from before A.D. 1700', and on p.4 of the same book he describes it as 'the England of hamlets, medieval farms in hollows of the hills, lonely moats and great barns in the clay-lands, pollards and ancient trees, cavernous Holloways and many footpaths, fords, irregularly shaped groves with thick hedges colourful with maple, dogwood and spindle – an intricate land of mystery and surprise.'

⁷ Many of the items on this list could also be defined as adverse amenity impacts of the development.

- Ancient woodland;
- Ancient hedgerows;
- Sunken lanes (hollow ways);
- Ancient field patterns.

4.5.6 Impact on archaeological and cultural heritage

- Area of land to be subject to archaeological work;
- Area of land to be subject to cut – resulting in destruction to the site;
- Area of land to be subject to fill – resulting in degradation of the site;
- Nature, quality and extent of the archaeological remains in the landtake area;
- Listed and historic buildings⁸ whose fabric or setting would be lost, including as a result of associated and consequential development and other ripple effects;
- Scheduled ancient monuments whose fabric or setting would be lost, including as a result of associated and consequential development and other ripple effects.

4.6 Nature conservation impacts

4.6.1 As in the case of the foregoing section on landscape impacts there will be some impacts on nature conservation even where a development option does not require an airport to extend beyond its existing boundary. Thus the assessment of nature conservation impacts needs to cover the four development scenarios defined in para 1.6 above as well as the baseline position. Noting that there will inevitably be overlap between landscape impacts and nature conservation impacts, as well as the inter-relationship with communities, the key components of the nature conservation assessment should be as follows.

4.6.2 An assessment of the level of destruction and degradation of natural and semi-natural habitats caused by the airport development and the associated and consequential development upon:

- Ancient woodland and other woodland habitats;
- Protected trees;
- Higher value grasslands;
- Lower value grasslands;
- Hedges, especially those defined as 'important' in terms of the Hedgerow Regulations;
- Veteran trees;
- Ponds and ditches;
- Streams and rivers;
- Sites of Special Scientific Interest ('SSSI');
- Wildlife reserves;

and the consequent loss of species, especially endangered species which have legal protection.

4.6.3 An assessment of the impacts of the airport development and the associated and consequential development upon biodiversity arising from the removal, restriction or disturbance of habitats, flora and fauna. This aspect of the assessment needs to take account of the risk to ecosystems during the construction stage as well as after the development is completed, by noise, air quality, and climate change impacts, as well as by hydrological or landscape changes.

4.7 Noise impacts

4.7.1 The assessment of noise impacts should cover the four development scenarios defined in para 1.6 above as well as the baseline position.

4.7.2 The starting point for the assessment of noise impacts will be the projected number of ATMs by type and engine noise category for each of the development scenarios. This will form

⁸ The assessment of heritage 'significance' shouldn't be based solely on the listing grade but, in line with good practice, place-specific, in-depth assessment.

the basis for producing noise contours which in each case should: (a) be shown separately for each direction of runway operation; (b) be provided at 3dB intervals from 48dB to 75dB; and (c) provide population and household counts.

4.7.3 For the purposes of the assessment of noise impacts, noise contours for each of the development scenarios will be needed for:

- Summer average LAeq, 16hr;
- Annual average Lnight, 8hr and Lnight, 6.5hr (QCnight);
- Annual average 24 hour Lden with sub-periods for day (0700-1900), evening (1900-2300) and night (2300-0700), using the standard 5dB weighting for the evening period and the standard 10dB weighting for the night period;

and the same contours will need to be produced for the 2012 baseline to enable comparison.

4.7.4 'Number above' noise contours (N70 type metric), which combine single event noise levels with aircraft movement numbers, should also be used for the assessment. We would propose using representative values such as N70 for day and N60 for night, on a consistent basis for all options.

4.7.5 The assessment of noise impacts needs to give particular consideration to the predicted noise impacts upon:

- Educational facilities;
- Healthcare facilities;
- Outdoor recreational facilities, including for schools;
- Places of worship;
- Other community facilities.

This will involve a mixture of qualitative and quantitative assessment using dB LAeqT and dB Lmax figures for typical, most and least noisy aircraft types.

4.7.6 Ground noise impacts also need to be assessed and should be compared against LA90 background sound levels at a range of settlements in close proximity to the airport site. Ground noise needs to be assessed for both directions of runway operation and should be compared against benchmarks of 54 dB LAeq for day (0700-1900) and evening (1900- 2300) and 45dB LAeq, 8hr and 60 LAmx.fast for night (2300-0700). The ground noise assessment also needs to take account of road traffic, and apply a higher weighting for road traffic at night, and it should also take account of the ambient level of noise in the locality.

4.8 Local air quality impacts

4.8.1 The assessment of the air quality ('AQ') impacts should be based on modelled predictions supported by evidence obtained from air quality monitoring. Again the assessment should cover the four development scenarios defined in para 1.6 above as well as the baseline position.

4.8.2 The main part of this assessment will be to estimate the effects on local AQ arising from aircraft emissions during the take-off and landing cycles and taxiing, airport-related surface access traffic, airside vehicles and airport buildings, in respect of the following pollutants:

- NO₂;
- NO_x;
- PM₁₀;
- PM_{2.5};
- SO₂;
- Benzene;
- 1,3-Butadiene.

4.8.3 Contour maps will need to be produced showing the baseline position (from real time AQ monitoring carried out according to the recommendations of the PSDH report⁹) together with the range of modelled predictions for each of the above pollutants. These results then need to be compared to the standards laid down by the EU Air Quality Directive 2008/40/EC and the UK Air Quality Standards Regulations 2007 for the protection of human health and vegetation. It will not, however, be sufficient simply to ensure that the statutory limits are not exceeded because adverse AQ impacts can arise at levels below the statutory limits. Woodland, particularly ancient woodland, is highly susceptible to damage from eutrophication and acidification caused by high levels of NO_x. In addition, as the Environmental Audit Committee noted in a 2010 report: '*Poor air quality leads to poor human health*' and '*has wide ranging environmental impacts including loss of diversity, reduced crop yields and a contribution to climate change.*'¹⁰

4.8.4 The area affected by airport-related AQ impacts will extend beyond the boundary of the airport, notably under the flight paths as planes take off and land and along the main approach roads and in order to assess the effects of the development it will be necessary to first carry out AQ monitoring of the whole area likely to be affected, so as to establish the baseline.

4.8.5 The main information required for reliable modelling of AQ emissions – which will need to include weather (mostly wind direction) variables – will include:

- Projected numbers and types of ATMs (passenger and cargo combined);
- Emissions performance for each of these aircraft/engine types;
- Aircraft taxiing distances, based on proposed airport layout;
- Projected volumes and type of road traffic on local roads around the airport and the main approach roads;
- Predicted future emissions performance for the various types of road vehicles;
- Airside vehicle traffic, types of vehicles and their emissions performance;
- Emissions performance of airport buildings;
- Location, size and characteristics (e.g. open-venting) of airport fuel storage facilities;
- Nature of aircraft refuelling arrangements - e.g. open venting, vapour recapture.

4.8.6 The presence of any local Air Quality Management Area ('AQMA') should be recorded and weighed in the assessment.

4.8.7 AQ impacts during the construction phase(s) also need to be assessed and aggregated with AQ impacts arising from the operation of the airport and other airport-related activity so as to enable assessment of the combined impact on receptors.

4.9 Surface access impacts

4.9.1 The assessment of surface access impacts should cover the four development scenarios defined in para 1.6 above as well as the baseline position.

4.9.2 The starting point for the assessment of surface access impacts will be the predicted annual airport passenger throughput ('mppa'), its seasonality and the UK origin/destination of the passengers, noting that transfer passengers can be discounted for the purposes of the surface access assessment. Surface access traffic generated by the airport's employees and its cargo operations will also need to be considered in the assessment.

4.9.3 Surface access mode share will need to be estimated for each of the development scenarios, for each of the following categories:

⁹ 'Project for the Sustainable Development of Heathrow: Report of the Air Quality Technical Panels', DfT, July 2006 <http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/pgr/aviation/environmentalissues/heathrowsustain/>

¹⁰ 'Air Quality', House of Commons Environmental Audit Committee, Fifth Report of Session 2009–10 <http://www.publications.parliament.uk/pa/cm200910/cmselect/cmenvaud/229/229i.pdf>.

- Private car;
- Hire car;
- Taxi;
- Bus/coach;
- Rail;
- Underground;
- Other.

4.9.4 Mode share will largely depend on the capacity, the quality of service and the cost of the surface access options available to airport passengers and employees and so these aspects need to be assessed, including:

- Capacity of the existing road and rail infrastructure and any currently planned improvements;
- Distance by road and rail from main areas of passenger origin/destination and workforce residences;
- Time of road and rail journeys to these areas of passenger origin/destination and workforce residences;
- Frequency of trains to each main area of passenger origin/destination and workforce residences;
- Cost of road and rail journeys to these main areas of passenger origin/destination and workforce residences.

4.9.5 In assessing the road traffic impacts the normal practice is to start by estimating hourly passenger flows for an average weekday in a busy month (August/September) and then:

- Establish average vehicle occupancy ratio (number of air passengers per vehicle)¹¹;
- Calculate hourly and 3-hour morning and evening weekday peaks;
- Model impacts of increased traffic on the airport's local and arterial road networks;
- Assess what road improvements (upgrades/new capacity) would be needed;
- Estimate the cost, feasibility and timescale of required road improvements;
- Assess the consequential environmental impacts of road improvements.

4.9.6 A broadly similar approach applies to the assessment of rail/underground traffic impacts:

- Calculate hourly and 3-hour morning and evening weekday peaks;
- Model impacts of increased traffic on rail/underground services which serve the airport;
- Assess what rail/underground improvements (upgrades/new capacity) would be needed;
- Estimate the cost, feasibility and timescale of required rail/underground improvements;
- Assess the consequential environmental impacts of rail/underground improvements.

4.9.7 Finally, in relation to the assessment of surface access impacts, note that it will be necessary to take account not only of surface access demand generated by the airport's passengers, employees and cargo operations but also of surface access demand generated by attracted commercial development such as hotels, offices, warehousing and distribution, and consequential development such as housing and social infrastructure to support the airport and its workforce. Such urbanisation impacts will be especially significant – and not only in relation to surface access impacts but across the full range of environmental impacts – in the case of any new airport location and in the case of existing airport locations in sparsely populated areas.

¹¹ The vehicle occupancy ratio ('VOR') is a critical factor in assessing the road traffic impacts of airport development and SSE has for some time been pressing the CAA to improve the evidence base in this area by seeking to obtain VOR data from departing passengers, as part of its annual passenger survey.

4.10 Community cohesion/social capital impacts

4.10.1 The assessment of community cohesion/social capital impacts will largely be qualitative, with the impact of the development scenarios compared to the baseline assessment.

4.10.2 The Department of Communities and Local Government ('DCLG') describes a cohesive community as one with '*a common vision and a sense of belonging for all communities*' and makes clear that '*Community cohesion cannot be forcibly imposed by external agencies but has to be achieved through community members working together for the benefit of all.*'¹²

4.10.3 Indicators of community cohesion, which can be used as a basis for assessment and comparison, including the following which are all cited by DCLG:¹³

- Crime;
- Fear of crime;
- Health;
- Employment;
- Education;
- Economic investment.

The DCLG's work in this area includes a detailed study of the academic literature and estimated financial benefits of improving community cohesion in the above areas.

4.10.4 The term 'social capital' is similarly used to describe the shared values and behaviours that bind members of a community together and encourage social networking and co-operation for mutual benefit. This type of interaction helps to build trust and spirit within communities and encourages mutual support and a sense of belonging. Social capital has a very tangible value even though it consists of intangibles i.e. values and behaviours. It is a significant factor in relation to the perceived quality of life and wellbeing of communities and there is a considerable body of scientific evidence which shows that communities with a high degree of social capital are more likely to benefit from lower crime, better health and higher educational achievement.

4.10.5 Given the importance of community cohesion/social capital, as above, it will be important for the Commission to ensure that the impacts of airport development on the health, perceived quality of life and wellbeing of local communities are properly assessed and given due weight in the overall assessment of options.

4.10.6 The indicators used by the DCLG provide a starting point for establishing the baseline for the options under consideration. However, in order to assess the likely future impacts of airport development options at local level, there will need to be some form of opinion survey, probably by questionnaire, of the communities potentially affected by the airport development options. The key will be to obtain detailed and *comparable* information for each of the options.

4.11 Health impacts

4.11.1 Adverse health impacts from increased aviation activity arise in a number of areas including¹⁴:

- Stress and anxiety arising from the impact of aircraft noise generally;
- The effects of sleep deprivation caused by aircraft noise at night;
- Impaired cognitive development in children at schools near airports due to aircraft noise disturbance during school hours as well as sleep disturbance at night;¹⁵

¹² <http://www.communities.gov.uk/index.asp?id=1503278>.

¹³ 'Guidance for local authorities on how to mainstream community cohesion into other services', DCLG, Aug 2009.

¹⁴ See, e.g. http://www.stopstanstedexpansion.com/documents/Aviation_and_health_BMJ_Feb_2013.pdf.

¹⁵ The CAA has published a review of the academic literature on this subject in 'ERCD Report 0908: Aircraft Noise and Children's Learning', CAA, Feb 2010 - see <http://www.caa.co.uk/docs/33/ERCD200908.pdf>.

- Probability of an increased risk of certain forms of cardiovascular disease such as hypertension and ischaemic heart disease;
- Heart and lung damage caused by aircraft emissions and airport-related road traffic emissions, particularly NO₂ and particulates;
- Increased airport-related road traffic will result in increased road casualties;
- Aviation's role in accelerating climate change and the far reaching health impacts thereof;
- Aviation's role in facilitating the rapid global spread of communicable diseases.

4.11.2 Given the very obvious importance of the adverse health impacts of aviation, it will be essential for the Commission to take proper account of health impacts in its overall assessment of the need for airport expansion and in its assessment any development options. However, given the pressure of time on the Commission, we consider that it would be sufficient at this stage to use the AQ assessment as a proxy for assessing the relative importance of the health impacts for each of the options under consideration, noting that a full Health Impact Assessment ('HIA') would be required to support any planning application for a major infrastructure project.

4.12 Water impacts

4.12.1 The assessment of water impacts should start by examining the supply side, i.e. the water resources available locally and regionally, including improvements currently planned, and also taking account of the predicted long term impact of climate change on rainfall levels across the UK.¹⁶ The assessment will also need to examine the projected overall level of future water demand, including from population and housing growth.

4.12.2 The projected water needs of the airport (annual and peak day) will need to be assessed for each of the development options and compared to the baseline. It is likely however that the water usage arising from associated and consequential development will be a far more significant consideration. Where the assessment indicates a need for additional capacity, an estimate of the cost of this will need to be included in the overall assessment of the option.

4.12.3 There also needs to be an assessment of the ability of the existing waste water and sewage treatment facilities (including improvements currently planned) to meet anticipated levels of discharges from the airport and the associated and consequential development. Where the assessment indicates a need for additional capacity, an estimate of the cost of this will need to be included in the overall assessment of the option.

4.13 Safety and air traffic management considerations

4.13.1 We have no comment to make on these matters except to suggest that the Commission seeks the advice of the CAA and NATS on the safety and air traffic management considerations to be included in its assessment of options and on the measures and indicators to be used.

5. Climate change context

5.1 Aviation accounts for about 11% of the UK's impact on climate change¹⁷ and even without any expansion this share will rise markedly as the rest of the economy decarbonises in line with the target of reducing the UK's carbon emissions by 80% by 2050, compared to 1990 levels.

5.2 Whilst the UK's international aviation emissions have so far been excluded from the 80% target¹⁸, in January 2009, the then Government adopted a target to reduce UK aviation emissions to below the 2005 level 37.5 Mt CO₂ by 2050. The CCC has since given clear advice

¹⁶ The Hadley Centre produces long term forecasts, by UK region, of the predicted reduction in average summer and winter rainfall levels, due to the changing UK climate.

¹⁷ Including the non-CO₂ effects.

¹⁸ Emissions from domestic flights are currently included but this is only a small proportion of UK aviation emissions.

to the Government that international aviation should be brought within the control framework of the UK's legislated five-yearly carbon budgets, although in December 2012 the Government decided against this for the time being, citing complications relating to the one-year suspension of the EU ETS for international aviation.

5.3 The Government has however made clear that aviation must be included in the 2050 UK climate target and that '*emissions from international aviation and shipping should be treated the same as emissions from all other sectors*'. In the meantime, the latest DfT forecasts predict aviation emissions of 43.5 Mt CO₂ in 2030 and 47.0 Mt CO₂ in 2050, which would then be about one third of total UK emissions. As we have stated earlier, there is enormous uncertainty with these very long term forecasts of the volume of air travel. Nevertheless, in the event of the Commission supporting significant expansion of UK airport capacity, it would need to be explained how this was reconcilable with the policy of reducing the UK's carbon emissions by 80% by 2050, compared to 1990 levels.

6. Holistic impacts

6.1 We have listed criteria for assessing local environmental impacts under several different headings – landscape and heritage, nature conservation, air and ground noise, local air quality surface access, community cohesion/social capital and health – and within each heading we have listed them under sub-headings. Such lists are informative and may provide helpful comparative evidence. But separation of this kind is artificial.

6.2 On the one hand the visual enjoyment of a beautiful tract of countryside may be ruined by the deafening noise of an overflying aircraft; on the other it may be enhanced by all the associations that we may bring to that scene. If we look at an ancient lane running between ancient hedgerows we may see it not just in visual terms, but also in terms of its historical associations. We are looking not just at a lane, but a lane that has been there for centuries, that has been trodden and worn down by generations. And we are looking not just at a row of bushes, but at a boundary that has been tended and maintained over a period just as long. In the same way, while taking pleasure in a wood we may also think of the deer that find a refuge and the birds that nest there, or as we look at a pond we shall be seeing too the dragonflies darting around it and the pondskaters on its surface. A field of ripening wheat will remind us how agriculture has shaped our landscape. Separating out one aspect from another results in a disjunction of sensibility that is alien to our experience.

6.3 Even within each category the drawing up of lists cannot be an adequate way of evaluating what we see. The historic landscape is much more than the sum of its parts, a point that has been well put by a leading expert on historic landscape, Christopher Taylor:

*'Surely we require an interpretation of a particular place in order to understand layout and history and thus factors involved in their creation rather than just lists. What happens is that these lists take the place of any real history of the total landscape ... a total or unified landscape history continually disintegrates into separate sites, features, monuments or buildings – a Victorian antiquarian approach ...'*¹⁹

6.4 To a certain extent we have overcome this problem by suggesting that Oliver Rackham's '*Ancient Countryside*' should be used as a criterion for the historic landscape but, over and above this, we need an overall criterion that captures the entire experience. We suggest that the overall value of the local environment should be measured on a scale of 1-10, with 1 being the most valuable, and that the potential impact on this environment should also be measured on a scale of 1-10, with 1 being beneficial, 5 being neutral, and 10 being harmful. One way of facilitating this overall assessment would be to require a series of transparent maps, one, for example, showing ancient woodland, another listed buildings, another ancient lanes, which could be overlaid on each other. In this way the Commission would be able to form a judgement of the density of those factors which would be at risk.

¹⁹ Taylor, C., '*Landscape History*', vol. 29 (2007), p. 97. See Appendix 2.

7. Concluding points

7.1 The purpose of this submission is to assist the Commission – in the event that it concludes that the UK needs more runway capacity – in the task of deciding, on the basis of a comparable and reasonably comprehensive set of assessment criteria, which development options should be short-listed. As stated almost at the outset of this paper, we regard the Commission's intention to narrow down all the options, in one step, to a short-list by the end of 2013 as an extremely challenging objective.

7.2 We note that the Commission's terms of reference require its final report by the summer of 2015 and require an interim report by the end of 2013 on:

- *its assessment of the evidence on the nature, scale and timing of the steps needed to maintain the UK's global hub status [and]*
- *its recommendation(s) for immediate actions to improve the use of existing runway capacity in the next 5 years – consistent with credible long term options'*

7.3 These two tasks amount to a very considerable workload for the Commission over the coming months and we note that the drawing up of a short-list of long term development options in the same timeframe is not an explicit requirement in the Commission's terms of reference. Indeed some might consider that this would be to prejudge matters.

7.4 The Chairman of the Commission states, in his foreword to '*Guidance Document 01: Submitting evidence and proposals to the Airports Commission*', the document that we are responding to here:

'It is my ambition that the Airports Commission will be able to play that role objectively and rigorously in considering the crucial questions of whether new airport capacity is needed and, if so, where and how it should be provided. As this paper explains, we will follow a process which is comprehensive, rigorous, open and inclusive.'

7.5 We are very doubtful that the Commission's intention to draw up a short-list of long term development options by the end of 2013 allows adequate time for the process to be either comprehensive or rigorous.

*Stop Stansted Expansion
March 2013*