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Appeal by BAA Ltd and Stansted Airport Ltd following the refusal by Uttlesford District Council of planning application UTT/0717/06/FUL

Revised Proof of Evidence on behalf of Stop Stansted Expansion

Demand for Surface Access and the Implications

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1 INTRODUCTION

1.1 Personal details

1.1.1 My name is Reg Harman and I appear at the Public Inquiry on behalf of Stop Stansted Expansion ('SSE') by whom I have been commissioned to review the demand for surface access and its implications.

1.2 Qualifications and experience

1.2.1 I hold an honours degree in French Studies from the University of Manchester (1966). I am a Fellow of the Chartered Institute of Logistics and Transport, a Fellow of the Institution of Highways & Transportation, a Fellow of the Royal Society of Arts and a Member of the Royal Town Planning Institute.

1.2.2 I am an independent consultant in transport policy and practice; a chartered town planner; and a visiting fellow at the Centre for Transport & Society, University of the West of England, Bristol. My previous employment included positions with the Chartered Institute of Transport, as Policies Director, 1995-2000; Hertfordshire County Council/SERPLAN; the University of East Anglia; the Sheffield/Rotherham Transport Study; and British Rail.

1.2.3 My experience has covered a range of areas, including strategic and project studies for railways and bus systems; local transport planning; accessibility planning; regional and local spatial plans; demographic forecasting; comparisons of other European countries' transport practices. Particular responsibilities have included: acting as expert witness on rail traffic and operations for Hertfordshire County Council at the West Coast Main Line TWA inquiry; managing the surface access studies which SERPLAN contributed to the Government's RUCATSE project; acting as expert witness for the Hertfordshire Society on the Baldock Northern Bypass inquiry; managing studies of transport impact and implications for a number of development projects, including hospitals and public facilities; leading or contributing to strategic studies for railway development at national and regional level; advising Medway Council on the procurement of the Transport for Medway project and acting as its programme manager.

2 SCOPE OF EVIDENCE

2.1.1 This proof of evidence replaces my previous proof of evidence SSE/15/a submitted on 30 April 2007. It incorporates a review of the BAA Environmental Statement Volume 11 Addendum Update [CD/14.2] published in July 2007, the 'Delivering a Sustainable Railway' White Paper [CD/433.1], also published in July 2007, and other relevant material that has emerged from discussion and proceedings at the Inquiry since submitting my original proof.

2.1.2 This proof of evidence reviews the demand and supply aspects of surface access to and from Stansted Airport should the current limit of 25 million passenger per annum ('mppa') be removed and the maximum permitted number of air transport movements ('ATMs') per annum be raised from

241,000 to 264,000, as proposed by the current planning Appeal by BAA (the 'Generation 1' proposal). The evidence considers the forecasts for travel to and from the airport, including the factors and assumptions on which they are based and the networks to which they apply; the possible effects of alternative scenarios; and the implications of likely impacts from the proposals for transport in the local areas, the sub-region and beyond.

2.1.3 The evidence is set out in five sections:

Context for surface access and forecasts. Forecasts of airport use and operation, forecast trends in sub-regional population and employment, regional transport forecasts and issues, institutional aspects of providing surface transport services and infrastructure;

Demand for travel to/from the airport. Present and forecast travel patterns of passengers, origins, times, etc; present and forecast travel patterns of employees, origins, times, etc; modal split for travel to and from the airport;

Demand for car travel - road use and provision. Current and proposed road system – trunk roads – local roads, current and forecast road use on trunk roads, implications;

Demand for travel by rail - rail services and investment. Current and proposed rail system, current and forecast rail travel, implications;

Demand for travel by bus and coach - service provision. Current and proposed bus and coach services, current and forecast bus and coach travel, implications.

2.1.4 From these successive analyses some conclusions are drawn, looking at the effects on particular modes – road, rail, coach and bus – and the wider implications, including timescales and 'graduality'.

2.1.5 BAA Stansted have set out their assessment of the surface access implications in Volume 11 of their Environmental Statement ('ES Vol 11'), April 2006[1]; in the Transport Addendum, April 2007[2]; and in the Addendum Update, July 2007. ES Vol 11 and the Addendum Update[3] form the main references for this evidence, and are referred to here respectively as BAA ES Vol 11 and BAA ES Vol 11 Update, or simply the Update; or (within the text) as the 2006 forecasts and the 2007 Addendum. Reference has also been made to BAA's technical note of September 2007 describing a sensitivity test undertaken using SSE criteria (referred to as FL1148).[4]

3 CONTEXT FOR SURFACE ACCESS AND FORECASTS

3.1 Forecasts of airport use and operation

3.1.1 The planning application seeks to remove the current limit of 25mppa and raise the annual permitted number of ATMs from 241,000 to 264,000.

[1] Generation 1 Environmental Statement, Volume 11: Surface access – transport assessment, BAA April 2006 [CD/14].
[2] Generation 1 Environmental Statement: Volume 11 Addendum: Surface access – Transport Assessment - Updates and Sensitivity Tests, BAA, April 2007 [CD/14.1].
[3] Generation 1 Environmental Statement: Volume 11 Addendum Update: Surface access – Transport Assessment - Updates and Sensitivity Tests, BAA, July 2007 [CD/14.2].
[4] Technical Note FL1148, Halcrow, 14 September 2007.

Passenger throughput in 2006 was 23.7 million (BAA statistics). Should the proposed application be granted, BAA foresees the level of passenger throughput rising to 35mppa, and this figure forms the main basis for its analysis of surface access impact. BAA forecasts for surface access are mostly limited to the single year of 2014, when, according to BAA's April 2006 forecasts, a throughput of 35mppa was expected although the Inquiry has heard evidence from Mr Stan Maiden of BAA to the effect that his latest forecasts point to a delay of about 18 months in reaching a throughput of 35mppa. Comparisons are presented by BAA against the (current) limit of 25mppa on two bases: growth to 35mppa without any real expansion of public transport; and growth with enhanced public transport. The 25mppa case assumes a different form of operation, more focused on specific markets than either the current situation or the 35mppa scenarios; thus the validity of the comparisons offered is questionable. There are very few comparisons of the traffic levels from 25mppa and 35mppa scenarios compared to those of the current / base year.

3.1.2 The tight focus on year 2014 does not allow for assessment of the airport's impact on surface access in the catchment area in the context of the continuous growth trend that is likely in surface transport demand in the sub-region and beyond. This might in principle be addressed through achieving major changes in how people travel but the BAA forecasts do not consider such changes or assess the effects of such changes were they to be achieved. This principle of forecasting is very significant: it effectively glosses over the gradual but continuous development of the airport and its surface access demand within the developing catchment sub-region.

3.1.3 The forecasts presented have been developed through a complex suite of models, discussed in Chapter 6 of BAA ES Vol 11 and in Chapter 2 of the Update. While the principles are set out, it is almost impossible to follow how the modelling suite reacts to particular factors. Forecasts are given as single figures, without any indication of what the potential variation (confidence limits) might be. An understanding of the possible variations is an important aspect of assessing the impact of particular steps in the airport's development.

3.1.4 The growth in air traffic involves three aspects which bear on the demand for surface access: the level of transfer traffic (i.e. passengers interlining at Stansted and thus not using the surface access system); the timing of demand for air travel departures and arrivals; and the UK origins of departing air passengers. These have been addressed by BAA in the air travel forecasts which form the basis for their application. They have also been covered by other reports; notably by SH&E for Uttlesford District Council, who generally agree with the overall forecast trends but suggest different patterns affecting the surface access factors.

3.1.5 The BAA forecasts for Stansted assume that a throughput of 35mppa would involve a significantly higher proportion of passengers transferring between flights at Stansted, as distinct from those starting or finishing their journey there. For 2014 they give a proportion of 16.7% for 35mppa compared to 10.2% for 25mppa. No explanation is advanced for this very substantial difference. In fact the proportion of transfer passengers at Stansted in 2006 was 10.8%, a decline from 14.4% in 2003.[5] The review of BAA forecasts by

[5] CAA Annual Passenger Survey Reports 2003-2005 [CD/210-212], Table 3.

SH&E [6] suggests that Stansted is likely to remain as a base for low cost airlines, with a focus on leisure traffic, a view shared by the ACC [ACC/28]. Overall growth in the leisure travel market across the country will be likely to increase the use of regional airports and the range of direct flights offered by regional airports, thus reducing the likelihood that passengers would need to transfer at Stansted. Thus the airport does not appear likely to become the focus for significantly more interlining.

3.1.6 The implications of this for surface access forecasting are significant. The BAA forecasts indicate that, with a limit of 25mppa, total demand for surface access with a 10.2% transfer rate would be 22.46 million passengers and for 35mppa with a 16.7% transfer rate it would be 29.17 million passengers.[7] But if the 35mppa throughput had a transfer rate of 10.2%, this would give a surface access demand of 31.43 million passengers, which is 7.75% higher than the figures used in BAA ES Vol 11 and in ES Vol 11 Update.

3.1.7 Forecasts of arrival and departure patterns in BAA ES Vol 11 suggest a small increase in arrivals and departures at peak hours: early evening and later evening for arrivals, morning and early evening for departures. The BAA case focuses strongly on the extent to which growth in traffic will occur during the off peak periods, i.e. spreading of additional demand occurs more during the off-peak hours, which of course implies that additional demand for surface access would arise when it is less under pressure. However, the peak period levels remain a significant factor. In particular, departures during the period 16.00 to 19.00 will become higher, especially with throughput at 35mppa.[8] The tests in ES Vol 11 Update identify some changes in peak demands between modes but do not indicate overall change.[9] So essentially growth in air traffic through Stansted means growth in surface access demand at the times when travel in the sub-region and on key corridors beyond is at its highest.

3.1.8 In addition, BAA does not appear to have considered the prospect that, as demand grows, peak hour flights will have higher load factors or that airlines may introduce larger aircraft to cope with higher demand at peak hours in circumstances where there is no room for additional slots.

3.1.9 Of course, much of the growth with 35mppa, especially for departures, will fall during the middle hours of the day, as BAA's forecasts show. These identify that this will not cause the serious capacity problems that the extra peak hours traffic, on which its forecasts concentrate, will do. But business activity and travel within the airport's catchment sub-region is also heavy for much of the working day and this will increase with the planned growth in population and with high level (service) employment in the corridor. Increased airport road and rail traffic, unless fully catered for, risks reducing convenience and quality in off-peak hours as well as in peak hours, and thus may prove detrimental to the intended aims of regional policy.

3.1.10 In addition, passenger throughput could be higher than 35mppa. BAA ES Vol 11 includes some analyses of the implications of 40 mppa as well (albeit based on simple extrapolations of the 35mppa forecasts). But it would be feasible for the airport to handle even higher passenger numbers, with

[6] SH&E (2006), Review of BAA Traffic Forecasts for Stansted Airport [CD/133-135.1].
[7] BAA ES Vol 11, Table 6.2.
[8] BAA ES Vol 11 [CD/14], Figures 6.2/6.3.
[9] BAA ES Vol 11 Update [CD/14.2], Part 3.

potentially serious implications for surface access. Some parts of the network are already under severe pressure (as discussed later in this evidence) and relatively small increases in demand at crucial points can trigger critical changes in the loading and performance of (surface) transport systems. SSE has already analysed the potential and considers that the airport could handle up to 45 or 50mppa.[10]

3.2 Regional planning guidance – population and employment

3.2.1 BAA's 2006 forecasts for surface access incorporate planning data based on the Department for Transport ('DfT') Tempro 1.6 datasets.[11] These reflect the sub-regional growth plans set out in the East of England Regional Assembly's Draft East of England Plan ('DEEP').[12] The 2007 Update forecasts reflect the changed patterns in the Draft Changes issued for consultation by the Secretary of State in December 2006.[13] Both sets of proposals incorporate significant growth in numbers of dwellings, as Table 1 shows. The target minimum would increase the number of households by one fifth over the two decades from 2001 to 2021. The Secretary of State's slightly higher proposals also change somewhat the sub-regions in which it is to be located.

[10] Planning Application UTT/0717/06/FUL – Response, Stop Stansted Expansion [CD/201], Section 4.
[11] BAA Environmental Statement Volume 6 [CD/9].
[12] East of England Plan Draft revision to the Regional Spatial Strategy (RSS) for the East of England East of England Regional Assembly 2004 [CD/74].
[13] East of England Plan - The Secretary of State's Proposed Changes to the Draft Revision to the Regional Spatial Strategy for the East of England and Statement of Reasons, Department of Communities & Local Government 2006 [CD/76].

Table 1: Targets for housing growth in the East of England 2001-2021

Area	***Total Households 2001*** *[rounded to nearest 100]*	***Proposed DEEP Housing growth***	***Increase %***	***Proposed SoSCLG Housing growth***	***Increase %***
East of England	2,232,000	478,000	21.4	508,000	22.8
Essex	544,700	123,400	22.7	127,000	23.1
Hertfordshire	420,700	79,600	18.9	83,200	19.8
Cambridgeshire & Peterborough	272,100	89,300	32.8	98,300	36.1
Broxbourne	26,800	5,000	18.7	5,600	20.9
East Herts	52,100	20,800	39.9	12,000	23.4
Harlow	32,200	8,000	28.4	16,000	30.7
Uttlesford	27,500	8,000	29.1	8,000	29.1
Cambridge	42,700	14,700	34.4	19,000	44.5

Sources: Census 2001; East of England Plan - Draft revision to the Regional Spatial Strategy ('RSS') for the East of England; East of England Plan - The Secretary of State's Proposed Changes to the Draft Revision to the Regional Spatial Strategy for the East of England and Statement of Reasons.

3.2.2 As this shows, the residential growth rates for Uttlesford, Harlow and East Hertfordshire (and Cambridge) are well above the average. Thus growth will be particularly concentrated on the main transport corridors on which Stansted Airport lies, based on the M11 and the West Anglia rail route. The towns near the airport, especially Bishop's Stortford, have seen significant growth in population over recent decades. Thus the forecast growth for the sub-region follows strong growth in the recent past. Table 2 sets out some relevant population figures.

Table 2: Population 1991 & 2001

Area	***Population 1991***	***Population 2001***	***Increase %***
Bishop's Stortford (CP)	27,900	34,300	22.9
Harlow (District)	74,600	78,800	5.6
Uttlesford (District)	65,000	68,900	6.0

Source: Census data.

3.2.3 Substantial growth targets for employment for the whole region are also proposed by both DEEP and the Secretary of State's amendments: 421,500 and 452,000 additional jobs respectively. The Stansted/M11 sub-region forms a particular growth area. 40,000 additional jobs are proposed in DEEP, i.e. 9.5% of the total. Readily comparable figures for the sub-region are not given in the proposed Government amendments but total jobs allocations for Essex and Hertfordshire are 10% higher than DEEP. The approach to the sub-region is seen in DEEP as to:

> *' … create a sustainable employment led growth corridor, conserving and delivering a high quality environment, by capitalising on its role as a key aviation gateway, realising its potential for sustainable growth and regeneration, and*

> *capitalising on its potential as a focus for hi-tech, knowledge-based employment, related to Cambridge clusters and London.'*

This points to considerable growth in employment along the corridor which, taken with the housing increase, implies further growth in commuting. This is already a significant part of employment patterns, related to above average earnings and skills in the sub-region.[14] The principal effect for the sub-region is for a potentially strong increase in commuting along it to London and also to Cambridge. The exact pattern of economic activity and of commuting will depend on the provision of transport facilities and on the policies implemented to manage demand in the most effective way.

3.2.4 These population and employment figures are reflected in the forecast inputs. There are some substantial differences between the 2006 and the 2007 (Update) forecasts. These involve, for employment, slower growth between 2003 and 2014 but much faster growth between 2014 and 2023 for the East of England; London sees slightly slower growth over both periods. Household growth in both the East of England and London is forecast to be higher over both periods; significantly so for London. The location and scale of growth over particular periods do of course affect the exact levels of forecast travel demand and patterns. But significant and continuing growth remains the key feature of all forecasts.

3.2.5 It should be noted that Tables 1 and 2 above and the related commentary take no account of the recent announcement by the new Prime Minister of a further increase in the number of new homes to be built in the East of England.

3.3 Regional transport forecasts

3.3.1 Chapter 8 of the DEEP sets out the Regional Transport Strategy ('RTS') associated with the new spatial planning guidance. The basis for this included a review of existing conditions, including current problem spots.[15] Road sections identified as having traffic flows at or above an assessed congestion reference flow ('CRF') included the M11 (94%) and the A120 west of the M11 (182%). (They also included the A120 east of the M11, but this related to the now replaced single carriageway route.) The review did not produce any analytical assessment of rail.

3.3.2 The RTS sets out a specific policy for improving transport as a basis for supporting the economic, environmental and social aims of the RSS. It outlines a transport strategy and proposals for focusing infrastructure improvement in relation to development. The RTS designates regional interchanges, including Harlow as a major centre and also Stansted Airport. Relevant issues raised by the RTS include:

> *'[Stansted Airport has] relatively good access provision, including rail access, although this is orientated towards London rather than to the East of England. While this accommodates current throughput it needs augmenting to meet further approved expansion. Development … as proposed in the Aviation White*

[14] BAA Environmental Statement Volume 6 [CD/9], paras 7.1.13, 8.2.9, 8.2.10; East of England Regional Assembly (2004) – op cit -; Department for Communities & Local Government (2006) - op cit.

[15] MVA (2002) East of England Transport Strategy – Existing Conditions Report – Final MVA [CD/313].

> *Paper [i.e. beyond 35mppa] would certainly require major prior infrastructure investment.'* (para 8.28)
>
> *'It is considered that the network identified (suitably enhanced) can support the likely demands of the emerging strategy for much of the region. It relates well to the regeneration areas, growth areas and regional centres. The exception to this is in the London arc, and particularly in the Stansted/M11 sub-region. … housing growth in this area is likely to place additional demands on rail routes into London which the existing network cannot sustain.'* (para 8.35)
>
> *'[There are] shortcomings in meeting regional requirements. For instance, rail service provision from Stansted to the north or Cambridge to the east. Those parts of the strategic network which are rail only are particularly critical. … Through services from Norwich to Stansted should also be achieved.'* (para 8.42)

3.3.3 The RTS proposes several projects directly relevant to Stansted Airport in its regional proposals and categorises these in three levels of priority, A to C:

- M11 Dual 3-lane Junctions 9 – 14 (in HA TPI)
- A120 dual 2-lane Braintree – A12 (in HA TPI)
- Bus/coach access to Stansted from the east (priority B)
- West Anglia (rail] route further enhancements (priority B)
- Rail route from mid to west Essex, with link to Stansted (priority C)

Its sub-regional proposals for the Stansted/M11 sub-region include:

- M11 dual 3 lane (in HA-TPI)
- High quality bus lane between Epping, North Weald, Harlow & Stansted (priority A)
- High quality coach link on A120 (priority A)
- Harlow – public transport interchange improvements (priority B)
- Harlow outer northern bypass and new Junction on M11 (priority C)
- M11 Junctions 7 & 8 improvements (priority C)

3.3.4 The changes to the DEEP proposed by the Secretary of State imply possible changes in transport impact and these have been examined in two reports prepared by consultants. Both reports provide valuable insights into the overall impact of regional growth on transport use and provision as well as bringing out differences between the two sets of proposals.

3.3.5 Faber Maunsell, commissioned by the HA, assessed the impact of the EiP Panel recommendations on strategic roads and identified stress levels on the highway network in 2021, looking at each sub-region as well as the overall picture.[16] Their main conclusions were that forecast highway demand would grow by 44% under the EiP Panel's recommendations as against 42% under

[16] Highways Agency - EiP Panel Test Report, Faber Maunsell 2006 [CD/314].

the DEEP. However, they set this against an increase in overall demand of 38% under either scenario, as traffic is suppressed by lack of investment in sufficient capacity, which is causing congestion at present. Their section on the Stansted/M11 sub-region stated that:

> *'Congestion related to capacity constraints is not yet a problem on the M11, although the dual 2-lane section north of Junction 8 can impose some operational inefficiencies.'*
>
> *'Proposed development in this sub-region is expected to cause significant deterioration in travel conditions. Thus, moderate congestion is forecast on the M11 south of Junction 9, with flows exceeding capacity between Junctions 6 and 7. Flows are also forecast as approaching capacity on the A120 in the vicinity of the M11, despite widening to dual 2-lane standard. In addition, moderate to severe congestion on the A414 around Harlow is expected to remain.'*
>
> *'Predicted congestion levels are higher between Junctions 8 and 14 on the M11 than in F3 Core RTS as widening schemes on the M11 are no longer being modelled. There are also higher forecast levels of congestion on the A120 at its approach to the M11 and on the M11 south of Junction 8, as the A12 is not widened in the EiP Panel Report scenario and some traffic is instead routed via the A120 and M11.'*

3.3.6 Atkins, commissioned by the DfT, assessed the impact on the rail network.[17] The review included an expectation that rail capacity would be increased, but mostly through the provision of higher capacity rolling stock. Their main findings were that the two scenarios resulted in very little difference in crowding on rail services, with the worst effects being for inner suburban services into Liverpool Street, especially from the West Anglia route.

3.4 Transport policy trend

3.4.1 The future shape of transport in and beyond the airport catchment sub-region will be determined by the policy implemented on provision and management. Recognising the issues of climate change, emerging limits on the availability of oil and concerns over the inefficiency of current transport systems to address related problems in other fields, the Government is seeking to change the direction of transport policy. While the effects are not immediately apparent, it is likely that there will be gradual change over the coming years, and this could affect the context within which forecasts of surface access to Stansted might be seen.

3.4.2 The Government's overall approach is set out in PPS1 [CD/92]. This includes as key principles that development plans should:

> *' … ensure that sustainable development is pursued in an integrated manner'*
>
> *' … contain clear, comprehensive and inclusive access policies – in terms of both location and … physical access'* (para 13)*'*
>
> *'Provide improved access for all to jobs, health, education, shops, leisure and community facilities, open space, sport and recreation,*

[17] East of England Alternative Growth Scenarios: Analysis of the Impact of Growth on the Rail Network, Atkins, 2006 [CD/315].

> *by ensuring that new development is located where everyone can access services or facilities on foot, bicycle or public transport rather than having to rely on access by car …'* (para 27)

3.4.3 PPG13 defines (para 23) the purpose and principles for a Transport Assessment ('TA') and states (para 26), that:

> *'Development comprising jobs, shopping, leisure and services should offer a realistic choice of access by public transport, walking and cycling.'*

Detailed requirements for a TA are set out in Guidance on Transport Assessment, published in March 2007. This clearly sets the role of TAs within the policy context of PPS1, together with other spatial planning guidance and transport policy documents (paras 1.9-1.17). In the light of these, it identifies the main considerations under three main areas (1.19):

- encouraging environmental sustainability, through reducing the need to travel, especially by car, and improving sustainable transport choices;
- managing the existing network, by making best possible use of existing transport infrastructure;
- mitigating residual impacts through demand management and improvements to the (local) public transport network.

These considerations are intended to be seen in order, for each group in turn and within each group. The TA should put provision for increased individual car travel at the bottom end of its priorities:

> '*It is considered good transport planning practice to demonstrate that the other opportunities above have been fully explored before considering the provision of additional road space such as new roads or major Junction upgrades.'*

3.5 Institutional aspects of providing surface transport services and infrastructure

3.5.1 The provision of surface transport services and infrastructure is strongly affected by the institutional situation. Like all developers, BAA Stansted needs to provide for effective movement within its own property and in practice would undermine the effective functioning of its activities if it failed to do so. However, the surface access impact of a major airport can spread through a wide catchment region. Under the heading 'Taking Forward Development at Stansted', the ATWP states (page 118):

> *'The airport operator will be expected to contribute to the costs of rail and road improvements to the extent that these are required to cater for airport-related traffic. Their contribution is likely to be substantial, in particular for provision of increased rail capacity.'*

There is a risk that a policy which requires airport operators to contribute to the cost of airport surface access improvements to the extent that they benefit may have the effect of encouraging airport operators to understate the surface access impacts of their expansion proposals.

3.5.2 The main aspects of surface transport in England and the responsibilities for them are:

- Trunk roads in England are managed and developed by the Highways Agency ('HA'), an executive agency of the DfT. The DfT also provides funding for constructing new and improved roads, following priorities identified in the HA Targeted Programme of Improvements ('TPI').

- Local roads are managed and developed by the local transport authorities: for the Stansted area these are Essex County Council and Hertfordshire County Council. The level of funding for their maintenance and for investment is guided by DfT, through the Local Transport Plan process; DfT provides or approves most of the funds, especially for investment.

- Railway passenger services are provided by train operating companies ('TOCs') under medium term franchises let by DfT. Currently the Cambridge/Stansted Airport – London services form part of the West Anglia division of 'one' Railway, let from 2004 to 2014, for payment of an (increasing) premium. The TOCs lease their trains from the rolling stock leasing companies ('ROSCOs') and pay charges to Network Rail for use of the railway lines, largely related to train mileage operated. Network Rail is a 'not for dividend' company limited by guarantee which operates in practice as a commercial business. It receives funding from access charges paid by train operators, grants from DfT and commercial borrowing, with which to operate, maintain and renew the rail network. Its overall financial requirement and basis of setting access charges are determined at five yearly intervals by the Office of Rail Regulation ('ORR'). In making its next determination the ORR is being guided by a High Level Output Specification and Statement of Funds Available, recently published by DfT as an Appendix to the 2007 Rail White Paper.[18] To the extent that the ORR judges that Network Rail cannot reasonably meet the outputs required by DfT within the funds available, the ORR will, through an iterative process with DfT, determine what outputs should be provided over the next five year period.

- Coaches and buses are operated largely on a commercial and sometimes competitive basis by bus operating companies who are responsible for most of their own investment, especially the vehicles. Companies also determine fares, ticketing and most promotion. Bus companies rely on local transport authorities for provision of their infrastructure, i.e. the highways. Local transport authorities (or indeed other bodies) may let contracts to provide services not being provided commercially and may provide highway priorities and support for promotion, often in the form of a Quality Bus Partnership. Some proposals for change have been made in a recent consultative draft Local Transport Bill[19] but the overall level of change proposed is limited.

- The Greater London Authority ('GLA'), through Transport for London ('TfL'), is responsible for principal highways and for public transport other than Network Rail within London.

- Cycleways and footways are the responsibility of the local transport authority. Funding for their maintenance and development is guided by the DfT through the Local Transport Plan process.

[18] DfT (2007) Delivering a Sustainable Railway, TSO, London [CD/433.1].
[19] DfT (2007) Strengthening local delivery: the draft Local Transport Bill, TSO, London.

3.5.3 Thus the responsibilities and approaches vary distinctly between modes and levels, as do the principles for assessment of current and investment funding. But plans and funding are strongly controlled for the most part by the DfT. Thus practical solutions are almost all in the hands of the Department. The GLA and TfL do have substantial powers for coordinated investment and service development, but these are still limited in respect of trunk road and national rail.

4 DEMAND FOR TRAVEL TO AND FROM THE AIRPORT

4.1 Present and forecast origins of air passengers

4.1.1 As indicated above, the BAA forecasts for non-transfer passengers, and hence for surface access, are 22.46 million at 25mppa and 29.17 million at 35mppa. These are about one-fifth and one half above the base (2004) levels.[20] If the proportion of transfer passengers does not grow as assumed in the BAA forecasts, then the surface access demand would be 31.43 million passengers, two-thirds above the current level.

4.1.2 However, the BAA forecasts of passenger growth by area for a throughput of 35mppa foresee the pattern of origins spreading out. Table 3 summarises the forecast numbers by regional distribution from the 2007 Update. The BAA forecasts in the Update [CD/14.2] (Appendix C) are identical to those in the 2006 ES [CD/14] (Appendix M) for the 25mppa and 35mppa scenarios respectively.

Table 3: Forecast 2014 non-transfer passenger totals and origins
['000 passengers]

	25mppa	***35mppa***	***as % on 25mppa***	***35mppa SHE forecasts***	***as % on 25mppa***
Central London	2919	3492	*20*	3592	*23*
Rest of London	6595	8012	*21*	8277	*26*
Essex & Herts	4010	4813	*20*	4985	*24*
East Anglia	2858	4645	*63*	4672	*63*
Rest of UK	6118	8205	*34*	7641	*25*
Total	22500	29167	*30*	29167	*30*

Source: BAA Es Vol 11 Update, Tables C.1-C.4 [CD/14.2].

4.1.3 This shows that at 35mppa surface access demand for both central and outer London is forecast by BAA to be about 20% higher than for 25mppa, even though non-transfer traffic overall would be 30% higher; Essex and Hertfordshire demand forecasts also show the same change as London. In contrast demand from the rest of East Anglia is 63% higher, i.e. would increase three times as fast. Traffic from the rest of the UK would be 34% higher. The SH&E forecasts would result in a proportionally higher difference between 25mppa and 35mppa for London and for Essex and Hertfordshire, but still below the average; however, their forecast would reduce the difference for surface access demand from the rest of the UK. The variances in these figures are perhaps surprising in some respects. The national growth

[20] BAA ES Vol 11, Table 6.2 [CD/14].

of low fare operators now offers a wide range of flights to destinations from airports in several regions of the UK, so reducing the need for travellers to go further afield to obtain a flight to their preferred leisure area. The level of increase for the numbers likely to come from East Anglia with the 35mppa forecast compared to other origins is surprising. So too is the relatively lower difference for passengers from all of London and especially from Essex and Herts.

4.1.4 The 35mppa forecast figures reflect the much higher transfer rate for air passengers used for the 35mppa scenarios. If they were prepared using the same transfer rate as for the 25mppa case, then the surface access figures would be 7.75% higher. This would in principle affect all sections equally. Thus, for example, the Central London origin numbers would increase from 3.492 million to 3.762 million, 29% higher than for the 25mppa case.

4.1.5 These variances become more significant when placed against the mode of travel from the main origin areas. Table 4 gives the proportion travelling by public transport. Perhaps not surprisingly, almost all passengers to and from central London use public transport for all four scenarios and about half of other London passengers do so too. However, the proportion of Essex and Hertfordshire passengers using public transport is very low indeed. The enhanced scenarios see significant increases in the proportion using public transport from East Anglia and from Essex and Hertfordshire; given the networks included in these scenarios, the additional proportions would almost entirely be on coach. (Whether such networks are the only feasible ones or would be implemented form questions picked up later.)

Table 4: Forecast 2014 passenger travel by public transport
[% of total passengers]

	25mppa	***35mppa***	***35mppa enhanced***	***35mppa SH&E enhanced***
Central London	94	94	94	94
Rest of London	53	52	53	53
Essex & Herts	13	13	20	20
East Anglia	22	22	32	31
Rest of UK	24	25	27	27
Average	**39**	**38**	**42**	**42**

Source: BAA Es Vol 11 Update Tables C.1-C.4 [CD/14.2]
Note: Public transport mode share in 2004 was 40.2% (CAA Annual Passenger Survey).

4.1.6 The potential impact of the origins of passengers is borne out by FL1148. This maintains the higher levels of air passengers originating in central London from the 25mppa case and much lower levels from East Anglia, very similar to the 2004 situation. It forecasts a higher level of travel on the Stansted Express than the 2007 Update; this clearly is largely as a result of the origin patterns input to the modelling process.

4.1.7 Higher levels of passenger throughput would obviously produce commensurately higher numbers of passengers travelling to and from the airport. For example, throughput levels of 40mppa and 45mppa would result in demand levels 14% and 29% respectively higher than those projected by BAA for 35mppa.

4.2 Present and forecast origins of airport employees

4.2.1 Table 5 sets out the current number of employees working at the airport and their origins together with the BAA 2007 forecasts of these figures. These differ only marginally from the 2006 forecasts. In 2003 the number was just under 11,000, of whom three-fifths come from Uttlesford, East Hertfordshire, and Braintree; i.e. the local catchment areas. Smaller numbers come from Harlow and Greater London, the rest come from a range of areas further afield. The BAA forecasts show employee numbers increasing to 14,350 at 25mppa and 16,800 at 35mppa and changes in originating pattern of employees. Two particular aspects stand out:

- At 25mppa the ratio of employees to passengers (574 per million) is almost the same as the current figure (566 million). But at 35mppa throughput the ratio (480 per million) is far lower. The reason given by BAA is that continuing labour productivity will reduce the ratio by 2014 if airport growth is sustained; but if it is restricted, then more value-added services would be needed to maintain viability, the staffing of which would offset productivity gains. However, the scale appears surprising and so too does the coincidence between the current and the forecast 25mppa ratios. If the ratio were not to increase, then employee numbers would be significantly higher; about 19,950 at 35mppa, 19% more. Thus the employee travel demand would also be that much higher.

- For both forecasts the proportion of employees from local catchment areas is slightly lower. But the proportion from Greater London is doubled. This is because BAA forecasts adopt a fixed ratio of 40% of employees in London (vs 60% in other catchments) rather than compiling numbers against future (relative) population forecasts.

Table 5: Current and forecast employment totals and origins

Area	***2003***	***2014 25mppa case***	***2014 35mppa case***	***2003 %***	***2014 25mppa case %***	***2014 35mppa case%***
Uttlesford	2520	3170	3720	23.8	22.1	22.2
East Herts	1930	2500	2930	18.2	17.4	17.5
Braintree	1810	2190	2560	17.1	15.3	15.2
Harlow	650	1100	1290	6.1	7.7	7.7
Chelmsford/ Epping Forest	720	840	980	6.8	5.8	5.8
Colchester/St Edmundsbury	460	540	640	4.4	3.8	3.8
Cambridge/ S.Cambs	300	420	480	2.8	2.9	2.8
Core area	**8390**	**10760**	**12600**	**79.2**	**75.0**	**75.0**
Greater London	570	1450	1700	5.4	10.1	10.1
Other	1630	2140	2500	15.4	14.9	14.9
Total	**10590**	**14350**	**16800**	**100.0**	**100.0**	**100.0**
Total passengers [million]	18.7	25	35	-	-	-
Employees per million passengers	566	574	480	-	-	-

Source – BAA ES Vol 11 Update Table 6.4 [CD/14.2].

4.2.2 Both aspects pose serious questions over the validity of employee numbers and origins. In consequence it is questionable how soundly the employee travel levels and patterns have been forecast.

4.3 Modal split for air passengers travelling to and from the airport

4.3.1 Table 6 sets out the base year and forecast 2014 levels of total travel to and from Stansted Airport by air passengers (non-transfer) and the numbers using each of the main methods of surface access. ES Vol 11 [CD/14] sets out two cases for the 35mppa scenario, while ES Vol 11 Update [CD/14.2] sets out three more. These include both the base case and the 'enhanced' cases modelled with a much improved coach network. As this shows, even with this improved public transport system, car (plus taxi) remains the dominant mode for all cases. So car use rises very significantly at the same time as the increase in airport passenger throughput. The difference between the 25mppa case and 35mppa base case is four million car trips per annum, for both the 2006 and the 2007 forecasts; even with the 35mppa enhanced (public transport) scenarios the increase on 25mppa is over three million.

4.3.2 However, the 2007 Update scenarios offer changes in the overall modal split patterns compared to the 2006 forecasts. The number forecast to travel by car is about 400,000/500,000 higher; a small (proportional) increase on the overall total. Figures by coach and bus are about 500,000/600,000 higher, while in contrast the rail carryings are forecast as being down by 900,000 to one million. This particularly reflects an expectation of higher demand for travel by coach, especially from London (the main focus for rail travel), generated by significantly lower fare inputs for London coach services to 2014. This assumption, discussed later in relation to rail and coach provision and demand, appears questionable. FL1148 effectively 'restores' the 2006 forecast modal split for air passengers, based on forecast passenger origins similar to the base and 25mppa cases; presumably it would produce even higher rail forecasts with higher London coach fares.

Table 6: Travel to/from Stansted Airport – total passenger demand per annum *['000]*

Year/case	*Total Pax Non-transfer*	*Car & Taxi*	*Coach & Bus*	*Rail*	*Car & Taxi %*	*Bus & Coach %*	*Rail %*
2003	16,331	10,308	1,567	4,457	63	10	27
2014 – 25mppa	22,501	13,273	2,453	6,776	59	11	30
2014 – 35mppa	29,168	17,544	3,227	8,398	60	11	29
2014 – 35mppa enhanced	29,168	16,568	4,524	8,077	57	15	28
2014 Update – 25mppa	22,500	13,674	2,972	5,854	61	13	26
2014 Update – 35mppa	29,167	18,037	3,887	7,243	62	13	25
2014 Update – 35mppa enhanced	29,167	17,009	4,973	7,185	58	17	25
2014 Update - 35mppa – SHE forecasts	29,167	16,891	5,001	7,276	58	17	25

Sources: BAA ES Vol 11, Appendices C & M/BAA ES Vol 11 Add Appendix C [CD/14 and CD/14.1].

4.3.3 Table 7 translates the ES Vol 11 [CD/14] figures into the daily demand on a typical September day. (Comparable figures are not given for the 2007 Update scenarios.) This reflects the same pattern as for the annual figures, with the very substantial increase in car traffic evident. Compared to 2004 levels, the 2014 situation would see an additional 6,500 car trips per day with the 25mppa throughput; with the 35mppa throughput, there would be an additional 12,600 with enhanced public transport provision and 16,200 without. Public transport travel would increase more sharply but by lower numbers; e.g. Stansted Express trips per day would increase by about 4,800 per day for 25mppa throughput, and by 7,300-8,000 for 35mppa throughput. (The interpolated forecasts for 40mppa throughput show that car trips would increase by 18,900 from 2004, while Stansted Express trips would be up by over 10,000 passengers per day.)

Table 7: Travel to/from Stansted Airport – typical September day

Year/case	*Total*	*Car taxi*	*Stansted Express*	*Other PT*	*Car/taxi %*	*STEX %*	*Other PT %*
2004	n/a	31,150	12,159	n/a	n/a	n/a	n/a
2014 – 25mppa	65,094	37,602	16,923	10,569	58	26	16
2014 – 35mppa	81,279	47,346	20,169	13,724	58	25	17
2014 – 35mppa enhanced	80,162	43,808	19,432	16,922	55	24	21
2014 – 40mppa	91,605	50,064	22,204	19,337	55	24	21

Sources: ES Vol 11, Tables 4.4/8.2-8.5 [CD/14].

4.3.4 This shows that, overall, significant growth is likely in surface access demand from the continuing increase up to 25mppa throughput, 38% over 2003 figures. 35mppa throughput would lead to considerable extra growth, 30% above the 25mppa figures. Significant improvement of coach services (the enhanced scenario) would change the balance somewhat but it would not make much difference in the general scale of increase by all modes. If transfer passengers in 2014 were the same proportion for 35mppa as for 25mppa, the 35mppa figures would be higher, by about 8% overall. The growth level for individual modes might vary according to relative modal factors, but they would all be higher.

4.3.5 BAA emphasises the relatively high proportion of air passengers arriving and leaving the airport on public transport now. BAA also foresees some further reduction in the share of car use by passengers in the future. For the 25mppa and 35mppa cases car use is forecast to fall by about three percentage points and public transport to increase by a similar figure. The 35mppa enhanced case, based on a significant increase in coach service provision, sees a further fall of three percentage points in car use, matched by a four percentage points rise in coach and bus use and, interestingly, a one percentage point fall in rail use.

4.3.6 The comparative changes across the 2007 Update cases are almost the same in magnitude. As indicated above, they also see slightly higher levels of car use in 2014 compared to the 2006 forecasts. The 2007 Update also includes forecasts for 2020 and 2030: these show the car share declining further while public transport increases, but in all cases only by a very small margin, two percentage points or less.[21]

4.3.7 While the enhanced scenarios in particular do show increased use of public transport, the overall forecast trends have to be placed in the context of major and continuing growth in travel to and from the airport. Furthermore, three out of every five passengers will continue to arrive and depart by car, even in the enhanced public transport scenario. This reflects the patterns of air travel within overall travel and behaviour.

4.3.8 Air travel requires a long check in and hence arrival in good time. A high frequency public transport system, operating for all the airport hours, offers an

[21] BAA ES Vol 11 Update, Table 3.1 [CD/14.2].

attractive means of access. It is most likely to have a viable market for travel between the airport and the main city centre served; hence the success of the Stansted Express and the coach services to central London. Otherwise car travel offers (perceived) control over access, in terms of times, convenience and reliability. With a high proportion of Stansted's passengers forecast to remain leisure travellers from within the airport's regional catchment rather than foreign visitors, the car is likely to continue to be an attractive mode of access. This in part explains the trends forecast by BAA, which show clearly that the airport's growth, however mitigated, will have an increasingly significant impact on surface access networks within the sub-region and beyond.

4.4 Mode of travel and shift patterns for airport employees

4.4.1 Table 8 sets out the employee travel pattern by mode, looking at the 2007 forecasts and the results of the staff travel survey in 2005. While the proportion of staff travelling alone in their car declines somewhat (as it did over survey years up to 2005), it remains dominant across the various cases. The major improvement is in car sharing. Public transport is actually lower than for 2005 though higher than in previous years. The enhanced public transport case raises it slightly, from 12% to 14% of employee travel. But even in that case, total daily employee car travel to the airport accounts for nearly five out of every six trips; most of these are solo car trips. (The 2006 forecasts also included a 40mppa sensitivity test, which showed employee travel significantly higher.)

Table 8: Travel to/from Stansted Airport – employee travel demand
[Total trips both ways]

Year/case	*Total trips*	*Car solo*	*Car share*	*Rail*	*Bus & Coach*	*Car solo %*	*Car share %*	*Rail %*	*Bus & Coach %*
2005	-	-	-	-	-	78	7	5	10
2014 – 25mppa	18,214	13,520	2,510	1,396	808	74	14	8	4
2014 – 35mppa	21,310	15,560	3,153	1,694	894	73	15	8	4
2014 – 35mppa enhanced	21,302	15,337	3,105	1,639	1,221	72	14	8	6

Note: 2005 on different basis; Car share includes taxi, Bus & Coach includes works bus
Sources: ES Vol 11, Table 4.5 [CD/14] & ES Vol 11, Tables 3.6-3.8 [CD/14.2].

4.4.2 BAA emphasises its initiatives to increase the sustainability of employee travel. Part of this involves promotion of public transport, but the car share scheme is also important. Although this does reduce the level of cars per employee travelling, it maintains the significance of car travel in the overall modal split. Given the importance of shift work in the airport, this is perhaps not surprising.[22]

4.4.3 These figures are based on the BAA forecasts of employee numbers and origins which, as discussed earlier, contain two surprising differences from the current and 25mppa cases: a low level of employees relative to passengers;

[22] BAA ES Vol 11 Update Table 3.5 [CD/14.2].

and a high proportion of employees in London. If adjustments were made for these there would be 19% more employees in total travelling; and about 8% more employees living in the catchment sub-region.

4.4.4 The proportion of employee arrivals and departures during the conventional work time peaks has fallen significantly over the last two decades, from about 35% (AM arriving) and 25% (leaving) to 20% and 17%. This no doubt reflects the increased proportions of staff working on varied shifts because their work relates primarily to the airport's activity patterns. However, the BAA forecasts - Table 9 - show this trend slowing significantly, so that the proportion arriving and leaving in the peaks is about one sixth of all employees for the 35mppa cases. The actual numbers travelling in the peaks therefore are much higher than for the current levels. The 2007 Update shows (in Table 3.5) very small reductions in peak arrivals and departures, of between 1% and 5%; this reduces the growth very slightly.

Table 9: Employee travel at peaks - current and forecast

Year/case	*Arriving at work 08.00-08.59 Employees*	*Leaving work 17.00-17.59 Employees*	*Arriving at work 08.00-08.59 % of total*	*Leaving work 17.00-17.59 % of total*
2003			20.0	17.0
2014 – 25mppa case	1569	1597	18.1	18.5
2014 – 35mppa case	1639	1607	16.5	16.1
2014 – 40mppa case	1829	1794	16.5	16.2

Source: BAA ES Vol 11 Figure 4.7/Tables 8.7/8.8/8.10 [CD/14].

4.4.5 Employees at the airport come from a range of places in the surrounding sub-region. An increasing number of employees are expected to work shifts outside the conventional '9 to 5' hours. On the operational jobs that many of them will work in, reliable arrival time is important. For most of these employees local bus services are unlikely to offer a sufficiently attractive service, unless operated to a high level of reliability, reasonably good frequency and over a long period of the day. Thus for most the car will remain the means of travel to and from their workplace.

5 DEMAND FOR TRAVEL BY CAR - IMPLICATIONS FOR ROAD USE AND PROVISION

5.1 Current and proposed road system

5.1.1 Road provision in the area is dominated by the M11, providing the key link to London, and the A120, providing regional links east and west and also local links. Section 5.8 of BAA ES Vol 11 discusses the road network and Figure 5.9 identifies the proportion of airport related traffic on the main routes. Nearly a quarter of all traffic on the A120 between the M11 and Great Dunmow and on the A130 north of the A131 is generated by airport-related trips and one seventh of all traffic on the M11 south of Stansted is also. This confirms the importance of the M11 (south) and A120 in access to/from the airport and of the airport on them.

5.1.2 The road network has developed significantly in the last two decades; the A120 from M11 Junction 8a eastwards was completed in 2002. A number of

further links are proposed (in the HA TPI, the RTS and LTPs of transport authorities in the region). BAA's traffic forecasts assume that a significant number of new highway links are completed, both on the key sections affected and on principal routes within the catchment region. Four scenarios are proposed.[23]

- 2014 Core supply – largely motorway and trunk route schemes
- 2014 Increased supply – 2014 Core plus additional schemes, mostly local authority schemes
- 2023 Core supply – 2014 Core plus additional schemes, motorways and trunk routes
- 2023 Increased supply – all above plus further schemes, motorways and other roads

These are assumptions. There is no commitment to construction of any schemes not already built or scheduled.

5.1.3 The forecasts include figures for 2023, the only area in BAA ES Vol 11 [CD/14] and the Update [CD/14.2] where figures beyond 2014 are given.

5.1.4 The 2007 Update [CD/14.2] revises the forecasts with three additional scenarios for 2023 compared to the 35mppa enhanced (public transport) case in ES Vol 11 [CD/14]. These are:

- A hybrid 35mppa (enhanced) test with the TA non-airport-related demands held constant but air passengers and airport employees updated
- The updated 35mppa (enhanced) test with new non-airport and airport related demands - 35mppa (enhanced) update sensitivity test
- The 35mppa SH&E (enhanced) sensitivity test which adopts the same assumptions as the 35mppa (enhanced) update test but with the air passenger demand forecasts developed by SH&E.

For the road network overall they show some substantial changes compared to the 2006 forecasts, especially on the A120 adjacent to the airport. Mostly these are reductions in traffic levels, reflecting reduced forecasts of future non-airport traffic. These have been generated by a combination of the new planning data and new model structures: it is not possible to identify the extent to which each has played a part. The implications for the airport road travel forecasts are considered in the following paragraphs.[24]

5.2 Current and forecast trunk road use

5.2.1 Despite the changes between the 2006 and 2007 forecasts, the growth in forecast traffic flows has its major impact on highway links close to the airport itself, especially on the links between the airport, the A120 (east and west) and the M11 (south). Table A1 (Annex) pulls together the data set out in BAA ES Vol 11 and ES Vol 11 Update for the key link of the A120 between Bassingbourn and Priory Wood Roundabouts, covering 2014 and 2023

[23] BAA ES Vol 11 Update, section 2.4 [CD/14.2].
[24] BAA ES Vol 11 Update, section 5.2 [CD/14.2].

forecasts for the four scenarios examined. It gives the main flows for the eastbound and westbound directions, in both the AM and PM peaks; i.e. the times of main commuting movement to and from the airport and to and from the M11 for London, and shows these as percentages of the 2004 base figures. It also identifies the airport traffic flows within these. This reveals several key points, as follows.

5.2.2 Traffic flows for the A120 near the airport are generally much higher for all forecast years/cases than for the base year of 2004. Broadly the forecast years/cases are projected to be around one and a half times higher in 2014 and one and three quarters to two times higher in 2023 for most directions; the exception is for the eastbound evening peak, when forecast traffic flows are only around a quarter higher. However, the 2007 forecasts for this stretch give traffic flows (two way figures) as far lower than the 2006 ones: 20% eastbound and 23% westbound in 2014; 9% eastbound and 15% westbound in 2023. This is largely attributable to changes in the general traffic flows.

5.2.3 The airport traffic in fact forms a dominant element of total traffic on this stretch. For the 2014 eastbound AM and westbound PM figures it accounts for half of the total traffic; for the other 2014 peak flows and for all the 2023 peak flows it is rather lower. In all cases airport traffic represents a lower proportion of total in 2023 than in 2014. This of course reflects the use of 2014 as the target year for achieving 35mppa throughput, after which in principle there would be no further rise in airport traffic.

5.2.4 There is very little difference on overall traffic flows between the two sets of 35mppa forecasts. The enhanced scenario brings a reduction in travel by car of three percentage points across all passenger surface access: this is worth about 5% difference in road traffic. The impact on employee travel is lower. Thus, even over those sections where airport traffic amounts to half of all traffic, the total impact is small. In the light of total traffic rising to as much as double the base year, the reduction is worth less than one year's growth overall: hardly a real contribution to sustainable mobility.

5.2.5 The impact on other roads is rather smaller, albeit still real. Table A2 (Annex) sets out the proportions of airport traffic in peak traffic flows for key sections of the A120 and the M11. It is also significant on the M11 southbound, where of course it impacts on commuter traffic, much of it to the London area. Elsewhere on the M11 and A120 it forms only about one tenth of all traffic. Nonetheless increased traffic can have a serious impact on traffic flow at the margin of capacity, especially at Junctions.

5.2.6 These growth figures should be placed against the forecast 'growth drivers' in the East of England which see increases in peak travel by car of about 25% from 2003 to 2014 and by a further 16% from 2014 to 2023. This of course assumes that there will be continuous trend growth. Given the current major challenges to the national supply and use of energy, this assumption cannot any longer be taken for granted. Government policies point towards achieving sustainability through at least reducing the growth of car borne mobility, through appropriate measures of demand management. While the policies set out in e.g. PPS1 are at present being implemented in a low key fashion, pressures on world resources are such that this cannot be assumed to continue. Thus ways of supporting economic growth without such significant growth in traffic may come to be more intrusive. In straight forecasting terms, this could be seen as reducing total traffic and thus supporting more airport

traffic. In reality, such measures would apply to all travel means and would thus pose questions for travel to airports too.

5.3 Current and forecast local road use

5.3.1 Relatively little coverage is given to local roads. However, a substantial impact is likely to fall on local roads in adjacent urban areas if they see traffic increases of the scale indicated for 2014 and 2023, whether airport related or otherwise. The most immediate impact could fall on Bishop's Stortford; the central area and the A1250 on the western side already suffer seriously from congestion.[25] In Essex local roads around the airport and in Harlow also demonstrate peak period congestion.[26]

5.4 Implications for road travel

5.4.1 Much of the impact of the airport's expansion will fall on the trunk roads: the A120 adjacent to the airport and the M11 south. BAA forecasts imply that these will be within manageable limits. This assumes that the forecasts are sound and that the wider context does not change. However, there are several reasons for questioning this. Three in particular are important. First, the forecasts are based on a complex set of models, including regional highway models, and the levels of confidence are unclear. The changes between the 2006 forecasts and the 2007 Update forecasts, especially for the A120 near the airport, shows how significant this could be. Second, the use of a higher air passenger transfer rate for the 35mppa scenarios means that all surface access, including road travel, is understated in comparison to the current / base situation and the 25mppa case. Third, further substantial changes in mobility demand management may well alter the parameters substantially.

5.4.2 The picture that emerges is that the BAA forecasts produce a situation in 2014 whereby road traffic can just be catered for within the available network, and where also there is no growth in airport traffic between then and 2023. This seems very convenient. If the forecasts were higher, then the impact would be much more serious than suggested. There is substantial pressure on the road networks in the area, notably on the M11 towards London, and some of its Junctions are already under pressure. Local roads in the sub-region suffer from serious congestion, at least at peak times. In fact, BAA ES Vol 11 [CD/14] draws out some key issues on the immediate impact:

> *' … by 2023 … the westbound three lane weaving section would be approaching the design capacity.'* (para 10.5.16)
>
> *'… [at the] traffic signal controlled gyratory at M11 J8 … queue lengths on the circulating carriageway could exceed available space in the AM and PM scenarios in 2014 and 2023.'* (para 10.5.17)
>
> *'… the two roundabouts … on the A120, at the A1250 and B1383, would be operating above capacity by 2014 in the 25mppa case …'* (para 10.5.18)

The implications are that in practice the traffic levels from the proposed expansion to 35mppa would have serious, perhaps grave,

[25] Hertfordshire's Local Transport Plan 2006/07-2010/11 Figure 2.5, Hertfordshire CC, 2006 [CD/318].
[26] Essex Local Transport Plan 2006/07-2010/11 paras 6.108 to 6.115, Essex CC, 2006 [CD/86].

consequences for travel by road in the area of the airport and in its catchment sub-region.

6 DEMAND FOR TRAVEL BY TRAIN – IMPLICATIONS FOR RAIL USE AND PROVISION

6.1 Current and proposed rail network

6.1.1 The airport lies just off the West Anglia rail route between Liverpool Street and Cambridge. This route is now two-track throughout, except between Bethnal Green and Hackney Downs, and it has several Junctions and branches. The approach to Liverpool Street involves a four track section merging into two tracks. The number of platforms at Liverpool Street is limited in relation to traffic especially at peak times: on occasions two trains arrive at or depart from one platform in succession. The airport terminal line has a triangular Junction with the Cambridge line; the tunnel under the runway has only one track. Essentially the layout of the line and the mixed character of the services mean that it is operating at the limit of its capacity with the present mix of trains.

6.1.2 In 2004 Stansted Airport station handled 3.8 million passengers (total entries plus exits). In comparison Cambridge handled 6.1 million. The stations on the line in the vicinity of the airport see varied use: Bishop's Stortford and Harlow Town are the busiest (2.2 and 1.7 million respectively in 2004), followed by Cheshunt and Broxbourne (both 1.4 million); most other stations see far lower numbers. Season ticket holders constitute around half of all passengers handled; except that for Cambridge they are just over one quarter. But for Stansted Airport they amount to just 2.5%.[27]

6.1.3 In operational terms, each Stansted Express train runs through five heavily used flat Junctions between Liverpool Street and the airport. Stansted Airport services are interwoven with several other regular services of varying stopping patterns and routes, some of them frequent. For much of their history they have run as a completely separate service, but this ended with the December 2005 timetable change, which introduced stops at Harlow Town or Bishop's Stortford, and Stansted Mountfitchet in some cases. Services are operated by refurbished 1981 electric trains, of the type (class 317) that operate most longer distances services on the West Anglia route. The service is now operated as one business unit of the 'one' Railway franchise, which covers the whole of East Anglia, based on Liverpool Street.

6.1.4 The current situation is reviewed by Network Rail's Greater Anglia consultative Route Utilisation Strategy (RUS) published in April 2007.[28] This identifies serious problems with current operations on the West Anglia route, with the Stansted express services forming a significant element in those problems. The key aspects may be summarised as follows:

- West Anglia outer suburban services already have 80% of peak train capacity used, Hertford East 90%; measured on a basis that allows 45% standing. (Table 3.7)

[27] Station usage statistics 2004-2005, Office of Rail Regulation, www.rail-reg.gov.uk.
[28] Greater Anglia Route Utilisation Strategy – Draft for Consultation (2007), Network Rail, London [CD/312].

- Stansted Express services have 86% of AM peak hour capacity used and 75% of PM peak hour capacity. The three hour capacity use factors are 57% AM and 60% PM. This is on the basis of 40% permitted standing (an extraordinarily high figure for what should be a quality service). (Table 3.9)

- Airport passengers account for 23% of all AM peak hour passengers and 38% of PM peak passengers. The figures are 21% and 27% respectively for the two peak three hours periods. (Table 3.10)

- The West Anglia route has far more delay spots at peak times than all the rest of the Greater Anglia network. (para 3.7.10 figures)

The RUS sums up the line's situation by stating that:

> *' …The suburban lines into Liverpool Street are heavily used in the peak and there is little capacity to run additional trains. The two track section on the Lea Valley and the mix of services causes a performance risk throughout much of the day.' (para 3.7.2)*

6.1.5 Looking forward, the RUS sees very heavy forecast population and employment growth (based on the DEEP forecasts [CD/74] and the DCLG proposed changes [CD/76], with population increasing relative to London & South East average by 69% up to 2016 and by 65% up to 2021. These measures indicates that relative growth is expected to be particularly significant during the next decade (para 5.2.17). In view of this, predicted increases in AM peak journeys on the West Anglia route compared to the 2002 base date are for +37% by 2016 and +42% by 2021 (Table 5.2). Thus, although the actual crowding and standing levels are relatively small at the moment, they are predicted to increase very strongly by 2016 and 2021, to a far great level than other parts of the Greater Anglia network (paras 5.7-5.2.10, Tables 5.4-5.6).

6.1.6 It is notable that the RUS, reflecting Government's narrow focus on capacity issues, does not address quality of travel issues. In a corridor with a highly skilled workforce increasingly expecting a high quality of living, sustainable forms of transport such as rail need to offer a service which is very attractive in all its attributes, including high levels of frequency and reliability, as well as information, ticketing, and facilities on trains and stations. This requires significant investment. The overall quality of travel experience at present is not good, and the forecast airport traffic will add to the problems that already exist. Furthermore the nature of the corridor will increasingly generate an all-day demand for quality travel, which must be provided for in quality and quantity terms. Thus investment on the line will need to go over and beyond just reducing forecast levels of peak crowding.

6.1.7 Two options for investment are proposed in the consultative RUS which relate most directly to Stansted Airport rail services. Option 8 involves lengthening peak services from Cambridge and Stansted to Liverpool Street to 12 coaches, at stated costs of £100 million capital and £362 million operating. This would still not provide enough passenger capacity south of Stansted Mountfitchet and would 'maintain current average morning peak hour load factors until 2016' (but not beyond, apparently). Option 12b would include four-tracking on the Lea Valley to Broxbourne, grade separation at Coppermill Junction, 12 car trains and platform lengthening, at stated costs of £608

million capital and £1,287 million operating. This would eliminate overcrowding north of Tottenham Hale to beyond 2021; albeit at a price.

6.1.8 Transport for London's strategic rail plan for 2025 incorporated review and planning proposals for the West Anglia route.[29] This set out the same key points as examined in the consultative RUS, with an emphasis on the inner suburban sections. Its key policy objective is quadrupling of the Lea Valley line, which it sees as the only way to solve the problems.

6.1.9 The service linking the airport with Cambridge and beyond operates hourly for most of the day, using modern two-car diesel units. These operate from/to Peterborough, Nottingham and the Midlands, with connections to centres further afield. Changes in timetables by Central Trains have over time reduced the through services available to more distant cities. On 22 June 2007 DfT announced that a new and restructured East Midlands franchise covering these services had been let to the Stagecoach Group; no significant alterations to Stansted Airport train services are proposed.

6.2 Current and forecast travel by rail

6.2.1 BAA forecasts aim for the level of public transport use to increase significantly for all cases; even though total public transport carryings remain less than those by car. For rail services London is the dominant factor, with travel on the Stansted Express the single highest flow. The major part of growth thus falls on the Stansted Express services. However, coach services also compete on this route. Surveys in Autumn 2004 showed that the Stansted Express was carrying about 8,700 passengers to London and 7,600 from London daily, while coach services carried about 2,200 in and 3,000 out. (The differences probably reflect the cheapness of the coach service for those landing at the airport but the higher perceived reliability of rail when catching a flight out.) So rail has three quarters of the London market. The rail service to/from Cambridge and beyond carries moderate numbers, about 600-700 per day each way from the 2004 surveys.[30]

6.2.2 Overall, rail travel is forecast to increase significantly, reflecting both passenger and employee travel. There are forecasts for rail travel, both for passengers and for employees, but these are limited to the total figures reviewed in an earlier section of this report (Tables 6 and 8). They are set out in Table 10. These reflect the two alternative cases for 35mppa throughput: with a broadly similar network to today; or with significantly expanded coach services; they also incorporate the revised figures set out in the Update [CD/14.2]. The Update forecasts for rail are far lower than the 2006 forecasts. This is both unexplained and questionable (for reasons previously discussed in section 4.3). Even so, the Update figures too are substantially higher than the current levels. In the light of the current overcrowded state of the line, any substantial increase is of concern. Furthermore, FL1148 shows average weekday airport rail traffic as about one-sixth higher than the Update: this would establish rail growth as similar to the 2006 forecast.

[29] Transport for London (2006) A rail strategy for London Transport for London [CD/317].
[30] BAA ES Vol 11, section 5.5 [CD.14].

Table 10: Forecast growth in rail use
(% increase on 2004 base year)

Year/case	***Passengers* Vol 11**	***Passengers* Update**	***Employees* Vol 11**
25mppa	+52%	+31%	+201%
35mppa	+88%	+63%	+208%
35mppa enhanced	+81%	+61%	+244%

6.2.3 The most obvious impact must be in the peak periods. Forecasts for rail travel in the up morning peak were set out in 2006 in ES Vol 11 [CD/14] and in 2007 in ES Vol 11 Update [CD/14.2]. The 2007 Network Rail Greater Anglia RUS [CD/312] added further forecasts. Table 11 sets out these various forecast figures. It is immediately obvious that there are some remarkable differences:

- The 2007 Update forecasts are all between 18% and 22% lower than the 2006 forecasts. While the revised model forecasts reduce the Stansted Express figure, they do so by 12%-15% for the various scenarios (and this, as indicated, is itself difficult to understand). The key reason for reduced rail traffic in the Update forecasts appears to be increased use of coach. But, as suggested earlier, this seems unlikely with the forecast increased pressure on roads, so that coach seems far less likely to offer a real alternative during the peak periods. The FL1148 forecasts indicate overall airport rail use as similar to the 2006 forecasts.

- The BAA figure for 2016 quoted in the consultative RUS is nearly 9% higher than the highest BAA 2014 figure in the 2006 forecasts and 37% higher than the highest BAA 2014 figure quoted in the 2007 Update. It is understood that this reflects forecasts for a possible second runway with about 40mppa at this date. Since 40mppa would be a possible throughput with the single runway, this shows that a substantially increased level of rail traffic could well occur were the requested removal of the limit on numbers to be granted.

- The consultative RUS also includes a DfT forecast which for 2016 is 15% higher than the BAA 2016 forecast quoted. It is thus 24% higher than the highest BAA 2014 figure in the 2006 forecasts and 56% higher than the highest BAA 2014 figure quoted in the 2007 Addendum. No explanation is available for this. It illustrates that some officially supported forecasts do see a much higher possible level of airport traffic.

6.2.4 Furthermore, the 2021 forecasts quoted in the consultative RUS are higher than the 2016 ones by 23% (BAA) and 15% (DfT). While the rate of growth thus differs, this demonstrates that both BAA and DfT agree that Stansted Express traffic may well continue to grow strongly during the latter half of the decade. It confirms that the 2014 data used in the BAA surface access forecasts for rail and for other modes is one step along a continued growth trajectory, not an end state. While these two forecasts are almost certainly for the proposed Generation 2 development, they would also be feasible if policy

and other initiatives were to shift increasing numbers of air passengers to rail for access rather than car.

Table 11: Departures from Stansted in the up AM peak

Basis	***Case***	***2014***	***2016***	***2021***
BAA – Vol 11	25mppa	1777	-	-
BAA – Vol 11 Update	25mppa	1447	-	-
BAA – Vol 11	35mppa	1996	-	-
BAA – Vol 11 Update	35mppa	1586	-	-
BAA – Vol 11	35mppa	1950	-	-
BAA – Vol 11 Update	35mppa	1587	-	-
BAA – FL1148	35mppa	1806	-	-
RUS – BAA		-	2167	2663
RUS - DfT		-	2480	2865

Sources: ES Vol 11 Update Table 3.2 [CD/14.2] / Consultative RUS T.5.9 [CD/312] / FL1148.

6.2.5 Similar variations occur between the 2006 and 2007 forecasts for the evening peak Stansted Express travel from London to Stansted. These are set out in Table 12. Again, the 2007 forecasts for the 35mppa scenarios are 21% and 20% lower than the 2006 ones. The 2007 figure for the 25mppa scenario is 15% lower. No forecasts for this period are given in the consultative RUS; presumably, if they were compatible with the figures for the morning up peak, they would show higher and still growing forecasts rather than lower ones.

Table 12: Departures to Stansted in the down PM peak

Case	***Vol 11***	***Update***
25mppa	1937	1640
35mppa	2588	2038
35mppa	2540	2040

Source: ES Vol 11 Update Table 3.2 [CD/14.2].

6.2.6 The impact on the three key hours of the evening peak period is set out in Table 13, based on the 2006 forecasts. This shows the passengers arriving at Stansted Airport from London by Stansted Express for a typical September day during the evening peak. (They exclude numbers of employees arriving, as these are extremely small at this time and direction.) For all hours substantial growth above the current level is forecast by 2014. For the peak arrival hour 17.00-18.00 the increase amounts to nearly 230 for the 25mppa case, around 350 for the 35mppa cases, and almost 500 for the 40mppa case. Similar increases are forecast for the 18.00-19.00 hour, involving trains which would have left Liverpool Street during the main evening peak departure for London commuters. No hourly forecasts are shown in the Update; obviously they would be rather lower, but they would still be higher than the current figures. On the other hand, were comparable forecasts shown in the consultative RUS, they might well be much higher.

Table 13: Travel to/from Stansted Airport – typical September day - Stansted Express arrivals from London in the evening peak

Year/case	*17.00-18.00*	*18.00-19.00*	*19.00-20.00*	*Total*
2004	732	501	319	1552
2014 – 25mppa	958	702	377	2037
2014 – 35mppa	1090	964	534	2588
2014 – 35mppa enhanced	1070	946	524	2540
2014 – 40mppa	1223	1081	599	2903

Source: ES Vol 11, Tables 4.4/8.2-8.5 [CD/14].

6.3 Implications for rail travel

6.3.1 The Stansted Express service now forms an influential part of the West Anglia rail corridor's services. In addition to the four Stansted Express trains, a stopping train also links the airport with Stratford every hour. As outlined above, these now form part of an intense service on this complex corridor, where service reliability is at risk throughout the day, little scope exists for service expansion or even security without substantial investment, and where peak loadings are high, even with the assumption that a standing load factor equal to two-fifths of the seating is acceptable.

6.3.2 In simple terms the major growth in passenger numbers forecast by BAA can be addressed by extending all Stansted Express trains to 12 coaches; this has been proposed by BAA and the DfT. This assumes of course that the necessary trains can be acquired and that platform lengthening takes place. Even these are not guaranteed commitments in the current regime. But it also ignores several factors:

- The line is already working under severe pressure. There have been no real additions to services for many years. The use of Stansted Express trains to provide stops at Bishop's Stortford and Harlow reflects the fact that this was the only way to maintain good services to these expanding and important local centres on the corridor while also increasing the Stansted Express service to quarter hour intervals.

- The air traffic growth that is forecast for the 35mppa case will not necessarily spread out tidily through the day; growth may well occur in the peaks as well. This will certainly put pressure on peak trains, especially outward peak trains in the evening. The potential conflict with commuters returning from London will seriously worsen the service quality for both air travellers and London workers. FL1148 accepts (para 4.8) that:

  '… at this level of demand in 2014, the PIXC levels are more likely to be exceeded …'

- Current quality of travel on the line is generally poor, and over time expectations will rise further. Improving quality of travel on rail, especially convenience and reliability, will not be possible without investment in capacity that does much more than just accommodating forecast increases in peak passengers. Such investment needs to provide for quality movement throughout the day, for business and leisure travel along the corridor as well as for air passengers.

- Further pressure will fall on the line. The East of England regional planning proposals see the corridor expanding in terms of population, economic activity and hence travel. At the same time the pressure for more sustainable transport, complemented probably by increasing congestion on the M11, will lead to demand for more rail services. Regeneration of the Stratford area and lower Lea Valley (especially with the Olympic Games scheduled for 5 years hence) will call for more rail services nearer London, where there are already capacity shortages on the trains at times. This could lead to demands for more stopping trains south of Cheshunt.

- Extra tracks could be provided along the Lea Valley but the complex Junctions prevent any significant increase in service levels commensurate with the likely demand. The proposals in the Greater Anglia RUS offer the possibility of this, but the recent rail White Paper makes it clear that no investment in extra track capacity is intended before 2014. Whether it would happen later in the decade remains open to question.

6.3.3 Relatively little attention is given to rail services to/from the north of the airport, i.e. the through diesel multiple unit service connecting to Cambridge, Peterborough and beyond. Yet this is potentially of considerable value in relation to the emphasis on East Anglia and the East Midlands as greater sources of an increasing number of air passengers. If suitable through services were provided from Norwich and Ipswich, and the coastal lines beyond them, then a much greater number of passengers might access the airport by rail instead of car; perhaps some employees too. Of course such provision also raises questions for rail planning and funding; especially at the northbound Junction of the airport branch with the Cambridge line. It is regrettable that such services have not been at least built into the transport models and tested through them.

7 DEMAND FOR TRAVEL BY COACH AND BUS – IMPLICATIONS FOR SERVICE PROVISION

7.1 Current and proposed bus and coach services

7.1.1 The dominant road passenger operation is of coaches between the airport and central London, which clearly provides a good market. The 2004 surveys showed these services accounted for 2,200 coach passengers arriving daily at the airport and 3,000 leaving, against totals of 3,300 in and 4,000 out: i.e. London travel accounts for nearly three-quarters of all coach travel. As shown above, coach services have about one quarter of the London market. Services operate along the M11 and are provided mainly by National Express, Terravision and, latterly, Easybus, running at a high frequency and operating almost round the clock. Running times are about 90 minutes between London and the airport, twice as long as for the Stansted Express. The coach services go beyond Liverpool Street, and are also far cheaper than the

parallel rail service. But they can suffer severe delays when there are incidents on the M11 or in London's road system; especially at peak periods.

7.1.2 Other coach and bus services provide radial links to a range of main towns across East Anglia (BAA ES Vol 11, section 5.6). Bus services provide local links to Bishop's Stortford, Harlow, Braintree and surrounding villages; they serve mainly for local travel, especially staff access. Coach services operate further afield, usually on an hourly or less frequent basis. Some local bus services are on contract to the airport, or to the county councils as transport authorities, but most are run on a commercial basis. For this reason most services do not operate outside the main daytime hours, or do so at low frequencies. Local bus services can also suffer from local congestion.

7.1.3 Expansion of coach services is proposed as part of the 35mppa case (BAA ES Vol 11 [CD/14] section 7.7 and ES Vol 11 Update [CD/14.2] section 2.7). This would provide a few new services at intervals ranging from half-hourly to two-hourly. It is assumed that the likely demand from airline passengers would enable all or most of them to operate commercially. However, this is questionable. While coach services have built up over the years, the main attraction for operators remains travel to London, as there is a continual high flow to and from the capital which can support a frequent service, which in turn attracts users.

7.2 Current and forecast travel by coach and bus

7.2.1 There are forecasts for coach and bus travel, both for passengers and for employees, but these are limited to the total figures set out in an earlier section of this report (Tables 6 and 8). They are set out in Table 14. They reflect two alternative cases for 35mppa throughput: with a broadly similar network to today; or with a significantly expanded network, which is described. For passengers they include forecasts from the 2007 Update as well. (FL1148 forecasts coach travel levels similar to the 2006 forecast.) The forecasts show a very substantial growth in passengers expected to use coach and bus services (mostly coach) for all scenarios; but especially for the enhanced provision, i.e. the much increased coach network, where they double at least. But this should be seen in a context where the majority of air passengers continue to travel by car.

7.2.2 The much greater impact of (London-bound) coach services in the 2007 forecasts as compared to the 2006 ones is understood to reflect two factors: changed car parking provision; and a lower level of coach fares on London routes (but not on other routes). In the input factors, London coach fares have been assumed to be lower in 2014 than in 2003; this has been adopted because coach fares fell from 2003 to 2006, reflecting the competitive approach of existing and new operators. There is, however, no reason to assume that this short term trend will continue; especially as the forecast increases in traffic on the M11 and within London could well increase operating costs and difficulties.

7.2.3 The forecasts also see significant increases in employees travelling by coach and bus, but especially with the enhanced network, where they again are expected to double. This again should be seen in a context where the overall proportion of employees travelling on bus (as on rail) remains very small, while the great majority still use cars to travel to and from work.

Table 14: Forecast growth in coach and bus use
(% increase on 2004 base year)

Year/case	***Passengers* Vol 11**	***Passengers* Update**	***Employees* Vol 11**
25mppa	+56%	+90%	+44%
35mppa	+106%	+140%	+34%
35mppa enhanced	+189%	+217%	+247%

7.2.4 It is also essential to appreciate that achieving these levels of growth requires provision of suitable services. Maintaining the present level and pattern of services may not be too difficult (though even this cannot be taken for granted). But provision of the significantly expanded services proposed by BAA ES Vol 11 [CD/14] and ES Vol 11 Update [CD/14.2] within the British deregulated commercial regime is very questionable. It is notable that most of the forecast growth in coach travel is on the London corridor. For the more scattered medium size towns across Essex, Hertfordshire and East Anglia, the numbers travelling at any one time are likely to be too small to provide much higher frequencies than those available today. In consequence, there is no commercial case for providing services on these axes that could attract a much higher proportion of air passengers, given the need for long check-in times and some uncertainty in air flight departures and arrivals. Only one or two services have succeeded in particular circumstances, and at low frequencies (e.g. the Southend - Chelmsford - Stansted service also relies on other flows of traffic).

7.2.5 Services could be provided through support grants and, indeed, launch grants are being offered or proposed. But these are limited to a figure of £2 million, hardly enough to sustain more than one or two longer coach routes over a medium term period. No commitment exists to provide funding at anything like a sufficient level to ensure frequent services on all main axes or to sustain it over a period of time so that services become commercially established. Furthermore, operators do not have security of tenure for any routes they do build successfully, and this militates against management time being put into development of potentially risky services. In addition rising traffic levels may add to congestion faced by coach (and bus) services, probably leading to rising costs and reduced attractiveness. All in all, the proposed enhanced public transport scenario rests on very flimsy ground. Unless real commitments to funding and provision are made, the forecasts for significantly increased bus and coach travel are very unlikely to be achieved.

8 CONCLUSIONS

8.1 Forecast scale and pattern of airport surface access demand

8.1.1 The BAA forecasts for future growth in surface access demands are set out in ES Vol 11 [CD/14] and the 2007 Update (ES Vol 11 Update) [CD/14.2]. The forecasts have been developed using a suite of models, with inputs including the planned regional growth in housing, employment and transport facilities. The relationship of outputs (forecasts) to inputs (data and assumptions) is almost impossible to follow. They are geared to the forecast pattern of airport activity. They focus almost entirely on one year only, 2014, when the throughput of 35 million passengers is expected to be achieved.

8.1.2 Three main cases are presented for 2014: for a throughput of 25mppa, the maximum allowed under the current planning permission; for a throughput of 35mppa, as if the planning permission were granted, but with no real improvement to public transport; and for a throughput of 35mppa with an enhanced public transport network. Comparisons are made for the 35mppa situation against the 25mppa situation and against the nominal current year (mostly 2003 or 2004, reflecting data availability). Much of the BAA case on surface access rests on the relatively manageable impact which it claims expansion to 35mppa throughput would have in comparison to 25mppa, especially if the 35mppa enhanced public transport case were adopted. It is not clear why BAA has not modelled an enhanced 25mppa case so as to provide like-for-like comparisons, especially since it has been clear Government policy from as far back as the 1998 Transport White Paper [CD/129] to reduce car use and airport operators are expected to contribute towards the achieving this objective by encouraging the use of public transport for passenger journeys to and from airports.

8.1.3 Overall the BAA forecasts see passenger surface access demand in 2014 being one fifth higher than today's figure if throughput is limited to 25mppa. With 35mppa throughput the forecasts see passenger surface access demand in 2014 as one half again above current levels and nearly one third above 25mppa levels.

8.1.4 The forecasts assume a higher transfer (interlining) rate for air passengers with 35mppa throughput than for now or 25mppa: 16.7% as against 10.2%. This means that proportionally fewer passengers are forecast to travel to and from the airport. For the 25mppa case, surface access demand would be 22.46 million. For the 35mppa BAA'S forecasts is for a surface access demand of 29.17 million; but if transfer passengers at 35mppa were 10.2%, then the surface access demand would be 31.43 million. This is 7.75% higher than the BAA forecast; a figure which in principle would work through all the aspects of forecast travel to and from the airport. (FL1148 applies this factor but does not provide figures for total demand which could be compared to the BAA 2006 and 2007 forecasts and so allow the effects to be properly identified.)

8.1.5 BAA points towards the high proportion of air passengers travelling to and from the airport by public transport, 40.2% in 2004 (a figure well above most other UK airports). Its forecasts see this high proportion being maintained, or even increased slightly; especially if an enhanced coach network is put in

place. However, the proportion of passengers travelling to and from the airport by car is still forecast as nearly three fifths, even with enhanced public transport. The proportion of staff travelling to and from the airport by car is even higher, about five in every six, even with the enhanced public transport scenario. A high proportion of staff work shift patterns outside the standard '9 to 5' hours; but one in six will continue to travel in the usual commuting peaks. Given the substantial growth in total surface access demand for both air passengers and staff, this would add substantially to pressures on travel by all modes in the area.

8.2 Airport travel in the context of sub-regional and local transport

8.2.1 The airport and its activities need to be set in the context of local and sub-regional settlements and activity patterns, and especially their transport networks. The Environmental Statement defines a catchment sub-region, especially relevant to employee residence and also to direct effects such as noise. However the area of influence for transport effects varies. The major effects are for the main road and rail corridors and most of the transport forecasts and assessments focus on these. The major focus is on the north–south corridor, especially towards London, including both the M11 motorway and the West Anglia railway line; these are crucial for the whole region, for movement to and from London, especially commuting to jobs in central London. But the A120 trunk road, which provides the immediate link on to the airport site, also forms the principal east-west route for cross-country movement, as well as access to the M11 from this part of western Essex.

8.2.2 The draft regional guidance envisages substantial growth across all of East Anglia for the next two decades, with about a one-fifth rise in population and employment, but it identifies the Stansted/M11 sub-region as one particular focus. In doing so, it also brings out the importance of Cambridge and London as focal points for hi-tech knowledge based employment. Since it identifies the Stansted/M11 sub-region as having higher average skills, it is clearly pointing to commuting from the area towards these centres, identified as already strong. The draft regional guidance emphasizes current national policy that travel, especially between home and work, should be minimised, at least by car (this principle is also cited in the Local Transport Plans of the two county transport authorities [CD/86 and CD/318]). But it clearly expects that increased travel along the corridor is likely to form a vital element in further building an axis of strong and advanced economic development. In a corridor of high tech and service employment, it is very likely that the expectations of travel quality will be high and demand will be substantial all day, not just at peaks. Expanding travel to and from the airport poses a serious potential conflict unless both can continue to be accommodated.

8.2.3 Beyond the main roads in the area the BAA analyses and forecasts give little or no indication of the effect on minor roads or other aspects of local transport. However, it is very probable that road movement in the surrounding villages and small towns and in Bishop's Stortford is heavily affected, especially at peak times. The same is probably true, to a lesser extent, for Braintree and Harlow. With the growth forecast in numbers of both passengers and employees, this is likely to worsen.

8.3 Airport expansion and the use and provision of roads

8.3.1 With much higher numbers expected to travel to and from the airport by car, significant impact falls on the roads in the immediate vicinity. This particularly concerns the A120 which runs through the airport, forming the principal means of (road) access to it. There are also significant impacts on the M11 and the A120 corridors stretching out from the airport, where airport related traffic already forms about one quarter of all traffic.

8.3.2 The surface access modelling provides forecast flows for a number of scenarios for two years, 2014 and 2023, and sets out the results for the main road sections included in the network. Not surprisingly, given the overall scale of travel growth forecast, traffic flows are generally much higher for all forecast years/cases than for the base year (2004). Mostly, the peak movements in the dominant direction for the forecast years/cases are around one and a half to two times the present level. There are one or two notable exceptions, especially evening peak movements.

8.3.3 Airport traffic forms a dominant element of total traffic on the A120 adjacent to the airport, accounting for up to half of all flows in 2014. But it represents a rather lower proportion of total in 2023, because airport traffic then remains at the same level as for 2014, which forms the target year for achieving 35mppa throughput. After that there is in principle no further rise in airport traffic but general traffic flows are forecast to continue rising. The impact on other roads is rather smaller. On the M11 south of Junction 8 it represents one quarter of all traffic in the peak direction in 2014. Elsewhere on the M11 and the A120 it accounts for about 10% of all traffic.

8.3.4 There is very little difference on overall traffic flows between the two sets of 35mppa forecasts. With the enhanced public transport scenario road travel by air passengers is about 5% lower; the impact on employee travel is also lower. Compared to overall traffic growth forecasts, the reduction is very limited, worth barely one year's growth overall travel.

8.3.5 The traffic forecasts should be seen in a scenario where the M11 southbound, the Junctions around the airport, sections of the A120 and a number of more minor roads in the area are already under serious pressure. This particularly applies to the A120 through section between the Bassingbourn roundabout (the key airport access point) and the M11 Junctions 8 and 8a. Further growth in the short to medium term would worsen this. Investment for particular stretches might reduce the effects. But none is proposed for this phase of the airport's proposed expansion. Even if they were, not all proposals for road building might be acceptable and some might actually generate increased traffic on the sub-region's road network. It should also be noted that BAA's traffic forecasts take no account of G2 construction traffic although BAA has stated that its target date for opening a second runway is 2015. Nor do BAA's traffic forecasts take account of the substantial additional housing planned for Uttlesford and East Herts districts in the period to 2021 where the location of such new housing has not yet been finalised (e.g. UDC's preferred option of a new 3,000 home settlement at Elsenham).

8.4 Airport expansion and the use and provision of rail services

8.4.1 Rail travel is forecast to increase very substantially. Passenger use would increase by 2014 by half for the 25mppa scenario and would nearly double for

the 35mppa scenarios. Given that rail currently conveys a relatively small proportion of total travel, the passenger figures are not surprising; especially as London will continue to form a major origin/destination point for Stansted passengers. The employee figures depend more on a higher proportion of employees residing in London. Nonetheless, significant growth on rail services, especially Stansted Express, can be expected. The 2007 Update foresees reduced growth in use of rail, and especially of the Stansted Express at peak times. Nonetheless, Stansted Express travel is still expected to be significantly higher than currently. These lower forecasts do however appear questionable, as they rely on increased coach travel based on coach fares not rising like other forecast factors. FL1148 in fact produces rail figures much closer to the 2006 forecasts but with the lower London coach fares input. The Update forecasts are also challenged by the much higher forecasts for Stansted Express peak use set out in the Greater Anglia consultative RUS.

8.4.2 BAA proposes that this growth could be accommodated by extending all Stansted Express trains to 12 coaches (a proposal supported by the DfT) but this assumes that the necessary investment in trains and platform lengthening will take place; something that has proved very difficult in the current policy regime (e.g. even transferring small numbers of trains between operators). The recently published Rail White Paper containing the High Level Output Statement and the Statement of Funds Available suggests that investment in new line capacity before 2014 is highly unlikely. In any case the Stansted Express service does not operate in isolation, and wider issues must be taken into account. The principal one is that the line is already working under severe pressure, and existing capacity is being used to its maximum; as shown by the use of Stansted Express trains to provide stops at Stansted Mountfitchet, Bishop's Stortford and Harlow. Continued growth in standards of living will call for growing quality of travel provision for rail if it is to play an increased role in bringing sustainable travel to this busy corridor: this means substantial investment, especially to provide for convenience and reliability.

8.4.3 Furthermore, the East of England RSS foresees substantial growth in the corridor, within a policy of sustainable transport, indicating that there will be much greater demand for rail movement, for commuting and other economic links. Regeneration of the lower Lea Valley (especially in connection with the 2012 Olympic Games) will call for more rail services nearer London. Providing effectively for Stansted Express services and for other growing demands on the already congested rail lines along the corridor requires major investment. The scale of the problems, even today, and of the investment needed to address them, is set out in the consultative RUS but there is no commitment for this to be implemented in the foreseeable future, if at all.

8.5 Airport expansion and the use and provision of coach and bus services

8.5.1 Travel by bus and coach is forecast to increase very substantially. In the 2006 forecasts passenger use would increase by 2014 by half for the 25mppa scenario; double for the base 35mppa scenario; and increase to nearly three times the present level if an enhanced coach network is introduced. The 2007 Update forecasts even higher growth. With the enhanced 35mppa network, employee travel by coach and bus would increase to three and a half times its present level.

8.5.2 These growth figures should, however, be seen in a context where there are a greater number of both air passengers and employees using cars. Most of the growth would be on coach services competing with the Stansted Express rail services; and the forecasts appear to rest heavily on an assumption of London coach service fares being lower while other public transport costs rise. More importantly, achieving even these levels requires provision of suitable services. Maintaining the present level and pattern of services may not be difficult; though no certainty can be given, in view of the vagaries of operating decisions within the British deregulated commercial regime. Problems may be exacerbated if traffic congestion increases in the face of rising traffic flows on roads in the area, as the traffic forecasts indicate. But if secure development of services with sufficient funding cannot be achieved, then the forecasts for significantly increased bus and coach travel are unlikely to be achieved.

8.6 Wider issues - timescales and 'graduality'

8.6.1 The forecasts of surface access demand and its possible effects need to be seen especially in the context of Stansted Airport's rapid growth in the past as well as the likely growth trend in the future. The airport has developed into a major facility within a very short timescale. The current terminal opened only in 1991, under a planning permission setting the maximum throughput of passengers at 8mppa. Subsequent planning applications took this to 15mppa and then 25mppa. In this short period the airport has come to have a strong influence on the physical, economic and social structures of the surrounding areas.

8.6.2 In parallel, travel to and from the airport has had a growing impact on transport demand and provision in the sub-region around it. This can be observed across all networks and services, but two examples stand out.

- The road system around the airport has changed very substantially. What was a relatively lightly used link on to the M11 on a cross country route has become the focus of a major new road network, heavily used. The new dual carriageway A120 runs through the airport site and its use is heavily influenced by traffic to and from the airport. Airport traffic also has a considerable effect on the M11 between Stansted and the M25.

- The West Anglia rail route between the airport and London has been gradually taken over by the airport rail services, to the extent that these now provide part of the core service for Stansted Mountfitchet, Bishop's Stortford and Harlow. Their operation at four trains per hour constrains the scope for providing other services on the line, to the extent that these do not always operate at regular intervals and the frequencies remain relatively low. Yet the corridor it serves has grown steadily and is identified for further significant growth in housing and employment.

8.6.3 So far the provision of infrastructure to provide for effective movement on both the airport links and for other traffic in the sub-region has lagged behind the growth in airport traffic. No one body has specific responsibility to provide for growth in transport demand across the whole spectrum of movement within the airport's catchment sub-region, let alone beyond it. Nor therefore is any one body responsible for monitoring and assessing trends in all such transport trends. In consequence the pattern and scale of impacts, past and potential, remain unclear. It is possible that problems with the main road and rail links

hide lost opportunities for improving access to local centres or achieving more sustainable transport use.

8.6.4 BAA has drawn up and presented its forecasts of growth in surface access from their viewpoint in this context. These forecasts point to a continuation of very significant growth, with the implication that airport traffic will dominate key transport corridors in the sub-region to an increasing extent. Even if growth in air passenger throughput remains limited to 25mppa, this will add to serious current pressures. If permission is granted for removal of the 25mppa limit, then the key roads and the rail line will quite rapidly become even more heavily affected by airport related traffic, resulting in serious congestion, increased occurrences of delays and generally worsening quality. More seriously, major growth in population, jobs and activities is forecast for the sub-region and for areas beyond on the main transport corridors serving the airport. These activities will rely on the provision of effective high quality transport, with a particular need for attractive and convenient public transport. Investment in provision of sufficient new facilities to meet this, quite possibly in conjunction with appropriate transport management techniques, seems very doubtful. In the circumstances, the forecast levels of growth in demand for surface access to the airport would be very damaging.

8.6.5 Furthermore, the forecasts carried out by BAA almost certainly underestimate the growth in surface travel, for three principal reasons. First, they are mostly limited to the year 2014, with no attempt to present an overall view of the trends in demand and its impact for further years. Growth in population and employment will continue beyond 2014, so that pressures related to airport access will continue to grow, as they have done in the last decade and a half. A clear indication is given by the Stansted Express morning peak forecasts in the Greater Anglia consultative RUS [CD/312] which show substantial growth between 2016 and 2021. Second, the 35mppa throughput is more likely to have the same level of transfer passengers as for today (or for the 25mppa forecast) and thus surface access demand would be nearly 8% higher. Third, the forecasts assume a throughput ceiling of 35mppa. But there is no reason why the throughput with one runway could not be much higher, perhaps 45mppa or even 50mppa in due course. Surface access demand for these levels (at whatever year) would be commensurately higher. For these reasons, the BAA forecasts of surface access are partial and misleading.

8.6.6 Finally, the airport's growth remains a focus for transport investment, land use planning and development of economic and community activities in the area. This may divert thinking and action from other local opportunities. Continuing expansion of the airport would exacerbate this.

ANNEX
Table 1: Peak hour traffic flows on A120 Bassingbourn – Priory Woods

Source: ES Vol 11, Figures 5.11/5.12/10.9-10.12.

AM peak

Year/case	*Traffic Eastbound*	*Traffic Westbound*	*Growth on base year Eastbound %*	*Growth on base year Westbound %*	*Airport Traffic Eastbound*	*Airport Traffic Westbound*	*Airport Traffic share Eastbound %*	*Airport Traffic share Westbound %*
2004	1480	2150	-	-	664	701	44	33
2014 – 25mppa	2449	3073	65	43	1205	1003	49	33
2014 - 35mppa	2616	3107	77	45	1410	1213	54	39
2014 - 35mppa enh.	2570	3065	74	43	1357	1158	53	38
2014 - 35mppa enh. + 15%	2680	3168	81	47	1475	1277	55	40
2023 - 25mppa	2975	3668	101	71	1158	984	39	27
2023 - 25mppa	3109	3630	110	69	1347	1180	43	33
2023 - 35mppa enh.	3065	3581	107	67	1292	1124	42	31
2023 - 35mppa enh. + 15%	3157	3687	113	71	1410	1242	45	34

PM peak

Year/case	*Traffic Eastbound*	*Traffic Westbound*	*Growth on base year Eastbound %*	*Growth on base year Westbound %*	*Airport Traffic Eastbound*	*Airport Traffic Westbound*	*Airport Traffic Share Eastbound %*	*Airport Traffic share Westbound %*
2004	2770	1650	-	-	906	837	33	51
2014 – 25mppa	3019	2512	9	52	938	1111	31	44
2014 - 35mppa	3086	2683	11	63	1143	1347	37	50
2014 - 35mppa enh.	3069	2633	11	60	1092	1292	36	49
2014 - 35mppa enh. + 15%	3133	2744	13	66	1204	1409	38	51
2023 - 25mppa	3721	3003	34	82	910	1102	24	37
2023 - 25mppa	3705	3120	34	89	1110	1337	30	43
2023 - 35mppa enh.	3673	3100	33	88	1058	1268	34	41
2023 - 35mppa enh. + 15%	3753	3170	35	92	1166	1400	31	44

ANNEX
Table 2: Airport traffic as proportion of peak hour traffic flows on A120 and M11 [%]

Sources: ES Vol 11 Update, Figures 5.1 & 5.2 [CD/14.2]

Road section	***Direction***	***2014 - AM***	***2014 - PM***	***2023 - AM***	***2023 - PM***
A120: M11 – Bassingbourn	E	53	36	42	29
- " -	W	38	49	31	42
M11: J8 Southbound	N	25	13	20	10
- " -	S	13	24	11	19
M11: J8 Northbound	N	12	14	9	11
- " -	S	16	13	13	10
A120: Bishop's Stortford bypass	E	10	15	9	14
- " -	W	12	7	11	6