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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

Proof of Evidence on behalf of Stop Stansted Expansion

Demand for Surface Access and the Implications

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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 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 & 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 for 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, especially hospitals; 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 reviews the demand and supply aspects of surface access to and from Stansted Airport should the current limit of 25 million passenger per annum (25 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 application 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.

2.1.2 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.

2.1.3 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'.

2.1.4 BAA Stansted have set out their assessment of the surface access implications in Volume 11 of their Environmental Statement (published in 2006)[1] and in the supplementary Addendum (published in 2007)[2]. These form the main references for this evidence, and are referred to here as BAA ES Vol.11 and BAA ES Vol.11.Add, or (within the text) as the 2006 forecasts and the 2007 Addendum.

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 25 million passengers per annum (mppa) and raise the annual permitted number of ATMs from 241,000 to 264,000, but without making any changes to the runway capacity. Passenger throughput in 2006 was 23.7 million (BAA statistics). Should the proposed application be granted, BAA foresee the level of passenger throughput rising to 35 mppa, and this figure forms the main basis for their analysis of surface access impact. BAA forecasts for surface access are mostly limited to the single year of 2014, when the 35 million throughput is expected to be reached. This does not allow for assessment of the continuous growth trend that is likely in surface transport demand in the sub-region and beyond, unless major changes to how people travel are actually implemented; nor indeed assessment of the effects from such changes were they to be achieved.

[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].

3.1.2 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 origins in Great Britain 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 reports from other companies; notably by SH&E Limited for Uttlesford District Council, who generally agree with the overall forecast trends but suggest different patterns affecting the surface access factors somewhat.

3.1.3 The BAA forecasts for Stansted assume that a throughput of 35 mppa would involve a significantly higher proportion of passengers transferring between planes at Stansted, as distinct from those starting or finishing their journey there. For 2014 they give a proportion of 16.7% for 35 mppa compared to 10.2% for 25 mppa. No explanation is advanced for this very substantial difference. In fact the rate of transfer passengers at Stansted in 2005 was 11.3%, a decline from 14.4% in 2003.[3] The review of BAA forecasts by SH&E Air Transport Consultancy[4] suggest that Stansted is likely to remain as a base for low cost airlines, with a focus on leisure traffic provided for by low cost airlines flying to a wider range of destinations. Overall growth in the leisure travel market across the country would increase the use of more local airports for each region, thus reducing the likeliehood that passengers would need to transfer at Stansted. Thus the airport does not appear likely to become the focus for significantly more inter-lining.

3.1.4 The implications of this for surface access forecasting are significant. The BAA forecasts indicate that, with a limit of 25 mppa, total demand for surface access with 10.2% transfer rate would be 22.46 million passengers; for 35 mppa with 16.7% transfer rate it would be 29.17 million passengers.[5] But if the 35 mppa 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.

3.1.5 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 35 mppa.[6] The tests in ES Vol.11.Add identify some changes in peak demands between modes but do not indicate overall change.[7] 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.

3.1.6 But passenger throughput could be higher than 35 mppa. BAA ES Vol.11 includes some analyses of the implications of 40 mppa as well (albeit based on simple extrapolations of the 35 mppa forecasts). But it would be feasible for the

[3] CAA Annual Passenger Survey Reports 2003-2005 [CD/210-212], Table 3.
[4] SH&E (2006), Review of BAA Traffic Forecasts for Stansted Airport [CD/133-135.1].
[5] ES Vol.11, Table 6.2
[6] BAA ES Vol. 11 [CD/14], Figures 6.3/6.4.
[7] BAA ES Vol.11.Add [CD/14.1], Part 3.

airport to handle even higher passenger numbers, with potentially serious implications for surface access. On one hand, some parts of the network are already under severe pressure (as discussed later in this report). On the other, marginal increases in demand at crucial points can trigger critical changes in the loading and performance of (surface) transport systems. Stop Stansted Expansion has already analysed the potential and considers that the airport could handle up to 45 or 50 mppa.[8]

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 Tempro 1.6 datasets.[9] These reflect the sub-regional growth plans set out in the East of England Regional Assembly's Draft East of England Plan (DEEP).[10] The 2007 Addendum forecasts reflect the changed patterns in the Draft Changes issued for consultation by the Secretary of State in December 2006.[11] 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.

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

[8] Planning Application UTT/0717/06/FUL – Response by Stop Stansted Expansion [CD/201], Section 4.
[9] BAA Environmental Statement Volume 6 [CD/9].
[10] 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].
[11] 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].

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***	***Change %***
Bishops 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.[12] 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 the policies implemented to manage demand.

3.3 Regional transport forecasts

3.3.1 Chapter 8 of the proposed Draft East of England Strategy 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.[13] Road sections identified as having traffic flows at or above an assessed congestion reference flow (CRF) included the M11 (94%) and the

[12] 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.
[13] MVA (2002) East of England Transport Strategy – Existing Conditions Report – Final MVA [CD/313].

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 to supporting the economic, environmental and social aims of the Regional Spatial Strategy. To meet these, it outlines a transport strategy and proposals for focusing infrastructure improvement in relation to development. It 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 Paper [i.e. beyond 35 mppa] 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 proposed several projects directly relevant to Stansted Airport in its regional proposals (which categorise projects 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 Highways Agency, 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.[14] Their main conclusions were that forecast highway demand would grow by 44% under the EiP Panel's recommendations as against 42% under 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 Department for Transport, assessed the impact on the rail network.[15] 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. Under the pressures from global warming, emerging limits on the availability of petroleum oil and concerns over the inefficiency of current transport systems to address related problems in other fields, 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 Airport might be seen.

3.4.2 The Government's overall approach is set out in Planning Policy Statement 1 (PPS1) [CD/92]. This includes as key principles that development plans should:

' … ensure that sustainable development is pursued in an integrated manner'

[14] Highways Agency - EiP Panel Test Report, Faber Maunsell 2006 [CD/314].
[15] East of England Alternative Growth Scenarios: Analysis of the Impact of Growth on the Rail Network Atkins 2006 [CD/315].

' … contain clear, comprehensive and inclusive access policies – in terms of both location and … physical access' (paragraph 13)

'Provide improved access for all to jobs, health, education, shops, leisure and community facilities, open space, sport and recreation, 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 …' (paragraph 27).

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. But the surface access impact of a major airport can spread through a wide catchment region. The extent to which BAA Stansted may agree to mitigate effects, or be required to do so through the planning system, is relatively limited, especially where responsibilities and plans are in practice unclear.

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

- Trunk roads are managed and developed by the Highways Agency (HA) (in England), whose funding comes from Government (Department for Transport). The Department for Transport (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 the DfT, through the Local Transport Plan process; the 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 the 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 the 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 will be guided by a High Level Output Specification and Statement of Funds Available, published by the DfT. To the extent that ORR judges that Network Rail cannot reasonably meet the outputs required by the DfT within the funds available, ORR will, through an iterative process with the 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.

- 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 Department for Transport through the Local Transport Plan process.

3.5.3 So 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 Department for Transport. 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 with a limit of 25 mppa throughput and 29.17 with 35 mppa throughput. These are about one-fifth and one half above current levels. If the proportion of transfer passengers did 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 35 mppa foresee the pattern of origins spreading out. Table 3 summarises the forecast numbers by regional distribution from the 2007 Addendum. The BAA forecasts in these (ES Vol.11.Add Appendix C [CD/14.1]) are identical to those in the 2006 ES (Vol.11 Appendix M [CD/14]) for the 25 mppa and 35 mppa scenarios respectively.

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

	25 mppa	***35 mppa***	***as % on 25 mppa***	***35 mppa SHE forecasts***	***as % on 25 mppa***
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.Add Tables C.1-C.4 [CD/14.1]

4.1.3 This shows that at 35 mppa surface access demand for both central and outer London is forecast by BAA to be about 20% higher than for 25 mppa, 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 25 mppa and 35 mppa 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 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 35 mppa 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 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 would be implemented is a questions picked up later.)

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

	25 mppa	***35 mppa***	***35 mppa enhanced***	***35 mppa SHE 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.Add Tables C.1-C.4 [CD/14.1]

4.1.5 Higher levels of air travel would produce commensurately higher numbers of passengers travelling to and from the airport. For example, throughput levels of 40 mppa and 45 mppa would result in demand levels 14% and 29% respectively higher than for 35 mppa.

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 forecasts of these figures. (Note – the forecasts in BAA's 2007 Addendum (Table 2.3) 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 numbers increasing to 14,350 for 25 mppa throughput and 16,800 for 35 mppa throughput and changes in originating pattern of employees. Two aspects stand out:

- For 25 mppa throughput the ratio of employees to passengers (574 per million) is almost the same as the current figure (566). But with 35 mppa 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 25 mppa ratios. If the ratio were not to increase, then employee numbers would be significantly higher; about 19950 for 35 mppa, 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 of a fixed ratio of 40% of employees in London (v. 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 25 mppa case***	***2014 35 mppa case***	***2003 %***	***2014 25 mppa case %***	***2014 35 mppa case %***
Uttlesford	2520	3230	3790	23.8	22.5	22.6
East Herts	1930	2570	3020	18.2	17.9	18.0
Braintree	1810	2160	2520	17.1	15.1	15.0
Harlow	650	970	1140	6.1	6.8	6.8
Chelmsford/ Epping Forest	720	860	1000	6.8	6.0	5.9
Colchester/ St Edmundsbury	460	550	640	4.4	3.8	3.8
Cambridge/ S.Cambs	300	420	490	2.8	2.9	2.9
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 through [million]	18.7	25	35	-	-	-
Employees per million passengers	566	574	480	-	-	-

Source – BAA ES Vol.11 Table 6.4 [CD/14]

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. If for example the passenger:employee ratio with 35 mppa throughput were the same as current or 25 mppa, i.e. 570 employees per million passenger throughput, then the total number of employees would be 19950, 19% higher than BAAs' forecasts, i.e. one fifth higher.

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 35 mppa throughput, while ES Vol.11.Add [CD/14.1] 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 25 mppa case and 35 mppa base case is 4 million car trips per annum, for both the 2006 and the Addendum forecasts; even with the 35 mppa enhanced (public transport) scenarios the increase on 25 mppa is over 3 million.

4.3.2 However, the 2007 Addendum 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 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 900,000/1 million. This particularly reflects an expectation of higher demand for travel by coach, especially from London, which is the main focus for rail travel. This in particular appears very questionable and is not explained.

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 – 25 mppa	22,501	13,273	2,453	6,776	59	11	30
2014 – 35 mppa	29,168	17,544	3,227	8,398	60	11	29
2014 – 35 mppa enhanced	29,168	16,568	4,524	8,077	57	15	28
2014 Addendum – 25 mppa	22,500	13,674	2,972	5,854	61	13	26
2014 Addendum – 35 mppa	29,167	18,037	3,887	7,243	62	13	25
2014 Addendum – 35 mppa enhanced	29,167	17,009	4,973	7,185	58	17	25
2014 Addendum - 35 mppa – 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 Addendum 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 25 mppa throughput; with the 35 mppa throughput, there would be an additional 12,600 with enhanced public transport provision, or 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 25 mppa throughput, and by 7,300-8,000 for 35 mppa throughput. (The interpolated forecasts for 40 mppa 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*	*Std Express*	*Other PT*
					%	*%*	*%*
2004	n/a	31,150	12,159	n/a	-	-	-
2014 – 25 mppa	65,094	37,602	16,923	10,569	58	26	16
2014 – 35 mppa	81,279	47,346	20,169	13,724	58	25	17
2014 – 35 mppa enhanced	80,162	43,808	19,432	16,922	55	24	21
2014 – 40 mppa	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 25 mppa throughput, 38% over 2003 figures. 35 mppa throughput would lead to considerable extra growth, 30% above the 25 mppa 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 35 mppa as for 25 mppa, the 35 mppa 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 emphasize the relatively high proportion of air passengers arriving and leaving the airport on public transport now. They also foresee some further reduction in the share of car use by passengers in the future. For the 25 mppa and 35 mppa cases car use is forecast to fall by about 3 percentage points and public transport increase by a similar figure. The 35 mppa enhanced case, based on a significant increase in coach service provision, sees a further fall of 3 percentage points in car use, matched with a 4 percentage points rise in coach and bus use and, interestingly, a 1 percentage point fall in rail use.

4.3.6 The comparative changes across the 2007 Addendum 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 Addendum 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, 2 percentage points or less.[16]

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.

[16] BAA ES Vol.11.Add Table 3.1 [CD/14.1].

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 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 forming the main mode of access. This explains the trends forecast by BAA, which show clearly that the airport's growth, however mitigated, will have a growing 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. Car travel remains dominant across the various cases. Public transport is forecast to increase its share, especially with the enhanced public transport case, moving from 12% to 16% of employee travel. But even in that case, total daily employee car trips to the airport account for nearly five out of every six trips and they would increase by 7,100 between 2003 and 2014. (With the 40 mppa case, they would increase by 9,000 per day.) Thus daily employee trips per day are likely to increase as much as daily passenger trips.

Table 8 Travel to/from Stansted Airport – employee travel demand

[Total trips both ways]

Year/case	*Total trips*	*Car*	*Bus & Coach*	*Rail*	*Car*	*Bus & Coach*	*Rail*
					%	*%*	*%*
2003	10,592	9,660	445	487	91	4	5
2014 – 25 mppa	17,292	15,184	641	1,467	88	4	8
2014 – 35 mppa	19,912	17,816	596	1,500	89	3	8
2014 – 35 mppa enhanced	19,997	16,778	1,546	1,673	84	8	8
2014 – 40 mppa	22,210	18,632	1,718	1,860	84	8	8

Sources: ES Vol. 11, Tables 4.5/4.7/8.7-8.10 [CD//14]

4.4.2 BAA also emphasizes the initiatives to have more employees travel by public transport. Employee travel modes are forecast to change in the same direction. As for passenger demand, the 35 mppa enhanced case sees a sharp drop in the proportion of car use. The update shows almost identical results, but with one small change; the expected car occupancy rate is increased, to reflect more car sharing, so that the proportion of employees going by car increases fractionally but slightly lower proportions are actually driving. Of more interest are the 2020 and 2030 forecasts for the enhanced scenarios only; these show

car use increasing and public transport declining over time, albeit very slowly, implying that there are limits to mode change initiatives.[17]

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 25 mppa cases: a low level of employees relative to passengers; 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% (a.m. 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 35 mppa cases. The actual numbers travelling in the peaks therefore are much higher than for the current levels. The 2007 Addendum 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	17
2014 – 25 mppa case	1569	1597	18.1	18.5
2014 – 35 mppa case	1639	1607	16.5	16.1
2014 – 40 mppa 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 them are expected to work shifts outside the conventional '9 to 5' hours. On the operational jobs that many of them will work in, accurate arrival time is important, to ensure that their element of the airport's services continues to function well. For most of these employees at least, local bus services are unlikely to offer a sufficiently attractive service, unless operated to a high level of reliability and at least reasonable frequency. Thus for most the car will remain the means of travel to and from their workplace.

[17] BAA ES Vol.11.Add Table 3.5 [CD/14.1].

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 are 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 Highways Agency 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.[18]

- 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] where figures beyond 2014 are given.

5.1.4 The 2007 Addendum [CD/14.1] revises the forecasts with three additional scenarios for 2023 compared to the 35 mppa enhanced (public transport) case in ES Vol.11 [CD/14]. These are:

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

For the road network overall they show mostly minimal changes compared to the ES Vol.11 forecasts.[19]

[18] BAA ES Vol.11 section 10.3 [CD/14].
[19] BAA ES Vol.11.Add section 5.2 [CD/14].

5.2 Current and forecast trunk road use

5.2.1 The growth in forecast traffic flows maintains the 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 1 (Annex 1) pulls together the data set out in BAA ES Vol. 11 for six key links: the A120 east of Bassingbourn roundabout; the slip roads between the Bassingbourn Roundabout and the A120; the A120 between Bassingbourn and Priory Wood Roundabouts; the A120 between Priory Wood and M11 Junction 8a; the link road between Priory Wood Roundabout and M11 Junction 8; and the A120 between M11 Junction 8 and the A1250. Table 2 (Annex 2) summarises the main in flows (as percentages) for four of these stretches for the eastbound AM peak and westbound PM peak (i.e. the times of main commuting movement to and from the airport and to and from the M11 for London. This reveals several key points, as follows.

5.2.2 Traffic flows are generally much higher for all forecast years/cases than for the base year of 2004. Broadly the forecast years/cases are around two to two and a half times higher, ranging from 103% to 178% higher. The notable exception is for traffic from M11 Junction 8 to Priory Wood roundabout, perhaps reflecting lower growth in evening peak movements from Bishop's Stortford and west.

5.2.3 The differences between the 25 mppa years/cases and their 35 mppa equivalents are very small. The reasons are not explained. This is despite the fact that growth in overall car travel is forecast to increase – with the enhanced public transport case used in the road traffic forecasts - by 25% for passengers (Table 6) and by 10% for employees (Table 8). (With the 35 mppa base case the increases would be 32% and 17%.)

5.2.4 Traffic flows with the increased road network are higher than equivalents for the core network, mostly in the range of growth by between 10% and 20%.

5.2.5 The 2023 forecast traffic levels on almost all links for most cases are higher than for the 2014 equivalent figures, but only by a small margin. However, the link between the A120 and Bassingbourn roundabout (in effect the airport entry/exit) is slightly lower in 2023 compared to 2014 for both directions for both peak periods. So too are the flows eastbound from junction 8a of the M11 to Priory Wood roundabout (but not westbound from Priory Wood to the M11).

5.2.6 The 35 mppa forecasts reflect the enhanced (public transport) scenario, in which overall passenger use of cars is lower by about 3 percentage points; employee travel by car is also reduced somewhat. With less provision of public transport, i.e. the base 35 mppa case, car traffic would be commensurately higher.

5.2.7 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 (assuming there were no significant policy change in demand management).[20]

[20] BAA ES Vol.11 Table 10.3 [CD/14].

5.3 Current and forecast local road use

5.3.1 Little coverage is given to local roads. The diagrams of forecast traffic flows show some reductions for cross-country (B) roads from the Increased scenarios compared to the Core scenarios (for 2014 and 2023). 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 Bishops Stortford; the central area and the A1250 on the western side already suffer seriously from congestion.[21] In Essex local roads around the airport and in Harlow also demonstrate peak period congestion.[22]

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:

- The forecasts of road traffic at 35 mppa throughput used assume an enhanced public transport (coach) system and reflect the air traffic forecasts incorporating a high (16.7%) transfer rate. Without either of these the level of road traffic would be rather higher; without both it could be significantly higher.
- The forecasts of employee numbers and travel patterns are questionable. Since most employee travel is by car (airport initiatives notwithstanding), higher levels of employee travel mean higher car movement.
- Forecasts of road traffic in the Increased scenarios are significantly higher, indicating that provision of more road capacity effectively has a generative effect. This matches growth assumptions based on providing for road movement rather than seeking to change activity patterns.

5.4.2 The picture that emerges is that the BAA forecasts produce a situation at 2014 in which road traffic can just be catered for within the available network, and where also there is suddenly little growth 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.' (paragraph 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.' (paragraph 10.5.17)

'… the two roundabouts … on the A120, at the A1250 and B1383, would be operating above capacity by 2014 in the 25 mppa case …' (paragraph 10.5.18)

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

[21] Hertfordshire's Local Transport Plan 2006/07-2010/11 Figure 2.5, Hertfordshire CC, 2006 [CD/318].
[22] Essex Local Transport Plan 2006/07-2010/11 Paras 6.108/6.115, 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: Bishops 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 2½%.[23]

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. During its initial years of operation the Stansted Express trains made some stops at Harlow or Bishops Stortford, but for most of their history they have run as a completely separate service, Tottenham Hale forming the only intermediate stop. But the December 2005 timetable change ended this separate operation, adding intermediate stops at Stansted Mountfitchet, Bishops Stortford or Harlow Town to maximise the use of capacity on the line. 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.[24] 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:

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

- 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)
- Stansted Express services have 86% of a.m. peak hour capacity used and 75% of p.m. peak hour capacity. The three hour capacity use factors are 57% a.m. and 60% p.m. This is on a 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 a.m. peak hour passengers and 38% of p.m. 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 a.m. 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 (Paragraphs 5.7-5.2.10, Tables 5.4-5.6).

6.1.6 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 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 - 4 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.

6.1.7 Transport for London's strategic rail plan for 2025 incorporated review and planning proposals for the West Anglia route.[25] 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.

6.1.8 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

[25] Transport for London (2006) A rail strategy for London Transport for London [CD/317].

further afield. Changes in timetables by Central Trains have over time reduced the through services available to more distant cities; further changes may come with the letting of a new and restructured franchise covering these services.

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 8700 passengers to London and 7600 from London, while coach services carried about 2200 in and 3000 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 700-600 from the 2004 surveys.[26]

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 35 mppa throughput: with a broadly similar network to today; or with significantly expanded coach services; they also incorporate the revised figures set out in the Addendum [CD/14.1].. The Addendum forecasts for rail are far lower than the 2006. This is both unexplained and questionable (as previously discussed in section 4.3). Even so, the Addendum 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.

Table 10 Forecast growth in rail use

(% increase on 2004 base year)

Year/case	***Passengers* Vol.11**	***Passengers* Addendum**	***Employees* Vol.11**
25 mppa	+52%	+31%	+201%
35 mppa	+88%	+63%	+208%
35 mppa 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]. However, further sets of forecasts appeared in April 2007 in two sources: the Addendum to Vol.11 [CD/14.1] and the Network Rail Greater Anglia RUS [CD/312]. Table 11 sets out these various forecast figures. It is immediately obvious that there are some remarkable differences:

- The 2007 Addendum forecasts are all between 18% and 22% lower than the 2006 ones. 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 Addendum forecasts appears to be transfer from rail to coach.

[26] BAA ES Vol.11 section 5.5 [CD.14].

But, as suggested earlier, this seems unlikely with increased pressure on roads. And coach seems far less likely to offer a real alternative during the peak periods.

- 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 Addendum.
- 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.

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 will continue to grow strongly during the latter half of the decade. It confirms that the 2014 date 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.

Table 11 Departures from Stansted in the up a.m. peak

Basis	***Case***	***2014***	***2016***	***2021***
BAA – Vol.11	25 mppa	1777	-	-
BAA – Vol.11.Add	25 mppa	1447	-	-
BAA – Vol.11	35 mppa	1996	-	-
BAA – Vol.11.Add	35 mppa	1586	-	-
BAA – Vol.11	35 mppa	1950	-	-
BAA – Vol.11.Add	35 mppa	1587	-	-
RUS – BAA		-	2167	2663
RUS - Dft			- 2480	2856

Sources: ES.Vol.11 Tables 8.2-8.4/ES Vol.11.Add Table 3.2/Consultative RUS T.5.9

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 35 mppa scenarios are 21% and 20% lower than the 2006 ones. The 2007 figure for the 25 mppa scenario is 15% lower, but there is a further serious inconsistency here: the Vol.11 figure is given in the Addendum as 1937, but in Table 8.2 of ES Vol.11 the total for the time period amounts to 2037. 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 p.m. peak

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

Sources: ES.Vol.11 Tables 8.2-8.4/ES Vol.11.Add Table 3.2

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 25 mppa case, around 350 for the 35 mppa cases, and almost 500 for the 40 mppa 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 Addendum; 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 – 25 mppa	958	702	377	2037
2014 – 35 mppa	1090	964	534	2588
2014 – 35 mppa enhanced	1070	946	524	2540
2014 – 40 mppa	1223	1081	599	2903

Sources: 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 loading 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 Department for Transport. 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 Bishops 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 by two thirds that is forecast for the 35 mppa 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.
- 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 (if the investment is available of course); but the complex junctions prevent any significant increase in service levels commensurate with the likely demand.

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 2200 coach passengers arriving at the airport and 3000 leaving, against totals of 3300 in and 4000 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. They are provided by National Express and Terravision, 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 Bishops Stortford, Harlow, Braintree and surrounding villages; they serve mainly for local travel, especially staff access. Coach services operate further afield, usually on an hourly 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 35 mppa case (BAA ES Vol.11 [CD/14] section 7.7 and ES Vol.11.Add [CD/14.1] section 2.7). This would provide a number of 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 35 mppa 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 Addendum as well. The forecasts show a very substantial growth in passengers expected to use coach and bus services for all scenarios; but especially for the enhanced provision, i.e. the much increased coach network, where they double at least. The forecasts see significant increases in employees travelling by coach and bus, but especially with the enhanced network, where they again are expected to double. But of course these significant growth figures should be seen in a context where there are a much greater number of both air passengers and employees using cars.

Table 14 Forecast growth in coach and bus use

(% increase on 2004 base year)

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

7.2.2 More importantly, achieving these levels of growth requires provision of suitable services. Maintaining the present level and pattern of services may not be too difficult. But provision of the significantly expanded services proposed by BAA ES Vol.11 [CD/14] and ES Vol.11.Add [CD/14.1] within the British deregulated commercial regime is very questionable. 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). Services could be provided through support grants, and indeed launch grants have been offered or proposed. But 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. 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 Environmental Statement Volume 11 [CD/14] and the 2007 Addendum (ES Vol.11.Add) [CD/14.1]. The forecasts have been developed using a suite of models, with inputs including the planned regional growth in housing, employment and transport facilities. 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 Two main cases are presented for this year. One is for a throughput of 35 million passengers; the situation if the planning permission were granted. The other is for a throughput of 25 million passengers; the maximum allowed under the current planning permission. Comparisons are made for the 35 mppa

situation against the 25 million mppa 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 35 mppa throughput would have in comparison to 25 mppa.

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 25 mppa. With 35 mppa throughput the forecasts see passenger surface access demand in 2014 as one half again above current levels and nearly one third above 25 mppa levels.

8.1.4 The forecasts assume a higher transfer (inter-lining) rate for air passengers with 35 mppa throughput than for now or 25 mppa: 16.7% as against 10.2%. This means that proportionally fewer passengers are forecast to travel to and from the airport. For the 25 mppa case, surface access demand would be 22.46 million. For the 35 mppa BAA'S forecasts is for a surface access demand of 29.17 million; but if transfer passengers at 35 mppa were 10.2%, then the surface access demand would be 31.43 million. This is nearly 8% higher than the BAA forecast; a figure which in principle would work through all the aspects of forecast travel to and from the airport.

8.1.5 BAA point towards the high proportion of air passengers travelling to and from the airport by public transport, 37% in 2003 (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 the impact on these absorbs much of Volume 11's contents. 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. 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 Bishops 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 adjacent to 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 also 2023, and sets out the results for the many 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 two to two and a half times higher (the difference ranges from 103% to 178% higher). There are one or two notable exceptions, especially evening peak movements. Strangely the differences on the links analysed between the 25 mppa years/cases and their 35 mppa equivalents are mostly very small, despite the fact that overall car travel is forecast to be higher by 25% for passengers and 10% by employees for 35 mppa as against 25 mppa, and this is with the enhanced public transport case used for road traffic forecasts. With the 35 mppa base case the increases on 25 mppa would be 32% and 17%.

8.3.3 Despite the large growth in traffic flows forecast from 2004 to 2014, growth figures from 2014 to 2023 are very small indeed on most road sections, and negative on a few cases. Yet the forecast ‘growth drivers’ in the East of England see increases in peak travel by car of about 25% from 2003 to 2014 and by a further 16% from 2014 to 2023. This suggests that the traffic modelling for the airport flows is narrowly defined.

8.3.4 The road traffic scenarios used for forecasting include, at both 2014 and 2023, two networks of roads, termed core (committed or possibly expected for the date) and increased (other planned schemes). Overall the traffic flows with the increased road network are forecast to be higher than equivalents for the core

network, mostly in the range of growth of 10% to 20%. Some of this reflects diversion from minor cross-country roads in the sub-region, but not entirely. Overall it appears that provision of more road capacity, or at least removal of 'pinch points' through investment is allowing easier road travel over the network as a whole. In the present context of policy being geared ever more towards meeting environmental challenges, will significant additional road capacity be provided to cater for unrestrained road travel?

8.3.5 The 35 mppa analyses used for the traffic flow forecasts reflect the enhanced (public transport) scenario, in which overall passenger use of cars is lower by about 3 percentage points; employee travel by car is also reduced somewhat. With less provision of public transport, i.e. the base 35 mppa case, car traffic would be higher.

8.3.6 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.

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 25 mppa scenario and would nearly double for the 35 mppa 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 Addendum forecasts 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. They 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 provided for 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). But 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.

8.4.3 Furthermore, the East of England regional planning proposals foresee 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 the, 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 25 mppa scenario; double for the base 35 mppa scenario; and increase to nearly three times the present level if an enhanced coach network is introduced. The 2007 Addendum forecasts even higher growth. With the enhanced 35 mppa 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 be seen in a context where there are a greater number of both air passengers and employees using cars. 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 8 mppa. Subsequent planning applications took this to 15 mppa and then 25 mppa. 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, even though 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 have drawn up and presented their 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 25 mppa, this will add to serious current pressures. If permission is granted for removal of the 25 mppa limit, then the key roads and the rail line will quite rapidly become even more heavily affected by airport related traffic, to the extent of serious congestion and delay spots on both. More seriously, major growth in people, 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. 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 two principal reasons. First, they assume a throughput ceiling of 35 mppa. But there is no reason why the throughput should not be much higher, perhaps 45 mppa or even 50 mppa. Surface access demand for these levels (at whatever year) would be commensurately higher. Second, the forecasts 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. But growth in population and employment are planned to 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. 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 1: Table 1 Peak hour traffic flows at key locations

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

East bound AM peak

Year/case	***Network***	***A120 - M11 J.8 from/to A1250***	***Priory Wood from/to M11 J.8a***	***Priory Wood from/to M11 J.8***	***A120 between Bassingbourn & Priory Wood***	***Bassingbourn from/to A120***	***A120 E. of Bassingbourn***
2004		1600	740	660	1480	660	890
2014 – 25 mppa	Core	2050	1600	1430	2630	1190	1610
2014 - 25 mppa	Increased	2260	1900	1600	3000	1240	1940
2023 - 25 mppa	Core	2260	1650	1610	2790	1160	1810
2023 - 25 mppa	Increased	2550	1980	1500	3120	1180	2120
2014 - 35 mppa enh.	Core	2080	1700	1500	2840	1440	1600
2014 - 35 mppa enh.	Increased	2280	1970	1680	3220	1500	1920
2023 - 35 mppa enh.	Core	2280	1720	1670	2990	1390	1800
2023 - 35 mppa enh.	Increased	2580	2060	1550	3290	1440	2060

East bound PM peak

Year/case	*Network*	*A120 - M11 J.8 from/to A1250*	*Priory Wood from/to M11 J.8a*	*Priory Wood from/to M11 J.8*	*A120 between Bassingbourn & Priory Wood*	*Bassingbourn from/to A120*	*A120 E. of Bassingbourn*
2004		1560	1460	1440	2770	910	2100
2014 – 25 mppa	Core	2120	2110	1750	3890	980	3310
2014 - 25 mppa	Increased	2420	2450	1710	4310	1090	3620
2023 - 25 mppa	Core	2260	2230	1990	4200	920	3670
2023 - 25 mppa	Increased	2630	2690	1850	4490	1030	3820
2014 - 35 mppa enh.	Core	2120	2150	1760	3880	1080	3290
2014 - 35 mppa enh.	Increased	2420	2490	1820	4300	1210	3510
2023 - 35 mppa enh.	Core	2230	2290	2010	4210	1030	3640
2023 - 35 mppa enh.	Increased	2620	2740	1900	4540	1140	3810

West bound AM peak

Year/case	*Network*	*A120 - M11 J.8 from/to A1250*	*Priory Wood from/to M11 J.8a*	*Priory Wood from/to M11 J.8*	*A120 between Bassingbourn & Priory Wood*	*Bassingbourn from/to A120*	*A120 E. of Bassingbourn*
2004		1520	1130	1130	2150	700	1750
2014 – 25 mppa	Core	1790	2300	1640	3880	1090	3180
2014 - 25 mppa	Increased	2370	2720	1600	4210	1180	3410
2023 - 25 mppa	Core	1870	2600	1830	4360	1100	3580
2023 - 25 mppa	Increased	2400	2910	1800	4570	1170	3710
2014 - 35 mppa enh.	Core	1810	2340	1720	3930	1220	3170
2014 - 35 mppa enh.	Increased	2390	2770	1680	4270	1310	3390
2023 - 35 mppa enh.	Core	1880	2640	1880	4380	1210	3570
2023 - 35 mppa enh.	Increased	2380	2960	1860	4610	1300	3680

West bound PM peak

Year/case	*Network*	*A120 - M11 J.8 from/to A1250*	*Priory Wood from/to M11 J.8a*	*Priory Wood from/to M11 J.8*	*A120 between Bassingbourn & Priory Wood*	*Bassingbourn from/to A120*	*A120 E. of Bassingbourn*
2004		1710	880	1090	1650	840	1040
2014 – 25 mppa	Core	2180	1650	1630	3000	1210	1940
2014 - 25 mppa	Increased	2330	1970	1710	3390	1310	2230
2023 - 25 mppa	Core	2340	1820	1740	3350	1180	2320
2023 - 25 mppa	Increased	2600	2250	1720	3680	1320	2510
2014 - 35 mppa enh.	Core	2200	1720	1730	3220	1460	1940
2014 - 35 mppa enh.	Increased	2360	2050	1820	3360	1570	2240
2023 - 35 mppa enh.	Core	2370	1920	1850	3570	1420	2320
2023 - 35 mppa enh.	Increased	2610	2300	1820	3900	1570	2500

ANNEX 2: Table 2 Forecast changes in traffic flows on key sections at main peak direction

Eastbound AM peak

Year/case	***Network***	***Priory Wood from/to M11 J.8a***	***Priory Wood from/to M11 J.8***	***A120 between Bassingbourn & Priory Wood***	***A120 E. of Bassingbourn***
		% change	*% change*	*% change*	*% change*
2014 – 25 mppa	Increased/Core	19	12	14	20
2014 - 35 mppa	Increased/Core	20	-7	12	17
Increased	2014@25/2004	157	142	103	118
Increased	2023@25/2004	168	127	111	138
Increased	2014@35/2004	166	155	118	116
Increased	2023@35/2004	178	135	122	131
Increased 25 mppa	2023/2014	4	-6	4	9
Increased 35 mppa	2023/2014	5	-8	2	7

Westbound PM peak

Year/case	***Network***	***Priory Wood from/to M11 J.8a***	***Priory Wood from/to M11 J.8***	***A120 between Bassingbourn & Priory Wood***	***A120 E. of Bassingbourn***
		% change	*% change*	*% change*	*% change*
2014 – 25 mppa	Increased/Core	19	5	13	15
2014 - 25 mppa	Increased/Core	24	-1	10	8
Increased	2014@25/2004	124	57	105	114
Increased	2023@25/2004	156	58	123	141
Increased	2014@35/2004	133	67	104	115
Increased	2023@35/2004	161	67	136	140
Increased 25mppa	2023/2014	14	1	9	13
Increased 35mppa	2023/2014	12	0	16	12

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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

Summary Proof of Evidence on behalf of Stop Stansted Expansion

Demand for Surface Access and the Implications

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1 PERSONAL DETAILS

1.1 My name is Reg Harman. 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 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.

1.3 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.

1.4 My experience has ranged widely, covering strategic and project studies for railways and bus systems; local transport planning; accessibility planning; regional planning; demographic forecasting; comparisons of other European countries' practices. Particular responsibilities have included: managing the surface access studies for SERPLAN's input to the RUCATSE project; acting as expert witness for the Hertfordshire Society on the Baldock Northern Bypass Inquiry; acting as expert witness for Hertfordshire County Council at the West Coast Main Line TWA inquiry; managing studies of transport impact and implications for development projects, especially hospitals; advising Medway Council on procurement of the Transport for Medway project and acting as its programme manager.

2 SCOPE OF EVIDENCE

2.1 My evidence addresses the analysis and forecasting of demand for surface access and the implications of these. It looks in turn at the BAA forecasts and their context; at the implications for travel by car and public transport; and at some wider issues.

3 THE BAA FORECASTS AND THEIR CONTEXT

3.1 The BAA forecasts for future growth in surface access demand focus mostly on one year, 2014, when the throughput of 35 million passengers is expected to be achieved. The forecasts incorporate comparisons between scenarios with a throughput of 35 mppa (the planning application) and 25 mppa (the current maximum). The BAA surface access case rests heavily on the relatively manageable impact which it claims expansion to 35 mppa throughput would have compared to 25 mppa. The 2007 Addendum forecasts suggest slight reduction in these impacts, especially for peak rail travel; but their basis is questionable and they do not alter the main conclusions drawn below.

3.2 Passenger surface access demand at 35 mppa is forecast as nearly one third above 25 mppa levels. BAA forecasts assume a higher transfer rate for air passengers with 35 mppa than for 25 mppa; 16.7% against 10.2%. For the 25 mppa case, BAA forecasts surface access demand as 89.8% of 25 million, 22.46 million. For 35 mppa they forecast it as 83.3% of 35 million, 29.17 million. If transfer passengers at 35 mppa were 10.2%, then surface access demand would be 31.43 million, nearly 8% higher.

3.3 In 2003, 37% of air passengers travelled by public transport (a high figure for UK airports). BAA forecasts see this being maintained. But nearly three-fifths of air passengers will still

travel by car, as will five in every six employees. Much of the passenger and employee travel will be in the usual commuting peaks, adding to serious existing pressures then.

3.4 BAA forecasts that the employee ratio to passengers will be much lower with 35 mppa but will remain at current levels with 25 mppa. If the ratios were the same, employees and their travel demand would be one-fifth higher.

3.5 Surprisingly, for the 35 mppa case, BAA sees two-thirds more air passengers from East Anglia compared to 25 mppa but only one-fifth more for London. Yet BAA forecasts a much higher proportion of employees coming from London than at present. The uncertain basis for these patterns of distribution poses questions on the forecast patterns of surface access demand.

3.6 The airport's major travel impact falls on the north–south corridor, especially towards London, including the M11 motorway and the West Anglia railway line. Draft regional guidance envisages major growth in population and employment for the Stansted/M11 sub-region. Commuting, towards London especially, is already high. Increased quality of travel along the corridor is crucial for sustainable advanced economic development. Expanding travel for the airport poses a serious potential threat to this.

4 BAA FORECASTS FOR ROAD TRAFFIC AND PUBLIC TRANSPORT

4.1 The forecast road traffic flows for 2014 and 2023 are significantly higher than for the base year, on all scenarios. The main peak hour flows are around two to two and a half times higher. Yet the differences between the 25 mppa scenarios and their 35 mppa equivalents are mostly very small; even though overall car travel for 35 mppa is forecast to be much higher for both passengers and employees than for 25 mppa.

4.2 The forecast traffic growth from 2014 to 2023 is very small on most road sections. Yet the forecast 'growth drivers' in the East of England see increases in peak travel by car of about 16% from 2014 to 2023. This poses questions on the validity of inputs to the traffic modelling for the airport flows.

4.3 The 35 mppa traffic flow forecasts reflect the enhanced (public transport) scenarios, in which overall passenger and employee travel by car is lower than the base 35 mppa case. Without improved coach services, car traffic would be rather higher. By using the 'enhanced' scenarios for road traffic forecasting, BAA is playing down potential car traffic growth.

4.4 There is already serious pressure and some congestion on the M11 southbound, junctions 8 and 8a near the airport, sections of the A120, and some minor roads in the area. The forecast traffic growth may well worsen this. Traffic growth above the BAA forecasts would substantially worsen conditions.

4.5 Rail travel by air passengers is forecast to increase by half for 25 mppa and to nearly double for 35 mppa; even the Addendum's reduced rail forecasts see it up by three-fifths for 35 mppa. London forms the major origin/destination point. BAA consider that this growth could be accommodated by extending all Stansted Express trains to 12 coaches. But no commitment exists to even this limited investment.

4.6 But the West Anglia line already uses available capacity to its limit. Regional planning proposals will bring greater demand for rail commuting in the corridor. So may regeneration of the lower Lea Valley nearer London. Providing adequate operational capacity to meet all future demands on the congested system requires major investment. But currently there is no commitment.

4.7 Air passenger travel by coach is forecast to double for 35 mppa and to triple with an enhanced coach network. But commercial decision making, lack of adequate secure funding and rising road congestion indicate that an enhanced coach network is very unlikely. This means that forecasts for significantly increased coach and bus travel are invalid, as are lower road traffic and rail forecasts.

5 WIDER ISSUES: TIMESCALES AND IMPACTS

5.1 Stansted Airport has developed into a major airport within a very short timescale. Since opening in 1991 its throughput has risen rapidly through successive permitted limits. It has steadily gained a strong influence on the physical, economic and social structures of the surrounding areas, especially through its impact on transport. The area's road system has grown very substantially and airport traffic now forms a significant element. Stansted Express services now dominate the West Anglia rail route and constrain the scope for providing other services.

5.2 BAA's forecasts for surface access demand point to continued significant growth, so that airport traffic will dominate key transport corridors to an increasing extent. If permission is granted for removal of the 25 mppa limit, growth in airport transport will have serious impact on key roads and the rail line. The resultant damage to transport quality as well as capacity will harm regional plans for growth in population and economic activities.

5.3 The forecasts prepared by BAA underestimate the growth in surface travel for two main reasons. First, they are mostly limited to the year 2014, with no attempt to present an overall view of the trends in demand for further years; even though population and employment, and hence travel demand, will continue to grow. Second, they reflect assumptions and factors that underplay the likely growth in various ways, even to 2014. For these reasons, the BAA forecasts of surface access are partial and misleading.