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RESPONSE TO NATS TC NORTH CONSULTATION

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Attachments:

1. INTRODUCTION

1.1 NATS is carrying out the biggest ever consultation on airspace change specifically that related to the airspace called Terminal Control North (TCN). The proposed changes are the first fundamental overhaul in several decades for this area of airspace. TCN includes four of UK's major airports in and around London and 59 smaller airfields. TCN covers a large area including Luton Airport, and encompassing, Buckinghamshire, Bedfordshire, Cambridgeshire, Suffolk, Essex, Hertfordshire, West/North/East London and including the Chilterns. It includes a population in excess of 12 million.

1.2 NATS advised, 9th May 2008, that should the proposal be accepted, they will provide a report on the success of the development against the objectives in terms of capacity/delay, safety and environmental performance. They have advised that the objectives that success will be measured against are:

"a) Improved safety per flight – NATS will seek to demonstrate that over the long term incident rates will be reduced. Safety incidents are relatively rare and therefore identifying long term trends after a 12 month period is difficult, however NATS will perform an analysis on the available data. The results of the analysis will be augmented with a qualitative assessment of the safety implications of the change.

b) Improved airspace capacity – NATS will seek to demonstrate that regional capacity is improved by at least 28% through analysis of sector capacities, throughput and delay.

c) Environmental performance – in the consultation material NATS has provided a large number of route and flight path maps that indicate where aircraft currently fly and will fly under the proposals. These indicate the 'before 'and 'after' scenarios. NATS will seek to demonstrate that the actual tracks flown following implementation match the heights and spreads indicated on the proposed route and flight path maps."

1.3 NATS had earlier advised that they would achieve these aims by implementing measures to:-

- Reduce congestion over Brookmans Park caused by converging departure routes from Heathrow, Stansted, Luton, London City and Northolt.
  [N.B. That is achieved in part by re-routing 35% of Luton's departing traffic, that to the East and South-East, the former Clacton/Dover/Detling routes].

- Relocate and separate the holding facilities for Luton and Stansted to accommodate their growth. The Airports currently share two holds; under these proposals each would have a dedicated hold and Stansted an additional hold.
  [N.B. That involves a new holding stack for Luton traffic only in the vicinity of Eltisley, set between St Neots and Cambridge].

- Establishing set arrival routes from the holds to the runways at Luton, Stansted and London City.

- Introduce continuous descent approaches (CDA) where aircraft stay higher for longer, reducing fuel burn and noise, for Stansted's easterly runway.

[N.B. NATS in Part D of the Consultation Papers give their definition of a CDA applicable within the TCN region as a continuous descent from 6000ft to the ground, except where the aircraft joins the 'final approach' where a period of level flight is required for safety reasons. Final approach is the last portion of the flight where the pilot aligns the aircraft with the runway ready to land. The period of level flight is required to enable the aircraft to stabilize speed and establish its landing configuration before descending to the runway. The UK definition states that this period of level flight should be no more than 2.5 nautical miles (just over 4.5km).]

- Formalize arrival and departure routes for London City to reflect the growing number of jet aircraft using the airport, and to provide a new hold.

1.4 NATS addressed members of LLACC on the 10th March 2008 at Putteridge Bury Conference Centre on the effect of these proposals on flying activities with regard to London Luton Airport. In light of that presentation the Chairman requested clarification from NATS on various issues raised by Members, see Appendix A. Appendix A also includes the replies from NATS received on the 9th and 16th May.

1.5 The consultation period was to close on the 22nd May 2008, but was extended to 19th June. NATS advised that if their proposal is approved by the Civil Aviation Authority (CAA) the change would not become operational before Spring 2009.

1.6 NATS made it clear in their presentation to LLACC that the current proposals are based on extensive pre-consultation and testing over several years. The opportunity for further change, based on the current consultation, NATS advised is minimal but that views will be passed to the CAA who will take the final decision.

1.7 This report provides LLACC's response on the TCN Consultation, finalised by the Noise and Track Sub-Committee at their meeting of June 16th.

2. EFFECTS OF TC NORTH PROPOSALS ON OPERATIONS OF LUTON AIRPORT

2.1 The effects on London Luton Airport operations impacts are very significant. This can be illustrated by the forecast 2009 daytime noise contours, viz

Population Counts for 2009 57 dB $L_{Aeq,16h}$ Daytime Contour	
Current Airspace Arrangements	4,758
Proposed Airspace Arrangements	10,068

No population data was provided for the Luton 2014 noise contours given in the Consultation papers. Those would have related to conditions with the Airspace used as proposed by NATS. The population within the 2014 Luton contours will be greater or equal to that of the old 1984 contour currently used as the not to be exceeded planning condition noise limit at Luton. (Appendix B contains a copy of the NATS 2014 noise contour).

The effects indicate over 5000 people to be newly exposed to noise at 57 dB $L_{Aeq,16h.}$ This is the level used by Central Government based on 1980's research as the level of daytime noise marking the approximate onset of significant community annoyance. NATS has not provided any night-time contours, but have provided some SEL footprints.

LLACC are aware of the criticisms of the recent large ANASE study, but note that the Parliamentary Under Secretary of State advised LLACC in February this year that two-key conclusions emerged from the study; i.e. that people are more annoyed by all levels of aircraft noise than they were in 1985, and that there is no identifiable threshold at which noise becomes a serious problem. The Secretary of State also advised LLACC that for the Heathrow consultation he would provide information for exposures to 54 dB $L_{Aeq,16h}$ as well as 57 $L_{Aeq,16h}$. Such information should be provided for this more extensive consultation.

2.2 The considerable change in routes is illustrated by the aircraft noise footprints given in the NATS separate SEL technical report,
e.g. for departures to the east – see Figure 6.
for departures to the west – see Figure 12
(Appendix B contains copies of these figures)

No population data was provided for these aircraft noise footprints. The greatest effect is the alteration shown in Figure 12, which shows that noise levels greater than 90 dB(A) SEL will be incident on many properties in South Luton. This level is that

used by Government in assessing the impact of aircraft noise on sleep disturbance, and by some UK airports as the threshold of eligibility for soundproofing to mitigate effects of night noise.

2.3 There are many significant changes for local people, these include,

- The revision to the initial climb track of aircraft departing on runway 26, such that noise contours move north into Luton and Caddington. For many years departing aircraft have turned quickly, 40^0 on departure to avoid this effect. The Airfield Environment Reports have shown the tracks actually flown achieve this turn consistently and the tracks flown are concentrated in a relatively thin swathe.

- The re-routing of the easterly departing Clacton/Dover/Detling traffic (usually 35% of all departures), to avoid the Brookmans Park area, by flying over the north of Stevenage towards Buntingford. This redistributes the consequential noise from areas to the south of Stevenage and over Knebworth to north Stevenage and over Cottered where current planning policies provide for some 10,000 to 12,000 dwellings to be built.

- The re-routing of the westerly departing Clacton/Dover/Detling traffic to avoid the Brookmans Park area, by flying over the area exposed during easterly operations to arrivals, and to overfly villages in the recently extended Western Airspace Extension area and the Houghton Regis major development area, prior to overflying Hitchin. This traffic currently flies to the south of the Airport overflying north St Albans and Hatfield.

- The re-routing of the westerly departures to the North, "Olney 1B", to proceed to Tring as opposed to Little Gaddesden before turning North.

- The re-routing of the busiest route, Compton, which takes around 45% of Luton's departures. For departures off runway 08 currently traffic, after departure towards Stevenage, quickly and sharply turn over Codicote to pass towards Tring and avoid overflying South Harpenden. As shown in the AMR 2007 (recently published), in practice this is not achieved and flying does occur over all parts of Harpenden. The new route leads the traffic to the area south of Harpenden and north of St Albans prior to manoeuvring around Hemel Hempstead and then passing over north Berkhamsted to overfly the Chilterns AONB. The new route also turns traffic soon after departure over Whitwell.

- The reorganization of arrival aircraft now to fly on a published arrival route north of Leighton Buzzard with easterly operations. There is currently no defined route. LLACC will recollect the long discussions over the Western Air Space Extension that led to advice from NATS that the arriving aircraft would be to the south of Leighton Buzzard.

- The establishment of a new holding area in an area not currently so overflown.

2.4 There are many changes to the routes, and NATS have estimated the population under the Luton noise preferential routes in two ways. In Part C of the Consultation package they delineate the population based on 2006 statistics, as

Current Design	64,133
Proposed Design	53,395

These estimates only considered the routes which are to be changed, and separately considered populations under the NPRs and airport L_{eq} contour.

2.5 In the Addendum to TCN Consultation using a different method the populations under the NPRs were reassessed, viz

Population beneath today's NPRs that would remain	18,029
Population under today's NPR but would not in the future	57,829
Population under future NPR but not today	50,214

2.6 NATS in their first reply to LLACC, that of 09th May 2008, provided further population statistics.

Below are the population count figures for the current and proposed Luton NPRs. Please be aware that these figures should not be aggregated as this would lead to double counting in some areas.

LUTON AIRPORT

NPRs

CURRENT	POPULATION
E – Olney	10959
F – Clacton/Detling/Dover	3752
G – Compton	17087
H – Clacton/Detling/Dover	43461
I – Olney	5176

PROPOSED	POPULATION
A – Clacton/Detling/Dover	34385
B – Compton	11508
C – Compton	10614
D – Olney /Clacton/Detling/Dover	9876
E – Olney	10959

2.7 There will be a redistribution of the effects of departing and arriving aircraft for a very large number of people with the populations overflown by 4 of the 5 NPRs increasing significantly. NATS have assessed that for westerly departures to Clacton/Detling/Dover (the Brookman's Park routes) there will be a large reduction in the population overflown. This arises from NATS method of analysis which assumes that departing aircraft will be at less than 4000ft when they overfly parts of St Albans and Hatfield. As LLACC has been advised in the 2007 Annual Monitoring Report the heights over Hatfield are mainly in the height range >6000 ft less than 10,000 ft. There will be benefits for the population south of Stevenage and those in Harpenden.

2.8 The proposals for TCN do not provide any overall reduction in average fuel burn and $C0_2$ emissions. In fact for Luton departure routes to the East off runway 26 aircraft have to fly an additional 20 nmiles or so. This appears to conflict with the assumption made in the DfT UK Air Passenger Demand and $C0_2$ Forecasts report of November 2007, which foresaw air traffic management contribution in gains in efficiency so helping to address climate change.

2.9 The proposals for TCN are not assessed by NATS as having any effect on local air quality. This assessment appears incorrect for the areas of Luton newly exposed to all Westerly departures at heights less than 1000ft.

2.10 The proposals are predicted to lead to a better use of CDA approaches for Luton. There is however a concern over this prediction as Luton's future arrivals are shown to continue to have a long segment flight below the NATS 6000ft CDA standard.

2.11 The proposals for the entire TCN are predicted to reduce delays to the travelling public by 4 million hours in the period 2009-2014. It is unclear what effect on delays at Luton will arise. Further information on current delays, and forecast delays without implementing the TCN proposals have been requested for NATS, but no advice received to-date.

Elsewhere in the consultation documentation NATS advise that due to the proposed dedicated hold for Luton traffic, the airborne arrival delay will reduce by 10% by 2014. LLACC have been advised by the Airport (Item 4a, 14 April 2008) that in 2007 the average delay was about 16 minutes. Thus a 10% reduction in this delay time would be less than 2 minutes and insignificant.

2.12 The proposals, as mentioned earlier, are intended to produce a 28% increase in regional airspace capacity.

2.13 The proposals, by adopting P-RNAV technology will lead to a concentration of traffic over properties under the centre line of the new routes, unless the aircraft are radar-vectored off the route having reached 4000ft above mean sea level. This will concentrate noise for those under the routes, as more distant areas from the routes are relieved from hearing that activity.

2.14 The departure routes to the West will in the future overfly the population exposed to arrivals, whereas currently the departure aircraft turn before the M1 and diverge from the arrival track. This will result in a major change for local people who currently tolerate arrivals for approximately 30% of the time, and no departures; and if NATS

proposals are accepted will have aircraft noise on every day i.e. for 30% arrivals as now and 70% departures in a year.

2.15 The advice to-date received from aviation representation of LLACC, who were especially contacted, is limited to advice from one airline that the TCN proposals are expected to lead to “small improvements in a very complex jigsaw puzzle”. LLACC was also advised that significant fuel savings will only occur if continuous departure climbs are introduced, and the whole inefficiencies of North of London arrivals due to the very early descents required to facilitate transit through the Heathrow stacks is successfully addressed.

3. ADEQUACY OF NATS CONSULTATION PROCESS

3.1 LLACC Members have noted that many local people are ill informed of these extensive proposals. This has occurred because of the need for quite advanced internet provisions to view all the documents, and the apparent absence in many local libraries of a set of the hard copies. LLACC note the recent extension of the consultation period by four weeks was not adequately publicised.

3.2 LLACC has been involved in detail with both the resolution of a new departure route described as Olney 1B, and a recent extension of Western Airspace to accommodate deconfliction of arriving aircraft on runway 08 from Compton departures off the same runway. In those examples the Airport carried out much more extensive consultation including holding public meetings in the areas affected. The process allowed adequate time for questions to be raised and answers given or dialogue held. This present Consultation process appears rushed and not sufficient.

3.3 Despite the role set by the Department for Transport for Airport Consultative Committees, LLACC understand they were not considered by NATS worthy of pre-consultation whilst the proposals were being formulated. In any case the pre-consultation that was said to take place was more in the nature of fact finding than consultation on the proposals.

3.4 LLACC are concerned that despite public consultation being in progress on the Western Airspace Extension recently, NATS remained silent of the now intended use of that Airspace, and also on the need for its further extension.

3.5 LLACC are also concerned that the Consultation includes much confusing information and does not simply advise people correctly of the best estimate that can now be made of in simple terms the typical number of aircraft that will overfly local people, the typical height, and the typical noise levels. Such information was provided to the public when consultation occurred over the Western Airspace Extension.

3.6 LLACC are also concerned that no scientific information is provided on the dispersion around the P-RNAV routes, despite trials occurring elsewhere in UK.

3.7 LLACC is also very concerned over the lack of information on the degree to which aircraft will be taken off the P-RNAV routes once they reach a specified altitude/height. In the Olney 1B consultation misinformation occurred because the

use of radar-vectoring off the route was not properly described. This appears to be going to happen again over this Consultation.

3.8 LLACC are disappointed that the public have still not been advised clearly of the benefits that may arise in order to be able to appreciate the balance sought by NATS between competing interests. A very important example of the failure in communication is the failure to delineate clearly the alleged strategic confliction in the Brookman's Park area which appears to be the justification for the major changes in Luton departure routes. Such changes are of themselves contrary to Government guidance which recognises the importance of long-term stability in route structure in the immediate vicinity of airports. NATS do advise that their brief was to maintain current route alignments wherever possible so as to make minimal change to the noise contours; this clearly has not happened for Luton Airport.

3.9 LLACC are dismayed that these changes to airspace arrangements are being proposed whilst for Luton Airport and it's local community it is clear that no overall environment benefit will accrue as required by the Guidance given by the Secretary of State under Section 70(2)(d) of the Transport Act 2000.

3.10 LLACC are also concerned that NATS have indicated that the responses to consultation will be assessed so that a post-consultation report can be published one month (originally by 22 June but presumably now 19 July) after the end of the consultation period. In view of the complexity of the changes, and inevitably the detailed nature of the responses likely to be received, this is totally inadequate. It gives the impression that little attention will be given to views expressed and thereby casts doubt on the sincerity of the consultation process.

3.11 The Consultation document would also appear to be deficient in not indicating clearly how any benefits from these changes will be monitored and assessed against the existing situation. In relation to the three objectives:

- Improved safety – a clear statement of the existing safety record and any improvement will need to be given.

- Improved airspace capacity – again existing and achieved capacity figures will be needed.

- Environmental performance – this should be much more than just heights and spreads and should cover environmental impact generally.

4. OUTSTANDING LLACC QUESTIONS

4.1 LLACC acknowledge the detailed responses made to the many questions made by Members. These have helped to clarify many issues, unfortunately in some cases the NATS responses lead to follow up questions or are unacceptable.

4.2 LLACC appreciate the outcome reported above occurred when LLACC, the Airport and NATS were working together over Olney 1B and the Western Airspace Extension. In those cases there was time for effective dialogue, the current time constraint on this much larger Consultation prohibits effective dialogue.

4.3 Appendix A records the main LLACC questions asked and the NATS responses.

4.4 LLACC conclude from these responses the following key points about the Consultation to-date:-

- Design objectives/Rigorous Assessment Approach unclear as only one numerical key performance indication mentioned.

- Non rigorous consideration of Governments' major new residential plans.

- Uncertainty for local people over height of aircraft as only minimum quoted, uncertainty for local people over the proportion of traffic that will use the proposed P-RNAV routings, and also those that will use the new published arrival routes from the new hold.

- Population statistics provided are misleading as they do not separate populations against height bands, and so treat aircraft at 1000ft in the same manner as those at 3000ft.

- Daytime Noise Contour Data is provided in a non-standard format, and does not delineate population in 2014 contour.

- Night-time Noise Contour Data not provided.

- Inconsistent advice to the Stop Stansted Expansion group (SSE) and LLACC over the estimation of emissions, in contrast to technical information provided with regard to TC South West Airspace Change Proposal.

5. LLACC RESPONSE: PRINCIPLES OF AIRSPACE CHANGE NATS ASSESSMENTS

5.1 LLACC acknowledge that NATS have worked for four years with Airport authorities and others to develop this comprehensive re-organisation of the airspace and its use for Terminal Control North. LLACC also thank NATS for making a special presentation to LLACC on their proposals on the 10th March 2008.

5.2 LLACC note that NATS have sought to achieve an appropriate balance between conflicting requirements, and appreciate that with such changes there will inevitably be both "winners" and "losers". Unfortunately the rigorous assessment adopted by NATS is not clearly identified in the Consultation documentation. For instance the proposals modify the long established westerly departure procedures at Luton, and so double the noise contour population. The balancing process here is unclear.

5.3 LLACC note that the important guidance set by the Government on the CAA of maintaining established routes so that the public can select to live near or far from such routes has been abandoned. This leads to the question: "Where property values become depreciated will NATS be arranging suitable compensation for the disadvantaged property owners?"

CAP 725

5.4 CAP 725 "CAA Guidance on the Application of the Airspace Change Process" was recently resolved after public consultation and published in April 2007. This Guidance delineates environmental assessments that CAA indicate "MUST" be provided by those providing a change in airspace and those that "SHOULD" be considered and those that "MAY" be provided.

5.5 The "MUST" requirements are to be met in full. The "SHOULD" requirements are to be provided unless it has been agreed otherwise with the Directorate of Airspace Policy, and those proposing the changes are to decide whether they submit the "MAY" items. These CAP 725 requirements were delineated in the Note to LLACC (A4461/N34/T1) of 21stJune 2006. Appendices C, D and E copy the lists for "MUST", "SHOULD", and "MAY" items.

5.6 LLACC note that NATS has not fully explained why the selection options for Luton's traffic are the best, or provided the vertical distribution of traffic, or provided local air quality information as required on the "MUST" items.

5.7 LLACC note that NATS has not provided departure profiles for the most frequent types of aircraft including maximum, typical, and minimum climb rates or details of traffic forecasts as required on the "SHOULD" items. LLACC note that due to use of a worst case climb rate, 5.75%, approximately half that used at Luton the height information and noise information is erroneous if the public are to be properly advised.

5.8 LLACC note that NATS has not implemented all the "MAY" items either, e.g. no outputs from simulation to demonstrate the lateral dispersion of traffic from the P-RNAV trials, and no economic appraisal of the impact of airspace change. Also not provided by NATS are the 54 dB $L_{Aeq,16h}$ contours, which have been used by the Department for Transport in 2008, in their major Heathrow Consultation.

5.9 The Directorate of Airspace Policy, "DAP", is bound by Guidance issued by the Department for Transport in pursuance of Section 70 (2)(d) of the Transport Act 2000. These lead to a set of environmental design criteria, viz

CAA Environmental Objectives

- routes should avoid densely populated areas as far as possible;
- aircraft taking off from airports should be concentrated on the smallest possible number of specified routes;
- make as few changes as possible;
- design options should be able to show that they result in environmental benefits;
- airspace should be designed to enable aircraft to climb quickly, as far as possible de-conflicted from other air traffic;
- seek to avoid tranquil areas where this does not increase significantly the environmental burdens on congested areas; and
- design airspace structures that ensure that consideration is given to the use of Continuous Descent Approach (CDA) and low power/low drag (LP/LD) procedures (the accepted best practice noise and emissions reducing operating technique for arriving aircraft)."

5.10 When NATS designs airspace, these environmental criteria should be taken into account, along with the overriding safety imperative, and capacity and efficiency.

5.11 LLACC note that this TCN Consultation has not been able to adopt all these design criteria, for instance enabling aircraft to climb quickly, avoid tranquil areas, make as few changes as possible. This arises to some extent because the Consultation has

not given consideration to the location of the Bovingdon stack, which has such a major effect on operations in TC North. LLACC are very concerned on the concentration that will arise from the adoption of P-RNAV routes on rural areas; an effect about which no adequate impact assessment information has been provided.

Dispersion or Concentration?

5.12 LLACC note that the CAA expect routes should avoid densely populated areas and also avoid tranquil areas where possible. This leaves a heavy burden on areas, particularly the extensive rural areas, that some may consider come into neither category. Studies are needed to identify if the environmental impact on rural areas is less if a single track is used or if dispersion around a centre line is flown.

Tranquillity

5.13 LLACC appreciate the lack of authorative guidance on protection of tranquil areas, but suggest NATS have failed in their legal obligations, that arises from the Countryside and Rights of Way Act 2000 to have regard to the purpose of conserving and enhancing the natural beauty of the Chilterns Area of Outstanding Natural Beauty.

Climate Change

5.14 LLACC was disappointed to note that the proposals do not provide any overall reduction in average fuel burn and $C0_2$ emissions. This appears to conflict with the assumption made by the DfT and noted in their document UK Air Passenger Demand and $C0_2$ forecasts of November 2007, which foresaw air traffic management contribution in gains in efficiency so helping to address climate change.

New Residential Development

5.15 LLACC appreciate the lack of clarity on the precise locations for the major new developments (housing) planned by the Government, and the delay over the recent publication of the East of England Plan. However it is clear that certain areas will be developed to provide some of the 3 million homes proposed by the Government, and it appears inappropriate that NATS have chosen to take no consideration of this major Government policy. Of course, consideration should also have been given to the Government's developing South East Plan.

Continuous Descent Approach (CDA)

5.16 CDA has been shown to be a distinct advantage and its use at Luton has been fully supported. But it would appear that to achieve some of the new CDA approaches to Stansted there may be a detrimental effect on the heights flown by some of Luton's traffic. The evaluation of net benefits for each of the two airports has not been demonstrated by NATS in the Consultation process and is needed before any final decision is taken.

6. LLACC RESPONSE: SPECIFIC ISSUES

6.1 LLACC find that it cannot support the current NATS proposals as they appear to produce unacceptable adverse effects whilst the claimed benefits are poorly delineated and few if any of such benefits are suitable for independent verification. Clearly, even on the basis of the Consultation information, no overall environmental benefit for Luton Airport and it's local community has been established such that LLACC rely on the Civil Aviation Authority in line with it's Guidance from Government (Section 70(2)(d) of the Transport Act 2000) to reject the proposals in their current form.

6.2 LLACC suggest that the way forward is for effective dialogue between NATS, the aviation community, and local people. This was achieved over the Western Airspace Extension and Olney 1B, and led to resolution of the appropriate compromise. In particular LLACC suggest the airspace constraints on this area due to Bovingdon, Heathrow Departure routes, and the alleged congestion at Brookman's Park should be openly discussed in any further studies. The opportunity should be taken to ensure aircraft can use their improved performance to climb quickly and descend from the stacks using CDA, LP/LD mitigation measures.

6.3 LLACC, consider the present proposals inadequate in terms of climate change and environmental issues etc. However LLACC have considered what improvements should be considered in the short term if the airspace re-organisation has to be implemented prior to serious reconsideration. These are briefly noted below.

6A <u>Easterly Departures</u>

<u>Luton Easterly Departures to East: Figure F3</u>

- Route not to be adopted prior to completion of P-RNAV Trails and so confirmation of dispersion about track.
- Route to be modified to take aircraft between Hitchin and Stevenage, i.e. not overflying the area's main Hospital, the Lister, the John Henry Newman School, and the large resident population and the area now identified in the RSS for major new residential development.
- Route management to be put in place to maintain aircraft on new route by restricting radar vectoring so that traffic is not taken over urban areas that P-RNAV was seeking to protect.

Luton Easterly Departures to South East: Figure F5

- Route not to be adopted prior to completion of P-RNAV Trials and so confirmation of dispersion about track.
- Route to be modified to take aircraft between Hitchin and Stevenage, i.e. no overflying the area's main Hospital, the Lister, the John Henry Newman School, and the large resident population and the area now identified in the RSS for major residential development.
- Route management to be put in place to maintain aircraft on new route by restricting radar vectoring so that traffic is not taken over urban areas that P-RNAV was seeking to protect..
- Route design be improved to ensure that the southern edge (black line) of the route be moved further east and north towards Cottered to avoid further overflying Stevenage.

Luton Easterly Departures to South West: Figure F7

- Route not be adopted prior to completion of P-RNAV Trials and so confirmation of dispersion about track.
- Route to be redesigned to avoid currently proposed overflying of Hemel Hempstead and North Berkhamsted, and to avoid aircraft held at less than 4000ft for 19nm. Such modern aircraft should be released to climb so as to minimise local noise effects and minimise fuel burn.
- Route to be redesigned to avoid overflying of The Chilterns AONB, by for instance retention of the existing route.
- In absence of the required redesign the edges of the route (black lines) should be repositioned to avoid overflying of Wheathampsted, Hemel Hempstead, Berkhamsted and Chesham.
- Route management to be put in place to maintain aircraft on new route by restricting radar vectoring so that traffic is not taken over urban areas that P-RNAV was seeking to protect., and speeds restricted until after the leftward turn which would bring the track over Water End.
- Route to be redesigned to avoid in the initial climb overflying Whitwell, Codicote and South Wheathampstead.

6B Westerly Departures

6.4 The proposed completely new routes for East and South East destinations that take aircraft having departed westerly on a long route away from their destinations introduces such departures to an area which on westerlys has the Olney 1B traffic, and on easterly has the just resolved new arrival procedure from Lorel stack. These routes will bring departure noise (by NATS design) to many villages including Edlesborough, Eaton Bray, Studham and Caddington. Without the benefit of adequate details of the Brookman's Park congestion, neither of these routes could be supported. As above short term suggestions are given below.

6.5 The proposed new routes for Westerly operations produce in effect one departure route for this Airport until aircraft reach Hudnall. This will occur for 70% of the year, and will accommodate approximately 250 aircraft per day in 2014. Consideration should be given to splitting the routes to avoid the unusual concentration; unusual in that for most airports departure tracks split quickly so allowing greater airport capacity and a sharing of the burden by the local community.

Luton Westerly Departures to East: Figure F11

- Route not to be adopted prior to completion of P-RNAV Trials and so confirmation of dispersion about track.
- Route to be redesigned to maintain current 40^0 turn on departure which has been used successfully for decades to minimise effect on people with Airport noise contours.
- Route to be redesigned to avoid overflying Tring and Houghton Regis, and then to avoid the centre of Hitchin.
- Route management to be put in place to maintain aircraft on new redesigned route by restricting radar vectoring so that traffic is not taken over urban areas that P-RNAV was seeking to protect. and speeds restricted until completion of the right turn to protect Tring and Marsworth.

Luton Westerly Departures to South East: Figure F13

- Route not to be adopted prior to completion of P-RNAV Trials and so confirmation of dispersion about track.
- Route to be redesigned to maintain current 40^0 turn on departure which has been used successfully for decades to minimise effect on people with Airport noise contours.

- Route to be redesigned to avoid overflying Tring and Houghton Regis, and then to avoid the centre of Hitchin.
- Route management to be put in place to maintain aircraft on new redesigned route by restricting radar vectoring so that traffic is not taken over urban areas that P-RNAV was seeking to protect. and speeds restricted until completion of the right turn to protect Tring and Marsworth.
- The edge of the route to be as for the route to the East, Figure F11 to avoid overflying of Stevenage.

Luton Westerly Departures to South West: Figure 17 (re-issue)

- Route not to be adopted prior to completion of P-RNAV Trials and so confirmation of dispersion around track.
- Route to be redesigned to maintain current 40^0 turn on departure which has been used successfully for decades to minimise effect on people within Airport noise contours.
- Route to be redesigned to avoid overflying of the Chilterns AONB.
- Route management to be put in place to maintain aircraft on new route by restricting radar vectoring so that traffic is not taken over urban areas that P-RNAV was seeking to protect..

Luton Westerly Departures to the North: Figure 19

- Route not to be adopted prior to completion of P-RNAV Trials and so confirmation of dispersion around track.
- Route to be redesigned to maintain current 40^0 turn on departure which has been used successfully for decades to minimise effect on people within Airport noise contours.
- Route design to be improved by reducing width of black lines, e.g, as Figure F17, so as to avoid overflying of Milton Keynes, Bedford, Dunstable, Leighton Buzzard etc.
- Route management to be put in place to maintain aircraft on new route by restricting radar vectoring so that traffic is not taken over urban areas that P-RNAV was seeking to protect. and speeds restricted until completion of turn to protect Tring and Marsworth.

6C Easterly Approach Routes: Figure F24

- Whilst carrying out this major re-organisation the design should avoid long stretches of level flight. This has not been achieved to-date with the proposals,

and therefore the proposals should be modified to allow and cause CDA approaches from the new holding stack in Cambridgeshire.

- LLACC has recently considered with NATS use of the Western Airspace Extension, and in particular the need to avoid overflying of Leighton Buzzard. As shown on Figure F24 the new proposal appears to achieve just the opposite. To retain the recently resolved approach paths should be the design aim.
- During that consultation the need to keep well south of Milton Keynes was agreed, therefore the approach route management should work with the upper black line on Figure F24 moved southwards.

6D Non P-RNAV Route

Luton Easterly Departure to North [Unaltered non P-RNAV route]

- Whilst implementing the new routes, route management to be applied to the existing route by restricting speeds to facilitate left hand turn without overflying Hitchin.

6E Westerly Approach Routes: F26

- No improvement suggestions.

6F Areas of Outstanding National Beauty: Figure F54

- LLACC study in detail on a three month basis local community concerns over aircraft noise. With respect to current flying over Wendover which appears as the reason for moving this busy departure route over the Area of Outstanding Beauty, the Chilterns, the Airports' Annual Reports suggest little impact.

Location:	**Annual Nos of Complaints:**				
	2003	**2004**	**2005**	**2006**	**2007**
Wendover	0	1	0	0	1
Princes Risborough	1	1	1	0	1

- The proposed routes should retain the existing routes north of the Chilterns.
- The route management of these routes should seek to achieve the greatest height for departing aircraft a.s.a.p.

6G Use of Direct Flight Paths

6.6 The Consultation has concentrated on the P-RNAV route from the holding area for arriving aircraft. However in Consultation Part F Section 7 NATS describe how direct flight paths may be adopted such that whilst aircraft landing at Luton during normal operations will head towards the hold (situated between St Neots and Cambridge) if holding is or is not required; at off peak times (midnight to 6 am) and even during normal operations quiet periods Direct Flight Paths may be taken. NATS have sought LLACC's view on whether air traffic controllers should by use of Direct Flight Paths disperse traffic or concentrate traffic on the P-RNAV route.

6.7 LLACC acknowledge that use of Direct Flight Paths would offer some respite for those under the new P-RNAV route. LLACC are however unable to form a formal view on this detailed matter as they have not been provided with any estimate of the proportion of traffic that would use Direct Flight Paths and which Paths and so areas would be overflown.

6.8 LLACC are perplexed on the dispersion discussion over Direct Flight Paths for arriving aircraft for a Consultation that in general seeks to concentrate aircraft over local properties during the noisier phase departures.

7. LLACC CONCLUSION ON TC NORTH

7.1 The Consultation information to-date has neither appropriately identified for local people what they will experience (i.e. use has been made of very pessimistic assumptions) or the benefits to the aviation industry. The industry and in particular Luton Airport is a major employer in the region, and its interests need to be properly considered.

7.2 The proposals, considering the entire TCN area, have been assessed by NATS as neutral with respect to average fuel burn and emissions, such that with the forecast growth in traffic, emissions will continue to increase. This is unacceptable. Changes of this magnitude should only be promoted by NATS when they have been revised to ensure a positive scenario on fuel burn and emissions.

7.3 The proposals have significant deleterious effects on the people living near Luton Airport. The design aims should be not only to minimise noise and air quality effects, but also to make better use of modern aircraft (climb away quickly/descend using CDA/LP/LD no extended level flights) and better use of airspace to minimise fuel usage and delay. Such aims have clearly not been met for Luton Airport, where not only have some departure routes increased in length, but aircraft noise impacts determined by the population in the Airports' noise contours have doubled, and over 50,000 people are to be newly exposed to departure noise.

7.4 The proposals do not appear to have taken into account the detailed guidance given in CAP725, the Governments' guidance to the CAA, or the Governments aim to address climate change.

7.5 In addition to the above general points, LLACC has several more detail concerns, namely:

- Information for exposures to 54 dB $L_{Aeq,16h}$ as well as 57 $L_{Aeq,16h}$. should have been provided.
- The proposals are predicted to lead to a better use of CDA approaches for Luton. There is however a concern over this prediction as Luton's future arrivals are shown to continue to have a long segment flight below the NATS 6000ft CDA standard.
- It is unclear what effect on delays at Luton will arise. Further information on current delays and forecast delays, without implementing the TCN proposals, have been requested for NATS, but no advice received to-date.

- The proposals, by adopting P-RNAV technology, will lead to a concentration of traffic over dwellings under the centre line of the new routes, unless the aircraft are radar-vectored off the route having reached 4000ft above mean sea level. This will concentrate noise for those under the routes, as more distant areas from the routes are relieved from hearing that activity.

- The departure routes to the West will in the future overfly the population exposed to arrivals, whereas currently the departure aircraft turn before the M1 and diverge from the arrival track. This will result in a major change for local people who currently tolerate arrivals for approximately 30% of the time, and no departures; and if NATS proposals are accepted will have aircraft noise on every day i.e. for 30% arrivals as now and 70% departures in a year.

- The revision to the initial climb track of aircraft departing on runway 26, such that departing aircraft will in future not turn 40^0 on departure, is totally unacceptable in that it will cause a huge increase in the number of residents adversely affected by noise.

7.6 In summary, LLACC are dismayed that these changes to airspace arrangements are being proposed whilst for Luton Airport and it's local community it is clear that no overall environment benefit will accrue as required by the Guidance given by the Secretary of State under Section 70(2)(d) of the Transport Act 2000

7.7 LLACC cannot support these proposals as they cause major environmental impact and no adequate evidence is advanced as to the alleged benefits to overcome the numerous valid concerns of the community near this important Airport.

7.8 LLACC request that a high level meeting be held with NATS to fully discuss these objections in more detail before NATS finalise their post-consultation report.

APPENDIX A

LLACC Questions to NATS dated 26 March 2008 (in light type)
and NATS Responses dated 9 May 2008 and 16 May 2008 (in bold type)

GENERAL

(1) Design Objectives

Whilst appreciating the need to balance conflicting requirements LLACC was pleased to hear that a rigorous assessment approach had been adopted. In order to comprehend the balance achieved LLACC require NATS to delineate clearly the criteria they have adopted. For instance the criteria used to establish improvements for the aviation industry, such as reduction in delays and safety improvements. LLACC note that in Part B, paragraph 2.2, mention is made of reducing delay by over 30,000 hours in the period 2009 to 2014, and a reduction of almost 4 million hours of delay to the travelling public. To understand these figures please can NATS delineate the delay that is forecast to occur in 2014 with and without the TCN improvements, and the delay that occurs today.

Whilst elaborating on the delay question, LLACC does require delineation of all the criteria included in the rigorous assessment.

One essential requirement of CAP725 is a post-change audit to confirm that the objectives of the change have been achieved. Thus it is a fundamental requirement that objective and verifiable measures of the "before" and "after" states be made. The present proposal includes virtually no quantifiable objectives apart from the "persons overflown" data. Can some be set please: in terms of safety, track-keeping and speed management accuracy etc. etc. and can the "now" positions be verifiably established?

Whilst NATS is responsible for providing a safe and efficient service, we do not control the demand placed upon UK airspace, any increase in numbers of flights or the times of flights. These are dictated by the demand for air travel from businesses and the general public, and also determined by the airspace policy set out by the Directorate of Airspace Policy at the CAA.

The figures in the proposal are based on forecast demand. This demand is forecast for the region regardless of the proposal going ahead or not. One objective of the proposal is to provide capacity to meet reasonable future demand without excessive delay. The consequence of the proposal is therefore assumed to be a change to delay, rather than a change to the demand itself.

<u>Post Implementation Review</u>
Should the proposal be accepted, and in accordance with CAP725 NATS will provide a report on the success of the development against the objectives in terms of capacity/delay, safety and environmental performance based on the first 12 months of operation.

The objectives that will be measured against are:

a) Improved safety per flight – NATS will seek to demonstrate that over the long term incident rates will be reduced. Safety incidents are relatively rare and therefore identifying long term trends after a 12 month period is difficult, however NATS will perform an analysis on the available data. The results of the analysis will be augmented with a qualitative assessment of the safety implications of the change.

b) Improved airspace capacity – NATS will seek to demonstrate that regional capacity is improved by at least 28% through analysis of sector capacities, throughput and delay.

c) Environmental performance – in the consultation material NATS has provided a large number of route and flight path maps that indicate where aircraft currently fly and will fly under the proposals. These clearly indicate the 'before ' and 'after' scenarios. NATS will seek to demonstrate that the actual tracks flown following implementation match the heights and spreads indicated on the proposed route and flight path maps.

(2) Design Life

NATS to confirm their verbal advice that this proposal is designed only to cope with traffic up to 2015, and does not take into account the current proposals for development of a third runway at Heathrow, a second runway at Stansted, or the growth of activity at London City Airport currently before the planning authority.

NATS does not have any control over airport development. This proposal is not associated with, and does not assume, future development of Heathrow, Stansted or any of the other airports in the region.

The future traffic figures used in the proposal have been primarily based on historical trend data. Apart for Heathrow terminal 5 (which was not operational at the time of the forecasts), no additional development to airport infrastructure (runway or terminal) has been assumed within the period covered by the forecasts, namely 2007-2014.

Any subsequent airport development that requires changes to the airspace structure would be subject to its own separate consultation and approval processes.

(3) Land Use Assumptions

NATS to confirm that the development of the proposals related to current land use, and no account was taken over the Governments' provisional plans for new housing in the area.

We have used 2007 population data as the basis for our population analysis. In addition we have considered the position of developments where we have been made aware of these by local council representatives during the design stage of the proposal.

DETAILED ASSESSMENTS

DISPERSION (RADAR VECTORING

(4) The Report shows routes – centre line (Red), edge lines (Black, to contain 99% aircraft) and minimum heights. It is apparent from existing operations aircraft will legitimately diverge from given routes. The question is what residents can actually expect from the proposed routes. The local communities were not helped during the 3½ year dialogue over Olney 1B with the lack of information over the use of radar vectoring.

It is understood that using P-RNAV aircraft will keep closely to the centre line of departure routes when following the route up to 4,000 feet.

- For each proposed route at what point will aircraft (i.e. B737-700 and A300-600) normally reach 4,000 feet and will they continue on the given route further and to what height or can they be expected to vector off?
- Can NATS offer some surety as to the likely conformity to departure routes e.g. 90% aircraft are expected to follow a specific route for a certain distance and to a given height?
- Can NATS advise on what track-keeping monitoring process they will undertake to monitor compliance?

It would be helpful if NATS were to issue an Explanatory Note to the Consultation Report to provide this detail for all the airports so the public are aware of what is actually intended. At present they can only comment in the light of the past history of keeping on and vectoring from published routes. They also are being misled by the current Consultation which only advises on minimum heights not typical heights.

The same concern relates to Arrivals and how closely they will conform to the new arrival routes. Uncertainty is increased by the statement in the Consultation Report :

"even with P-RNAV, air traffic controllers will still take aircraft off the routes **when necessary** to maintain safety, to land aircraft more efficiently or to provide a direct flight path reducing fuel burn and C02 emissions **when possible**." (F31 5.10).

The route and flight path maps show the estimated spread of flight paths around each route including:

- **the effect of navigation accuracy where aircraft would be expected to always follow the P-RNAV route, and**
- **the effect of radar vectoring where this will occur.**

No actual data exists which can be analysed for the proposed flight paths. The information presented in the documents has been generated by operational experts drawing on knowledge, where applicable, from existing flight data and from computer simulations of future traffic environments. However, because no actual data exists for the future scenarios no definitive statistical analysis of track distribution is possible.

The expert opinion has been used to determine the anticipated spread off traffic, shown on the maps by the extent of the coloured areas. However, for the purposes of these diagrams a further distinction is made between the spread of traffic during 'normal' and 'off peak' periods:

Normal operations: this is when the airspace is busy because of a high demand from aircraft and the flight paths are generally concentrated over a narrower, more defined swathe.

Off-Peak: this is when the airspace has less demand placed upon it – at night or other periods during the day when there are fewer aircraft flying; these flight paths are more variable as air traffic control give more direct routes to reduce fuel burn and emissions.

The normal operation generally starts after 6am and ceases around midnight though there may be lulls within this period. As the majority of flights occur during the normal operation period, this grouping of flights also makes up the majority of flights on any given route.

The pair of black lines identify the area in which the majority of flights occur during normal operations. Majority in this case can be assumed to be in excess of 90%. The coloured areas outside the black lines show the potential spread of flight paths during the off-peak period. The uncoloured areas denote where aircraft are not anticipated to be seen on a regular basis at all.

Aircraft will follow the P-RNAV routes whilst within the Noise Preferential Route (NPR) (i.e. below 4000ft). The point at which aircraft would normally be expected to reach 4000ft and therefore potentially be vectored off the route is shown by the point at which the black lines widened beyond the NPR.

Track keeping accuracy within the NPR will be monitored by the existing noise and track keeping systems in place at the airport.

Heights

In the route and flight path maps we have endeavoured to show a worst case scenario of likely aircraft heights - for both current and proposed routes - by indicating the lowest levels of flight activity (in terms of height of the aircraft). This ensures that we have given fair representation of the height of the aircraft which may have the most impact. We have applied the same rationale to both the current and proposed routes so that they are comparable.

Presenting the typical heights in the consultation material would leave NATS open to criticism that the aircraft heights presented were not those that would have the most impact.

Arrivals

The route and flight path maps show black lines where most traffic will be seen. These show that traffic will be spread around the P-RNAV routes.

Air traffic control will be required to take arrivals off the P-RNAV route in order to create an efficient stream or 'sequence' of aircraft for landing during busy periods. An efficient sequence is one where aircraft have a safe spacing between each other, which also ensures that the runway is fully utilised. If the spacing between aircraft is more than it needs to be, fewer aircraft are able to land within a given time period and the airborne queue can get longer. This creates more emissions and exposes communities to more noise because the aircraft fly above them for longer.

Creating an efficient sequence requires ATC to vector aircraft off the P-RNAV routes to increase or decrease the gaps in the sequence.

The route and flight path maps assume that the use of direct flight paths will continue as today, in particular Luton Easterly arrivals from the North and West will not necessarily fly past the airport to reach the hold and the start of the P-RNAV approach route if there is no requirement to hold. If there is no requirement to hold they may descend early and join the P-RNAV track at an appropriate point for the purposes of sequencing – generally somewhere abeam or south of Leighton Buzzard. For this reason the black lines for easterly approaches encompass a wide swathe coming from the north and West. Likewise westerly arrivals that do not need to stack may join the approach sequence abeam or south of the A505 rather than joining the P-RNAV approach from the holding point.

The use of direct flight paths is an issue that NATS is seeking specific feedback on. Please see Section 7 on Page G36 in the consultation document for more details.

(5) With specific reference to Luton Airport, the verification and completion of the table below would assist LLACC in fully understanding the proposals:-

Route	Height Requirement of PR-NAV	Minimum PR- NAV Release Height	% L
Easterly Departures to the East: F3	6000ft by Furneux Pelham	4000ft	
Easterly Departures to the South-West F7	Above 3000ft by Ayot St Peter At 4000ft from north of Hemel Hempstead to north of Princes Risborough At 5000ft to West of Princes Risborough	4000ft	
Westerly Departures to the East F11	At 4000ft by Little Gaddesden At 5000ft by Edlesborough At 5000ft by north-east of Luton At 6000ft by Graveley	4000ft	
Westerly Departures to the South-West: F17	At 4000ft by Little Gaddesden to north of Princes Risborough At 5000ft to west of Prices Risborough	4000ft	
Westerly Departures to the North: F19	At 4000ft by Little Gaddesden Above 4000ft by Upper Ickfield Way At 5000ft by Horton At 6000ft by Woburn Sands	4000ft	

%L Estimated % of Aircraft to leave route once 4000ft reached.

The %L statistic is not recognised by NATS. Once past 4000ft aircraft be vectored off the route immediately or at any subsequent point up to the end of the route, the %L as defined in the questions would vary at every individual point along the route to its end.

The point at which aircraft are vectored off the route will depend on a number of factors: the presence of conflicting traffic, requested level and controller workload being the main three. These factors will vary on a flight by flight basis.

(6) Representations were made by airlines that 210 knots was too slow for some aircraft to be flown "clean" and were seeking routes designed around 220 knots. Which aircraft types were involved, and do they operate regularly at Luton? Why, given that the majority of Luton departures' inaccurate trajectories are caused by speeds in excess of 220 knots, cannot the speed restriction be maintained until complicated manoeuvres such as that envisaged for "easterly departures to the south-west" have been completed? Can it therefore be confirmed that the proposal is "no more that 220 knots within the TMA and the TMA extends to 6000ft amsl"?

It is true that the airlines have requested 220kts to be designed into new SID turns as opposed to 210kts. Aircraft can be flown in a cleaner configuration at 220kts making the aircraft quieter for people underneath the departure track. Aircraft will not exceed 220kts below 3000ft and are restricted to 250kts below 10000ft. One exception to this is the Luton easterly SID to the Southwest; this is designed to 210kts to keep the track over the ground between the villages of Whitwell and Codicote.

(7) Can information be provided from the various PR-NAV trials at other UK airports over the width of the swathe of traffic on a PR-NAV route?

Track keeping accuracy along P-RNAV routes is dependent on the specifics of the route design. Factors such as the extent and proximity of turns, the relative positioning of way points, and the proximity to the airport can all affect track keeping accuracy.

In recent P-RNAV trials in the U.K. initial data found that traffic proved to be 100% compliant in staying within the 1nm either side of track in all trialled circumstances. Further analysis will take place in the future to confirm these findings.

The swathes contained in the consultation material were formed using data from the trials which was then interpreted with expert input and reference to the technical specifications. The dispersals for aircraft following the P_RNAV route were then blended with a view as to where aircraft were likely to be vectored when headings were being assigned. The result is a swathe that starts narrowly (for departures) and then broadens out as radar vectoring may start to take effect.

(8) It appears that the distance between easterly arrivals between Stansted and Luton is reduced: does this imply the need for synchronising directions for runway use at the two airports?

The Stansted and Luton arrivals will be separated vertically. There will be no need to synchronise runway use at the two airports.

POPULATION STATISTICS

(9) How are the reductions in populations overflown at below 4,000 feet, which featured in NATS press releases about the consultation, calculated? These calculations are not referred to in Appendix C where, it is claimed, the environmental methods are explained. The calculations in the Addendum are clearly described but are different from the originals and the NPRs applied to the calculation do not correspond to those published in the Luton Annual Monitoring Report (AMR).

An addendum to the NPR calculation has been published on the web site. This provides the detail requested. Please see http://www.consultation.nats.co.uk/uploads/Addendum_NPR_count.pdf

(10) The population figures provided for both PNRs and Leq contours are insufficiently clear.

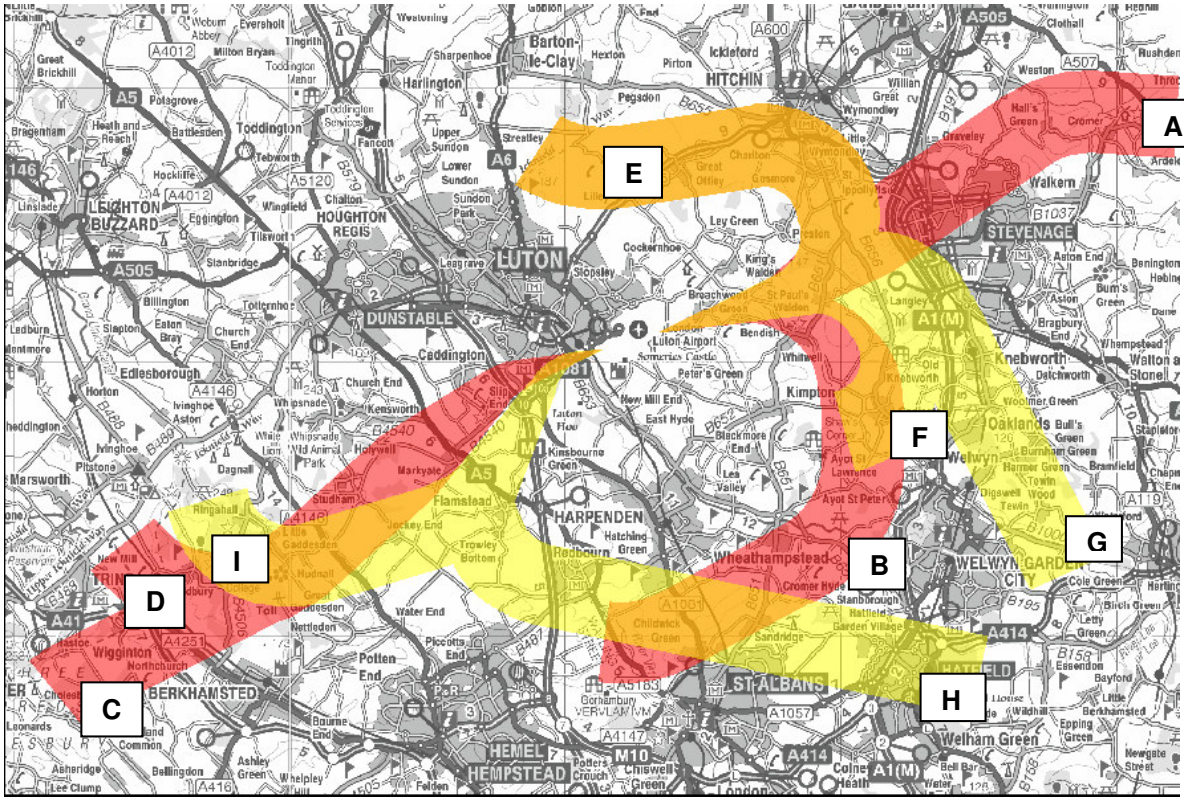
- At minimum can the existing populations for each PNR, existing and proposed, be provided together with the figures where there is overlap? Real comparison should take account of populations affected at different heights so some breakdown within each PNR figure should be provided.
- Areas west and north of Stevenage proposed to be overflown (easterly departures to the east and south east) are planned for significant levels of new housing (10,000 dwellings plus) in line with the new Regional Strategy (see attached plan). How are these and other planned developments to be taken into account by NATS when considering the environmental impact of proposals?
- Can all population counts be recalculated and published to take account of major developments that are committed, either by way of a planning permission or a firm allocation in a local authority plan?
- The population change within the 57Leq contour should be accompanied by consideration of the 54Leq contour areas and populations as a sensitivity test as suggested in CAP 725 appendix B para 48. Why has this not been done and can the 54 Leq contours and populations now be provided?
- Table C3 on page C7 gives population counts "beneath the holds". On the assumption that aircraft generally fly around the edge of the hold, surely the population count should be based on adding a swathe of, say ½ to 1km, outside the hold to pick up the noise disturbance?

Please see below the population count figures for the current and proposed Luton NPRs. Please be aware that these figures should not be aggregated as this would lead to double counting in some areas.

LUTON AIRPORT NPR

CURRENT	POPULATION
E	10959
F	3752
G	17087
H	43461
I	5176

PROPOSED	POPULATION
A	34385
B	11508
C	10614
D	9876
E	10959



We have used recent population data as the basis for our population analysis. In addition we have considered the position of developments where we have been made aware of these by local council representatives during the design stage of the proposal.

(11) Why were area and population counts not included with the SEL footprints published on Friday 7 March? Can this data be provided, please?

NATS has followed the CAP725 in the provision on 57Leq contours. There is no requirement to produce 54Leq contours.

(12) The noise contour assessment populations are only reported for 2009, can the populations for the 2014 contours also be provided? This will illustrate the maximum number of people exposed to significant community disturbance, i.e. using the numerical criterion in the White Paper (December 2003) paragraph 3.14.

The SEL metric provides a noise analysis for one aircraft movement following a route centreline. It takes no account of dispersal around a route. The route and fight path maps clearly show that the proposal will affect dispersal in many areas. Given that a key element of the P-RNAV routes will be their affect on dispersal NATS considered the presentation of metrics which did not take this into account to be potentially misleading.

NOISE ASSESSMENTS

(13) How are the L_{Amax} ranges calculated? Appendix C, "Technical details of the environmental analysis", does little to explain this.

NATS employed the CAA's Environmental Research Consultancy Department (ERCD) to undertake all noise analysis utilising the ANCON noise model. A range of scenarios were considered, which has lead to the range of results presented for each height band on pages F75 and F76. The high end of the range represents the worst case, assuming an aircraft is:

- **at the lowest height of the defined height band, i.e. for 4000-5000ft this would be 4000ft**
- **in the noisiest phase of flight , i.e. for departures a high climb rate and arrivals level flight above the highest ground in the region.**

(14) Impact on residents will be related to the noisiness of the aircraft and the number. The dB max range for the aircraft at different heights is very wide so little help to residents.

- Are the average hourly flights an annual average or the summer (92 day) average?
- What is meant in the DVD commentary by the term 'meeting predicted growth in the region'? It should be made clearer that if the growth is not limited to 2014,

that the movement figures for that and subsequent years are likely to be exceeded on most routes if the airport expansions proposed in the Air Transport White Paper (the predicted growth to 2030) were to occur.

The average hourly flights were calculated from a baseline sample for a 92 summer period from 2006. The predicted growth in the region used as the justification for this development is documented in Appendix D of the consultation document.

(15) NATS states that it is conducting more noise analysis to accompany the CAA submission. What form will this take?

This relates to the SEL analysis referred to in point (12).

(16) Is there potential for mitigating the noise impact of Luton by employing 5.5 degree approaches in place of 3 degrees?

It is not possible to increase the angle of the glide path for arriving aircraft because this would require special certification, training, and would not be flyable by all aircraft types.

It is only appropriate to meet specific operating constraints.

(17) In Appendix C, "Technical details of the environmental analysis", the NATS model for estimating emissions is cited but no technical details or references are given. Could these be supplied, please?

The emissions analysis undertaken in the preparation of the TCN proposal airspace change design that is currently being consulted upon is detailed and highly technical. Interpretation of the results is complex and requires relevant background knowledge in the design and the technicalities of fuel and emissions modelling. The material produced as part of that exercise has not been designed for external consumption (i.e. it does not explain the background knowledge relating to the technicalities of fuel and emissions modelling and, as such, could be unhelpful and misleading).

Furthermore, it should be noted that the design process is still ongoing and therefore the emissions analysis may need to be revisited in the light of the proposed changes.

NATS will produce records of the TCN emissions analysis for submissions as part of any future ACP, which are in the context of our ongoing discussions with the CAA about the methods of analysis employed by NATS. These records will be presented to the relevant technical experts at the CAA to assess whether the process followed has been sufficiently robust and accurate. NATS does not intend to release extracts from the analysis material for

external review as this could be misleading for the reasons stated above.

(18) Easterly Departures to East and South East (Figures F3/F5)

This is a major change taking traffic over north Stevenage an area not presently regularly overflown.

- How have the implications in terms of population affected (existing and proposed), Lister Hospital, Henry Newman School etc been considered and why is this information not made available in the Consultation Report as would seem to be required in CAP 725?

The existing easterly route to the North turns more sharply towards Hitchin.

- Has the option of using the first part of this route for the proposed East and South East routes then turning east over St Ippollytts/Little Wymondley between Hitchin and Stevenage been investigated? If it is considered impractical, e.g. because 2 P-RNAV turns cannot be made in the route distance available, can this evidence be made available?

- Can the southern edge (Black line) of the route for the South East route be moved further east towards Cottered to avoid further overflying Stevenage.

It is unfortunate that the NATS terms of reference meant that routes that did not need to be changed, such as that to the North, were not looked at to see if existing environmental problems, overflying south west Hitchin, could be addressed.

- Will this route be converted to PRNAV (for relevant aircraft) to help avoid overflying Hitchin and will the NPR be increased to 4,000 feet on this route so that it is the same as the other routes?

Easterly deps to the East and South East
CAP 725 provides guidance on the required contents of an airspace change proposal. It does not provide specific guidance as to the information that should be provided within consultation material. It should also be noted that 57 LEq contour ends before Stevenage.

Easterly Departures to the North
The proposal does not include changes to the Easterly Departure route to the North. This will remain as it is today.

Westerly Departures to the South East
On the basis of this feedback, consideration will be given to procedures that will reduce the likelihood of overflight of Stevenage by this route.

(19) Easterly Departures to South West (Figure F7)

- Has any analysis been done on the change in anticipated noise levels over the villages affected by the detailed changes in the route, such as Whitwell with the edge of the NPR now over the village and Codicote now to be off the centre of the NPR rather than directly beneath it but above 2000 feet rather than above 3000 feet?

- Will NATS formally confirm the reassurance given at the Luton NTK meeting (March 08) that aircraft would be expected to follow the centre line of the route to at least south of the A413 (Great Missenden) so that they can be expected to avoid Wheathampstead and Hemel Hempstead?

- Will the southern edge of the route (Black line) be repositioned to reflect this and ensure aircraft do not overfly Hemel Hempstead?

- Can the centre line be moved a little to the north (closer to the position of that for the westerly departures to the South West) to avoid overflying Berkhamsted? It would seem Berkhamsted is at risk of overlying at 3000 feet plus in order to avoid overflying Princes Risborough at 4000 feet plus.

Easterly Departures to the South West
The affect of the design on the LEq noise contours for Luton are shown on Page F81.

The route and flight path maps with accompanying usage tables and associated Lmax noise tables are the method by which stakeholders in any location can assess where the flight paths are now and how they would change, how often they may be overflown and how loud it may be.

Given the geographical area, and the population count within the TCN consultation region, we are unable to provide any further bespoke analysis of the potential impact for each given location other than already contained within the consultation material.

The black lines on the route and flight path maps indicate where the majority of traffic will fly. This shows that vectoring is currently expected to occur from points west of St Albans (where the southerly black line ceases to follow the realignment of the route centreline). Procedures to limit vectoring off the route until

further west will be considered on the basis of this feedback from the consultative committee.

It is not possible to move the centreline for the easterly departures to the south west further to the north because of a design requirement to separate these departures from the arrival stream when Luton in using the easterly runway.

It should also be noted that the height of aircraft over Berkhamsted will be a minimum of 4000ft above mean sea level. Aircraft on this route will only follow this worst case profile in two circumstances:

1. **if there is a Heathrow departure that it could get to close to.**

2. **if air traffic control are very busy such that they do not have time to issue a climb instruction to the Luton aircraft.**

We conservatively estimate that these circumstances would only be applicable around 30% of the time (and therefore 70% of the time aircraft would in fact be higher then shown).

(20) There is concern whether departures will fly such a tortuous course – they may straight-line right over Hemel Hempstead. Since this particular proposed route has its first turn restricted to 210 knots to keep the traffic further away from the rural areas of Whitwell and Codiocote, why cannot its second turn be similarly restricted to keep the traffic further away from the urban areas of Hemel.

See above.

(21) Westerly Departures to South West (Figure F17)

Why is the proposed "westerly departures to the south-east" track width maintained at 1km swathe width for 67kms before it widens, at >5000ft: yet for the proposed "easterly departures to the south-west" track the 1km width is only maintained for **25kms** and the expected swathe dramatically widens at **3000ft.**

Westerly Deps to the South West

It is not clear which routes this question refers to - the title above states westerly routes to the south west whereas the question mentions westerly routes to the south east.

In general terms the route and flight path maps have been drawn on the basis of expert ATC opinion about where radar vectoring will occur. The opportunity for vectoring is dependent on a number of factors which will not be the same for each route; hence there will be differences in terms of where vectoring will be shown to

occur. Note that vectoring beyond the NPR will only happen once aircraft have reach 4000ft

The route and flight path maps accurately depict the swathes and worst case heights NATS expects aircraft to fly under the proposals.

(22) There is a major gap between the climb performance of the poorest-performing aircraft likely to operate at Luton and that of the most common commercial aircraft. The departure route diagrams showing operational height bands are being interpreted by the general public to indicate that aircraft will stay within the swathes far further down the track than will necessarily be the case. We also note that the PR-NAV routings may well be adhered to more closely for longer than with the existing routings to minimise Controller workload. Is there no experience from elsewhere which might allow consultees to make a more realistic assessment of likely tracks and heights of aircraft overhead?

NATS has presented the worst case in terms of aircraft heights as these are the aircraft that would generally have the most impact in terms of noise. Doing otherwise would open NATS to criticism of not being clear about the heights of aircraft that have the most impact.

(23) Relaxing the turn on takeoff has serious consequences in Luton and South Bedfordshire.

Are there population counts for the areas most affected under the existing and proposed flight paths, say to a minimum height of above 1,000 feet? Can these be made available (they must have been collected as part of the PNR count)?

Population counts for different height bands have not been performed.

(24) Westerly Departures to the East and South East (Figures F11 & 13)

- The centre line of these 2 routes passes over the centre of Hitchin (albeit at above 5,000 feet). Could it be moved south slightly to use the 'gap' between Hitchin and Stevenage.
- Is it necessary for the southern edge of the South East route (Black line) to diverge from the centre line across Stevenage? Could it continue alongside the centre line to around Cromer (B1037) before diverging southward.

Westerly Departure to the East and South East

The suggestion for route alignments between Hitchin and Stevenage have been noted and will be considered.

(25) Western Airspace Consultation

Questions were asked during the Western Airspace consultation about the possible use of the new Option 3a route for take-offs under westerly conditions, and we were firmly assured that this was **not** intended. However, the charts on Pages F19 & F21 show that this is **precisely** what is being proposed now. Why had this 'volte face' occurred, and why should we now trust any assurances about these new proposals?

The proposal of the eastbound departures from runway 26 to route north of Luton is required as part of the key design elements to remove the congestion from the BPK area. The track of the proposed route is south of Leighton Buzzard and does not mirror the arrival route for runway 08 which remains to the north of Leighton Buzzard.

(26) Easterly Approach Routes (Figure F24)

The northern limits of the **current** Easterly approach routes as shown on Page F36 are shown stretching from Flitwick almost to Buckingham, running east-west in a straight line. This extends **far** beyond the current limits of Luton's controlled airspace.

Do NATS accept that this map is seriously defective, or do they advise that they have made a habit of routing commercial aircraft through uncontrolled airspace?

The Chart on Page F37 again shows that the approach swathe will extend well beyond the new airspace that NATS is claiming – isn't this illogical and contrary to its own regulations?

The northern limits of the current easterly approach route as shown in F24 includes the airspace aircraft can use when making a direct route from the northwest for runway 08. All these flights are confined within the boundaries of controlled airspace. The height bands shown in the consultation document are, for example, above 4000ft means 4001ft to 5000ft. So aircraft at 5000ft will be shown in the above 4000ft band.

(27) Milton Keynes objected to the Option 3 flightpath proposal since Cranfield's flights would then be pushed northwards over the conurbation, but the chart on Page F36 leaves even **less** room for its flights. Indeed, Cranfield's only mention in the entire suite of documents is in the list of stakeholders, a lack of consideration that is truly

remarkable since these proposals would seriously affect its operation. They would also result in many more overflights of the Milton Keynes conurbation, as with the Option 3 proposal, but this implication is not considered in the consultation documents either. How can these oversights be explained?

Aircraft from/to Cranfield operate outside controlled airspace; all the TC North routes are confined within controlled airspace so this remains unchanged from today. Whilst the small extensions to CAS base 4500ft reduce the amount of Class G airspace in the vicinity of Cranfield, discussions with Cranfield ATC have indicated that they will not significantly change their operations. There will be a change to joining/leaving procedures and this has been part of the consultation process with Cranfield ATC.

(28) The charts on Page F36 & F37 show that the southern boundary of the easterlies approach from the hold has moved right up to the fringes of Leighton Buzzard. Why has this been done, and will this not lead to planes that are strategically vectored towards the inner edge of the curve overflying the town?

Compared with current operations, this was drawn to show greater adherence to the RNAV Transition. In determining the position of the black line swathe boundaries, we wished to ensure that it showed worst case and we couldn't be accused of making them artificially narrow. We expect aircraft flying the approach to adhere closely to procedure track. Current rules for not overflying the town of Leighton Buzzard will still apply.

(29) The new easterlys approach is being re-routed around the north of Leighton Buzzard on the grounds that planes cannot reliably follow the tight Option 3a curve using P-RNAV. However, the proposed westerly departures to the east and south east (Pages F19 & F21) do appear to be able to manage this turn under P-RNAV. Surely the route should be much easier to follow during a gentle CDA glide towards the runway than during a powered climb on departure?

Departing aircraft use airspace south of the 08 extended centreline to enable the turn to take place south of Leighton Buzzard. This airspace is not available to be used by arriving aircraft because of the departure route to the south west.

(30) <u>Westerly Departures to North</u> (Figure F19)

What confidence can we have that planes will actually follow the neat P-RNAV diversion around Leighton Buzzard and Milton Keynes on the new westerly departure route to the north (Page F27), since this apparent diversion occurs well above the normal vectoring altitudes?

If the aircraft are left on the SID then the track does route around Milton Keynes and Leighton Buzzard however controllers are currently able to put the traffic on a more direct routing once the traffic is above the NPR. It may be possible to apply measures to alleviate the expressed concerns.

(31) Non PR + NAV Routes

Why is there no PR-NAV "narrow-swathe" diagram for the easterly "Olney" departure route? The current route is very inaccurately flown due to excessive speed in the first turn, now clearly evident from Mode S data, with Hitchin being regularly overflown.

The proposal does not include changes to the Easterly Olney departure. Changes to this route were considered during the initial development of the proposal. However, the effective positioning of this departure route is dependent on (amongst other things) a move in the position of the Bovingdon hold. Changing holding arrangements for Heathrow is beyond the scope of this development (see answer 33).

(32) Could NATS retain the present non-PR-NAV westerly departure routing south of south Luton in order to avoid the appalling noise consequences for south Luton, Slip End, Caddington and Markyate? The decision on the easterly departure route to the north (Olney) is a precedent for this.

Guidance from the CAA is that new routes should be designed to utilise P-RNAV technology. In designing such routes, NATS must comply with international safety standards for the design of P-RNAV routes, which do not apply to the existing routes. These safety standards dictate the position at which an aircraft may start its first turn following take-off on a P-RNAV route. For Luton Westerly departures this position is further from the runway than today and it is therefore not possible to replicate the current departure route with an equivalent P-RNAV route.

(33) Retention of Bovingdon Stack

The presence of a Heathrow arrivals stack at Bovingdon contributes to the local airspace congestion and adversely affects Herts. residents, since Luton's departures are held far lower , and thus are far noisier, than they could be. Why was no thought given to shifting this stack to, for example, the Haddenham area to relieve airspace congestion in and around the Luton area?

There is a practical limit to the size and scope of airspace changes. All changes have to be tested through rigorous simulations and if

approved extensive training of air traffic controllers is required. The TCN proposal is already by far the largest proposal attempted in the UK under current regulations. Including Heathrow arrivals into the scope of the project would make it unmanageable in terms of simulation and training requirements.

A move of the Heathrow holds would therefore need to be considered as part of a separate future airspace development.

(34) Prematurity

As no major Airport in the south east has approval for significant expansion and changes of this kind can be implemented in a matter of months, is not this proposal premature? The only justification given is that NATS believes that it is necessary but no quantified information is provided to explain the need to the public.

NATS does not have any control over airport development. This proposal is not associated with, and does not assume, future development of Heathrow, Stansted or any of the other airports in the region.

The future traffic figures used in the proposal have been primarily based on historical trend data. Apart for Heathrow terminal 5 (which was not operational at the time of the forecasts), no additional development to airport infrastructure (runway or terminal) has been assumed within the period covered by the forecasts, namely 2007-2014.

Any subsequent airport development that requires changes to the airspace structure would be subject to its own separate consultation and approval processes.

(35) Ability to Respond to Consultee's Suggestions

How real is this consultation? How will the response influence NATS application to the CAA? Part A of the consultation implies that the only changes will come about if a consultee makes a point which NATS had not considered.

All responses will be considered. However NATS has already considered many of the competing factors, such as seeking to avoid populated areas at lower heights whilst at the same time trying to reduce the impact on AONBs. The wide range of differing stakeholder interests inevitably raises conflicting expectations and our continuing challenge is to find the most accommodating overall solution. We will use the feedback from the consultation exercise to inform further analysis and development of the proposal.

(36) Impacts Evaluation

NATS says that it does not consider the environmental effects of any increase in air traffic although the purpose of the proposed airspace changes is to accommodate more flights. The Government, in the consultation on expansion at Heathrow, only considered the impact close to the Airport, predominantly within the 57 L_{eq} noise contour, suggesting by implication that these effects are the responsibility of NATS. What will be the medium whereby the full environmental impact of air traffic growth is assessed and presented to the public?

This consultation follows guidelines laid down by the Civil Aviation Authority (CAA) in their airspace change process (see caa.co.uk). The CAA guidance adheres to government policy relating to the development of airspace. Full details of the scope of the consultation process may be found in the consultation document.

NATS does not have any control over airport development. This proposal is not associated with, and does not assume, future development of Heathrow, Stansted or any of the other airports in the region.

Any subsequent airport development that requires changes to the airspace structure would be subject to its own separate consultation and approval processes as dictated by the CAA.

(37) The CAA's response to the Competition Commission's Market Investigation of BAA, dated May 2007, states clearly in Para 28 of the Executive Summary.

> *"Over time, incremental changes to controlled airspace volumes and modifications to arrival and departure routes have been made to increase capacity and improve the efficiency of the airspace. To date, all airspace change requests have been managed and implemented. However,* ***the CAA and NATS are of the view that, were all of the SE airport development plans to come to fruition, there would not be sufficient airspace capacity to accommodate the scale of predicted traffic growth on the basis of current and predicted technology."***

Yet within a few months of that statement, NATS is busy proposing new flightpaths in order to squeeze even more planes into the overcrowded SE airspace. How will it know when to stop?

Under the terms of our licence from the CAA, NATS is required to respond to demand for airspace from aircraft operators; this demand is in turn influenced by government policy on air traffic growth as outlined in the 2003 Air Transport White Paper (Ref 3, Appendix F). NATS does not have control over the growth of airports or any increase in the number of aircraft flying.

The demand forecasts used as the basis of this proposal are possible/expected within the constraints of the current airport infrastructure.

(38) Appendix D: "Forecast Growth Rates" contains some remarkable projections, remarkable for the nature of the judgements involved and also for the assumptions on which they were based.

a) Paragraph 1.4 says that *"the forecast for Luton assumes lower growth than its master plan to better reflect recent trends"*. Surely NATS is aware that Luton only ever had a **Draft** Master Plan and that this was **withdrawn** in July last year – so how could its projections be based on a document that doesn't exist (and arguably never did exist)?

b) Paragraph 1.1 says that *"apart from Heathrow's Terminal 5, no additional development to airport infrastructure (runway or terminal) has been assumed within the period 2007-2014"* – i.e. at any of the five listed airports: Heathrow, Stansted, Luton, London City and Northolt. Given that DfT has just concluded a public consultation on "Adding Capacity at Heathrow Airport" and BAA has submitted a planning application for Runway 2 at Stansted, isn't this assumption misguided and somewhat short-sighted?

c) How confident can NATS be about its projected growth for Luton of 5.9% **per annum** between 2007 and 2014 (i.e. reaching 14 million passengers per annum by 2014), and just 0.5% per annum for Heathrow over the same period?

a) Appendix D states that the growth rates were calculated based on historic data. It does not state anywhere that master plan data was used as the basis of the forecasting. The resultant rates were checked against the available master plans for significant inconsistency. The appendix clearly states that the NATS forecasts based on historic data did not match the available master plan data for Luton.

b) This proposal is to reduce future delay that is forecast regardless of future infrastructure developments. NATS has not based this proposal on assumed future approval of any planning application.

c) The forecasts have been made based on historic flight trend data, and not based on passenger trends. Flight trend data has proved to be a good indicator of future growth during previous periods, and hence NATS has used it for the TCN proposal. We believe that the methodology used to forecast the growth in air traffic in the region is the most appropriate for the TCN proposal.

APPENDIX B

NOISE CONTOUR FOR LUTON AIRPORT (for 2009 and 2014 traffic levels)

- Figure F56: Proposed $_{Leq.16h}$ Contours

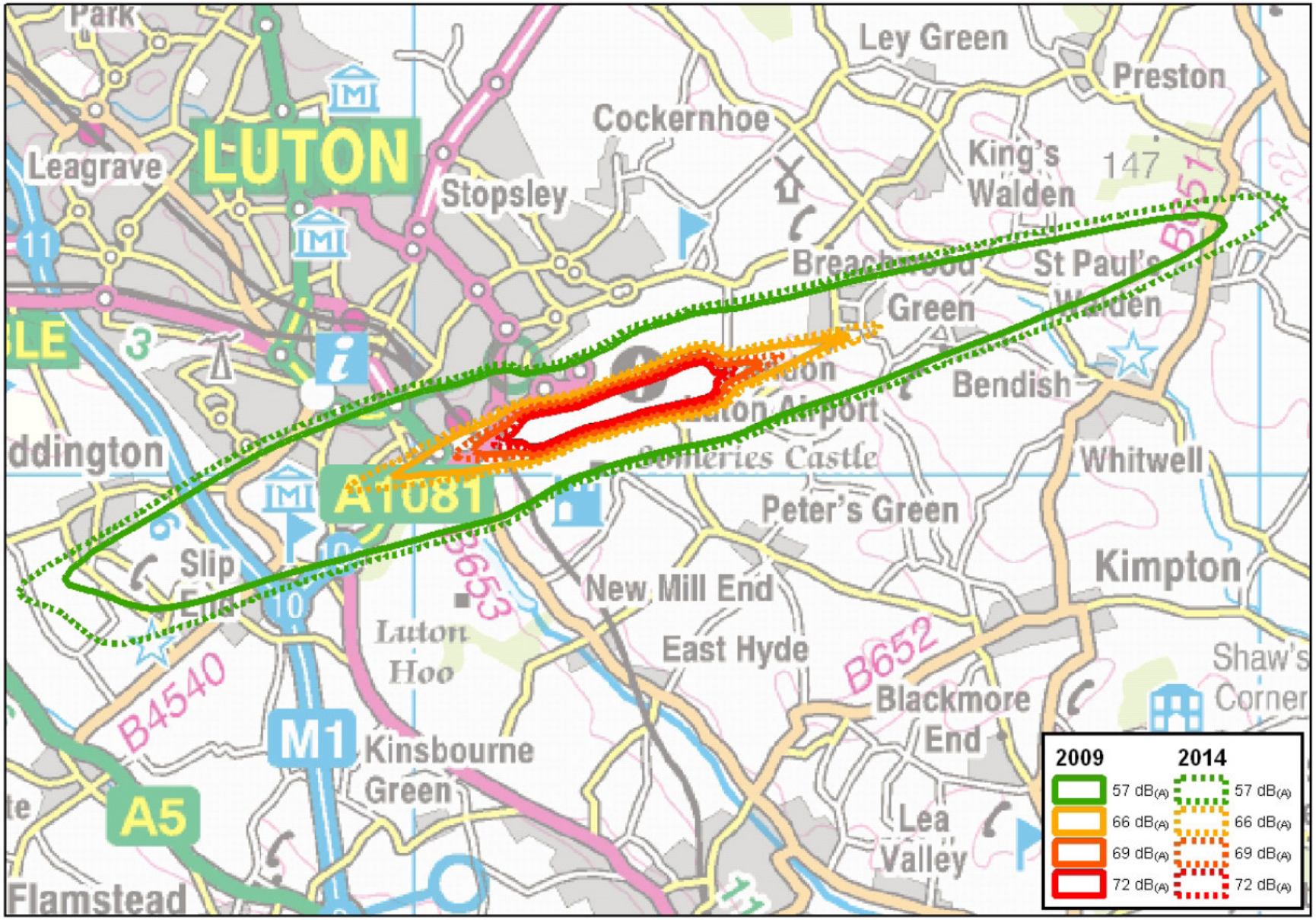
(from TCN Consultation Documeent (part F: Chilterns and Luton)

NOISE FOOTPRINTS OF AIRBUS A300 ON CURRENT AND PROPOSED ROUTES

- Figure 6: C;acton/Dover/Detling (35% of traffic)
- Figure 12: Compton (45% of trafffic)

(from Luton Technical SEL Report for noise specialists)

Figure F56: Proposed Leq (16 hrs) Contours for Luton (estimated for 2009 and 2014 traffic levels)



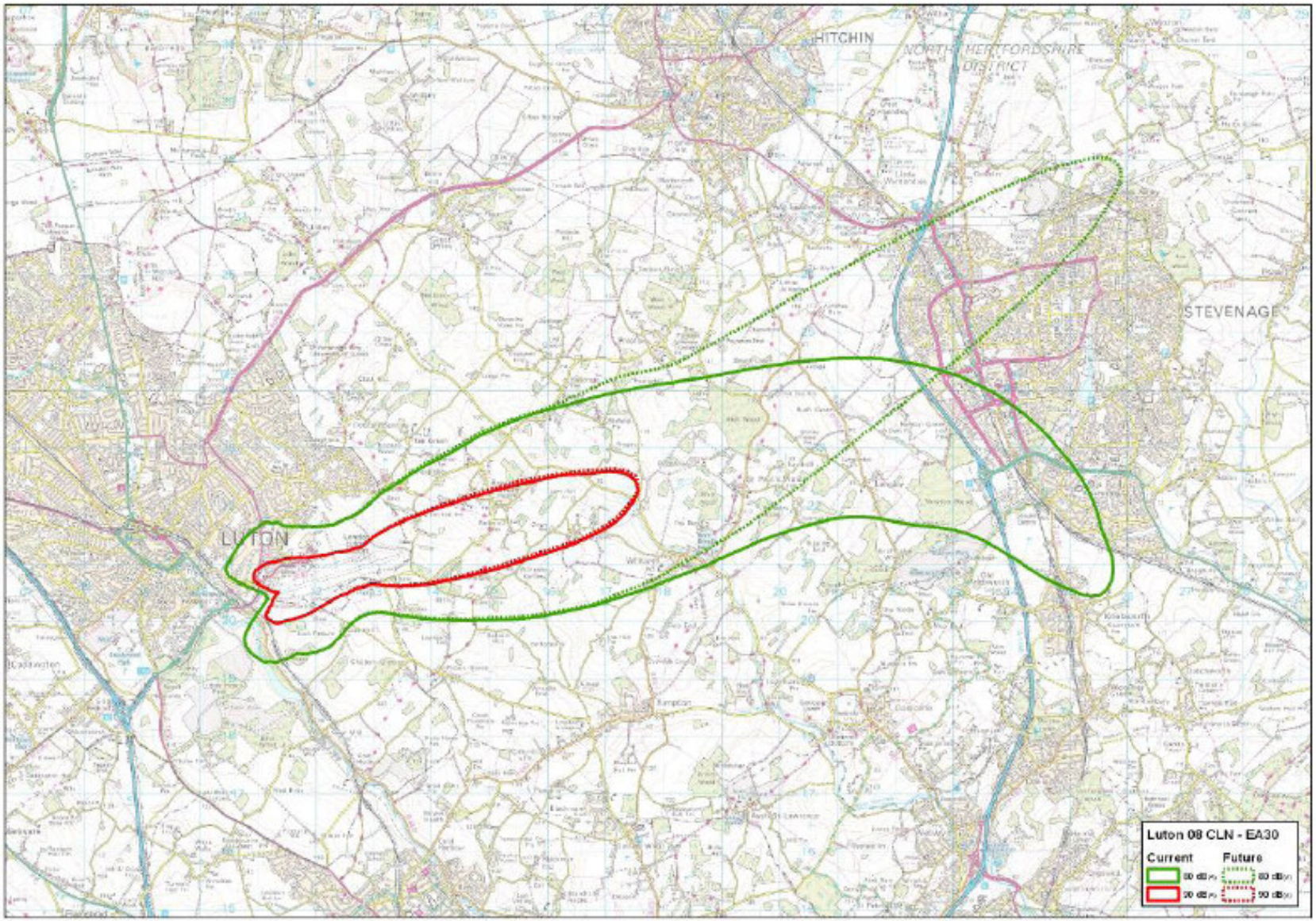


Figure 6. Modelled SEL footprints Airbus A300 (Noisiest aircraft type) Easterly Departures to the East Luton Runway 08

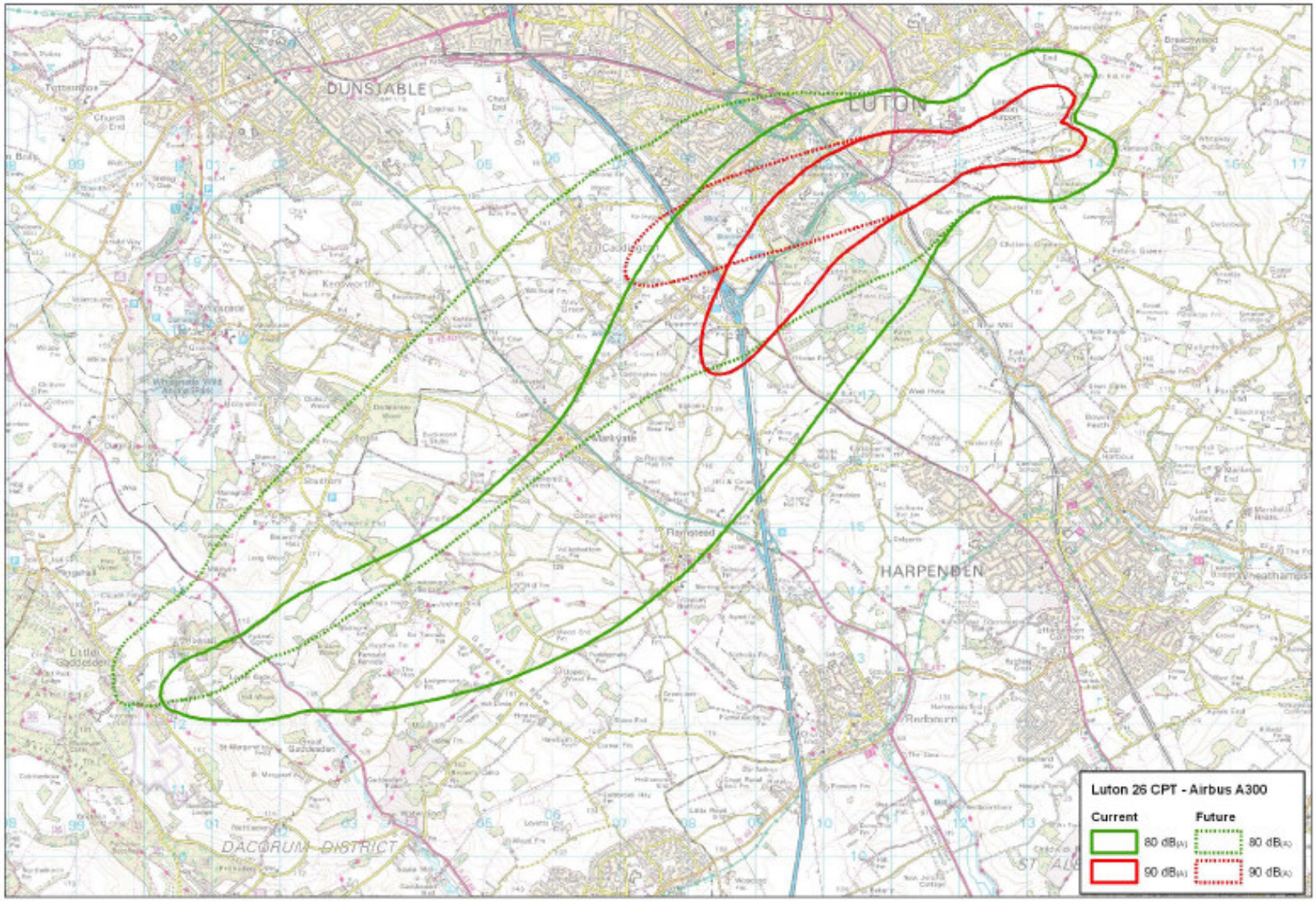


Figure 12 Modelled SEL Footprints Westerly Departures to the South West Airbus 300 (Noisiest aircraft type)

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APPENDIX C

CAP 725 Part B Environmental Assessment

Information to be provided

MUST Items
(Change Sponsors are to meet the requirements in full)

•	Consider environmental impact from outset.
•	A technical document containing complete details of the airspace change and environmental impact will be required for all airspace changes.
•	Change sponsors must also consider production of a separate description of the environmental impact in an easy-to-read format for public dissemination.
•	Environmental assessment must include a high quality paper diagram of the airspace in its entirety and must show relationship to known geographical features and centres of population.
•	Assess several options and demonstrate why the selected option is best in environmental terms or, if not, why it is being proposed.
•	Detailed coordinates of proposed change in World Geodetic System and Ordnance Survey co-ordinates.
•	Provide description of the vertical distribution of traffic.
•	Include traffic forecasts.
•	Include the current level of traffic using the present airspace arrangement.
•	Daytime noise exposure contours (dB $L_{Aeq,16h}$) for airports where the airspace change entails changes to departure and arrival routes for traffic below 4000 feet above ground level. Such contours must be portrayed from 57 dB(A) $L_{eq,16h}$ at 3 dB intervals.
•	The contours shall be displayed on a map indicating key geographical features, e.g. street, rail lines and rivers.
•	The contours shall be provided for current situations, situations immediately following the airspace change, and the situation after traffic has increased under new arrangements (typically 5 years hence).
•	80 dB(A) SEL and 90 dB(A) SEL footprints for both the noisiest and the most frequent night (23.00-07.00) operating aircraft when the proposed airspace includes changes to the number and/or distribution of flights at night before 7000 feet above ground level and within 25 Km of a runway.
•	Produce information on local air quality only where the airspace change affects traffic below 3000 ft above ground level and the airspace is above an Air Quality Management Area.
•	Demonstrate how the design and operation will impact on CO_2 emissions.

APPENDIX D

CAP 725 Part B Environmental Assessment

Information to be provided

SHOULD Items
(Change Sponsors are to meet these requirements unless there is sufficient reason which must be agreed in writing with the DAP case officer and the circumstances recorded in the formal airspace change documentation)

•	Provide indications of the likely lateral dispersion of traffic about the centre line of each route, in the form of a statistical measure of variation such as standard deviation for given distances along the track.
•	Provide departure profiles for the most frequent types of aircraft operating within the airspace. These to show the maximum, typical, and minimum climb rates achievable by those aircraft.
•	Provide departure profiles for the slowest climbing aircraft likely to use the airspace.
•	Provide traffic forecasts for five years from the planned implementation date of the airspace change.
•	Provide details of forecast traffic in terms of types of aircraft by runway and by route.
•	Noise contours should take into account terrain adjustments.
•	Noise contours not to be produced for levels below 54 dB $L_{Aeq,16h}$.
•	For contours, a table should be produced given area (Km^2) and population (thousands) rounded to nearest 100.
•	Consider N70 contours, Person-Event Index (PEI), Average Individual Exposure (AIE), and operations diagrams as supplementary communication tools.
•	Apply caution when interpreting population count methodology for environmental assessment.
•	Estimate the total annual fuel burn/mass of carbon dioxide in metric tonnes for the current situation, the situation immediately following the airspace change and the situation after traffic has increased under the new arrangements.
•	Adopt a metric to demonstrate environmental efficiency, e.g. calculate the fuel burn/carbon dioxide emissions per air transport movement (atm) through the airspace.
•	With respect to climate change, change sponsors must provide full details of modeling assumptions and software used.
•	With respect to air quality contours should be provided in similar formats to those used for noise exposure contours.

APPENDIX E

CAP 725 Part B Environmental Assessment

Information to be provided

MAY Items
(Change Sponsors decide whether this guidance is appropriate to the circumstances of the airspace change)

•	Provide the outputs from simulation to demonstrate the lateral dispersion of traffic within the proposed airspace change.
•	Provide traffic forecasts further into the future than five years.
•	Provide outline of key factors with respect to traffic forecasts and their likely impact.
•	Provide daytime noise contours at 54 dB $L_{Aeq,16h}$ as a sensitivity analysis.
•	Provide a count of the number of schools, hospitals and other special buildings within the noise exposure contours.
•	Provide daytime noise contours on 1:25000 or 1:10000 Ordnance Survey Maps.
•	Provide daytime noise contours on ordinary road map.
•	Provide SEL footprints when the airspace change is relevant to daytime only operations.
•	Assess options in terminal airspace by use of the percentage highly annoyed measure.
•	Assess airspace change using the EU Noise Mapping metric L_{den}.
•	Provide night-time noise contours, L_{night}.
•	Provide Difference Contours if it is considered that re-distribution of noise impact is a potentially important issue.
•	Use the Person-Event Index (PEI) as a supplementary assessment metric.
•	Use the Average Individual Exposure (AIE) as a supplementary assessment metric.
•	Use the techniques described under operations diagrams to communicate with consultees over matters of tranquility and visual intrusion.
•	Conduct an economic appraisal of the impact of the airspace change.