# London Southend Airport

## Proposal to Re-Establish Controlled Airspace in the Vicinity of London Southend Airport

**SPONSOR CONSULTATION**

# Document information

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# Executive Summary

London Southend Airport is an Air Navigation Service Provider approved under Article 7 of the European Commission Regulation 550/2004 and, as such, must satisfy the UK Civil Aviation Authority as to their competence to provide Air Navigation Services and that the services provided are safe.

London Southend Airport currently operates in a Class G uncontrolled airspace environment where there are significant numbers of aircraft operating in proximity to the traffic flows inbound to and outbound from the Airport. Increasing conflicts between the diverse airspace operations and the increasing numbers of Commercial Air Transport passenger flights now using the Airport has led to a commensurate increase in Air Traffic Control workload, system complexity and extended routing of flights, to the general detriment of the efficient and effective use of the airspace.

In meeting its statutory responsibilities for safety management of the air traffic services provided, and to ensure a continuing assurance of flight safety for aircraft inbound to or outbound from the Airport in the critical stages of flight, London Southend Airport proposes to submit a case to the CAA to re-establish controlled airspace (Class D) in the vicinity of London Southend Airport.

CAA Civil Aviation Publication (CAP) 725 sets out the administrative process that must be followed in applying for the establishment of controlled airspace and also details the regulatory design requirements for any controlled airspace proposal. This Airspace Change Proposal is being developed in accordance with the requirements specified in CAP725.

CAP725 requires that the sponsor (in this case London Southend Airport) of the proposed change to the airspace arrangements must carry out a consultation with the airspace users who may be directly or indirectly affected by the change and with organisations representing those who may be affected on the ground by the environmental impact of the change; consequently the public is invited to participate in this process. This document is the Sponsor Consultation Document developed in accordance with the provisions of CAP725.

Part A of this document explains the process of this Sponsor Consultation. It also provides some basic background information about the Airport, the current airspace arrangements and an outline of the current air traffic management arrangements.

Part B of the document describes in detail the various elements of the proposed airspace change, including the options that have been considered for each element. Through a process of option consideration and development, and taking due regard of external influences on the airspace configuration, London Southend Airport has reached a balanced judgement on the changes presented in this consultation.

A number of Appendices provide amplifying detail where necessary, including a comprehensive Glossary of the aviation terminology used. Additionally, as the required changes are affected by requirements arising from a number of UK, European and International Policies and Strategies, a list of source documents is included for reference by consultees.

This consultation runs from **20 September 2013 to 19 December 2013**.

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# PART A

# Background Information

# 1. About this consultation

## 1.1. What is this consultation about?

1.1.1. This Sponsor Consultation is about a proposal to re-establish[1] controlled airspace in the vicinity of London Southend Airport (LSA).

1.1.2. LSA management believes that the provision of controlled airspace is necessary to enhance the safe operating environment for the increasing numbers of passenger carrying aircraft in the critical stages of flight immediately after departure and prior to landing. This is explained in detail, together with the options that have been considered, in the body of this Consultation Document.

## 1.2. Why is this consultation being carried out?

1.2.1. The CAA requires that where a change to the airspace status or a significant change to procedures or to the distribution of traffic in the vicinity of an Airport is proposed then a consultation must be carried out by the Airport Operator concerned.

1.2.2. It is the responsibility of the Airport Operator to consult with the airspace users who may be affected directly or indirectly by the change and with organisations representing those who may be affected on the ground by the environmental impact arising from the change.

1.2.3. This proposed airspace development is about a change to the status of the airspace, from uncontrolled airspace to controlled airspace, together with minor changes to the Air Traffic Control (ATC) procedures to be used by aircraft inbound to and outbound from LSA.

1.2.4. The CAA lays down its regulatory requirements and process for consultation in Civil Aviation Publication (CAP) 725 *"CAA Guidance on the Application of the Airspace Change Process"*.

1.2.5. The Sponsor Consultation, when carried out by the Airport Operator, enables the CAA to meet its obligations under the Transport Act 2000 and the Directions given to the CAA by the Secretary of State for Transport.

1.2.6. Fundamentally, the consultation will enable LSA to obtain or confirm views and opinions about the impact of the proposed change in advance of the formal submission of a proposal to the CAA.

## 1.3. Who is being consulted?

1.3.1. Generally, those being consulted fall broadly into two groups: aviation consultees and non-aviation consultees. In the first case, the affected aviation parties comprise airlines and other aircraft operators based at or using LSA; the operators of adjacent aerodromes

[1] Controlled airspace previously existed in the vicinity of Southend Airport until 1993, when it was considered by the CAA that commercial air transport operations had declined to the extent that controlled airspace was no longer justified.

and other local airspace operators who may be affected by the change; and the national bodies representing all UK aviation interests who may be affected by the establishment of the proposed controlled airspace.

1.3.2. In the second case, non-aviation consultees comprise County, District and Parish Councils over whose areas the proposed controlled airspace would lie. In addition, certain specific environmental organisations are also consulted.

1.3.3. The Airport Consultative Committee (ACC), established under Article 35 of the Civil Aviation Act 1982, comprises organisations covering both aviation and non-aviation interests. The ACC's constituent members are therefore consultees and have, through its Chairman, been kept informed throughout the development of this proposal. Although predominantly an aviation-related consultation, the views of members of the public are valued and they are invited to contribute to the consultation process. The preferred way for the public to participate is through their representative organisations (eg Parish Councils etc) although nothing should deter anyone from partaking individually should they wish to.

1.3.4. A full list of consultees is given at Appendix D and has been developed in discussion with the CAA.

1.3.5. Consultees should note that in the development of the proposed airspace change LSA has involved local aviation and non-aviation stakeholders through the use of Focus Groups, as recommended by the CAA in CAP725. This is detailed in Part B of the document.

1.3.6. Consultees have a crucial role in providing timely feedback to LSA, giving their views and opinions on the impact of the proposed change.

## 1.4. Conduct of the consultation

1.4.1. The CAA requires that this consultation is conducted in accordance with the Cabinet Office Code of Practice on Consultation.

1.4.2. LSA has appointed Cyrrus Ltd to assist in the development of this proposal and to co-ordinate the consultation process. Cyrrus Ltd is an airspace management consultancy company with extensive experience of managing Airspace Change Proposals (ACPs) in the UK and abroad and conducting consultation to meet the CAA requirements.

1.4.3. This consultation document encompasses both the aviation and the environmental aspects of the proposed airspace change. The document is structured to give a clear and concise explanation of the proposed changes in plain language. Whilst aviation consultees will be familiar with the aeronautical terminology used, non-aviation consultees may not be so familiar with aviation terminology and practice; consequently, these aspects are explained in some detail where necessary.

1.4.4. A list of abbreviations and acronyms and a comprehensive Glossary of Terms is given at Appendices B and C respectively. Technical terminology is explained as simply as possible for the benefit of non-aviation consultees.

1.4.5. Should individual consultees require additional clarification of the terminology used or other aspects of the consultation or of the proposed airspace design, a discrete e-mail address lsacas@stobartair.com is provided. This is the preferred method of contacting LSA. Please indicate that you are making a **QUERY** in the subject heading.

1.4.6. Although this document is being made available on the LSA website at http://www.southendairport.com/news/controlled-airspace, a limited number of hard copies are available on request, in writing, to the Focal Point detailed in Section 1.8.

## 1.5. Consultation period and response method

1.5.1. In accordance with the Cabinet Office Code of Practice on Consultation and the CAA's requirements, a period of 12 weeks is allowed for consultation.

1.5.2. Accordingly, this Consultation Period begins on 20 September 2013 and is planned to close on **19 December 2013.**

1.5.3. Within this period we ask you, or the organisation you represent, to consider the proposal and submit your response to us.

1.5.4. For aviation stakeholders, even if you have no comment to make on the proposed changes we would still appreciate a response to that effect.

1.5.5. **Responses can be made to the discrete e-mail address lsacas@stobartair.com or in writing to the address given in Section 1.8. Please indicate clearly that this is a RESPONSE to the consultation in the subject heading.**

1.5.6. If you have any queries about what is presented in this document please contact the Focal Point (as detailed in paragraph 1.8) as soon as possible.

## 1.6. Results of the consultation

1.6.1. We will be monitoring the responses as they come in to us. If we need any clarification of any of the comments you have made we will contact you.

1.6.2. We will not acknowledge individual responses unless you ask for an acknowledgement. We will not respond to individual responses during the consultation.

1.6.3. At the end of the consultation period we will collate and analyse the responses received and identify issues or common themes in the responses received. A report of the consultation will be developed, which will include LSA's response to the issues raised. Objections to the proposal will then be the subject of detailed discussions with the parties concerned to endeavour to resolve the issues of concern. If the consultation indicates areas where minor changes could be made to any aspect of the proposed airspace arrangements without compromising the CAA's regulatory requirements and without detriment to safety or the environmental impact then these will be incorporated.

1.6.4. LSA will then prepare a formal submission to the CAA Safety and Airspace Regulation Group (SARG) proposing the re-establishment of controlled airspace.

1.6.5. Subsequently, the CAA will follow its regulatory process and will consider the proposed airspace change. In due course, if the CAA is content with the proposal, the proposed airspace change will be implemented in accordance with the international requirements for the promulgation of aeronautical information.

## 1.7. What this consultation is not about

1.7.1. Finally, it is appropriate to tell you what is not included in the scope of this consultation.

1.7.2. This consultation is not about the future development of LSA or any aspect of Government Aviation Policy.

1.7.3. This consultation is not about the Noise Abatement Procedures for departing aircraft or Noise Preferential Routes. The proposed airspace arrangements are compatible with the existing Noise Abatement Procedures.

1.7.4. This consultation is not about the NATS London Airspace Management Programme or any possible airspace arrangements associated with it. Although it has been necessary to discuss certain aspects of that project in this document due to the influence it may have on this ACP the project is still under development by NATS. NATS will conduct their own Industry consultation in due course in accordance with CAP725 and as agreed with the CAA.

1.7.5. Any comments on the above issues which may be included in your responses will be noted by LSA but discounted from the analysis.

## 1.8. Focal point for the consultation

1.8.1. The Focal Point for this consultation is:

Ms Sam Petrie
Airport Development Coordinator
London Southend Airport
Southend-on-Sea
Essex
SS2 6YF

1.8.2. A discrete **e-mail address** lsacas@stobartair.com **is the preferred method for you to** raise any queries on the content or conduct of this consultation and to **submit your formal response**. Please indicate clearly whether you are making a **QUERY** or a **RESPONSE** in the subject heading. Written responses should be made to the Focal Point detailed above.

## 1.9. CAA oversight

1.9.1. The CAA SARG maintains oversight of the conduct of the consultation being carried out to ensure that LSA adheres to the process laid down in CAP725. If you have any complaints about LSA adherence to the consultation process detailed in CAP725 these should be referred to:

Business Co-ordinator
Safety and Airspace Regulation Group
CAA House
45-59 Kingsway
London WC2B 6TE
airspace.policy@caa.co.uk

1.9.2. It is emphasised that SARG staff will not comment to consultees on the proposal itself.

## 1.10. Confidentiality

1.10.1. The CAA requires that all consultation material, including copies of responses from consultees and others, is included in any formal submission to the CAA of an airspace change proposal.

1.10.2. LSA undertakes that, apart from the necessary submission of material to the CAA and essential use by our consultants for analysis purposes, LSA will not disclose any personal details or content of responses or submissions to any third parties. Our consultants are signatories to confidentiality agreements in this respect.

# 2. London Southend Airport

## 2.1. History

2.1.1. Having been first established as an aerodrome in the First World War, a municipal airport was formally opened on the site in 1935. In 1939 the Air Ministry requisitioned the airfield and it operated as RAF Rochford during the Second World War. In 1946 the military airfield was decommissioned and civil aviation returned in 1946 as Southend Municipal Airport.

2.1.2. LSA is best remembered in its heyday as a major Regional Airport operating Cross-Channel Air Ferry services in the 1950s and 1960s. In that period Southend Airport was the third busiest airport in the United Kingdom in terms of passengers handled. Annual passenger traffic peaked in 1967 at just below 700,000 and Southend Airport continued to handle more traffic than nearby Stansted Airport until well into the 1970s.

2.1.3. As such, "Special Rules" airspace was in place around the airport and the en-route segments of the Cross-Channel Air Ferry services took place in "Special Rules" airspace which was the appropriate level of regulation for that time and was, effectively, equivalent to controlled airspace. In 1991 the Southend Special Rules Zone was re-designated as the Southend Control Zone (CTR).

2.1.4. The controlled and Special Rules airspace arrangements provided a "known traffic environment" in which all aircraft were known to ATC and the controllers could provide safe and effective separation (both with and without the use of radar) between all aircraft.

2.1.5. However, as the Air Ferry services declined in the 1970s commercial air traffic reduced and by the early 1990s traffic had declined to the extent that controlled airspace was no longer justified. Thus the Southend CTR was disestablished by the CAA in July 1993.

2.1.6. During the 1990s and early 2000s there were very limited Commercial Air Transport (CAT) operations at the Airport, with the principle activities being aero club, flying training and other General Aviation (GA) activities together with aircraft maintenance facilities for larger aircraft.

## 2.2. Recent development

2.2.1. LSA was purchased in 2008 by the Stobart Group and there has since been a vigorous programme of investment and redevelopment at the Airport.

2.2.2. A planning application was submitted in 2009 for a 300m (984ft) extension of the runway (to a useable length of 1799m (5902ft)), together with upgraded navigation aids and lighting infrastructure. Planning Approval was granted in 2010 and the runway extension was brought into use in 2012.

2.2.3. As part of the airport regeneration programme, a completely new on-site railway station and a new air traffic control tower have been constructed and these became operational

in 2011. Additionally a new passenger Terminal Building has also been constructed which became operational in 2012 and an extension is due to be opened by late 2013/early 2014.

2.2.4. The runway now has Category I Instrument Landing Systems (ILS) serving both landing directions of the runway. LSA has an excellent weather record and is used by a number of airlines when adverse weather conditions require diversion from other London area airports.

2.2.5. Furthermore, a new Selex Primary Surveillance Radar (PSR) and Mode S Secondary Surveillance Radar (SSR) equipment has recently been installed and accepted into operational service.

2.2.6. In April 2012 easyJet started commercial operations from LSA with around 70 flights per week to a number of European destinations, using 3 Airbus A319 aircraft which are based at LSA. A fourth based aircraft was added in 2013 as part of a 10-year partnership between LSA and easyJet. Additionally, Aer Lingus Regional (operated by Aer Arann) has established scheduled services between LSA and Dublin which provide connections to transatlantic services.

2.2.7. The Government's Air Transport White Paper - *The Future of Air Transport* (2003) (ATWP) provided strong Policy support for the growth of Regional Airports as a feature of UK economic growth, stating:

*"Small airports have an important part to play in the future provision of airport capacity in the South East. Their ability to provide services to meet local demand, and thereby relieve pressures on the main airports, will be particularly important before a new runway in the South East is built."*

2.2.8. LSA featured specifically in the South East Airports section of the ATWP and was recognised as a key air transport link which would play a:

*"……valuable role in meeting local demand and could contribute to regional economic development. In principle we would support their development, subject to relevant environmental considerations"*

and

*"There is support from a wide range of stakeholders that the small airports in the South East should be allowed to cater for as much demand as they can attract."*

2.2.9. The recent developments at LSA are fully in accord with the sentiments of the ATWP and, notwithstanding the economic downturn of recent years, the Airport is well placed to make its contribution to the regional economy.

2.2.10. Notwithstanding that Government is currently preparing a new Aviation Policy framework, the support for the important role of LSA and other Regional Airports remains. Under its new ownership LSA has been highly successful in garnering local support for the airport's development and has worked with local community stakeholders

to maintain the economic benefits that the Airport's resurgence has generated, including the creation of more than 500 new jobs.

2.2.11. Whilst the airport has supported, and will continue to support, a wide variety of operations including maintenance, cargo, flying schools, business and charter, the growth in passenger flights over the last 18 months is significant and this is set to continue. The LSA Phase 1 and 2 plans, developed in response to the ATWP, reflect current Government policy and provide a framework for the future growth and development of the airport.

## 2.3. Statistics

2.3.1. In common with other UK airports, LSA experienced a decline in all classes of air traffic as a consequence of the general economic situation. However, following acquisition of the airport by the Stobart Group in 2008 and the progressive development programme which is now coming to fruition, LSA has been successful in attracting new Low-Cost Carrier air transport operations.

2.3.2. A substantial growth in Air Transport Movement (ATM) operations took place in 2011 as a consequence of the introduction of scheduled services by Aer Arann. Subsequently, in 2012, the introduction of scheduled services by easyJet to a variety of domestic and European destinations led to a further substantial growth, rising to a total of 8086 ATMs. Total aircraft movements for 2012 rose to 27715.

2.3.3. Similarly, the profile of passengers using the airport reflects the decline, and then vigorous regeneration of passenger ATMs following the new ownership of the airport. For 2012, with only 8 months of easyJet operations, passenger numbers grew to 617027, which represented a 1354% increase over the previous year.

2.3.4. From June of 2013 easyJet has based a fourth aircraft at LSA and their range of destinations has been further expanded.

2.3.5. The Charts at Figure 1 to Figure 3 below illustrate the air traffic and passenger profiles between 2007 and 2012 (derived from CAA Airport statistics publications). Provisional traffic figures for the first 7 months of 2013 indicate a continuing growth in ATMs and passengers handled over the same period in 2012.

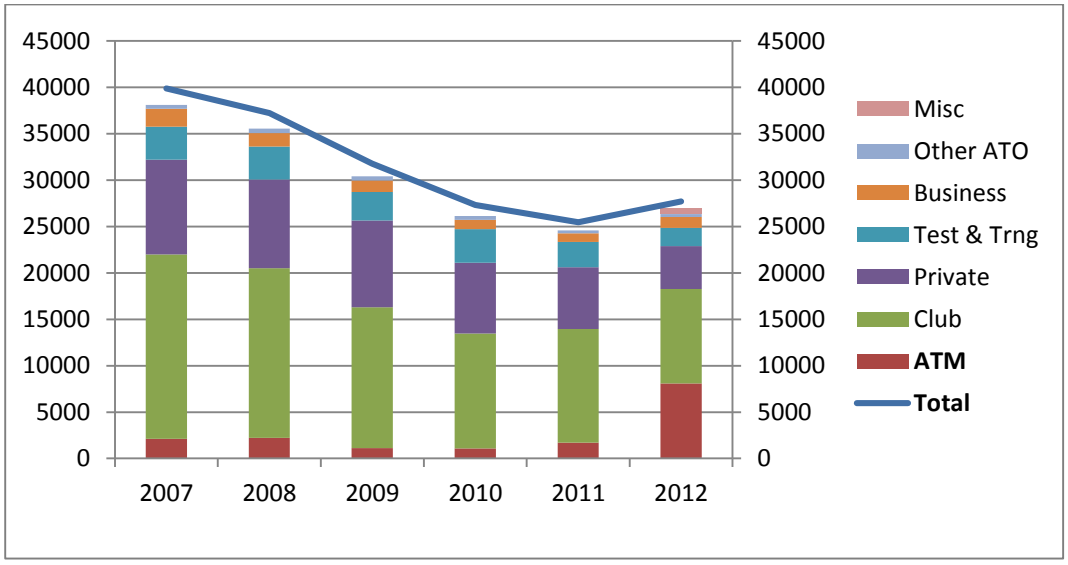


**Figure 1: Overall traffic profile 2007 to 2012**

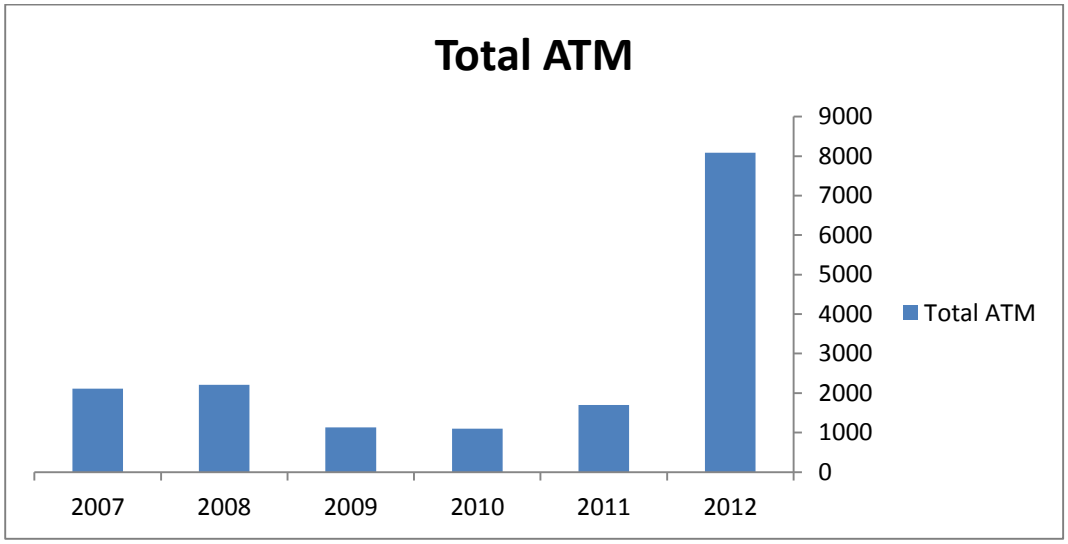


**Figure 2: Air Transport Movements 2007 to 2012**

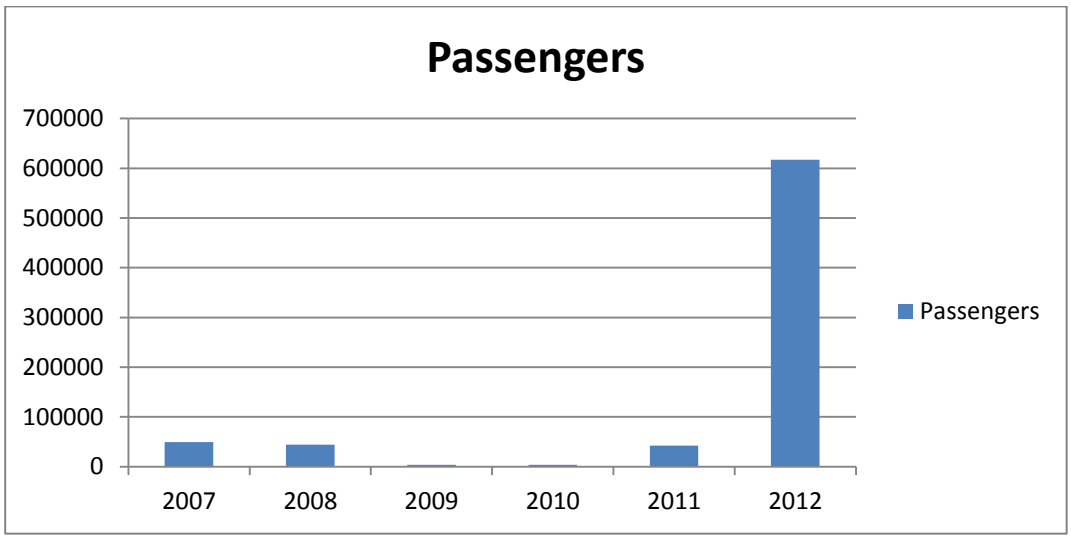


**Figure 3: Passengers handled 2007 to 2012**

2.3.6. The LSA Master Plan predicts growth to 2 million passengers per year by 2020. A planning condition imposed at the time of Planning Consent for the runway extension in 2009 limits the total number of aircraft movements to 53300. It is forecast (in the Environmental Statement submitted to the Local Planning Authority) that this will be met by growth to 26400 ATMs and 26900 non-commercial movements (the latter comprising private, business and training flights) by 2020. Traffic and passenger forecasts are illustrated in the Charts at Figure 4 and Figure 5. (Source: Avia Solutions LSA Traffic Validation Report 2009.)

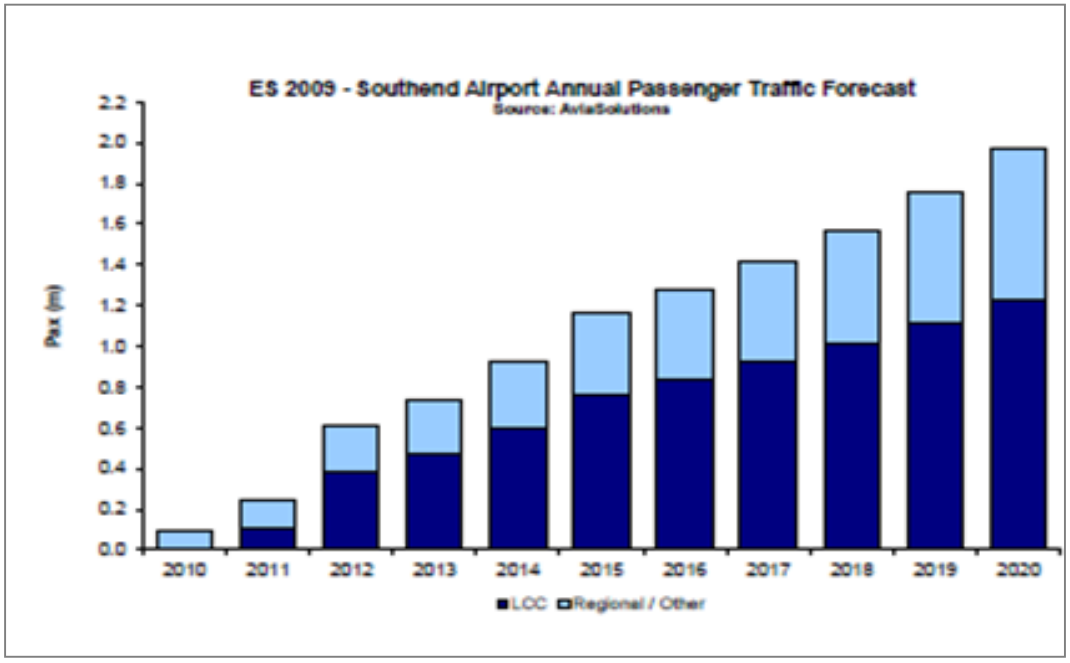


**Figure 4: LSA Annual Passenger Traffic Forecasts to 2020**

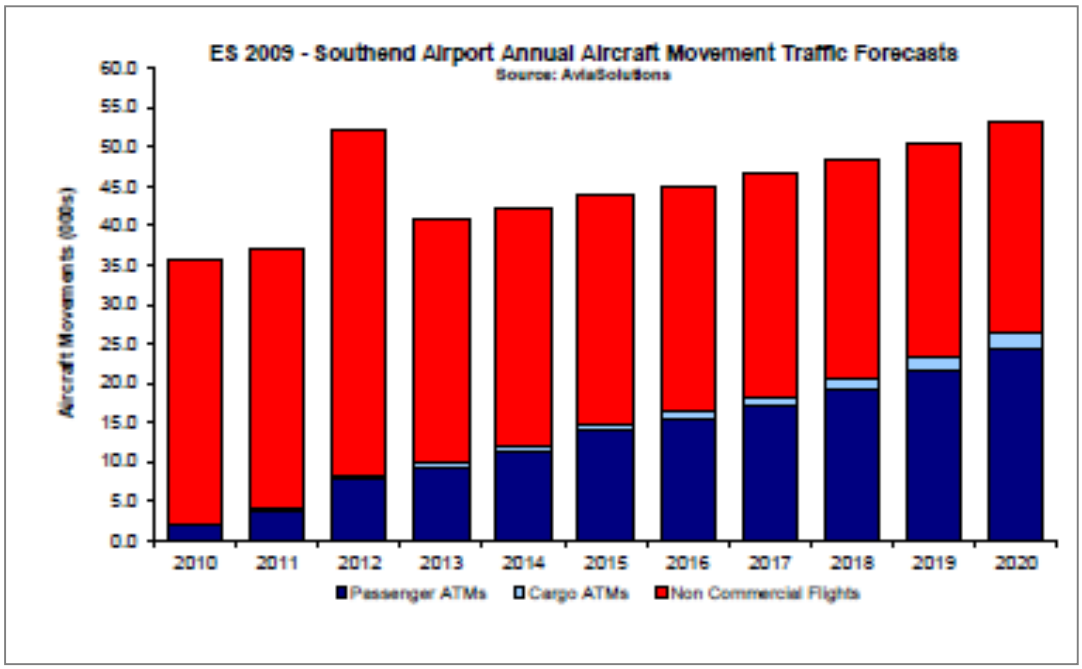


**Figure 5: LSA Annual Aircraft Movements Forecasts to 2020**

# 3. Air Traffic Management at LSA

## 3.1. Overview

3.1.1. LSA currently lies within uncontrolled airspace (Class G airspace). Uncontrolled airspace is airspace in which any category of aircraft can operate freely without reference to any ATC Unit, subject only to compliance with the Rules of the Air Regulations (RotAR).

3.1.2. An Aerodrome Traffic Zone (ATZ) is established around the airport with a radius of 2.5 Nautical Miles (NM) from the Aerodrome Reference Point (ARP) from the surface to 2000ft above aerodrome level (aal). This airspace extends to approximately 2NM along the final approach and departure paths and is the only airspace within which all aircraft are required to make their presence known to Southend ATC and comply with ATC Instructions.

3.1.3. From 3500ft above mean sea level (amsl) upwards, LSA is overlaid with Class A controlled airspace known as the London Terminal Control Area (LTMA). The configuration of the LTMA is shown at Figure 6. The LTMA is under the jurisdiction of NATS London Terminal Control (LTC) and has been established and developed over many years to serve the high density air traffic operations routing to and from the major London Airports[2].

3.1.4. Also pertinent to the airspace arrangements in proximity to LSA is the Clacton Control Area (CTA), also Class A controlled airspace, with base levels of 5500ft amsl and Flight Level (FL) 85 in the areas of interest.

3.1.5. Immediately to the east and south-east of LSA is the Shoeburyness Danger Area (DA) complex[3]. This comprises a number of segments of different dimensions and periods of activity and protects aviation operations from the potentially hazardous activity taking place over Foulness Island and the Maplin Sands. The Shoeburyness Range is a Strategic National Asset and all aircraft operations to/from and in the vicinity of LSA must take due regard of the DA activity at all times and avoid active DA airspace. Other airspace restrictions pertinent to the LSA area of operations include a Restricted Area (RA) around the Bradwell Nuclear Power Station up to 2000ft amsl and a small DA (Yantlet) up to 3000ft amsl, together with two Gas Venting Stations (of 2NM diameter and up to 3500ft amsl) on the Isle of Grain which must be taken into account in the design of the airspace configuration.

3.1.6. Apart from the various flying activities taking place to and from LSA itself, there are numerous small aerodromes in proximity to LSA, all of which generate airspace activity within the same airspace volume as LSA operations are taking place. The majority of such airspace activity comprises GA and Sport & Recreation (S&R) activity. GA and S&R activity, in general, cannot take place within Class A controlled airspace. It is therefore constrained to operate below the LTMA and Clacton CTA.

[2] London Heathrow Airport, London Gatwick Airport, London Stansted Airport, London Luton Airport, London City Airport and RAF Northolt.
[3] Comprising EGD 136, 138, 138A and 138B

3.1.7. Currently, CAT flights operating to and from LSA must transit through the Class G uncontrolled airspace either prior to gaining access to the LTMA after departure or after leaving the LTMA when inbound to land at LSA. Notwithstanding the high performance of modern jet aircraft types, the complexity of the existing ATS routes and density of air traffic already operating at the lower levels of the LTMA means that entry into the LTMA by departing CAT flights cannot be immediately assumed and arriving CAT flights must descend below the LTMA much earlier than the optimum.

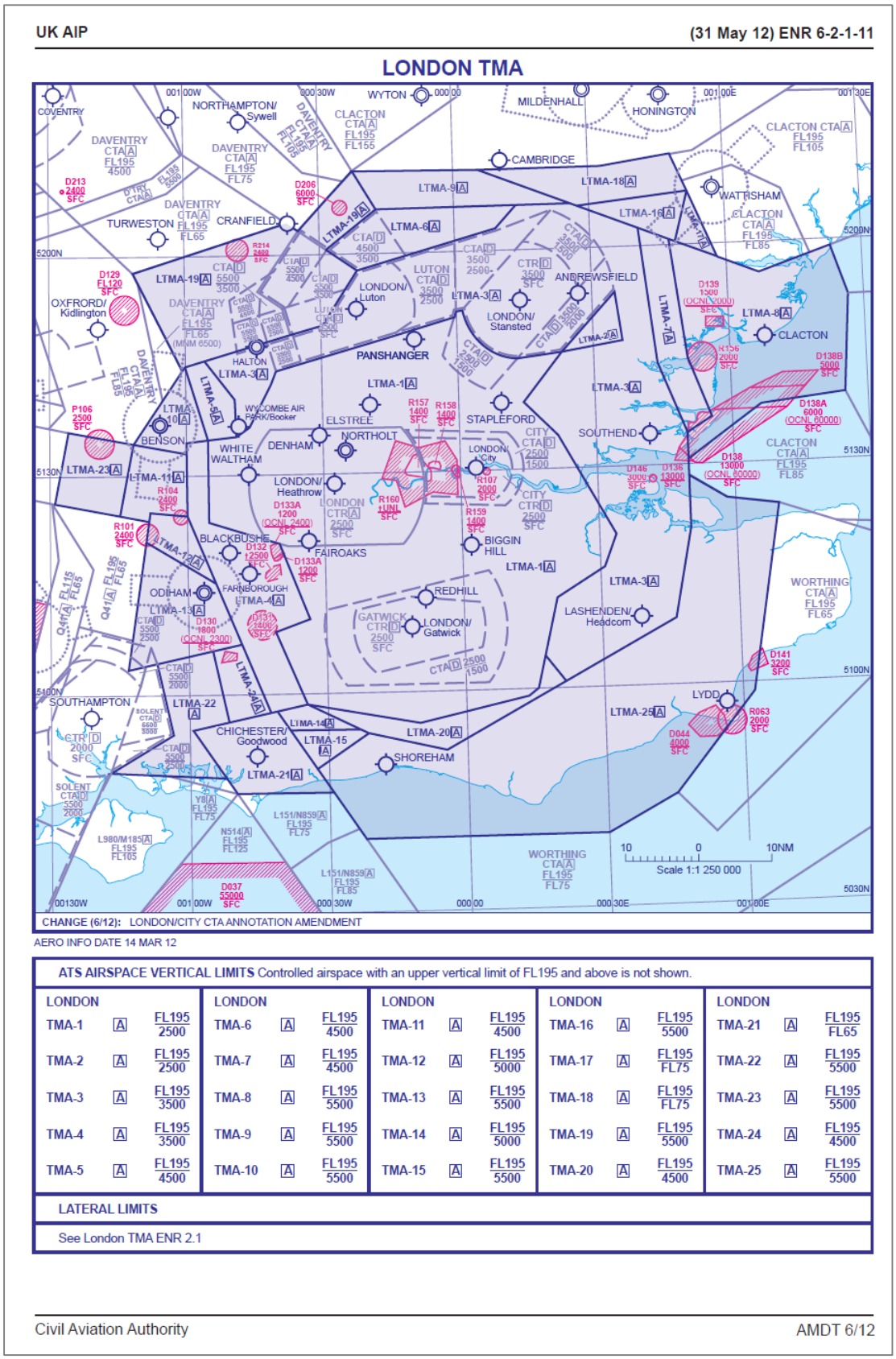




**Figure 6: LTMA and Clacton CTA**

## 3.2. Southend ATC

3.2.1. An ATC unit is established at LSA which provides a variety of Air Traffic Services (ATS) outside controlled airspace to aircraft inbound to, outbound from or operating in the vicinity of LSA.

3.2.2. The ATS provided comprise Aerodrome Control (Instrument) (ADI), Approach Control (Surveillance) (APS) and Approach Control (APP) and are provided from a new Control Tower Building located on the Airport. APS and ADI services are provided between the hours of 0630 and 2330 (Local time), with non-radar APP and ADI provided between 2330 and 0630.

3.2.3. The APS provides ATS to arriving and departing flights and to other flights, on request, operating in the vicinity of LSA under the terms specified in CAP774 *UK Flight Information Services.* (See the Glossary at Appendix C for a description of the radar services provided.) Radar services to aircraft other than arriving and departing aircraft are provided (when requested) under the auspices of the Lower Airspace Radar Service (LARS) scheme within 25NM of LSA and between the hours of 0900 and 1800 (Local time).

3.2.4. Radar services are provided using a modern Selex PSR and co-located Mode S SSR equipment which has recently been installed and became fully operational in June 2013.

3.2.5. LSA ATC works closely with NATS LTC controllers to facilitate access to and from the LTMA and en route ATS Route System (Airways) for CAT and other traffic operating to/from LSA. Standard Operating Procedures are agreed for the interface arrangements with two main LTC Sectors: TC Thames and TC North-East; outside of the hours of Thames Radar, TC South takes over the responsibility for the Thames Radar airspace interface requirements. However, interfacing with these LTC Sectors in a very constrained and busy lower airspace environment means that controller co-ordination workload can be complex, in some circumstances requiring co-ordination with more than one sector for a single flight. Furthermore, all conflict between LSA departures and other known or observed traffic operating below the LTMA must be resolved before they are transferred to LTC, which frequently delays transfer of control to LTC and delays the climb of CAT into the known traffic environment of CAS. This, in turn, reduces the efficient operation of aircraft and increases the environmental impact to communities below the flight path for longer than is desirable.

3.2.6. A system of Standard Routes for departing aircraft entering the Airways System, known as Preferred Departure Routes (PDRs), is published in the UK Aeronautical Information Publication (AIP) to enable pilots to pre-plan their expected routeing after departure. Because the PDRs lie outside (i.e. below) CAS, they are not designated as formal Standard Instrument Departure (SID) procedures and thus are not assessed for obstacle clearance and do not incorporate the airport's Noise Abatement Procedures (pilots must brief themselves separately on these aspects.) However, due to the complexities of integrating aircraft departing LSA with aircraft departing from London City (LCY) and other airports into the busy and complex LTMA operation at the lower levels, LSA departures are

frequently given a radar directed routing into less congested areas of the LTMA. This is explained in more detail later in this document.

## 3.3. Navigation infrastructure

3.3.1. As well as the radar capability, LSA currently provides the following navigation and instrument approach facilities:

- A medium Frequency (MF) Non-Directional Locator Beacon (NDB(L)) (coding "SND");
- Category I[4] standard ILS to both runways 06 and 24;
- Distance Measuring Equipment (DME) associated with the ILS and zero-ranged to thresholds;
- Surveillance Radar Approach (SRA) procedures using the airfield-sited PSR.

3.3.2. The NDB/ILS/DME facilities support both ILS/DME and Localiser (Loc)/DME Instrument Approach Procedures (IAPs) and, additionally, Direct Approach (DME arc) procedures are provided to the final approach track on each runway.

3.3.3. Action is in hand to introduce Area Navigation (RNAV) Global Navigation Satellite System (GNSS) IAPs and is anticipated that these will be introduced in Spring 2014.

## 3.4. Airspace activity beneath the LTMA

3.4.1. As noted previously, in the Class G uncontrolled airspace beneath the LTMA, pilots are not required to communicate with, or make their presence known to any ATC unit. So long as pilots operate in accordance with the RotAR, as appropriate to their flight, they can operate and manoeuvre at will. The principle means of collision avoidance is "see and avoid"[5]

3.4.2. Conversely, Air Traffic Services Outside Controlled Airspace (ATSOCAS) may be available, on request, from various suitably equipped and approved ATC Units. A menu of services[6], some of them radar-based, is available and provision of the service is at the controller's discretion, taking due regard of his[7] workload and primary functions, the nature of the airspace and the type of service requested. However, controllers are to use their best endeavours to provide the type of service requested.

[4] Minimum Decision Height (DH) 200ft; Minimum Runway Visual Range (RVR) 550m)
[5] The RotAR specifies "give way" and other Rules for avoiding aerial collisions.
[6] The services available are known as Basic Service, Traffic Service, Deconfliction Service and Procedural Service. Details of the nature of the services is given in the Glossary at Appendix 3.
[7] In the interests of simplicity any reference in this document to the male gender can be taken to mean either male or female.

3.4.3. Whilst some pilots will elect to ask for a radar service when operating beneath the LTMA, by no means all of them do so. Thus, the controller is operating in what is regarded as an "unknown traffic environment" where:

- some aircraft will be communicating with him and receiving a radar-based service from him;
- some aircraft may be receiving a service, possibly radar-based, from another ATC Unit;
- some aircraft may be showing on his radar display but not communicating with any ATC Unit;
- some aircraft (such as microlights, hang-gliders and parascenders) may not be showing on his radar display, whether or not they are in communication with him or another ATC Unit.

3.4.4. All CAT flights operate under the Instrument Flight Rules (IFR) and rely on instrument navigation, rather than external visual cues, to determine their route through the sky. GA and S&R flights in Class G airspace may operate under the Visual Flight Rules (VFR) or the IFR whether or not they are in communication with an ATC Unit.

3.4.5. If the Southend controller is providing a Deconfliction Service[8], which is the standard service provided to all CAT arriving and departing aircraft, then the separation he must apply between this aircraft and any other radar responses not under his jurisdiction is 5NM laterally or 3000ft vertically (however, the base level of the LTMA at 3500ft amsl largely precludes the application of 3000ft vertical separation by LSA ATC). These separation minima can be reduced to 3NM laterally or 1000ft vertically only if the other traffic has been identified and its level information verified and its intentions have been co-ordinated against the subject traffic, which is the situation that will prevail within the proposed Class D airspace that is the subject of this consultation.

3.4.6. Numerous small aerodromes in proximity to LSA generate aircraft operations which use the Class G airspace below the LTMA in the vicinity of LSA for a variety of airspace activities. Such small aerodromes include, but are not limited to: Stapleford Tawney, North Weald, Earls Colne, Andrewsfield, Stow Maries, Thurrock, Clacton, Stoke, Rochester. Airspace activity includes, but is not limited to: Flying Training (both Instrument and Visual); historic aircraft operations (including vintage jet aircraft); microlight, hang glider, glider and hot-air balloon flying, test flights, military flights and business flights.

3.4.7. Furthermore, given the extent of the LTMA segments having a lower base level, numerous GA flights operating between European aerodromes and aerodromes further afield in the UK transit through the area in which LSA operations are being conducted. Such transit

[8] See Glossary

flights are frequently constrained by the expanse of the Shoeburyness DA complex and so tend to route in close proximity to LSA rather than further to the east over water.

3.4.8. Thus it is seen that the airspace within which LSA CAT flights operate is densely populated with other, legitimate, airspace activity, some of which may not be under the jurisdiction of any ATC Unit.

3.4.9. A publicity campaign in the aviation press by LSA to encourage aircraft operating below the LTMA in the vicinity of LSA to communicate with LSA and participate in the ATS available has been met with some limited success.

## 3.5. Airspace safety

3.5.1. The air traffic density as a whole in the airspace within which LSA ATC provides services means that the safety-critical services provided by ATC would be enhanced and, as traffic continues to grow, safety levels would be improved through the introduction of a "Known and Managed Traffic Environment".

3.5.2. The need for CAT flights to be given extended routings or delayed to avoid other airspace activity has increased over the whole of the service area, whilst the need to re-route airline traffic around other traffic, when in the critical stages of flight immediately after take-off or prior to landing, has also increased.

3.5.3. Evidence of routine Airline Safety Reports shows that the immediate reaction of a pilot to urgent radar vectoring instructions can detract from the otherwise optimal operation of the aircraft as the pilot's attention could be diverted from essential flight deck procedures such as check lists and aircraft configuration changes. Interruptions during these critical, high workload, phases of flight are clearly undesirable and should be obviated if the means to mitigate the situation (e.g. the provision of controlled airspace) exists. The need for pilots to react promptly and decisively to such instructions is outlined in UK Aeronautical information Circular (AIC) 99/2006 (Pink 102).

3.5.4. In January 2003, in response to concerns expressed by airline operators, the CAA published a Policy Statement regarding flight outside controlled airspace. The Policy Statement recommended that, wherever possible, public transport flights should be conducted inside controlled airspace.

## 3.6. Summary

3.6.1. The growth of CAT passenger flights at LSA has led to a significant increase in the requirement to integrate such flights beneath controlled airspace whilst joining and leaving the complex route structures within the LTMA above.

3.6.2. The CAA Policy Statement of 2003 recommends that, wherever possible, public transport flights should be conducted within controlled airspace.

3.6.3. With the increased utilisation of LSA by CAT operators it is now appropriate to re-introduce controlled airspace in line with the CAA Policy statement.

3.6.4. Accordingly, therefore, LSA proposes to submit to the CAA a case for the re-establishment of controlled airspace in the vicinity of LSA. The proposed airspace configuration and the options considered in reaching the proposed airspace configuration are detailed in Part B of this consultation document.

# PART B

# Airspace Change Proposal

# 4. Introduction

## 4.1. Overview

4.1.1. This section of the Sponsor Consultation Document details the airspace changes proposed by LSA. It covers:

- The overarching principles and other factors which affect the design of airspace arrangements;
- the configuration of the proposed controlled airspace;
- the ATS and flight procedures that are to be contained within the airspace;
- the options that have been considered in reaching the proposed airspace configuration;
- the impact of forthcoming changes to the procedures contained within the overlying LTMA;
- the impact of the proposal on other airspace users and the means of mitigating any adverse impact;
- the environmental impact of the proposed changes.

4.1.2. The design of controlled airspace is a careful balance between the competing needs of the various airspace users, the operational requirements of ATS providers and the environmental impact of aircraft operations. At all times, however, flight safety takes precedence.

4.1.3. Airspace designers and the sponsors of controlled airspace changes do not have a “free hand” in determining the size and shape of any particular controlled airspace. There are many requirements and protocols that must be observed in developing the optimum airspace configuration. The CAA regulatory requirements for the design of controlled airspace and the associated infrastructure are detailed in CAP725 and derive from International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPS) and associated documents, Single European Skies (SES) Regulations and EUROCONTROL requirements together with discrete UK Policy and environmental requirements.

4.1.4. The most pertinent elements of the requirements to this airspace change are summarised below to assist consultees who may not be familiar with, or have access to, CAP725 and the other associated documents. (A list of source documents is given at Appendix A.)

4.1.5. Principally, the objectives of controlled airspace are to provide protection to passenger transport aircraft in the critical stages of flight prior to landing and immediately after take-off and in the en route phase of flight by providing a known and managed airspace environment where the intentions and flight paths of all aircraft are known and can be effectively separated from each other.

## 4.2. Airspace design principles

4.2.1. A number of basic principles are applied to the determination of the most appropriate dimensions, configuration and classification[9] for a given airspace. The classification[10] is principally dependent on the nature of the ATMs operating within it (although no threshold numbers are set), the complexity of operations under the IFR within it and the hazards posed to public transport flights operating under the IFR.

4.2.2. Basic principles[11] to be applied are:

- The volume of controlled airspace (Classes A to E) shall be the minimum necessary for the effective protection of the whole of the ATC operation as defined by the ATS provider within a particular airspace structure, subject to the need to avoid over-complication of the airspace structures and any environmental considerations;
- The classification shall be selected to permit safe access to as many classes of airspace user as possible;
- Class E shall not be used for CTRs (ICAO Standard[12]) and should only exceptionally be used for other controlled airspace applications (CAA Policy[13]);
- The Flexible Use of Airspace (FUA) concept should be considered at every opportunity to allow maximum integrated usage of airspace by all airspace users.

4.2.3. The CAA specifies a number of requirements relating to the design of controlled airspace in order that the design satisfies UK Policy. The most salient requirements with respect to this proposal are:

- The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments;
- Where additional airspace structure is required for radar control purposes, the dimensions shall be such that radar control manoeuvres can be contained within the structure allowing a safety buffer[14];
- The ATM system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures;

[9] Airspace Classification: See Glossary
[10] The UK application of the ICAO Airspace Classification System is detailed in CAA DAP Policy Statement of 31 August 2010: *"The Application of the ICAO Airspace Classification System in the UK"*
[11] CAA DAP Policy Statement as detailed above.
[12] ICAO Annex 11 paragraph 2.6.1
[13] CAA DAP Policy Statement as detailed above
[14] The Safety Buffer shall be in accordance with the parameters set down in DAP Policy Statement *"Safety Buffer Policy for Airspace Design Purposes; Segregated Airspace"*

- ATC procedures are to ensure required separation between traffic within a new airspace structure and traffic within existing adjacent or other new airspace structures;
- Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable;
- If the new airspace structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered;
- Should there be any other aviation activity in the vicinity of the new airspace structure and no suitable operating agreements or ATC procedures can be devised, the Change Sponsor shall act to resolve any conflicting interests.

4.2.4. Furthermore, additional requirements are specified with reference to terminal airspace (CTRs and CTAs):

- The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protection areas[15];
- There shall be effective integration of departure and arrival routes associated with the airspace structure and linking to designated runways and published IAPs;
- Where possible, there should be suitable linking routes between the proposed terminal airspace and the existing en route airspace structure;
- Suitable arrangements for the control of all classes of aircraft (including transits) operating within or adjacent to the airspace in question, in all meteorological conditions and under any flight rules, shall be in place or will be put into effect by the change sponsor upon implementation of the change (if these do not already exist);
- All new procedures should, whenever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding facility associated with the procedure;
- Sufficient Visual Reference Points (VRPs) should be established to facilitate the effective integration of VFR flights with other flights.

4.2.5. Additionally, environmental considerations must be taken into account at all stages of the airspace development.

4.2.6. Finally, taking all of the above into account, the airspace configuration should be as simple as practicable.

[15] The CAA has confirmed that "associated protection areas" means the primary areas used for obstacle clearance assessment derived from ICAO PANS-OPS (Doc 8168) Volume II *"Construction of Visual and instrument Flight Procedures"*.

4.2.7. As can be seen from the above, balancing the diverse and conflicting operating requirements of the wide spectrum of airspace users with the regulatory requirements for airspace design is a complex task.

## 4.3. LSA airspace design objectives

4.3.1. LSA has set certain objectives for the development of improved airspace arrangements.

4.3.2. The principle design objectives are summarised as:

- The airspace should establish a known and managed traffic environment which should not rely on the "see and avoid" principle for the operation of CAT flights;
- The airspace arrangements should provide direct and effective linkage to and from the LTMA and en route ATS route structure;
- The airspace arrangements should take due regard of the requirements of other airspace users, both those based at LSA and those operating from nearby aerodromes and should, to the maximum extent practicable make provision to accommodate such airspace activity;
- The airspace arrangements should take due regard of known future airspace developments in the LTMA and elsewhere in proximity to LSA and should ensure compatibility with such developments as far as they are known;
- The airspace and flight procedure design and configuration should comply with the safety and regulatory requirements of the CAA set out in CAP725, including acceptable mitigations in the event that the requirements cannot be fully met;
- The flight procedures for aircraft operating to and from LSA must reflect the existing published noise abatement procedures for LSA and should, wherever practicable, provide a reduced environmental impact to communities on the ground.
- The flight procedures and ATC procedures should take due regard of ATC capacity and workload;
- The design process should take due regard of known wind farm developments in proximity to LSA.

4.3.3. LSA is proud of its good working relationship with GA and S&R aircraft operators and seeks to sustain that good working relationship with the minimum of disruption to their activities in the vicinity of LSA. However, LSA is also conscious of the fact that GA and S&R operators are, in general, opposed to the expansion of controlled airspace and see it as a curtailment of their rightful use of the airspace. LSA acknowledges that the effective management of the airspace requires a fine balance between the competing needs of all airspace users, with the overriding need for flight safety to take precedence at all times.

# 5. Existing operational constraints and concerns

## 5.1. Unknown traffic

5.1.1. "Unknown traffic" is defined as traffic of which the flight details and intentions are unknown to the controller.

5.1.2. Sections 3.4 and 3.5 of this document outline the airspace activities which may take place below the LTMA without reference to any ATC Unit and the potential hazards that may arise as a consequence of much of this traffic being "Unknown traffic".

5.1.3. Under the Deconfliction Service provided, as standard, to CAT flights by LSA ATC, the Radar controller must issue, inter alia, headings and levels to the aircraft under his jurisdiction aimed at achieving the deconfliction minima against unknown traffic. The deconfliction minima in this instance are 5NM laterally, or 3000ft vertically against unverified SSR Mode C data. (Although, of course, the fact that the airspace is, in the main, only 3500ft in vertical extent where the provision of 3000ft vertical separation is precluded.)

5.1.4. However, the ultimate responsibility for avoiding the unknown traffic rests with the pilot of the aircraft receiving the Deconfliction Service.

5.1.5. The complex radar vectored manoeuvring necessary to provide the required Deconfliction Service separation minima frequently delays the onward clearance of departing aircraft into the controlled airspace above. LTC controllers are not permitted to provide Deconfliction Service beneath the LTMA and, consequently, departing aircraft must be "clean" in respect of Deconfliction Service before transfer of control to LTC.

5.1.6. "Unknown traffic" also encompasses traffic which may be operating in the airspace but which is not indicating on the LSA radar displays. Some aircraft in the recreational aviation category, such as hang-gliders, parascenders, and some microlight types, do not reflect sufficient radar energy to generate a radar response and, equally, are not generally equipped with radios or transponders. In this situation ATC is unable to provide the Deconfliction Service against such traffic operating, legitimately, in Class G airspace right up to the base level of the LTMA. (Conversely, it must be noted that hot air balloon operators routinely communicate with ATC and make their operating location and altitudes known to the radar controller.)

5.1.7. It is often contended that mandatory operation of SSR transponders would alleviate the ATC concerns and workload in avoiding "unknown traffic". However, an SSR position symbol does not indicate to the controller the identity or intentions of the aircraft concerned and nor is any altitude information validated as being accurate. Separation minima for the Deconfliction Service remains 3000ft vertically or 5NM laterally from a transponding or a non-transponding "unknown aircraft" and as previously indicated the 3000ft vertical standard is not an option that can be employed over a large part of the LSA service area that is below the LTMA 3500ft base altitude.

5.1.8. Similarly, simple radio communication with an aircraft, whilst it does provide knowledge of the existence of the airspace activity and intentions of the pilot, does not reduce the separation minima that the controller must apply in Class G airspace unless the aircraft is formally identified and co-ordinated in relation to the other traffic by the controller.

5.1.9. Conversely, in a known and managed controlled airspace environment, all aspects of ATS provision against "unknown aircraft" are eliminated and the separation minima can be reduced to 3NM laterally or 1000ft vertically in respect of IFR versus IFR flights and to "traffic information" or other simple deconfliction measures in respect of IFR CAT flights against VFR flights.

## 5.2. Low TMA base – lack of discrete holding levels

5.2.1. The low LTMA base level overhead LSA and the use of the SPEAR hold at and above 4000ft for LCY arrivals limits LSA ATC to holding levels at 3000ft and below.

5.2.2. Departing traffic is not separated from traffic in the SND holding pattern (currently established above Southend Airport) at these low altitudes as holding traffic is in the normal radar "overhead" blind spot and is thus not visible at all times to the radar controller; this precludes the initial use of lateral separation based on radar positional data and requires the application of vertical separation to the departing traffic until lateral radar separation can be positively established in relation to the aircraft in the SND holding pattern.

5.2.3. Whilst LSA currently seldom has a requirement to hold arriving traffic for ATS capacity reasons, nonetheless as CAT traffic grows there will be occasions when CAT traffic may need to hold to await weather improvements prior to landing or for other reasons of runway non-availability (e.g. snow clearance).

## 5.3. Incompatible arrival routes

5.3.1. Whilst the Standard Arrival Routes (STARs) to SPEAR are currently, nominally, shared[16] by LCY, LSA, Biggin Hill Airport and Rochester Airport arrivals, the routing is seldom optimum for either LSA or LTC operational requirements.

5.3.2. There is a frequent, almost standard, need to tactically route aircraft away from the published routes due to congestion and system incompatibility.

5.3.3. Airways arrivals to LSA from the south are subject to early descent and operation below controlled airspace due to system congestion in the area of Detling (DET) radio navigation beacon.

5.3.4. The DA complex results in arrivals from the south having to route overhead LSA to join a right-hand traffic pattern (to the north-east) to runway 24 - the predominant landing runway. The fact that these aircraft are already at 3000ft or below constrains departures

[16] UK AIP AD2-EGLC-7-1/3/4

and other airspace operations in proximity to the SND whilst the arriving aircraft transits through the radar overhead.

## 5.4. LCY Standard Instrument Departure (SID) procedures

5.4.1. Until 2010 the SID procedures from LCY included "stepped climb" profiles which provided an integrated network of TMA routes separated from each other by procedure. The proximity of the two airports to each other and the interaction of LCY departures with other routes and procedures above, resulted in LCY departures via Clacton (CLN) and DET passing close to LSA at little above 4000ft.

5.4.2. The concomitant Radar Manoeuvring Area (RMA) configuration for LTC operations for LCY traffic imposes significant vertical constraints on the operation of LSA traffic.

5.4.3. LCY SID procedures have been revised to have an absolute upper limit of 3000ft. The use of "stepped climbs" within LCY procedures to establish effective integration of traffic flows is no longer used. Thus, as published, the LCY SID procedures would leave controlled airspace to the west of LSA at 3000ft were it not for LTC controller intervention to ensure climb clearance is issued in time to ensure aircraft containment within LTMA controlled airspace. Such traffic still passes close to LSA at low altitude, which precludes the free-flow of LSA traffic into and out of the LTMA.

5.4.4. Thus, due to the close proximity of the two airports there is a complex interdependence between LCY SID procedures and all LSA traffic, whether arriving or departing.

## 5.5. D138 complex

5.5.1. The D138 complex to the east and southeast of LSA significantly constrains LSA ATC operations for arriving and departing traffic in that sector.

5.5.2. Departing aircraft to the south from runway 06 must make a relatively tight and extended right turn towards the south-west in order to remain outside the DA airspace, or alternatively must make an extended left turn back through the aerodrome overhead if they are unable to make a suitably tight right turn.

5.5.3. Arriving aircraft to runway 24, the predominant landing runway, from the south must, as noted previously, route overhead the Airport (to the west of the DA airspace) and then into a right hand traffic pattern to final approach. This results in routing considerably extended from the optimum routing on a left-hand traffic pattern.

5.5.4. Transiting flights, whether operating under VFR or IFR, tend to route overhead or close to LSA in order to avoid the DA airspace.

5.5.5. The proximity and extent of the DA airspace results in consequential airspace congestion overhead and in close proximity to LSA at low altitudes.

5.5.6. However, LSA fully accepts the constraints of the DA airspace and accepts that the status quo is likely to remain for the foreseeable future. LSA staff maintain a good working relationship with the DA operating agency and pass advice to them on observed unknown

aircraft plots which appear likely to infringe the DA airspace. In addition, LSA provides a Danger Area Activity Information Service (DAAIS) on request to itinerant pilots on both the D138 complex and D146 (Yantlet) to the south.

5.5.7. It is therefore acknowledged and accepted that the configuration and activity of the D138 complex will be a constraining factor to the design and configuration of any controlled airspace arrangements for LSA.

## 5.6. Wind farms

5.6.1. The effects of wind turbines on PSR radar displays are well-known and widely documented. The CAA has published CAA Document CAP764 *"CAA Policy and Guidelines on Wind Turbines"*. This Airspace Change Proposal takes due note of, and complies with, the provisions of CAP 764.

5.6.2. In summary, the turbine blades, when rotating, reflect radar energy as moving targets in the same manner as aircraft, but sometimes with a reflected energy level several times greater than reflections from an aircraft. Furthermore, the effects caused by the rotation of the blades vary according to the aspect of the turbine disc to the radar source.

5.6.3. The consequence of turbine returns are two-fold:

a) They will not be removed by the radar processing systems and will be displayed as if aircraft, and/or

b) They will raise the thresholds in the radar processor resulting in the loss of detection of lower energy targets near the turbines, i.e. aircraft returns in the vicinity of the turbines.

5.6.4. Consequently, areas of "clutter", or unwanted radar returns, are displayed on the radar display and the radar returns from genuine aircraft over and in the vicinity of the wind farm array would be swamped by the unwanted returns. The controller would be unable to differentiate between aircraft returns and wind turbine clutter and, as a consequence, would be unable to retain the radar identity of an aircraft, assimilate its progress and issue the executive instructions necessary to provide separation and maintain a radar service.

5.6.5. There are two wind farm developments which directly affect the provision of ATS in the vicinity of LSA. They are both on the Dengie peninsular to the north-east of LSA and straddle the final approach track to runway 24 between 6NM and 9NM from touchdown. This is an area which is critical to the retention of radar identity of aircraft by the radar controller when sequencing a stream of arriving aircraft and issuing executive instructions to establish on the instrument approach track. It is also an area where "unknown traffic" is sometimes observed, which also affects the provision of Deconfliction Service by LSA to CAT joining instrument approach path to runway 24.

5.6.6. Whilst the principles detailed in the CAA Policy require that the controlled airspace volume should be, inter alia, of the minimum practicable dimensions to ensure the

effective protection of the ATS function, nonetheless it recognises that additional airspace may be required for radar control purposes.

5.6.7. In this case it is argued that, whilst it may have been practicable to establish a marginally smaller volume of controlled airspace to the north-east of LSA to meet solely the regulatory requirements for IFP containment, nonetheless a small increase over the minimum is justified in this case to mitigate the effects of the wind farms on the provision of radar service over and in proximity to the established wind farms. The alternative would be the provision of Transponder Mandatory Airspace adjoining, vertically and laterally, any alternative controlled airspace configuration.

# 6. New operational considerations

## 6.1. London Airspace Management Programme

6.1.1. Achieving efficiency means, importantly, taking advantage of the very latest technology. To ensure the UK takes full advantage of this, the CAA has been working with the aviation industry to develop the Future Airspace Strategy (FAS)[17], a blueprint for modernising the UK's airspace.

6.1.2. Implementing the FAS requires changes throughout UK airspace. For this reason NATS is working on a very extensive programme of modernisation centred on London's airports and the surrounding airspace, beyond the southern and eastern coasts, and as far northwest as the midlands; this is referred to as the London Airspace Management Programme (LAMP). New ATC airspace management techniques will be introduced and the route and navigation infrastructure will be based on Area Navigation[18] (RNAV) techniques.

6.1.3. At the outset of the LSA airspace development project the LAMP was very much a future consideration for implementation in 2018 or beyond and of which LSA would take "due regard" so far as the LAMP concepts were known.

6.1.4. However, in January 2013 the CAA and NATS jointly announced that, due to potential changes in airspace throughout Europe, LAMP would be phased, with LAMP Phase 1a, which would include changes for LCY traffic, being introduced in 2015. Therefore, the emerging LAMP concepts and arrangements became a new, direct influence on the LSA airspace development.

6.1.5. Consideration has been given by LSA management to delaying the LSA airspace project until after LAMP Phase 1a is in place. However this option is rejected because it would delay the flight safety improvements which are now appropriate for the number of CAT passenger movements at LSA. Furthermore, although the proposed implementation of LAMP Phase 1a was to be "during 2015" there was no assurance that it would be accomplished in that timescale.

6.1.6. Thus, the LSA airspace development has been adapted to ensure that it remains compatible with both the existing LTMA route structure and ATC operation and the emerging Post-LAMP Phase 1a operation.

6.1.7. From inception the LSA airspace development team has been working closely with the NATS LAMP development team to ensure that LSA airspace development proposals will remain compatible with the future LTMA arrangements. Consequently, the LSA airspace development team have worked closely with both LTC Operations and the LAMP development team, and will continue to do so, in developing the airspace configuration and arrangements detailed in this consultation.

[17] The CAA explains the background to FAS here: www.caa.co.uk/default.aspx?catid=2408
[18] See Glossary

6.1.8. **It is emphasised that this consultation is not about the NATS LAMP initiative or any airspace arrangements associated with it.** NATS is developing a proposal for changes to airspace including parts of the route network used primarily by LCY flights above 4000ft, but also affecting some of the same geographical areas addressed by LSA in this consultation.

6.1.9. **The NATS proposal will be subject to an entirely separate consultation.** We encourage you, therefore, not only to consider and respond to this consultation, but also to go to www.londonairspaceconsultation.com for details of the NATS proposals.

# 7. Airspace development process

## 7.1. Initial airspace development

7.1.1. This Section outlines the evolutionary process utilised in arriving at the proposed airspace configuration detailed in Section 8 below. It should be read in conjunction with the Options Considered in the development process detailed in Appendix E.

7.1.2. At the outset of the project, as a consequence of the CAAs Performance-based Navigation (PBN) Policy, an airport user survey was conducted to ascertain the level of RNAV equipage and capability of CAT airspace users. This was necessary to ensure that airport operators would be able to operate on RNAV-1 defined airspace procedures such as SID and STAR procedures (and, indeed whether conventional navigation procedures would need to be established in addition to RNAV procedures).

7.1.3. It was determined that the majority of airline operators were equipped and approved for RNAV-1, or better, operations in European terminal airspace. The proportion of compliant operators was sufficiently high to conclude that an alternative array of non-RNAV procedures would not be provided for the interim period before RNAV equipage becomes mandated by European Union (EU) Implementing Rules (IR). In the interim pre-mandate period, non-RNAV-1 approved aircraft would, when necessary, be issued with individual non-standard ATC clearances, normally based on radar vectoring and conventional navigation technology.

## 7.2. Operational requirements to be met

7.2.1. At the outset of the project a list of operational requirements was developed which LSA would require the airspace arrangements to achieve. These were based broadly on the airspace design principles detailed in CAP725 and included, inter alia:

- development of a known and managed airspace environment to ensure adequate protection of CAT passenger traffic inbound to and outbound from LSA and other aircraft operating in the vicinity of LSA;
- containment of existing IFPs to meet the regulatory requirements;
- be of sufficient dimensions to fully contain vertical and lateral flight activity with regard to expected navigation performance and manoeuvrability in both radar and non-radar managed environments;
- development of SID and STAR procedures providing direct linkage to/from the LTC/LAC Airways system;
- establish a terminal holding pattern away from the LSA overhead to provide a minimum of 3 discrete holding levels for LSA traffic;
- ensure equitable access to as many classes of airspace user as practicable;

- reflect current UK PBN policy and comply with other appropriate CAA policies;
- take due regard of the environmental impact of aviation on communities and, wherever possible reduce the impact;
- take due regard of known windfarm developments and other areas of radar clutter;
- take due regard of known future airspace developments in the eastern LTMA areas.

7.2.2. On the basis of the operational requirements, coupled with the regulatory requirements, and the knowledge base within the local ATC team of local airspace usage and areas of concern, options were considered and a provisional controlled airspace configuration was developed.

7.2.3. The initial airspace case and outline proposals were discussed with CAA Directorate of Airspace Policy[19] (DAP) staff at a formal Framework Briefing in February 2013 in accordance with CAP725. A close dialogue has been maintained with the CAA throughout and guidance sought where appropriate.

## 7.3. Focus Groups

7.3.1. Following the Framework Briefing the project entered the Focus Group stage of the CAP725 process. The CAA recommends the use of Focus Groups from a cross-section of those who may be affected by the proposal to consider the Sponsor's initial proposals and, where appropriate, to suggest alternatives for consideration by the sponsor or to identify areas of concern.

7.3.2. The role of the Focus Groups is not to endorse or hinder the change but to contribute to the development of design options; identify issues that will be considered important by stakeholders and identify areas that need clarification or additional information.

7.3.3. LSA established three formal Focus Groups, namely:

- Airport-based airspace users;
- Off-Airport local airspace users and nearby aerodromes;
- Local non-aviation interested parties.

7.3.4. In addition, under the auspices of the Focus Group process LSA established a continuing dialogue with ATC Units whose operations interface with LSA, namely NATS LTC and LAMP and ATC Manager, Manston Airport. The Military Airspace Users Co-ordination Team (MUACT) has also been appraised of the proposals.

[19] The CAA's Directorate of Airspace Policy (DAP) and Safety Regulation Group (SRG) were merged in July 2013 into the Safety and Airspace Regulation Group (SARG). The terminology DAP is used in this document where that was the institutional arrangement existing at the time.

7.3.5. The Focus Group stage of the process enabled LSA to gain early knowledge of likely areas of contention with airspace user or environmental groups and to adapt the early design proposals to reduce potential opposition.

7.3.6. In this case substantial opposition to the early proposal arose from elements of the GA and S&R airspace user community, including individual aviators, flying schools, aerodrome operators and an aircraft manufacturer. All considered the "imposition" of controlled airspace to be a serious curtailment of their freedom of airspace access and utilisation, notwithstanding that the proposed airspace configuration would allow access by all classes of airspace user, including (by arrangement) non-radio operations.

## 7.4. Post-focus group airspace reviews

7.4.1. Throughout the airspace development process the sponsor of the change is required to take a balanced approach to the competing needs of the different elements of the airspace user community, together with the equally competing environmental objectives.

7.4.2. Following the Focus Group discussions the LSA airspace development team undertook detailed reviews of each area of the proposed airspace configuration to determine whether the proposed airspace could be reconfigured or reduced in dimensions and volume to mitigate, as far as practicable, the concerns of the GA and S&R Focus Group participants.

7.4.3. The detailed Reviews comprised:

- The CTR/CTA configuration to the south of the River Thames where it interacted with Stoke Microlight Airfield and Rochester Airport;
- The proposed western boundary of the CTR;
- The controlled airspace requirements to the west and north-west of LSA in the vicinity of Hanningfield Reservoir;
- The proposed vertical interface with the overlying LTMA Class A airspace;
- The configuration of the proposed offshore holding pattern and associated airspace configuration;
- The proposed controlled airspace configuration to the south-east, including the interaction with Manston operations, the need to provide containment for future SID and STAR procedures and the handling of arrivals and departures when the D136/138 complex is not active.

7.4.4. In each case, in taking a balanced approach, the LSA airspace development team have been able to reduce the overall volume of new controlled airspace required. Where there has been some erosion of the CAA's regulatory requirements potential mitigations have been developed and discussed with the CAA. However, in some areas it has not been possible to substantially reduce the dimensions of the proposed controlled airspace.

7.4.5. Documentation of the Post-Focus Group reviews serves to demonstrate to CAA SARG, on submission of a formal ACP, that LSA has considered and taken a well-balanced approach to the competing airspace user requirements to the maximum extent practicable. They will also serve to reduce further review and adaptation of the proposed airspace configuration following this formal Industry Sponsor Consultation stage of the process.

7.4.6. Clearly, a significant influence on the proposed airspace development has been the re-phasing of NATS LAMP project, as detailed in Section 6.1, bringing it forward (in the areas of interaction with LSA operations) to 2015.

7.4.7. This presented LSA with a need to consider options for the continuation of the project. The options considered were:

- Option 1: Abandon the project. This option would not find favour with the CAT airspace user community, nor would it be acceptable to LSA in meeting its safety management obligations as an ANSP.

- Option 2: Delay the project until after the implementation of LAMP Phase 1a. This was not acceptable to LSA in meeting its obligations as an ANSP. The implementation timescale of LAMP Phase 1a was not assured and, as with all large-scale projects, there is significant risk that it may be delayed beyond 2015.

- Option 3: Introduce controlled airspace and associated IFP interfaces with the existing LTMA only and then, subsequently, carry out a second adaptation of the arrangements to meet the post-LAMP requirements. Whilst this would provide a feasible option, it would require a second round of procedure development, possible airspace boundary reconfiguration and a second ACP consultation. Given that the subsequent changes would need to be ready for implementation possibly, but not assuredly, a few months after the first change this would lead to "consultation overload" for both airspace users and community interests. The separate NATS consultation for the LAMP proposals would be running partly concurrently with both LSA consultations and could lead to further confusion. This option was not acceptable to LSA.

- Option 4: Adopt a phased approach. Advantages were identified with this approach following discussions with the CAA. Retention of PDRs during the interim pre-LAMP period (i.e. without the introduction of formal SID procedures), subject to CAA agreement, whilst the definitive LAMP requirements were still under development would obviate the requirement for a second round of procedure design and adaptation. Finally, consequent on the implementation of LAMP, formal SID procedures would be introduced at LSA. This approach would allow the most expeditious introduction of controlled airspace whilst actively participating in the NATS LAMP planning to ensure future compatibility of the airspace arrangements. This approach has been adopted by LSA and the continuing discussions with NATS (both LTC and LAMP), as outlined previously, have assisted in the development of this Sponsor Consultation.

# 8. Design proposal for LSA controlled airspace

## 8.1. Overview

8.1.1. This Section of the consultation document details the airspace configuration that is proposed in this sponsor consultation. Specific details of the operation of the airspace are detailed later in the document.

8.1.2. Where appropriate, changes to the configuration resulting from the post-focus group reviews are mentioned but the detail of the reviews is not included.

8.1.3. A diagram showing the overall configuration of the proposed controlled airspace is shown at Appendix F.

## 8.2. Airspace classification

8.2.1. All new controlled airspace in this proposal is Class D airspace. Class D is the normal classification allocated to controlled airspace in the vicinity of Airports, in accordance with the CAA Policy.

8.2.2. Class D airspace allows operation of aircraft operating under both IFR and VFR. Access to the airspace is subject to clearance from ATC and compliance with ATC instructions and provides for a known and managed airspace environment.

8.2.3. **Class D airspace is not an "exclusion zone" to VFR or IFR GA and S&R operations.** However, it is acknowledged that a number of GA and S&R pilots prefer not to operate in controlled airspace, notwithstanding that they could do so if desired. LSA considers that the proposed airspace configuration detailed in this Section provides a suitable operating environment for both those pilots who are happy to operate in a known and managed environment and those who prefer to remain outside controlled airspace.

8.2.4. In Class D airspace ATC provides standard separation between IFR flights. Between IFR and VFR flights, or between VFR flights, ATC resolves conflict by passing traffic information to both parties so that the conflict is resolved or manages the traffic flows so that conflict does not occur.

8.2.5. Whilst the normal method of operation is for aircraft to be in two-way radio communication with ATC in order to obtain clearance and comply with instructions, nonetheless provision can be made for non-radio aircraft to access the airspace by individual arrangement.

8.2.6. Class D airspace does not require the mandatory carriage or operation of transponders in aircraft.

## 8.3. Control Zone (CTR)

8.3.1. The proposed Southend CTR extends laterally to 5NM either side of the runway extended centre-lines and to 10.75NM from the ARP along the runway 06 extended centre-line (to

the south-west) and 12NM from the ARP along the runway 24 extended centre-line (to the north-east). The CTR extends vertically from the surface to 3500ft amsl. The proposed CTR is depicted at Figure 7.

8.3.2. The CTR contains the published IAPs based on the SND NDB, together with their associated protected areas, the majority of SND NDB holding area and facilitates radar vectored circuits descending to 1500ft amsl prior to joining the final approach track, including the necessary buffer for radar vectored operations. It also facilitates those portions of RNAV and Direct Approach (DME Arc) IAPs at and below 2000ft amsl.

8.3.3. The CTR also protects departing aircraft immediately after departure whilst carrying out the published noise abatement procedures and until normal climb profiles achieve at least 2000ft amsl. The procedure protection areas for departure procedures are also contained to 2000ft amsl.

8.3.4. The detailed airspace review carried out following the Focus Group stage of the airspace development indicated that, to the south-west, the initially proposed CTR boundary could be "rolled back" from 12NM to 10.75NM from the ARP. This was seen to ease the "Choke Point" aspects of concern to GA and S&R airspace users and would enable operations in the vicinity of Thurrock aerodrome to remain outside controlled airspace. However, this was at the expense of not fully containing the protected airspace for the Direct Approach DME arc IAPs (as required by the regulatory requirements), albeit the nominal tracks of the procedure would remain contained. It was considered that, on balance, this would be justified on the basis that Direct Approach DME arc procedures are likely to be withdrawn as usage of RNAV IAPs becomes more routine.

8.3.5. To the south of the final approach track to runway 06, concerns had been expressed on the impact of the originally proposed CTR configuration on the operation of Rochester Airport and Stoke Microlight site. Accordingly, a detailed post-Focus Group review considered these aspects in detail. In addition to the general roll-back of the CTR boundary as detailed above, it was considered that a further roll-back of the proposed CTR could be accommodated to the south in order to reduce the impact on Rochester and Stoke. The proposed CTR boundary therefore provides a visually referenced (railway line) access to Stoke Airfield from the west below controlled airspace and increases the spacing from Rochester ATZ to approximately 4NM. The protection area for the SND NDB to ILS IAP to runways 06 and 24 at LSA remains contained within the CTR in accordance with the regulatory requirement as shown at Figure 8 and Figure 9, although the SND holding area protection at 1500ft is only achieved for CAT A aircraft types. The latter is considered acceptable as 1500ft holding is normally only utilised following a missed approach.

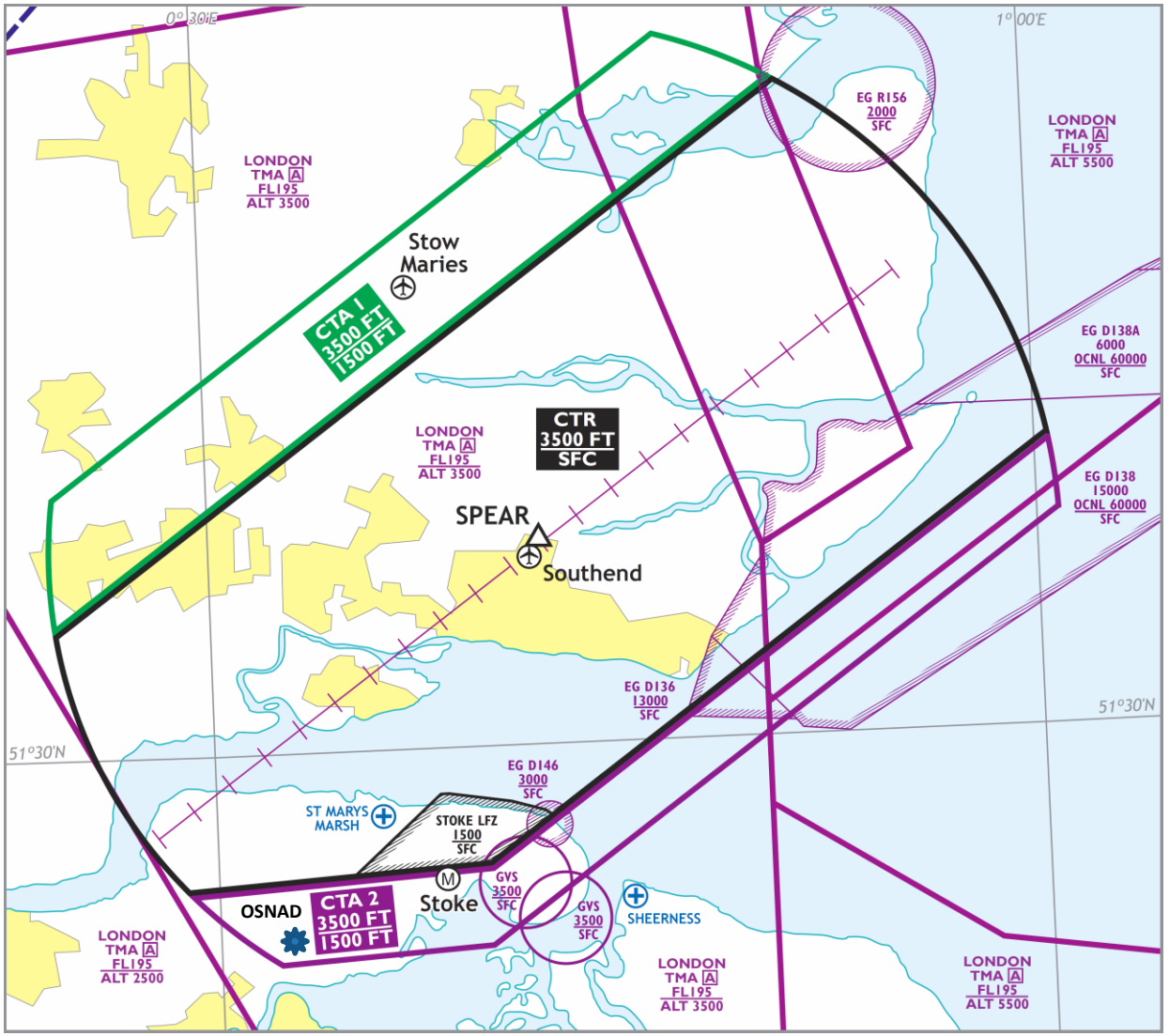




**Figure 7: Configuration of CTR and CTA 1 and CTA 2**

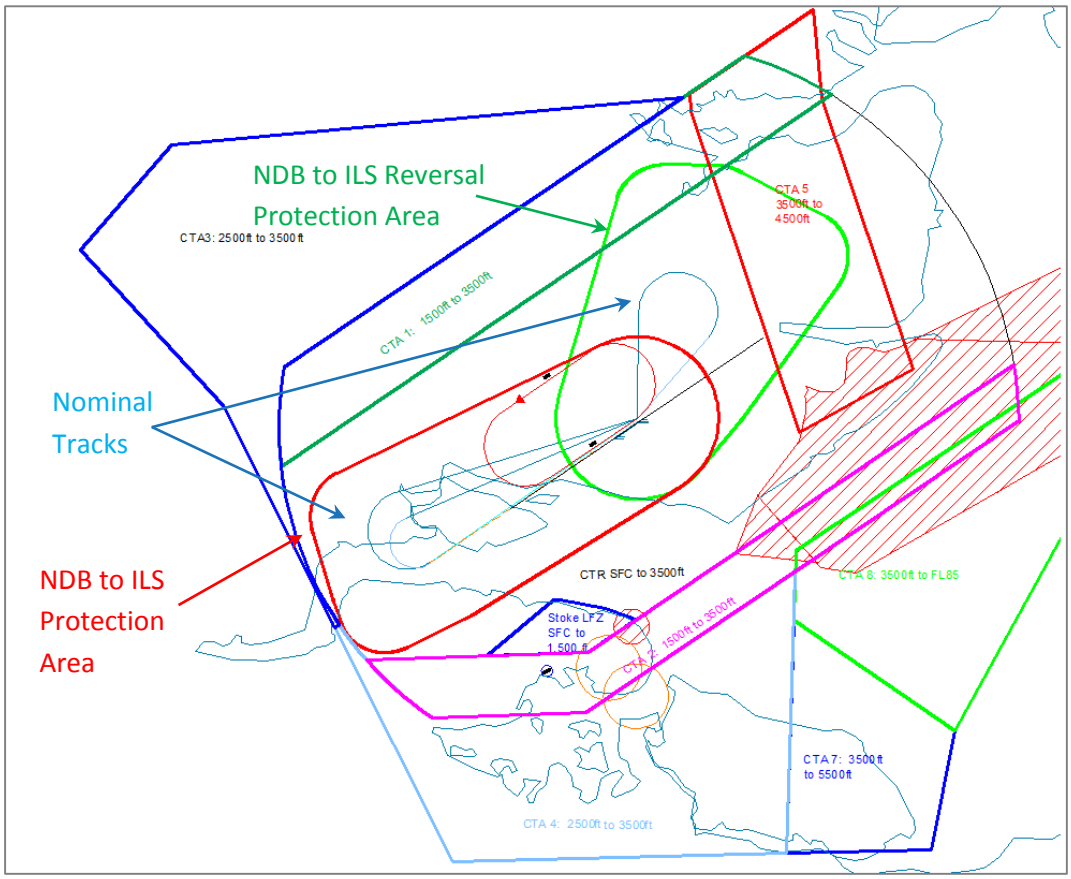


**Figure 8: CTR containment of NDB to ILS IFPs Runway 06 (Hold protection area not shown for clarity)**

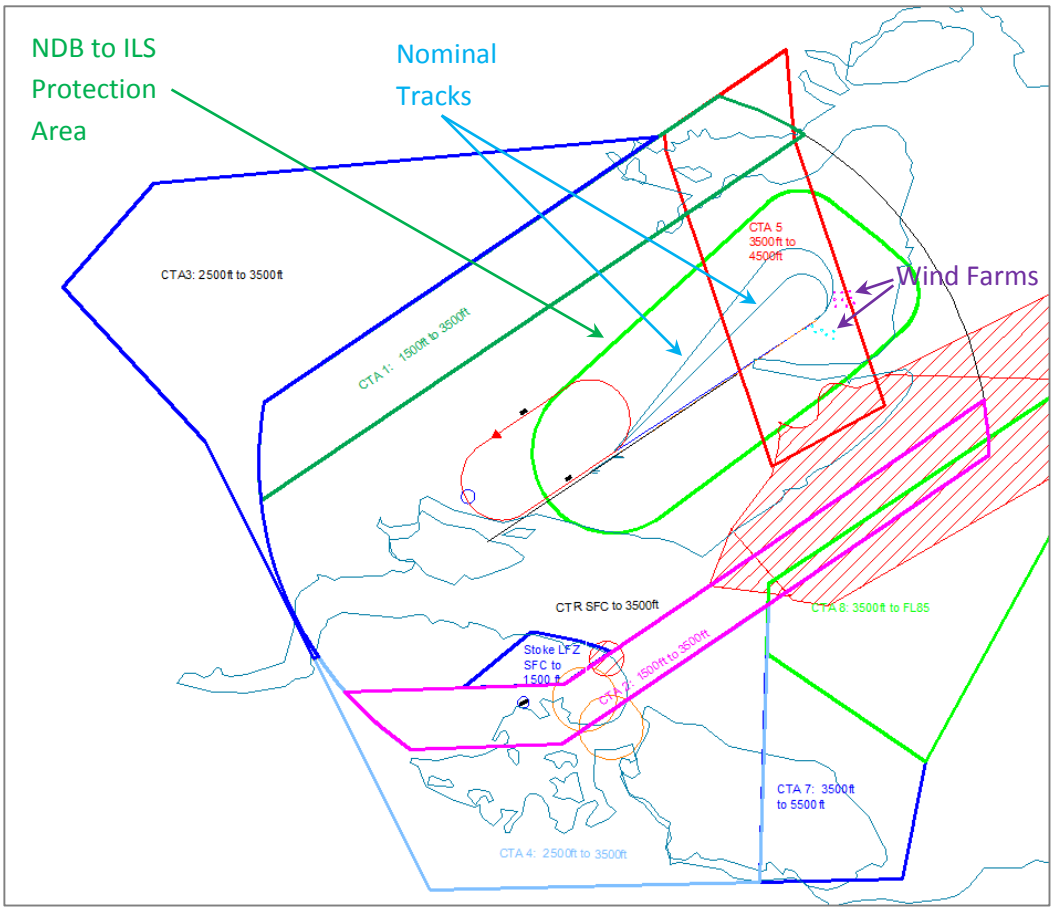


**Figure 9: CTR containment of NDB to ILS IFPs Runway 24 (Hold protection area not shown for clarity)**

8.3.6. Furthermore, a detailed review of CAT and other operations above the Isle of Grain area indicated that a discrete Local Flying Zone (LFZ) arrangement could be established to facilitate independent microlight operations at Stoke aerodrome. The proposed LFZ is geographically referenced and is described in more detail in Section 9 of this document.

8.3.7. In considering the north-easterly extremity of the proposed CTR it was determined that, on balance, the originally proposed boundary should not be rolled back as there was no significant objection from the GA and S&R community, no small aerodromes were affected and, most importantly, the CTR would mitigate the impact of the wind farms to the north-east of LSA on the ATC operation (see Section 5.6)

## 8.4. Control Area 1 (CTA-1)

8.4.1. CTA-1 is a “shoulder” of controlled airspace 2NM wide adjoining the northern boundary of the CTR. It has a base level of 1500ft amsl and extends vertically to 3500ft amsl. The configuration of CTR-1 is depicted in Figure 7.

8.4.2. CTA-1 contains the protected area of the SND holding pattern at 2000ft and 3000ft for up to Category C[20] aircraft and facilitates radar vectored circuits (left hand to runway 06 and right hand to runway 24) at or descending to 2000ft prior to entering the CTR and joining base leg. It also contains the climb profile of departing aircraft until they have reached an altitude of 3000ft.

8.4.3. Notwithstanding that the primary terminal holding pattern for LSA CAT flights will be the proposed offshore hold to the north-east, there will remain a residual requirement for holding at the SND principally for local IFR training flights and for those aircraft which are not equipped for RNAV-1 operations.

8.4.4. The post-Focus Group airspace review determined that the extent of CTR-1 to the south-west should be reduced commensurate with the reduction of the CTR detailed above. Thus, the south-westerly and north-easterly extremities of CTA-1 are continuations of the arcs defining the CTR extremities.

## 8.5. Control Area 2 (CTA-2)

8.5.1. CTA-2 comprises a "shoulder" of controlled airspace 1.5NM wide adjoining the southern boundary of the CTR and extending from 1500ft amsl to 3500ft amsl. The configuration of CTA-2 is depicted in Figure 7.

8.5.2. CTA-2 protects radar-directed circuits to the south of the Airport, predominantly right hand circuits to runway 06 due to the constraints of the DA complex affecting left-hand circuits to runway 24. It also protects the Initial Approach Segment of the RNAV IAP to runway 06 from the south and south-east.

8.5.3. The post-Focus Group review of this section of the originally proposed airspace concluded that, on balance, the south-western extremity of CTA-2 could be rolled back in a similar fashion to the rolled back CTR, but not to the same extent, whilst still providing adequate protection of radar directed operations and the RNAV IAPs. Full containment of the Direct Approach DME arc IAPs was, on balance, considered no longer essential due to the declining use and future withdrawal of these IAPs once the RNAV IAPs become established. The roll-back of the CTA-2 boundary reduces the impact of the new controlled airspace on Rochester Airport and Stoke microlight aerodrome and further mitigates the "Choke Point" concerns of the GA and S&R airspace user community.

8.5.4. Thus, the south-western and north-eastern extremities of CTA-2 are extensions of the arcs defining the CTR.

## 8.6. Control Area 3 (CTA-3)

8.6.1. CTA-3 is an irregular shaped segment of controlled airspace to the north-west and north of LSA adjoining CTA-1 and extending to LTMA-1 (base level 2500ft amsl) in the west.

[20] CAT C aircraft encompasses the CAT aircraft types currently using LSA on a routine basis. Larger, CAT D, aircraft occasionally use the airport but normally only for maintenance and training purposes. If it was, exceptionally, necessary to hold a CAT D aircraft then this would normally be done at a higher altitude.

CTA-3 has a base level of 2500ft amsl and extends vertically to 3500ft amsl, thereby adjoining the overlying LTMA-3 (base level 3500ft). CTA-3 is depicted at Figure 10.

8.6.2. Although only 1000ft in depth, it is acknowledged that CTA-3 is a contentious area with the GA and S&R airspace user community as it covers airspace traditionally used by day-to-day operations from North Weald, Stapleford Tawney, Andrewsfield and Earls Colne aerodromes as well as by transiting flights to destinations further afield.

8.6.3. CTA-3 is principally required to contain instrument departure procedures and IFR CAT flights departing from LSA to join the Airways System to Domestic UK, Irish and Spanish destinations. It also contains the initial radar-directed routing of CAT aircraft inbound to both runways 06 and 24 from the Airways System to the west and north-west.

8.6.4. During the Post-Focus Group review of this airspace segment, a highly detailed analysis was undertaken, both by the LSA airspace design team and by NATS LTC staff and LAMP airspace planners to determine whether alternative routes could be developed and/or higher altitudes specified in LSA departure procedures. The review was also required to take due regard of the updated NATS safety requirements for terminal airspace operations and procedure deconfliction.

8.6.5. Regrettably it has been concluded that no routes other than the existing LSA - EVNAS – Lambourne (LAM) route can be developed and, for reasons of safe airspace utilisation, there are no circumstances in which an altitude above 3000ft amsl can be specified in LSA departure procedures. Therefore it is necessary for the base level of CTA-3 to remain at 2500ft amsl, and for CTA-3 itself to remain a necessary element of the LSA airspace change proposal. Nonetheless, there is no reason while GA (including General Handling exercises) and S&R activity cannot be accommodated within this CTA, subject to clearance being obtained from LSA ATC.

8.6.6. Notwithstanding the above, the Post-Focus Group review did conclude that the northern boundary of CTA-3 could be rolled back slightly to increase separation from the LTMA-2 segment (base level 2500ft) to the east of London Stansted Airport. The revised boundary is based only on the protection areas required for departure procedures and, consequently, any requirements for arriving aircraft will be accommodated within the adjusted boundaries. This reduces the overall volume of airspace required down to 2500ft and, to a certain extent, mitigates the “Choke Point” aspect of the original airspace design where the segments were much closer.

8.6.7. It is emphasised that it is not within the gift of LSA to propose revisions to controlled airspace associated with London Stansted operations, nor to override the safety requirements of NATS terminal airspace operations.

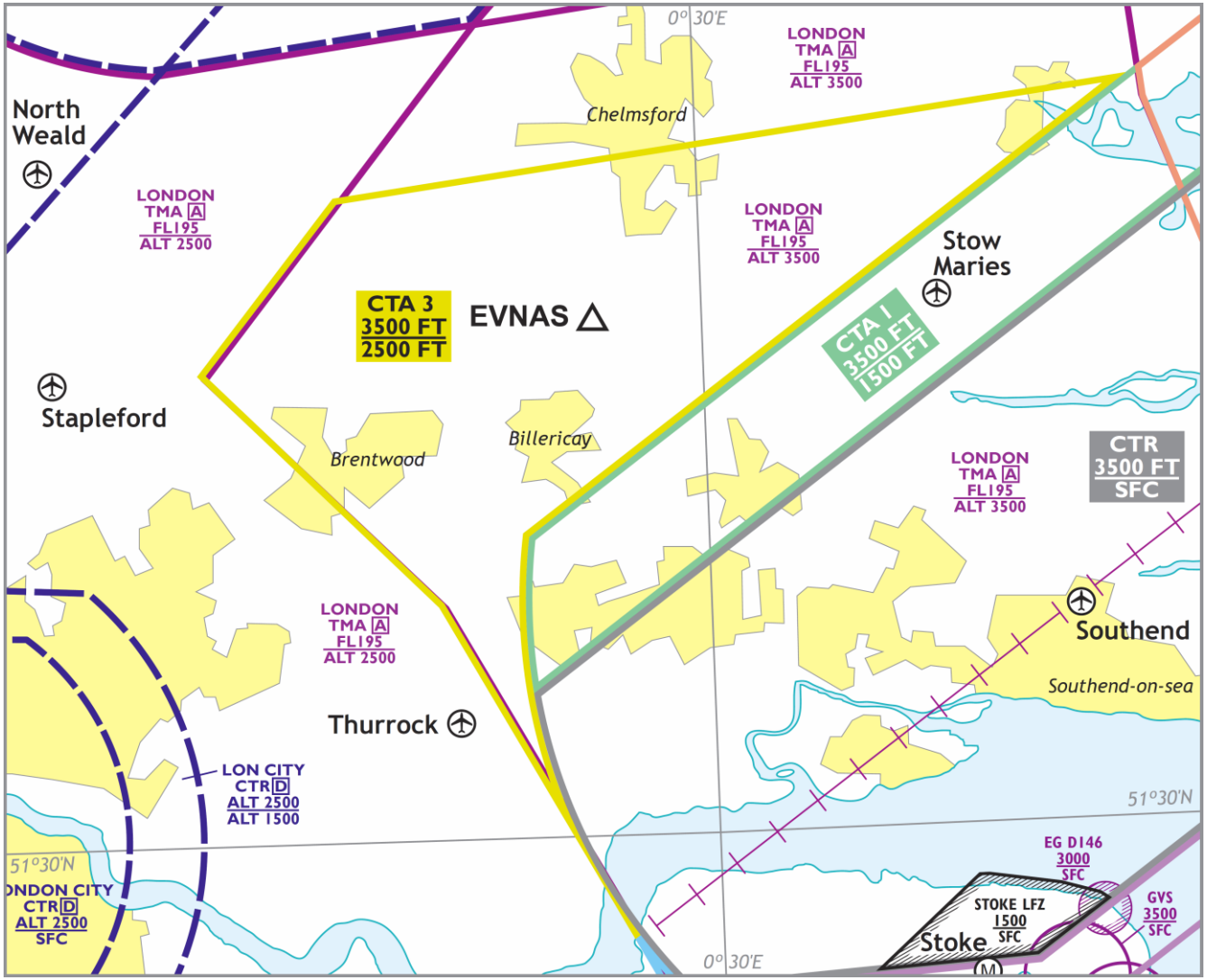




**Figure 10: Configuration of CTA 3**

## 8.7. Control Area 4 (CTA-4)

8.7.1. CTA-4 lies to the south of the CTA-2 shoulder and extends across the Medway Estuary and part of the Isle of Sheppey towards Detling (DET). CTA-4 has a base level of 2500ft amsl and extends to 3500ft amsl, adjoining LTMA-3 (base level 3500ft amsl) above. The configuration of CTA-4 is depicted at Figure 11.

8.7.2. CTA-4 protects the climb profile of departing aircraft entering the Airways System to the south (routes to European destinations). The design of departure routes to the south must take due regard of not only NATS safety requirements for terminal airspace operations but also the constraints of the D136/138 complex, D146 at Yantlet and 2 Gas Venting Stations (each of 2NM diameter) on the Isle of Grain.

8.7.3. CTA-4 also provides protection for inbound aircraft from the south and south-east from the Airways System on radar-directed initial descent towards an IAP to runway 06 or around the DA complex for approach to runway 24.

8.7.4. Once again, LSA is aware that this is a contentious airspace segment and a detailed post-Focus Group review was carried out by the LSA airspace design team in conjunction with NATS LTC and LAMP airspace planners. Regrettably, however, it has been concluded that there are no circumstances in which an earlier climb above 3000ft can be specified in LSA departure procedures.

8.7.5. Therefore, whilst some adjustments have been made to the originally proposed airspace configuration to the south and south-east of LSA as a consequence of the discussions with NATS, it is necessary for the proposed CTA-4 base level to remain at 2500ft and for CTA-4 to remain an essential element of the LSA airspace change proposal.

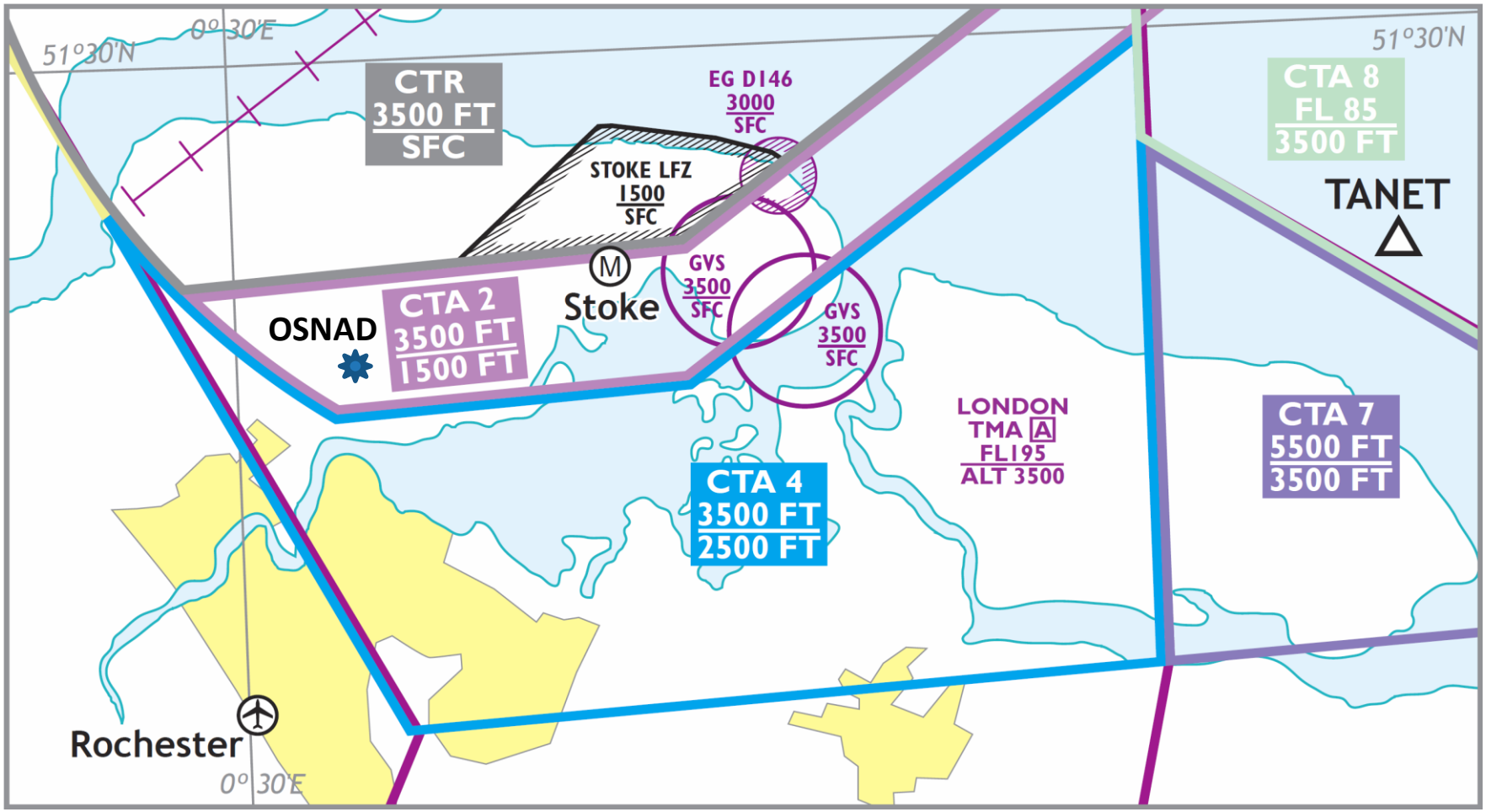




**Figure 11: Configuration of CTA 4**

## 8.8. Control Area 5 (CTA-5)

8.8.1. CTA-5 is a corridor of controlled airspace which sits below LTMA-7 (base level 4500ft amsl) and above the north easterly portion of the Southend CTR and CTA-1 and is shown in Figure 12.

8.8.2. It ensures that there is a continuum of controlled airspace between the CTR/CTA and the overlying LTMA. It facilitates routing from the Airways System into the offshore hold for traffic inbound from the LTC north sector (i.e. traffic inbound from the west) together with both radar vectored and RNAV initial approach procedures to both runways 06 and 24.

8.8.3. The original LSA proposal was that LSA airspace would have an upper limit of 3500ft and the overlying LTMA would be lowered to 3500ft to provide a uniform contiguous interface. However, this did not find favour with the GA and S&R community at the Focus Group stage as the lower base of Class A airspace would preclude GA operations (particularly flying training operations) in well used areas.

8.8.4. LSA and NATS therefore reviewed the original proposal and concluded that any new controlled airspace beneath existing LTMA base levels should be established as Class D airspace, under the jurisdiction of LSA ATC, in order to preserve access by VFR airspace users.

8.8.5. The proposed arrangement whereby CTA-5 sits across the CTR and CTA-1 results in a smaller number of controlled airspace segments overall than having stepped upper limit segments of the CTR and CTA-1.

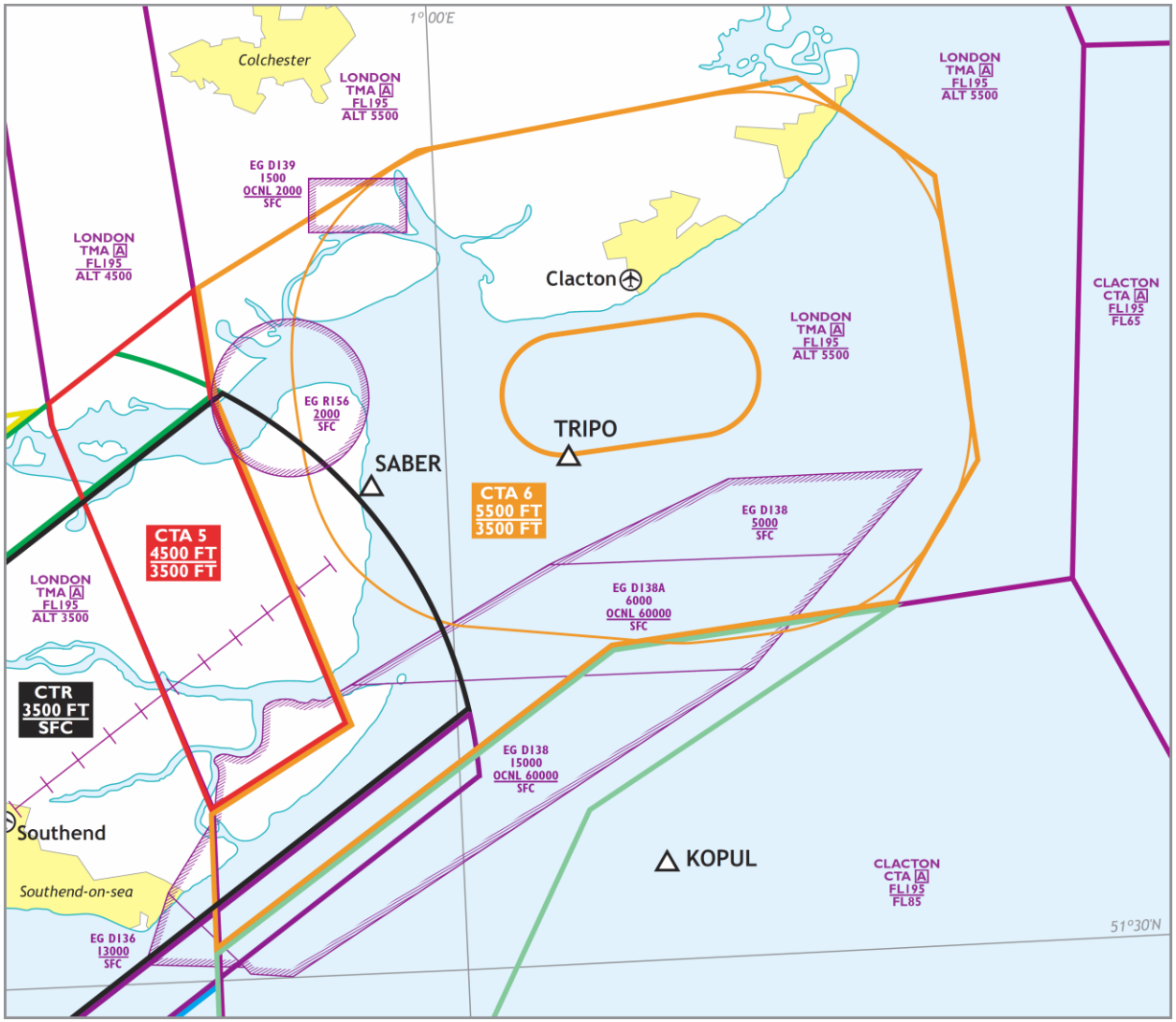




**Figure 12: Configuration of CTA 5**

## 8.9. Control Area 6 (CTA-6)

8.9.1. CTA-6 is an irregular shaped volume of airspace which underlies part of LTMA-8 (base level 5500ft amsl) and is shown at Figure 13. The base level of CTA-6 is 3500ft amsl and a part of the western portion of the area overlies the CTR to provide a continuum of controlled airspace between the CTR and the overlying TMA.

8.9.2. The main body of this airspace segment is designed to contain the protected area of an offshore holding pattern aligned on the existing ATS Significant Point at TRIPO.

8.9.3. Following the Focus Group stage, and in discussion with NATS LTC operations, various configurations of the TRIPO holding pattern have been evaluated. The original proposal was that the hold would be further to the north-east at a different ATS Significant Point, which would require a larger volume of controlled airspace to meet the regulatory requirement for containment of the full holding area.

8.9.4. The original proposal was also that the lowest holding level would be 3000ft in order to provide three holding levels below the LTMA, thereby requiring a base level of 2500ft amsl throughout. However, the fruitful discussions with NATS have enabled the third holding level, when required, to be raised to 6000ft within LTMA-8, thereby enabling the lowest holding level to be raised to 4000ft and the CTA base to be raised to 3500ft amsl.

8.9.5. Similarly, by moving the holding fix westwards to TRIPO and speed limiting both the TRIPO hold and the SPEAR hold (to preserve separation between the two) the external boundaries have been substantially reduced.

8.9.6. Thus, the proposed TRIPO terminal holding pattern will be an RNAV hold (navigation standard RNAV-1), 1 minute right hand pattern, inbound track aligned with the overlying Airway JACKO – TRIPO. The right-hand pattern ensures that the outbound turn is away from the D138 complex, thereby reducing the extent of the protected area to the south. However, it does result in the protected area overlying the land areas towards Clacton and Brightlingsea. The potential environmental impact of this airspace is discussed in Section 11 of this document.

8.9.7. Consideration has also been given to establishing this segment of CTA as Class E airspace to provide uncontrolled access to flights operating under the VFR. However, it was considered that:

- As CAT IFR traffic carrying out holding manoeuvres, notwithstanding that these may be taking place in VMC, would be operating with a high cockpit workload, maintaining a lookout for non-communicating VFR traffic would constitute an unwelcome additional workload;
- CAT IFR flights would routinely fly through this airspace segment irrespective of any holding requirement when inbound on STARs via TRIPO prior to carrying out an IAP. Again, the workload of looking out for non-communicating VFR flights would be an unwelcome additional workload;

- In both of the above situations, it should be borne in mind that for part of the night LSA ATC operates without radar. Thus there would be no assistance to the "see and avoid" requirement available from radar-derived traffic information;
- CAA policy is that Class E classification should not be used[21] and to progressively replace existing Class E airspace with other, more appropriate classifications.

8.9.8. Therefore, on balance, it was concluded that the Class D classification should prevail.

[21] CAP725 paragraph vii Footnote 1 and CAA DAP Policy Statement

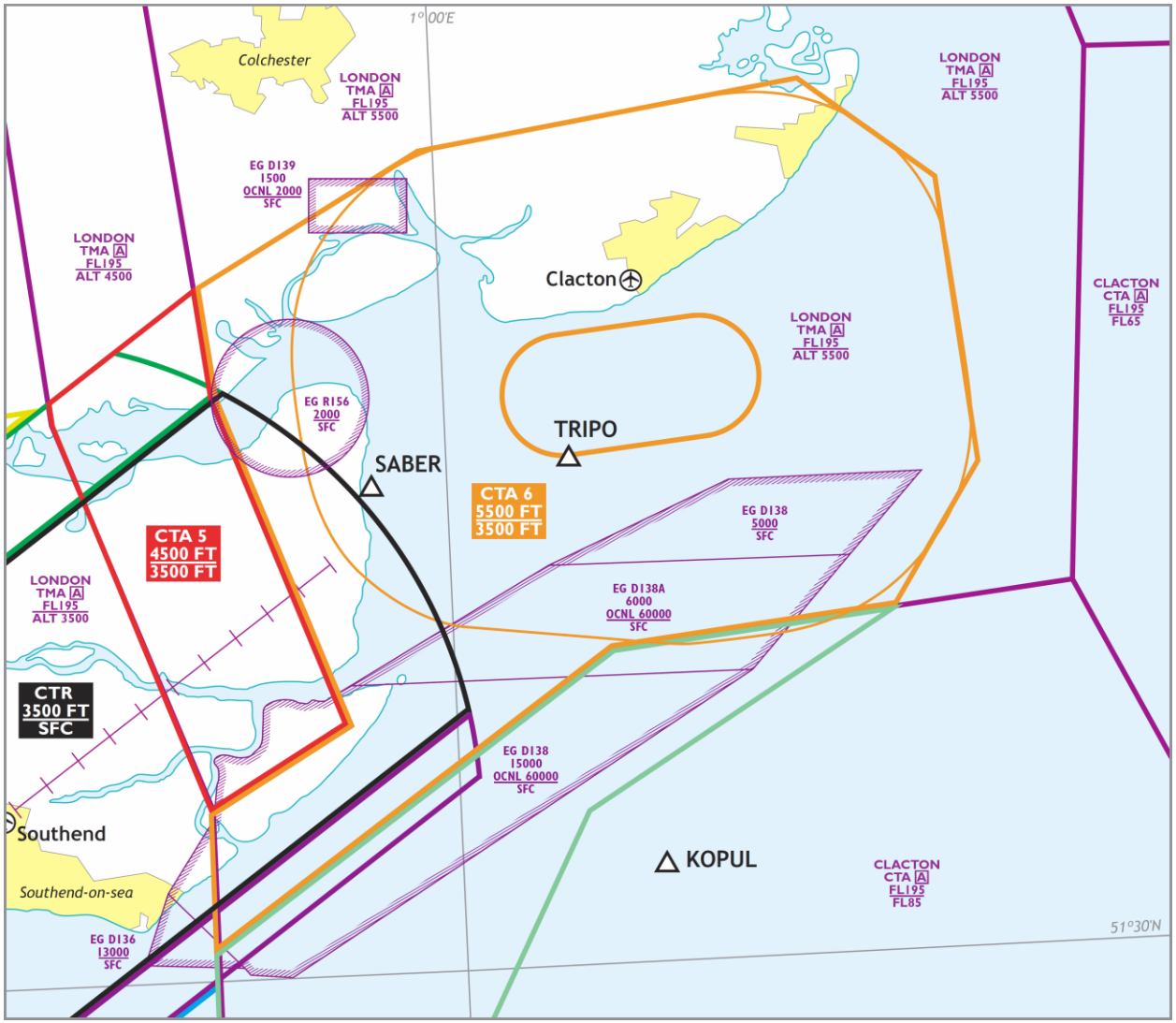




**Figure 13: Configuration of CTA 6**

## 8.10. Control Area 7 (CTA-7)

8.10.1. CTA-7 lies over the eastern end of the Isle of Sheppey to the east of CTA-4 with a base level of 3500ft amsl and extending upwards to adjoin the overlying LTMA-25 at 5500ft amsl. CTA-7 is depicted at Figure 14.

8.10.2. CTA-4 provides the necessary controlled airspace continuum for departing aircraft climbing into the LTMA and Airways System. As noted previously, discussions with NATS LTC and LAMP planners indicates that there will be no opportunity for earlier climb of departing aircraft above 4000ft into the LTMA, thus CTA-7 is necessary to ensure controlled airspace containment in accordance with the CAA's requirements.

8.10.3. CTA-7 also provides for direct routing and descent of inbound traffic to runway 06 when an early release can be given by LTC in the post-LAMP airspace arrangements as currently envisaged.

8.10.4. A number of iterations of this airspace segment have been tested both in discussion with NATS and with Manston Airport, the objective being to minimise any impact on Manston's operations for traffic inbound to or outbound from Manston. The Manston RNAV IAP to runway 10 (via LUTOL and MAPIT) does not infringe the proposed eastern boundary of CTA-7. A stable CDA descent path from the GOPAN offshore hold would normally result in Manston's traffic being below 5000ft at LUTOL, well to the east of CTA-7. Should Manston ATC need to extend westwards the routing of inbound traffic then co-ordinated access to CTA-7 would be granted.

8.10.5. LSA has also considered the possible impact on Manston's operations of a possible easterly displacement of itinerant VFR or IFR flights seeking to avoid controlled airspace. LSA considers that such displacement would be minimal due to continued availability of access to both VFR and IFR transiting flights to CTA-7 and CTA-8 and the greater over-water distances involved in a more easterly routing by light GA flights. Such traffic that does not wish to enter controlled airspace above 3500ft amsl would, in our opinion, be more likely to remain below 3500ft than re-route to the east. Furthermore, as Manston is also a LARS provider the instances of "unknown traffic" conflict, either beneath or to the east of CTA-7, would be minimal.

8.10.6. LSA will continue to discuss with Manston, and seek advice from the CAA, as to whether any LoA or Standing Co-ordination Agreement is necessary.

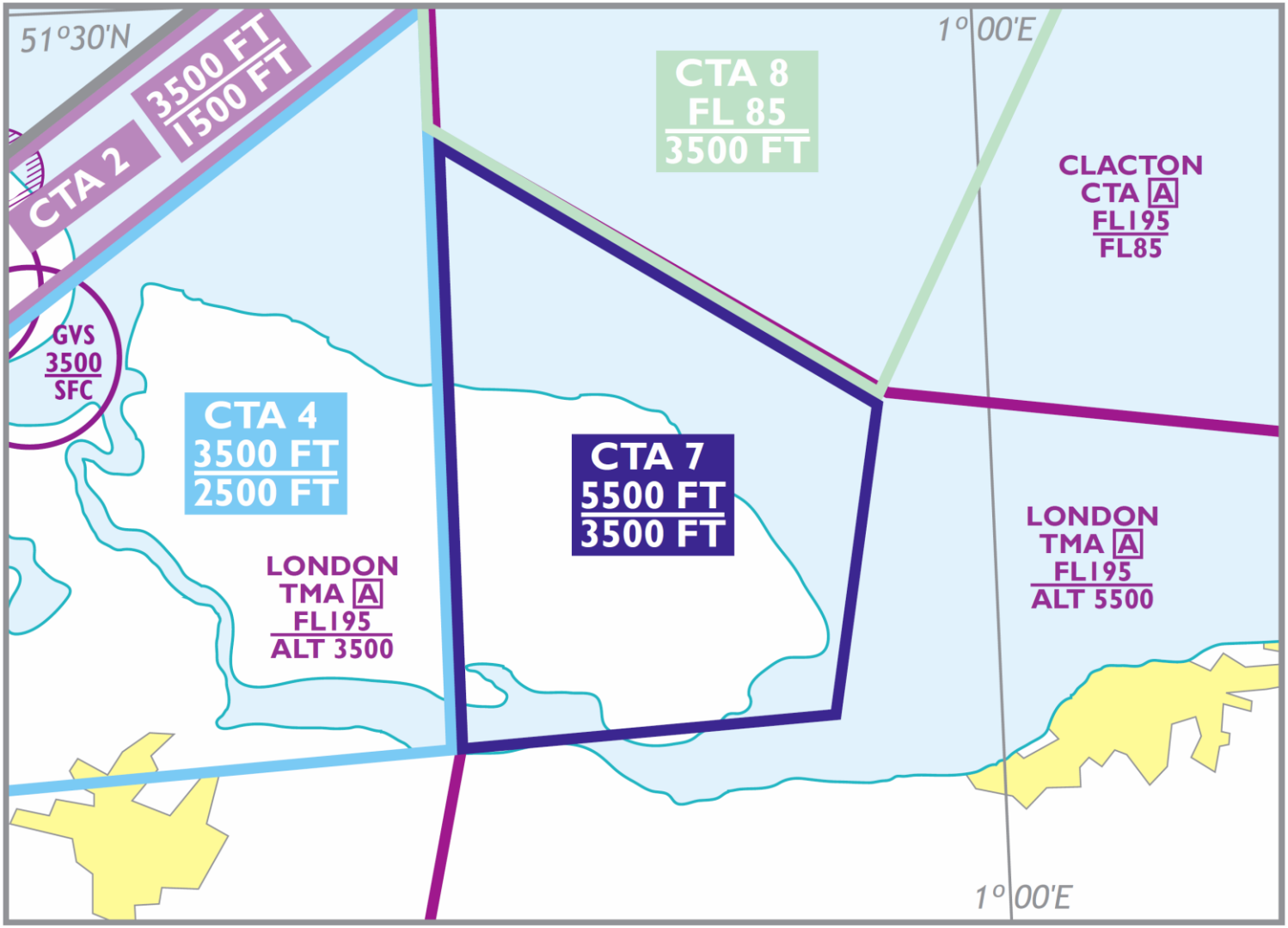




**Figure 14: Configuration of CTA 7**

## 8.11. Control Area 8 (CTA-8)

8.11.1. CTA-8 is a complex airspace shape which lies to the south of CTA-5, north of CTA-7 and overlies part of the CTR and CTA-2. The purpose of CTA-8 is to provide a continuum of controlled airspace from 3500ft base level to the overlying Clacton CTA base at FL85. CTA-8 is depicted at Figure 15.

8.11.2. The function of CTA-8 is to facilitate direct arrival routing, either under radar direction or via RNAV Routing Waypoints when the D138 complex is not active and the interaction with LCY inbound flights allows. It also facilitates controlled airspace containment for southbound departing aircraft through the DA airspace when D138 is not active.

8.11.3. Discussions with NATS LTC and the LAMP planners have tested various iterations of this airspace segment and the resulting configuration will be compatible with both the pre- and post-LAMP airspace arrangements.

8.11.4. Furthermore, the boundary of CTA-8 does not infringe the Manston GOPAN holding area up to FL85 or the direct track from GOPAN to the RNAV IAP Initial Approach Fix at LUTOL.

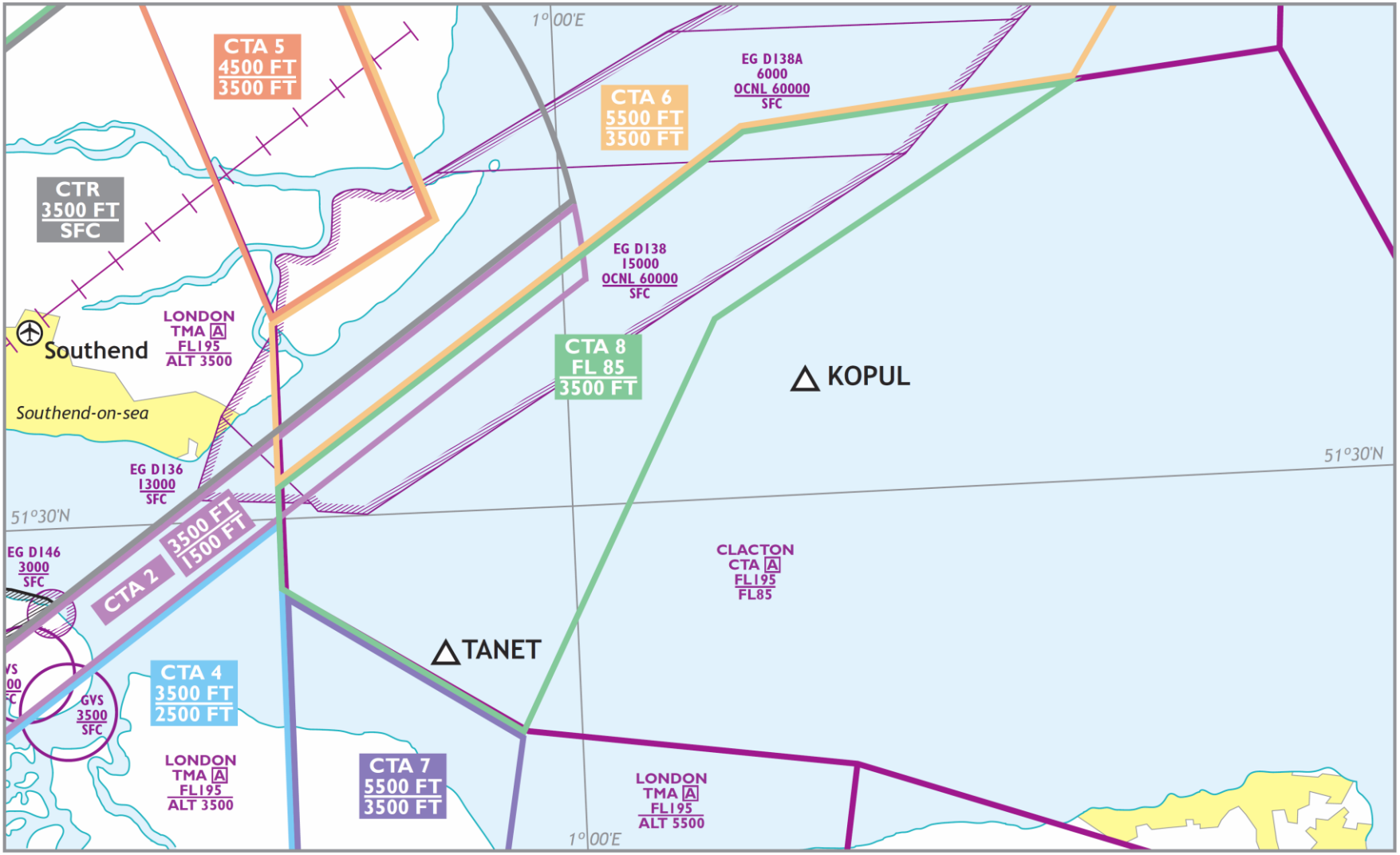




**Figure 15: Configuration of CTA 8**

## 8.12. Stoke LFZ

8.12.1. It is proposed that a segment of the Southend CTR from surface to 1500ft amsl would be delegated, under a Letter of Agreement (LoA), to microlight operations in the vicinity of Stoke microlight aerodrome.

8.12.2. The proposed configuration of the Stoke LFZ has been through a number of design iterations by the LSA airspace development team following the Focus Group stage of the airspace development. The configuration has been influenced by a number of factors including the discussions with NATS on the pre- and proposed post-LAMP departure procedures for LSA traffic as well as the objective of affording maximum freedom of operation to microlight operations. The proposed configuration of the Stoke LFZ is shown at Figure 16 and would permit microlight operations to take place without reference to Southend ATC over the eastern overland portion of the Isle of Grain.

8.12.3. In order to facilitate the delegation of airspace, LSA departure procedures to the south would incorporate a climb gradient of not less than 5% which would require aircraft to achieve 2000ft or above before the LFZ boundary. The routing of the proposed departure procedures to the west of Stoke is dictated by the requirement to avoid the two Gas Venting Stations on the Isle of Grain.

8.12.4. Arriving flights inbound to LSA runway 06 from the south-east will overfly the vicinity of Stoke aerodrome at not below 2000ft altitude routing towards the RNAV Initial Approach Fix OSNAD (circa Royal School of Military Engineering – Lodge Hill Training Area) or via radar vectoring to a right-hand base leg.

8.12.5. LSA ATC would also ensure that VFR flights inbound to, outbound from or transiting in proximity to LSA avoid flying through the Stoke LFZ.

8.12.6. It is acknowledged that, on occasions, operations from Stoke aerodrome require to operate above 1500ft altitude. This would be facilitated either by the normal application of clearance request to LSA ATC via radio or by prior arrangement via telephone.

8.12.7. It is proposed that, in addition to formalising the airspace delegation arrangements by LoA, the procedures would also be notified in the UK AIP.

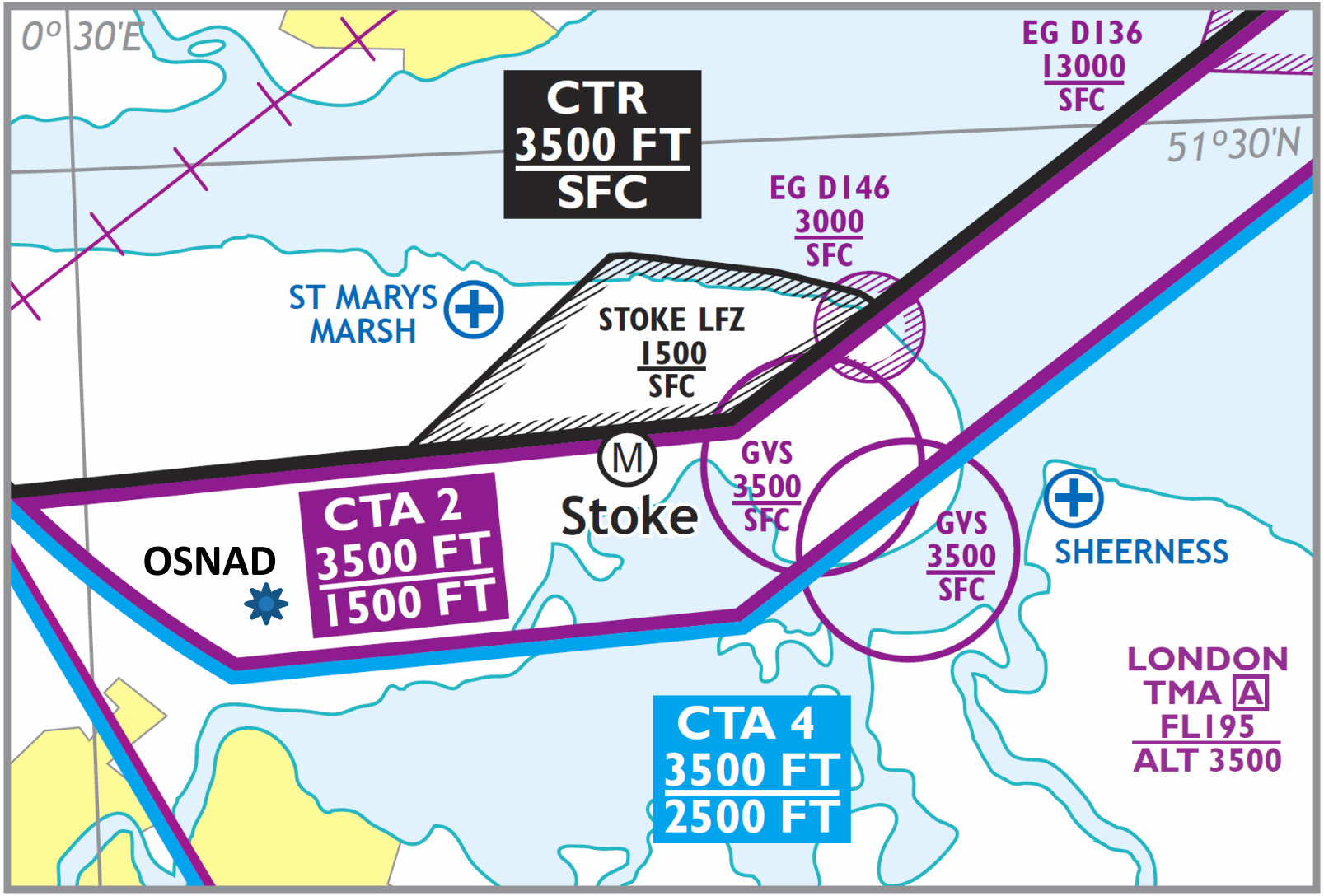




**Figure 16: Configuration of Stoke LFZ**

# 9. Operation of the proposed controlled airspace

## 9.1. Introduction

9.1.1. As noted earlier in this document, the bringing forward of the LAMP project by NATS has impacted on the LSA airspace development to the extent that it must now provide a controlled airspace infrastructure and arrangement which would be compatible with the current LTC/LSA operations and with the post-LAMP Phase 1a arrangements, so far as they are known at the present time.

9.1.2. As a consequence of discussions with NATS TC Ops staff and the LAMP development team LSA believes that a viable solution has been developed for the airspace arrangements, the operation of which will require the minimum of adaptation on the introduction of LAMP Phase 1a.

9.1.3. In order to achieve the enhanced safety benefits of controlled air space as soon as practical it is proposed that a phased approach will be adopted in which the LSA airspace configuration, together with an interim ATM arrangement, would be introduced initially and then, when LAMP Phase 1a is introduced, the formal and definitive airspace procedures and arrangements would be introduced. This is explained below.

## 9.2. Phase 1 - Pre-LAMP 1a operation

9.2.1. Within the proposed controlled airspace the ATC operation and interface arrangements with LTC would remain the same as those currently in place.

9.2.2. For departing IFR flights entering the Airways System, it is proposed that as an interim arrangement the PDRs in use prior to the introduction of controlled airspace would remain in place, and would continue to be designated as PDRs instead of being converted into formal SID procedures as would normally be expected.

9.2.3. This interim arrangement would be subject to agreement of the regulatory authorities. Discussions have taken place with the CAA on this issue. In the event that LAMP Phase 1a was significantly delayed then it is expected that the PDR arrangements would need to be formally reconfigured as SID procedures.

9.2.4. For arriving flights the STAR procedures (as published within the LCY STARs) and interface arrangements with LTC would remain in place as currently published. Tactical routing of inbound traffic, both by LTC before transfer of control, and by LSA ATC would continue through radar vectoring or by “Direct To” RNAV or conventional waypoints. (It is anticipated that the RNAV IAPs will be in place ahead of the introduction of controlled airspace.)

9.2.5. The offshore holding pattern at TRIPO would be introduced for use on a tactical basis. The formal proposed STARs and route structure to the TRIPO hold would not be introduced in this interim arrangement, except where existing STARs currently route via TRIPO.

## 9.3. Phase 2 - Post-LAMP Phase 1a operations

9.3.1. Following the introduction of LAMP Phase 1a procedures by NATS LTC, the definitive inter-unit operational arrangements and airspace operating procedures would be introduced.

9.3.2. For departing IFR flights entering the Airways System, the PDRs would be formally upgraded to RNAV SID procedures in accordance with the CAA PBN Policy together with CAP778 and CAP785 procedure design requirements. The RNAV standard would be RNAV-1, or RNP-1 if more appropriate. It is anticipated that CAA would have developed its policy for the application of "Radius-to-Fix" (RF Leg) Path Terminators by that time.

9.3.3. For arriving flights from the Airways System, the formal array of independent LSA STARs to the TRIPO hold would be introduced, taking due regard of, and integrated with, the eastern LTMA arrangements for LAMP operations. At this time it is anticipated that more efficient descent profiles would become available for inbound traffic, enabling flight at higher levels to continue for much longer than under the current LTMA arrangements. Notwithstanding the more easterly arrival route for traffic inbound from the south, an array of RNAV routing waypoints would be available for direct routing across the DA airspace when the DAs were not active.

## 9.4. Integration of VFR and other airspace activity

9.4.1. As stated at the outset of this project, LSA is proud of its good working relationship with the GA and S&R aviation community and is concerned that the introduction of controlled airspace to protect CAT operations should not impair that relationship.

9.4.2. VFR access to the Class D airspace under the jurisdiction of LSA would be granted with the minimum of disruption to the requested routing or activity. Extended access to particular areas for training or other activity would be granted. Multiple VFR operations could take place in proximity to each other with traffic information supplementing the "see and avoid" collision avoidance provided by the RotAR.

9.4.3. Where necessary to resolve conflict with IFR CAT flights joining or leaving the overlying TMA or alternative operating areas or levels may be specified. However, the fact that the VFR traffic is known and managed and can be identified means that the separation requirement for IFR flights under Radar Control Service (as opposed to the 5NM necessary under the previous Deconfliction Service in uncontrolled airspace) is reduced. In many cases potential conflict would be resolved before controller intervention became necessary and in some cases traffic information to participants would suffice.

9.4.4. VFR (or IFR) transit flights in close proximity to LSA would continue to be integrated as previously. The fact that controlled airspace was in place would serve to reduce or eliminate potential infringement of the DA complex – a hazard which does occur in the current Class G operating environment when transiting aircraft do not contact LSA ATC.

# 10. Impact on airspace users

## 10.1. Airline operators

10.1.1. IFR flights by CAT operators would be enhanced by the introduction of a known and managed air traffic environment afforded by Class D controlled airspace.

10.1.2. The elimination of unknown traffic, which may or may not be indicating on the controllers radar display, would improve the safety of operation of CAT flights and would facilitate further growth of this aviation sector without detriment to safety.

10.1.3. The provision of an ATC service in a known and managed traffic environment would streamline the interface to and from the overlying LTMA structure without the requirement for LSA ATC to establish the deconfliction buffers, and associated low-altitude manoeuvring, required under the Class G airspace Deconfliction Service. This would facilitate earlier transfer of departing aircraft to LTC sectors to enable earlier climb profiles to be achieved and, for arriving aircraft, would facilitate more direct routings to approach without the need to manoeuvre around "unknown" airspace activities.

10.1.4. Managing conflict effectively would reduce the occasions when visual avoidance of other flights by CAT flights is required.

## 10.2. Other LSA operators

10.2.1. Other airspace activity taking place from LSA includes flying training, flying club, general (business) aviation and aircraft maintenance test and delivery flights.

10.2.2. Light aircraft operators based at LSA are well used to operating in an ATC managed environment, albeit Class G airspace, and their operations within the proposed Class D airspace would continue as previously. They would benefit from a known and managed traffic environment throughout their normal local flying training areas. Special VFR clearance would be available within the Southend CTR (in accordance with the UK post-SERA application of Special VFR) to enable access to and from the Airport in poor weather conditions whilst being effectively separated from all other aircraft.

10.2.3. GA operations to and from the Airways System would benefit from the formalised airspace procedures and the same improved operating arrangements afforded to CAT flights as detailed above.

10.2.4. Maintenance and test flights by larger aircraft types would be enhanced with the known and managed traffic environment in proximity to LSA and reliance on the "see and avoid" principle would be eliminated. Tactically-based ATC clearance, both IFR and VFR would be available on a routine basis within the Class D controlled airspace for these operations.

## 10.3. Stapleford Tawney, Thurrock, North Weald, Earls Colne, Stow Maries and other adjacent aerodromes

10.3.1. Flying training and other GA and S&R flights from the adjacent aerodromes will be granted access routinely in accordance with the normal rules for accessing Class D airspace. Class D airspace is the standard application of controlled airspace in the vicinity of airports and empirical evidence indicates that it is appropriate to the safe and effective management of the airspace for all airspace users in areas where CAT operations take place in the vicinity of airports.

10.3.2. The intention of LSA ATC is to facilitate access to the airspace by GA and S&R flights, both IFR and VFR, to the maximum extent practicable and to respect their traditional operating areas.

10.3.3. Where necessary, LSA ATC would aim to facilitate fly-ins, air displays etc. LSA ATC wishes to continue to work with the organisers of airspace events to facilitate ease of access or transit to participating aircraft (including, where appropriate, non-radio aircraft). This may include block delegation of portions of the CTR/CTA.

10.3.4. LSA ATC would aim to accommodate, to the maximum extent practicable, operations by non-radio aircraft either by individual pre-arrangement for individual flights or by block clearance for longer periods of operation. The known and managed airspace environment enables traffic information to be passed to communicating VFR flights about non-radio flights in their proximity.

10.3.5. The post-Focus Group review of the airspace configuration to the west of LSA enables Thurrock aerodrome to remain outside controlled airspace and is approximately 2NM from the nearest CTR boundary.

## 10.4. Rochester Airport

10.4.1. The increased spacing that has been developed between the revised LSA CTR/CTA configuration and the Rochester ATZ improves the continued operation of Rochester Airport and relieves the perceived “Choke Point” between the two airspaces.

10.4.2. Aircraft inbound to or outbound from Rochester Airport to the north would be granted transit clearance through the LSA CTR/CTA in accordance with the normal access rules for Class D airspace.

## 10.5. Stoke microlight aerodrome

10.5.1. Provision has been made for the continued unrestricted operation of microlight flights around Stoke airfield and within the Southend CTR up to 1500ft amsl through the establishment of the Stoke LFZ and associated LoA. The southern boundary of the Stoke LFZ adjoins Class G airspace beneath Southend CTA-2 with base level 1500ft. The rolling back of the far western corner of the Southend CTR further facilitates unrestricted access to/from Stoke aerodrome by reference to prominent line features.

10.5.2. Microlight operations above 1500ft amsl can be accommodated either by standard application of the access rules for Class D airspace (including pre-arranged access for non-radio aircraft).

10.5.3. Thus it is concluded that the introduction of the proposed Class D controlled airspace, whilst not welcomed by the microlight airspace user community, would not unduly curtail operations at Stoke aerodrome.

## 10.6. Miscellaneous airspace activity

10.6.1. As with any Class D airspace, access is likely to be requested by a myriad of miscellaneous airspace activities such as hang-gliding, parascending, gliding, hot air balloons etc. In common with other ATC Units LSA ATC would grant access to the Class D airspace, especially where it is likely to be sought at the lower levels in the CTR, CTA-1 and CTA-2 to the maximum extent practicable.

10.6.2. Should any hang-gliding or parascending sites or other aircraft operating sites be identified within the proposed Southend CTR (none are currently known to Southend ATC) then due consideration would be given to establishing effective arrangements, potentially through a LoA, to facilitate their continued operation.

## 10.7. Visual Reference Points

10.7.1. Five Visual Reference Points (VRPs) are currently established in the vicinity of LSA to assist in integrating communicating VFR flights with IFR flights in the vicinity of LSA. These have worked well over the years and are appropriately sited to assist in the integration of VFR flights through the Southend CTR.

10.7.2. A review of existing VRPs will be carried out, with possibly additional VRPs being established as determined necessary to assist in the routing of VFR flights through the Southend CTR and CTAs.

## 10.8. Choke points

10.8.1. Concerns were expressed by some Focus Group participants from the GA and S&R community that the originally proposed airspace configuration would create a number of narrow Choke Points of uncontrolled airspace around the periphery in which those pilots who cannot or do not wish to enter Class D airspace would be concentrated, leading to a potentially hazardous concentration of traffic.

10.8.2. LSA considers that the post-Focus Group airspace reviews carried out, which have resulted in modifications to the airspace boundaries and a reduction in the volume of controlled airspace proposed in this Sponsor Consultation Document, have considerably eased the perception of Choke Points.

10.8.3. In all cases the identified Choke Points have been eased, thereby increasing the volume of uncontrolled airspace available to “non-participating” aircraft operations.

10.8.4. This is particularly apparent in the airspace to the west below LTMA-1 between the London/City CTR/CTA and the Southend CTR/CTA and between Southend CTA-3 and LTMA-2 to the north-west and between the Southend CTR/CTA and the Rochester ATZ to the south-west.

10.8.5. LSA believes that it has addressed the "Choke Point" concerns raised by the GA and S&R airspace user community as satisfactorily and supportively as regulatory compliance permits. This has been achieved at the expense of some incomplete compliance with the CAA's regulatory requirements (for which appropriate mitigation has to be developed) and some added complexity to the ATM arrangements within the proposed controlled airspace.

# 11. Environmental considerations

## 11.1. Introduction

11.1.1. The CAA requires that sponsors of airspace change take due regard of the need to reduce, control and mitigate as far as possible the environmental impacts of aircraft operations, including the disturbance caused to the general public arising from aircraft noise and emissions from aircraft engines.

11.1.2. The environmental impact of the proposed airspace arrangements has been considered by LSA throughout the airspace development process, in parallel with aircraft safety and the needs of other airspace users.

11.1.3. Throughout the development of this ACP, the LSA objective has been to minimise changes to the current operation of aircraft at low level and to minimise any adverse environmental effects of the proposal, subject to the overriding requirements of flight safety.

11.1.4. An unquantifiable environmental benefit will accrue overall from the introduction of controlled airspace as a result of the reduction of conflict resolution against unknown traffic, repositioning of flights, extended routing and ground delay.

## 11.2. In the vicinity of LSA

11.2.1. The published noise abatement procedures for LSA and the tracks across the ground of departing aircraft do not change as a consequence of this ACP. These procedures work well and are compatible with the changes proposed to the airspace arrangements.

11.2.2. Some routine updates have recently been proposed to the published PDRs in Class G airspace to reflect better the long-standing routes followed by departing aircraft on a day-to-day basis after the noise abatement procedures have been followed. The proposals enable navigation to be carried out more effectively and, to the south in particular, ensure that gas venting sites and Stoke aerodrome are not directly overflown.

11.2.3. The proposed changes also reflect an improved avoidance of more densely populated areas by aircraft departing from runway 06 to the north-east which has normally, and routinely, been achieved in the past through tactical radar vectoring.

11.2.4. Thus there is no environmental impact arising from this ACP in the vicinity of LSA.

11.2.5. PDRs would remain in place (subject to the agreement of the CAA), as an interim solution pending the definitive airspace arrangements to be introduced with the NATS LAMP project. At that time the PDRs would be adapted into formally designed RNAV SID procedures in accordance with the CAAs CAP778 and CAP785 requirements. It is anticipated that the nominal route of the PDRs would remain essentially compatible with the post-LAMP requirements, so far as they are currently known. However, if any substantial changes become necessary then they would be the subject of a separate consultation by LSA.

## 11.3. Further away from LSA

11.3.1. The published noise abatement procedures from LSA, once beyond the initial straight ahead requirement do not specify an altitude below which tactical radar control measures can be implemented. This will not change.

11.3.2. In the complex airspace arrangements in the LTMA in the vicinity of LSA radar vectoring of departing aircraft, both from LSA and from LCY and other Airports, is and will remain essential to ensure the most effective and efficient use of the airspace as a whole.

11.3.3. The introduction of a known and managed traffic environment through the introduction of controlled airspace is likely to lead to an earlier transfer of departing aircraft to LTC sectors and earlier clearance for aircraft to climb above the initial allocated levels. This would reduce the noise exposure for communities further away from LSA as departing aircraft climb to higher levels earlier. However, it is not possible to quantify this benefit for individual communities as it would be still dependent on the actual air traffic situation at the time and there would continue to be dispersion of traffic through radar vectoring.

## 11.4. Arriving traffic

11.4.1. In the initial interim phase of the controlled airspace operation, as detailed in Section 9.2, there would be no change to the published procedures, or method of operation, for inbound flights from the south. The operation of a myriad of complex route interactions at the lower levels of the LTMA means that CAT flights inbound to LSA would need to descend earlier than is optimum, as is currently the case, and the tactical radar-directed routing of aircraft would continue.

11.4.2. However, once the definitive airspace arrangements for NATS LAMP are introduced then the associated introduction of more effective STAR procedures from the south to the TRIPO hold will enable aircraft to remain at higher levels for a longer period than is possible with the current LTMA configuration. Conversely, track mileage incurred may be increased for some arriving flights but, overall, the LAMP aims to facilitate an overall more efficient airspace utilisation for controlled airspace users in the LTMA area as a whole.

11.4.3. On balance, it is anticipated that the operation of CAT flights inbound to LSA will be more efficient. To the maximum extent practicable shortened routing would be available when the DA airspace is not active and the descent of aircraft to lower altitudes would be over the Thames Estuary rather than over the land areas towards DET.

## 11.5. Distribution of GA activity

11.5.1. Access to the proposed controlled airspace by light aircraft would continue to be permitted and the traditional areas of operation of training and other recreational flights would be respected by LSA. In this aspect, the environmental impact of the proposed controlled airspace would be neutral.

11.5.2. VRPs are selected to minimise overflight of communities at low level and the future use of VRPs will reflect current practice. Routing restriction of flights by ATC will be kept to

the minimum necessary to facilitate the effective integration of VFR flights with other airspace activity. (The use of VRPs is detailed in Aeronautical Information Circular Yellow 006/2013.)

11.5.3. Conversely, it is accepted that some pilots of light aircraft prefer to operate their flights outside controlled airspace notwithstanding that the airspace classification and airspace arrangements would permit access if they so wished. For these pilots, the introduction of the proposed controlled airspace may result in a small, but unquantifiable, change to the distribution of flights by light aircraft.

## 11.6. Climate change

11.6.1. It is recognised that aircraft do contribute to carbon dioxide (CO2) emissions and this may have an impact on climate change. A responsible approach to airspace planning is to strike a balance between competing demands and ensure that the most direct routes possible are used, commensurate with optimal aircraft performance, as this will minimise fuel burn and may therefore reduce any impact on climate change.

11.6.2. Under the existing airspace arrangements LSA CAT traffic frequently has to be diverted from the most direct routings or efficient climb and descent profiles in order to maintain the prescribed deconfliction minima from unknown traffic operating in the vicinity of LSA. The introduction of controlled airspace will reduce the need to extend the routing of aircraft in the immediate vicinity of the airport.

11.6.3. The anticipated improved transfer of control arrangements between LSA and NATS LTC will enhance the opportunity for better climb profiles and descent profiles for CAT flights, which will reduce fuel burn and emissions. However, higher initial operating levels cannot be specified within in flight procedures for departing aircraft due to the interactions with other routes and traffic in the LTMA and the safety requirements for terminal airspace operations. For arriving flights the ability to remain at higher levels for longer must be balanced against the slightly longer routings involved.

## 11.7. Visual impact and tranquillity

11.7.1. Although difficult to measure, the potential visual intrusion and impact on tranquillity is recognised. Ultimately, the improved flight profiles for CAT flights will result in such flights operating at higher levels for a greater part of their flights.

11.7.2. Close-in to the airport, there will be no changes to the routing of aircraft in carrying out the noise abatement procedures or IAPs on final approach.

11.7.3. VFR flights will be integrated and will conduct their operations in essentially the same manner as they are under the current airspace arrangements. Thus, in this respect it is anticipated that the proposed controlled airspace would not have a greater impact nor affect the tranquillity of the countryside than that experienced today.

11.7.4. However, it can be assumed that the reduction in the requirement to extend the routing of aircraft around unknown traffic in the vicinity of LSA and the consequent repositioning

of aircraft at low level would be a benefit. However, such benefit would be unquantifiable due to the random nature of the hazards to which flights are currently exposed.

## 11.8. Air quality

11.8.1. Technical guidance material from the CAA does not require LSA to make an assessment of air quality as neither the airport nor the surrounding airspace lie within an Air Quality Management Area (AQMA).

# 12. Summary

12.1. LSA is an ANSP approved under Article 7 of the European Commission (EC) Regulation 550/2004 (the Service Provision Regulation) and, as such, must satisfy the UK CAA as to their competence to provide Air Navigation Services and that the services provided are safe.

12.2. LSA currently operates in a Class G uncontrolled airspace environment where there are significant numbers of aircraft operating in proximity to the traffic flows inbound to and outbound from the Airport. Increasing conflicts between the diverse airspace operations and the increasing numbers of CAT passenger flights using the Airport has led to a commensurate increase in ATC workload, system complexity and extended routing and delay of CAT flights to the general detriment of the efficient and effective use of the airspace.

12.3. In meeting its statutory responsibilities for safety management of the air traffic services provided, and to enhance the of flight safety for aircraft inbound to or outbound from the Airport in the critical stages of flight, LSA proposes to submit a case to the CAA to re-establish controlled airspace (Class D) in the vicinity of LSA.

12.4. In developing the configuration and arrangements for the proposed controlled airspace LSA has taken full account of the CAA regulatory requirement and the process for airspace change specified in CAP725.

12.5. LSA has taken a balanced approach to the views of local airspace users, both based on and off the airport, and local environmental interested parties in the development of this proposal. In particular, the proposed airspace classification will facilitate the continued operation of GA and S&R airspace activities in their traditional areas of operation and with the minimum of operational impact on their activities.

12.6. LSA believes there are no quantifiable adverse environmental impacts arising from the proposed introduction of controlled airspace. The potential for improved flight profiles to be realised for CAT flights inbound to or outbound from LSA will result in environmental benefit.

12.7. LSA believes that the airspace arrangements proposed in this consultation will enhance the safety of operation of CAT flights in the critical stages of flight prior to landing and immediately after departure and will also maximise the safety of other air operations in the vicinity of LSA.

# 13. What happens next?

13.1. As detailed in Part A of this Sponsor Consultation Document, this consultation is conducted in accordance with the CAA's requirements specified in CAP725 and enables LSA to obtain or confirm views and opinions about the impact of the proposed change in advance of the formal submission of a proposal to the CAA. It also enables the CAA to fulfil its obligation under the Transport Act 2000 and Ministerial Directions to the CAA.

13.2. This consultation ends on 13 December 2013.

13.3. We will acknowledge (electronically) receipt of responses but not, at the outset, respond directly to individual responses from consultees or others. Following the consultation we will collate all responses from consultees and determine whether there are any common issues or key themes arising in the responses. We will address these collectively and develop a report of the consultation. This will be posted on the appropriate section of the LSA website and will represent the feedback to consultees.

13.4. Where appropriate we will engage with specific consultees who may have objections or concerns with aspects of the proposal to endeavour to reach an accord. Where small changes can be made to the proposed airspace configuration without detriment to the safety of the airspace arrangements or the regulatory requirements these will be incorporated.

13.5. We also anticipate that we will receive submissions from individuals who are not consultees. These, also, will be acknowledged electronically but no individual detailed response will be sent. These submissions will be reviewed and any valid issues which have not already been identified by the formal consultees will be included in the overall analysis.

13.6. Any post-consultation airspace reviews or discussions with consultees will be documented and will be included in our formal submission to the CAA.

13.7. Following completion of the consultation and post-consultation activity we will prepare and submit a formal ACP to the CAA in accordance with the requirements specified in CAP725. We anticipate that this will be submitted in February 2014.

13.8. The CAA will then undertake its regulatory processes and Case Study, which will take up to 16 weeks, at which point a Regulatory Decision will be made and published by the Director of Safety and Airspace Regulation.

13.9. If Regulatory Approval of the ACP is granted, the CAA, in conjunction with LSA will take the necessary steps to promulgate the change in the UK AIP. This will take up to a further 17 weeks after the submission of the information to the UK Aeronautical Information Service (AIS) in accordance with the international requirements for the promulgation of aeronautical information.

# A. List of reference documents

| | |
|---|---|
| ANO | The Air Navigation Order 2009 |
| RotAR | Rules of the Air Regulations 2010 |
| CAP393 (UK AIP) | United Kingdom Aeronautical Information Publication |
| CAP493 | Manual of Air Traffic Services Part 1 |
| CAP670 | Air Traffic Services Safety Requirements |
| CAP724 | The Airspace Charter |
| CAP725 | CAA Guidance on the Application of the Airspace Change Process |
| CAP730 | Safety Management Systems for Air Traffic Services |
| CAP744 | UK Flight Information Services |
| CAP764 | CAA Policy and Guidelines on Wind Turbines |
| CAP778 | Policy and Guidance for the Design and Operation of departure Procedures in UK Airspace |
| CAP785 | Approval Requirements for Instrument Flight Procedures for Use in UK Airspace |
| | CAA Future Airspace Strategy (FAS) |
| | Policy for the Application of Performance-based Navigation in UK/Irish Airspace |
| CAA DAP Policy Statements | (Various) |
| | |
| ICAO Annex 11 | Air Traffic Services |
| ICAO Doc 4444 | Procedures for Air Navigation - Air Traffic Management |
| ICAO Doc 8168 (PANS-OPS) | Procedures for Air Navigation Services - Aircraft Operations<br>Volume I: Flight Procedures<br>Volume II: Construction of Visual and Instrument Flight Procedures |
| ICAO Doc 9163 | Performance-Based Navigation Manual |
| | |
| | Guidance to the CAA on Environmental Objectives Relating to the Exercise of its Air Navigation Functions |
| | Air Transport White Paper - The Future of Air Transport (2003) |
| | Transport Act 2000 |
| | The Civil Aviation Authority (Air Navigation) Directions 2001 (including Variation Direction 2004) |
| | Terminal Airspace Design - EUROCONTROL Guidelines for an Operational Methodology in ECAC. |
| | |

# B. List of abbreviations

| | |
|---|---|
| aal | Above aerodrome level |
| ACC | Area Control Centre |
| ACP | Airspace Change Proposal |
| ADI | Aerodrome Control Service (Instrument) |
| Agl | Above Ground Level |
| AIP | Aeronautical Information Publication |
| ALT | Altitude |
| amsl | Above mean sea level |
| ANO | Air Navigation Order 2008 |
| ANSP | Air Navigation Service Provider |
| APS | Approach Control Service (Surveillance) |
| ARP | Airfield Reference Point |
| ATC | Air Traffic Control |
| ATCO | Air Traffic Control Officer |
| ATM | Air Traffic Management |
| ATS | Air Traffic Service |
| ATSOCAS | Air Traffic Services Outside Controlled Airspace |
| ATZ | Aerodrome Traffic Zone |
| CAA | Civil Aviation Authority |
| CAP | Civil Aviation Publication (published by the CAA) |
| CDA | Continuous Descent Approach |
| CPL | Commercial Pilots License |
| CTA | Control Area |
| CTR | Control Zone |
| DME | Distance Measuring Equipment |
| FL | Flight Level |
| FUA | Flexible Use of Airspace |
| GA | General Aviation |
| GNSS | Global Navigation Satellite System |
| IAP | Instrument Approach Procedure |
| ICAO | International Civil Aviation Organisation |
| IFP | Instrument Flight Procedures |
| IFR | Instrument Flight Rules |
| ILS | Instrument Landing System |
| IMC | Instrument Meteorological Conditions |
| LoA | Letter(s) of Agreement |
| LSA | London Southend Airport |
| MATS | Manual of Air Traffic Services |
| MoU | Memorandum of Understanding |
| NATMAC | National Air Traffic Management Advisory Committee |
| NATS | National Air Traffic Services |
| NDB | Medium Frequency (MF) Non-Directional Beacon |

| | |
|---|---|
| NDB(L) | NDB (Locator) (associated with an IAP at an aerodrome) |
| NM | Nautical Mile |
| PANS-OPS | Procedures for Air Navigation – Operations |
| PATM | Passenger Air Transport Movement |
| PPL | Private Pilot's License |
| PSR | Primary Surveillance Radar |
| RNAV | Area Navigation |
| RotAR | Rules of the Air Regulations 2007 |
| RTF | Radio Telephony |
| SARG | Safety and Airspace Regulation Group of the CAA |
| SARP | Standards and Recommended Practices (ICAO) |
| SERA | Standard European Rules of the Air |
| SES | Single European Skies |
| SID | Standard Instrument Departure Procedure |
| SSR | Secondary Surveillance Radar |
| STAR | Standard Arrival Route |
| TMA | Terminal Control Area |
| VFR | Visual Flight Rules |
| VMC | Visual Meteorological Conditions |
| VOR | VHF Omni-Directional Radio Range |
| VRP | Visual Reference Point |

# C. Glossary

## C.1. Organisational

| Abbreviation | Meaning | Comment |
|---|---|---|
| ANSP | Air Navigation Service Provider | The organisation approved to provide air traffic management services. In some cases an Airport Operator provides the air traffic services itself (as at London Southend Airport) and in some cases the Airport Operator contracts a specialist ANSP company. |
| CAA | Civil Aviation Authority | The specialist UK aviation Regulator established by government to oversee all aspects of aviation activity in the UK. |
| DAP | Directorate of Airspace Policy | Prior to its merger with SRG on 1 July 2013, the DAP was the airspace approval and regulatory authority which conducted the planning of airspace and related arrangements in the UK. It ensured that the UK airspace was utilized in a safe and efficient manner. This was achieved through the development, approval and enforcement of policies for the effective allocation and use of UK airspace and its supporting infrastructure taking into account the needs of all stakeholders.<br><br>These functions are now encompassed within the Safety and Airspace Regulation Group. |
| SARG | Safety and Airspace Regulation Group | The part of the CAA which oversees all aspects of air safety including the operation of aircraft and air traffic services. The SARG is responsible for the airspace arrangements in the UK.<br><br>NB Prior to July 2013 these functions were undertaken by separate Departments within the CAA, namely the Safety Regulation Group (SRG) and the Directorate of Airspace Policy (DAP) |
| ICAO | International Civil Aviation Organisation | An organisation established under the auspices of the United Nations through the Chicago Convention, charged with establishing Standards, Recommended Practices, Procedures for worldwide application. |
| NATS | | Previously part of the CAA, NATS is an ANSP and was part privatised by the UK Government in 2001. NATS provides civil en route air navigation services in the UK under license from the Government and provides air navigation services at a number of airports under contract to the airport operators. |

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| LAC | London Area Control Centre | NATS En Route Area Control Centre located at Swanwick, Hants, providing civil en route ATS over the southern part of the UK airspace and Terminal ATC services for the London TMA Airports. |
| LTC | London Terminal Control | That part of the LAC which provides the Terminal ATC services for the London TMA Airports. |
| SRG | Safety Regulation Group | Prior to is merger with DAP on 1 July 2013 to form SARG, the SRG was the part of the CAA which oversaw all aspects of air safety including the operation of aircraft and air traffic services. |
| SES | Single European Sky | A European Commission initiative with the objectives to restructure European airspace as a function of traffic flows rather than according to national boundaries, to create additional capacity and to increase the overall efficiency of the ATM System. |
| EUROCONTROL | European Organisation for the Safety of Air Navigation | The EUROCONTROL Mission is to harmonise and integrate air navigation services in Europe, aiming at the creation of a uniform ATM System for civil and military users in order to achieve a safe, secure, orderly expeditious and economic flow of traffic throughout Europe, whilst minimising adverse environmental impact. |

## C.2. Documents

| Abbreviation | Meaning | Comment |
|---|---|---|
| AIC | Aeronautical Information Circular | Notices relating to safety, navigation, technical, administrative or legal matters |
| AIRAC | Aeronautical Information Regulation and Control | A system which ensures worldwide advanced notification, based on common effective dates, of circumstances that require significant changes to operating practices. (The AIRAC System is linked to the amendment of AIPs on a worldwide basis.) |
| ANO | Air Navigation Order 2008 | Secondary Legislation of the UK which sets out the regulations for aviation in the UK. |
| Ann. | Annex | ICAO documents (Annexes to the Chicago Convention) which detail the Standards and Recommended Practices (SARPS) to be applied by States worldwide. e.g.<br>Annex 2 Rules of the Air<br>Annex 6 Operation of Aircraft<br>Annex 11 Air Traffic Services<br>Annex 15 Aeronautical Information |
| CAP | Civil Aviation Publication | The UK CAA publishes Regulatory, Guidance and Information material in the form of CAPs. |
| CAP 724 | The Airspace Charter | A document published by the CAA authorities, responsibilities and principles by which the CAA DAP, as the airspace approval and regulatory authority conducts the planning of airspace and related arrangements in the UK. |
| CAP 725 | CAA Guidance on the Application of the Airspace Change Process | A document published by the DAP which details the procedure by which a proposal to modify airspace dimensions, classification or usage in the UK can be put forward to DAP for approval. The process to be followed by sponsors of airspace change enables the CAA to meet its statutory duties established under the Transport Act 2000. |
| MATS Part 1 | Manual of Air Traffic Services Part 1 | The UK document published by the CAA (CAP 493) which contains instructions and procedures applicable to UK air traffic services at civil air traffic control units, and represents the UK interpretation and application of ICAO SARPs and PANS relevant to air traffic services. |
| MATS Part 2 | Manual of Air Traffic Services Part 2 | The document which contains the local instructions for each air traffic control unit and provides information which amplifies and interprets, at a local level, the instructions in MATS Part 1 and also details local |

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| | | separation standards to be applied where these differ from the national criteria because of specific local circumstances. The MATS Part 2 is subject to approval by the CAA as part of the Regulatory process. |
| PANS | Procedures for Air Navigation | ICAO documents which are the next level down from SARPS detailing procedures recommended for worldwide application. They specify in greater detail than the SARPS the actual procedures to be applied. e.g.:<br>PANS-OPS Aircraft Operations<br>PANS-ATM: Air Traffic Management |
| PANS-OPS | Procedures for Air Navigation Services - Aircraft Operations (ICAO Doc 8168) | Volume 2. Construction of Visual and Instrument Flight Procedures.<br>A document published by the International Civil Aviation Organisation (ICAO) which specifies the criteria which are to be used on a world-wide basis for the design of Visual and Instrument Flight Procedures |
| UK AIP | UK Aeronautical Information Package | The State publication published by the CAA (CAP 32) to ICAO requirements detailing all of the aeronautical information and procedures applicable to civil aircraft operations in the UK. The UK AIP is a notifying document, which means that procedures notified within it have legal authority. Amendment of the UK AIP is in accordance with the AIRAC system. |

## C.3. Units of measurement

| Abbreviation | Meaning | Comment |
|---|---|---|
| | Units of Measurement | Aviation uses a mixture of imperial and metric measurements. Whilst runway lengths are measured in metres, distances for navigation are measured in nautical miles (NM). 1NM is a distance of 6017.12ft, equivalent to 1.8520km.<br><br>The standard unit for vertical measurement is feet (Ft). |
| aal | Above Aerodrome Level | The vertical displacement of an aircraft above aerodrome level is known as **Height**. The aircraft altimeter is set to the barometric pressure at the aerodrome (known as QFE). |
| amsl | Above mean sea level | The standard level reference for aircraft operations and airspace design below the Transition Altitude. The height of an aircraft measured above mean sea level is known as **Altitude** (ALT). The aircraft altimeter is set to the barometric pressure at the aerodrome, adjusted to take account of the aerodrome elevation (known as QNH). |
| FL | Flight Level | The height of an aircraft above a standard barometric pressure reference of 1013.25 Hectopascals and is the standard level reference for aircraft operations above the Transition Altitude. |

## C.4. Airspace and air traffic services

| Abbreviation | Meaning | Description |
|---|---|---|
| ATS | Air Traffic Services | A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service). (ICAO) |
| ATC | Air Traffic Control | A service provided for the purpose of preventing collisions between aircraft, and, on the manoeuvring area, between aircraft and obstructions, and expediting and maintaining an orderly flow of air traffic; |
| | Classification of Airspace | The ICAO system of classifying airspace by letter indicating the level of Air Traffic Service provided in the airspace and the meteorological criteria for VFR flight. Classes A to E are Controlled Airspace; Classes F & G are uncontrolled airspace. Class A airspace requires the mandatory operation of all flights according to the Instrument Flight Rules, Classes B, C, D and E controlled airspace permit VFR operations with differing levels of ATM compliance and application of separation by ATC. |
| | Class A Airspace | Controlled airspace in which the operation of flights according to the IFR is mandatory and in which ATC provides separation between all flights (including Special VFR flights). |
| | Class C Airspace | Controlled airspace in which both IFR and VFR flights are permitted and in which ATC provides separation between IFR flights (including Special VFR flights) and between IFR flights and VFR flights and provides adequate management of VFR flights to permit the effective integration of traffic and collision avoidance.<br><br>Throughout the EU airspace, all airspace from FL195 to FL660 is designated as Class C airspace but stringent access rules preclude the routine operation of VFR flights.<br>In the UK, some portions of Airways are also designated as Class C Airspace. |
| | Class D Airspace | Controlled airspace in which both VFR and IFR flights are permitted and in which ATC provides separation between IFR flights (including Special VFR flights) and provides adequate management of VFR flights to permit effective integration of traffic and collision avoidance.<br>In the UK, Class D airspace is the normal classification used for controlled airspace in the vicinity of |

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| | | aerodromes. Some Airway segments are also designated as Class D airspace. |
| | Class E airspace | Controlled airspace in which both VFR and IFR flights are permitted and air traffic service is only mandatory for IFR flights. VFR flights may operate without reference to ATC. The use of Class E airspace for Control Zones is not permitted. |
| | Class G Airspace | Uncontrolled airspace in which aircraft may operate freely, under VFR or IFR, without reference to any ATS Unit. |
| | Radar Vectoring | Provision of navigational guidance to aircraft in the form of specified headings based on the use of radar. |
| ATSOCAS | Air Traffic Services Outside Controlled Airspace | A menu of Air Traffic Services specified in CAP774 which are available, on request, to VFR or IFR flights operating in Class G airspace. The services comprise Basic Service, Traffic Service, Deconfliction Service and Procedural Service. |
| | Basic Service | An ATS in which advice and information useful for the safe and efficient conduct of flight is provided. It may include weather information, serviceability of facilities, conditions at aerodromes, general airspace activity information and any other information likely to affect safety.<br>The avoidance of other traffic is solely the pilot's responsibility and relies on the pilot avoiding other traffic unaided by controllers.<br>The provider of the service is not required to monitor flights. |
| | Traffic Service | A surveillance based ATS, where, in addition to the provisions of a Basic Service, the controller provides specific surveillance-derived traffic information to assist the pilot in avoiding other traffic.<br>Controllers may provide headings and/orlevels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility |
| | Deconfliction Service | A surveillance based ATS where, in addition to the provisions of a Basic Service, the controller provides specific surveillance-derived traffic information and issues headings and/or levels aimed at achieving planned deconfliction minima, or for positioning and/or sequencing. |

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| | | However, the avoidance of other traffic is ultimately the pilot's responsibility. |
| | Procedural Service | An ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service.<br>Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.<br>A Procedural Service does not require information derived from an ATS surveillance system. |
| ATM | Air Transport Movement | Landings or take offs by aircraft engaged on the transport of passengers, cargo or mail on commercial terms. All scheduled movements, including those operated empty, loaded charter and air taxi movements are included. |
| ATZ | Aerodrome Traffic Zone | Airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic. |
| CTA | Control Area | A controlled airspace extending upwards from a specified limit above the surface to a specified upper limit. |
| CTR | Control Zone | A controlled airspace extending upwards from the surface to a specified upper limit. |
| IAP | Instrument Approach Procedure | A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en route obstacle clearance criteria apply. |
| IFR | Instrument Flight Rules | Rules 32 to 37 of the Rules of the Air Regulations which specify certain rules to be complied with (including Minimum Height Rules, level convention rules, flight planning, and ATC clearance rules and position reporting requirements). A pilot must be suitably qualified and the aircraft appropriately equipped in order to operate under the IFR. |
| IMC | Instrument Meteorological Conditions | Meteorological conditions expressed in terms of visibility, distance from cloud and ceiling, which preclude flight under the Visual Flight Rules |

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| Special VFR | | A flight made in a Control Zone under conditions which would normally require compliance with the Instrument Flight Rules but which is made in accordance with special instructions issued by the ATC Unit instead of in accordance with the Instrument Flight Rules and in which the aircraft must remain clear of cloud and in sight of the surface. |
| TMA | Terminal Control Area | A Control Area normally established at the confluence of a number of ATS Routes in the vicinity of one or more major aerodromes. |
| VFR | Visual Flight Rules | Rules 25 to 30 of the Rules of the Air Regulations 2007 |
| VMC | Visual Meteorological Conditions | Meteorological conditions expressed in terms of visibility, distance from cloud which permit flight under the Visual Flight Rules.<br><br>In the UK the VMC minima for VFR operations in various classifications of airspace are laid down in Rule 27 of the Rules of the Air Regulations 2009 and different minimum flight visibility, distance from cloud and ceiling minima are specified between controlled and uncontrolled airspace. |
| VRP | Visual Reference Point | A point established in the vicinity of an aerodrome located within controlled airspace to facilitate access to and from aerodromes located within, and transit of the controlled airspace by VFR traffic. VRPs are located at prominent natural or man-made ground features which are readily identifiable from the air. |

## C.5. Infrastructure

| Abbreviation | Meaning | Description |
|---|---|---|
| DME | Distance Measuring Equipment | A navigational facility which provides information to an aircraft indicating its distance from the facility. DME may be installed in conjunction with an en route, terminal or approach navigational facility. |
| GNSS | Global Navigation Satellite System | A navigation infrastructure using satellite based navigation data. |
| GPS | Global Positioning System | A GNSS provided by the US Department of Defence and available for public use. |
| ILS | Instrument Landing System | A precision instrument approach navigation aid which provides lateral and vertical track guidance to aircraft along the final approach track and distance information. |
| NDB | Non Directional Beacon | An MF en route and/or terminal and approach navigational facility from which the pilot can determine the bearing of the facility with reference to his own position. |
| NDB(L) | Locator NDB | An NDB provided for use as an approach aid, during the notified hours of ATS, at aerodromes for which instrument approach procedures are published. |
| PSR | Primary Surveillance Radar | A surveillance radar system which uses reflected radio signals. |
| RNAV | Area Navigation | A method of navigation which permits aircraft operation on any desired flight path within the coverage of station referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these. |
| SSR | Secondary Surveillance Radar | A system of radar using ground interrogators and airborne transponders to determine the position of an aircraft in range and azimuth and, when agreed modes and codes are used, height and identity as well |
| SSR Mode C | | That element of the SSR System which provides information which indicates the height of the aircraft. |
| SSR Mode S | Mode Select | Modern transponder systems include Elementary Surveillance or Enhanced Surveillance capabilities and provide greater functionality than earlier generations of transponder systems including, inter alia, interactive ACAS Resolution Advisory. Mode S Elementary is the basic level of transponder carriage notified, as |

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| | | appropriate, in UK airspace. Enhanced Surveillance includes additional functionality and is mandated in certain specified controlled airspace. |

# D. List of consultees

## D.1. Development of the consultee list

D.1.1. This Section is included so that consultees understand why they have been included on the consultation list. In consultations in the past some aviation consultees have challenged the inclusion of non-aviation interests in an aviation consultation.

D.1.2. Development of the "Consultee List" is dictated very much by the CAA requirements specified in CAP725. LSA sought advice and guidance from the CAA prior to the compilation of an appropriate list of consultees and subsequently this was agreed with the CAA staff.

D.1.3. The CAA requires that consultation with non-aviation bodies includes Statutory Bodies and appointed Councils down to and including Parish Council level throughout the area that would be overlaid by the proposed airspace change design. Thus 27 Councils at County, City, District, Borough and Town level have been identified as consultees together with 155 Parish Councils. The CAA also expects certain other non-aviation national organisations who may have an environmental interest to be included.

D.1.4. It is expected that some of the incumbents at the lower tiers of government would have little, if any, aviation knowledge. Thus the offer is made within the documentation for them to seek clarification, preferably by e-mail query, if they so desire.

D.1.5. With respect to the "aviation interests" side, the CAA requires "local" aviation parties to be included in the process as individual entities; these being aerodromes or aircraft operators lying within, beneath or immediately adjacent to the proposed airspace development. Some of these parties have also been included in the earlier Focus Group stage of the airspace development so that particular local issues could be addressed, and the configuration of the proposed airspace reviewed.

D.1.6. However, such is the national interest in airspace usage that the consultation process needs to include the wider aviation community (including more distant aerodromes and airspace user groups). The CAA expects national bodies (such as LAA, BGA, AOA, BALPA etc.) to represent their members interests through the auspices of the CAA's National Air Traffic Management Advisory Committee (NATMAC). These member organisations are inherently more aware of the wider issues involved and, moreover, have been directly involved in the development of the CAA's regulatory process for airspace change. Consequently it is reasonable to expect that they should respond objectively to the consultation.

D.1.7. A number of military organisations are also members of the NATMAC and are, individually, included as consultees. However, it is standard practice for the MOD to provide a consolidated response representing all military branches.

## D.2. Airport user consultees

Airport Consultative Committee Chairman
Southend Flying Club
Seawing Flying Club
The Flight Centre
easyJet
Aer Lingus (Aer Arann)
ATC Lasham
Avionicare
Inflite
Cityjet
Jet 2
Malmo Aviation
NetJets
London Executive Aviation
Kings Aviation
PDG
JOTA Aviation
VVB Aviation
24/7 Jet
Finesse Aviation
Select Plant
Helicopter Services
TUI
Thomas Cook Airlines
Flybe
Skywork Airlines
Blue Islands Airlines
Atlantic Airlines
Brussels Airlines
Air Astana
Rossiya Airlines
Gama Aviation
Acropolis Aviation
Titan Airways
Norwegian Air Shuttle
Terry Holding
BA CityFlyer

## D.3. Off-airport aerodrome and airspace user consultees

Qinetiq (Shoeburyness Danger Area)
London City Airport

London Stansted Airport
Manston Airport
Biggin Hill Airport
Rochester Airport
Andrewsfield Aerodrome
Barling Aerodrome
Barnards Farm Aerodrome
Brentwood Childerditch Farm Strip
Burnham Aerodrome
Challock Aerodrome
Damyns Hall Aerodrome
Detling Hill Aerodrome
Earls Colne Aerodrome
Eastchurch Aerodrome
Egerton Barhams Mill Farm Aerodrome
Farthing Corner Aerodrome
Gerpins Farm Aerodrome
Great Oakley Aerodrome
High Easter (Bury Farm) Aerodrome
Jenkins Farm Aerodrome
Laddingford Aerodrome
Laindon (Bensons Farm) Aerodrome
Lashenden (Headcorn) Aerodrome
Linton Rankins Farm Aerodrome
Little Baddow (Retreat Farm) Aerodrome
Little Burstead Aerodrome
Maypole Aerodrome
Napps Field (Brocks Farm) Aerodrome
Nayland Aerodrome
North Weald Aerodrome
Old Hay Aerodrome
Peldon West Mersea Aerodrome
Rattlesden Aerodrome
Rayne Aerodrome
St Lawrence Aerodrome
Stapleford Tawney Aerodrome
Stoke Aerodrome
Stow Maries Aerodrome
Thurrock Aerodrome
Tillingham Aerodrome
Wethersfield Aerodrome
Willingale Aerodrome
Wormingford Aerodrome

Bond Air
Clacton Aero Club
Classic Wings (Clacton Aerodrome)
Learn to Fly (Damyns Hall)
Microlight Sport Aviation (Damyns Hall)
North Weald Flying Group
Rochester Microlights
Scott Microlights Ltd
Essex Police Air Support Unit
Essex Air Ambulance

NATS Hd TC Operations
NATS Mgr LAMP

## D.4. NATMAC consultees

Airport Operators Association (AOA)
Aircraft Owners & Pilots Association UK (AOPA UK)
Aviation Environment Federation (AEF)
British Airways (BA)
BAe Systems
British Airline Pilots Association (BALPA)
British Air Transport Association (BATA)
British Balloon & Airship Club (BBAC)
British Business & General Aviation Association (BBGA)
British Gliding Association (BGA)
British Hang Gliding & Paragliding Association (BHPA)
British Microlight Aircraft Association (BMAA)
British Model Flying Association (BMFA)
British Parachute Association (BPA)
British Helicopter Association (BHA)
Guild of Air Pilots & Navigators (GAPAN)
General Aviation Safety Council (GASCo)
Guild of Air Traffic Control Officers (GATCO)
Heathrow Airport Ltd
Helicopter Club of Great Britain (HCGB)
“Heavy Airlines”
Light Aircraft Association (LAA)
“Light Airlines”
“Low Cost” Airlines”
NATS
PPL/IR Europe
Unmanned Aerial Vehicle Systems Association (UAVS Association)
UK AIRPROX Board (UKAB)

UK Flight Safety Committee (UKFSC)

## D.5. NATMAC military consultees

HQ Directorate of Army Aviation (HQ DAAvn)
HQ 3rd Air Force USAFE (3AF UK/A3)
DAATM
Military Aviation Authority (MAA)
Ministry of Defence (MoD)
MoD Flight Test Regulator
NC HQ

## D.6. Non-aviation consultees (County, City, District Councils)

**Essex**

Essex County Council
Chelmsford City Council
Brentwood Borough Council
Castle Point Borough Council
Colchester Borough Council
Southend Borough Council

Basildon District Council
Braintree District Council
Epping Forest District Council
Maldon District Council
Rochford District Council
Tendring District Council
Thurrock Council

Billericay Town Council
Brightlingsea Town Council
Burnham-on-Crouch Town Council
Canvey Island Town Council
Leigh Town Council
Rayleigh Town Council
Witham Town Council

**Kent**

Kent County Council
Gravesham Borough Council
Swale Borough Council
Medway Council

## D.7. Non-aviation consultees (Parish Councils)

**Essex**

Abberton & Langenhoe Parish Council
Alresford Parish Council
Althorne Parish Council
Asheldam Dengie Parish Council
Ashingdon Parish Council
Barling Magna Parish Council
Beaumont-cum-Moze Parish Council
Birch Parish Council
Blackmore, Hookend & Wyatts Green Parish Council
Bowers Gifford & North Benfleet Parish Council
Boreham Parish Council
Bradwell Parish Council
Bradwell on Sea Parish Council
Canewdon Parish Council
Cold Norton Parish Council
Danbury Parish Council
Doddinghurst Parish Council
East Donyland Parish Council
East Hanningfield Parish Council
East Mersea Parish Council
Fingringhoe Parish Council
Foulness Island Parish Council
Frating Parish Council
Frinton & Walton Parish Council
Galleywood Parish Council
Goldhanger Parish Council
Great Baddow Parish Council
Great Bentley Parish Council
Great Braxted Parish Council
Great Burstead & South Green Village Council
Great Oakley Parish Council
Great Totham Parish Council
Great Wakering Parish Council
Hatfield Peverell Parish Council
Hawkwell Parish Council
Hazeleigh & Woodham Mortimer Parish Council
Herrongate & Ingrave Parish Council
Heybridge Parish Council
High Ongar Parish Council
Highwood Parish Council

Hockley Parish Council
Hullbridge Parish Council
Ingatestone & Fryerning Parish Council
Kelvedon Hatch Parish Council
Langford & Ulting Parish Council
Latchington Parish Council
Layer Breton Parish Council
Layer Marney Parish Council
Layer-de-la-Haye Parish Council
Little Baddow Parish Council
Little Bentley Parish Council
Little Braxted Parish Council
Little Burstead Parish Council
Little Clacton Parish Council
Little Oakley Parish Council
Little Totham Parish Council
Maldon Parish Council
Margaretting Parish Council
Mayland Parish Council
Mountnessing Parish Council
Mundon Parish Council
Navestock Parish Council
Noak Bridge Parish Council
North Fambridge Parish Council
Paglesham Parish Council
Purleigh Parish Council
Ramsden Bellhouse Parish Council
Ramsden Crays Parish Council
Rawreth Parish Council
Rettendon Parish Council
Rochford Parish Council
Runwell Parish Council
St Lawrence Parish Council
St Osyth Parish Council
Sandon Parish Council
Shotgate Parish Council
South Hanningfield Parish Council
Southminster Parish Council
South Woodham Ferrers Parish Council
Springfield Parish Council
Stambridge Parish Council
Steeple Parish Council
Stock Parish Council
Storndon Massey Parish Council

Stow Maries Parish Council
Sutton Parish Council
Tendring Parish Council
Thorpe-le-Soken Parish Council
Thorrington Parish Council
Tollesbury Parish Council
Tolleshunt Knights Parish Council
Tolleshunt Major Parish Council
Weeley Parish Council
West Mersea Parish Council
West Hanningfield Parish Council
West Horndon Parish Council
Wickham Bishops Parish Council
Winstread Hundred Parish Council
Wivenhoe Parish Council
Woodham Ferrers & Bicknacre Parish Council
Woodham Walter Parish Council
Writtle Parish Council

**Kent**

All Hallows Parish Council
Bobbing Parish Council
Cliffe & Cliffe Woods Parish Council
Cooling Parish Council
Eastchurch Parish Council
Frindsbury Extra Parish Council
Hartlip Parish Council
High Halstow Parish Council
Higham Parish Council
Hoo St Werburgh Parish Council
Iwade Parish Council
Leysdown Parish Council
Lower Halstow Parish Council
Luddenham Parish Council
Minster on Sea Parish Council
Newington Parish Council
Oare Parish Council
Queenborough Parish Council
St James, Isle of Grain Parish Council
St Mary Hoo Parish Council
Stoke Parish Council
Teynham Parish Council
Tonge Parish Council

Upchurch Parish Council
Warden Parish Council

## D.8. Non-aviation consultees (Other organisations)

Association of British Travel Agents
National Trust
CPRE - Essex
English Heritage
Natural England
English Heritage
Environment Agency
Friends of the Earth
RSPB – Wallasea
Stop Airport Expansion & Noise (SAEN)

## D.9. Members of Parliament

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| Mr J Duddridge MP | Southend East |
| Mr D Amess MP | Southend West |
| Mr M Francois MP | Rayleigh |
| Ms R Harris MP | Castle Point |
| Mr J Whittingdale MP | Maldon |
| Mr S Metcalfe MP | South Basildon & East Thurrock |
| Ms J Doyle-Price MP | Thurrock |
| Mr E Pickles MP | Brentwood & Ongar |
| Mr J Baron MP | Basildon & Billericay |
| Mr B Newmark MP | Braintree |
| Ms P Patel MP | Witham |
| Mr D Carswell MP | Clacton |
| Mr R Russell MP | Colchester |
| Ms A Watkinson MP | Hornchurch & Upminster |
| Mr Rehman Christi MP | Gillingham & Rainham |
| Mr G Henderson MP | Sittingbourne & Sheppey |
| Mr H Robertson MP | Faversham |
| Mr A Holloway MP | Gravesham |
| Mr M Reckless MP | Rochester & Strood |
| Ms E Laing MP | Epping |
| Mr S Burns MP | Chelmsford |
| Ms T Couch MP | Chatham & Aylesford |

# E. Airspace development – options considered

## E.1. Introduction

E.1.1. CAP725 requires that in developing proposals to change the airspace arrangements, the change sponsors should consider a range of options, including the "Do Nothing" option in arriving at their preferred solution.

E.1.2. This Appendix outlines, in broad terms, options that have been considered by LSA in arriving at the definitive proposed airspace configuration detailed in Section 7 of the consultation document.

E.1.3. It is emphasised that the options detailed in this Appendix are not options that are being consulted on - they have been considered and rejected or adapted in the pathway towards the consultation. They are included here for completeness and to avoid consultees who may object to the consultation proposal from suggesting alternatives which do not meet the safety or operational requirement.

## E.2. "Do Nothing"

E.2.1. CAP725 requires that in all proposals to develop new controlled airspace include consideration of the "Do Nothing" option.

E.2.2. If no action was taken to adapt the airspace arrangements to establish a known and managed airspace environment in the vicinity of LSA then growing numbers of CAT aircraft would not be provided with the enhanced level of safety that a known and managed airspace environment provides in line with CAA Policy for CAT traffic.

E.2.3. The "see and avoid" principle is not appropriate to CAT operations in the critical stages of flight.

E.2.4. LSA has 2 years' experience of practical experience of the "do nothing" option. This has led to the conclusion that it is now timely to take action to introduce Class D airspace around LSA to allow the effective management of traffic with the aim of further enhancing the safety of CAT operations.

## E.3. Develop a solution which does not require controlled airspace

E.3.1. LSA is conscious of the concerns of the GA and S&R airspace user community over the proliferation of controlled airspace in the areas within which they traditionally carry out their legitimate airspace activities unhindered by the burden of communicating with ATC and of possibly being denied access to their desired area of operation.

E.3.2. In considering options, LSA has considered (in advance of the recent CAA Policy Statement) the introduction of "Radio Mandatory Airspace" (RMA) or Transponder Mandatory Airspace (Zone) (TMZ) or a combination of the two.

E.3.3. RMA, whilst ensuring that all aircraft operating in the given airspace are in communication with the appropriate ATC Unit does not provide ATC with any means of managing the respective traffic flows to resolve conflict with CAT flights. Aircraft operating in RMA are not obliged to comply with ATC instructions intended to resolve conflict, they are merely required to make their presence and intentions known. No ATC permission is required to enter RMA. No requirement exists for the pilot to enable radar identification of his aircraft by the controller (when radar is available).

E.3.4. The avoidance obligations placed on the controller in the provision of an ATSOCAS Deconfliction Service remain the same. The avoidance requirement against communicating aircraft, whether or not they are identified traffic, remains 5NM laterally unless a positive course of action has been agreed with the pilot, in which case the separation may be reduced to 3nm laterally or 1000ft vertically. When radar is not available, conflict resolution is limited to the passing of traffic information and "see and avoid" principles.

E.3.5. Similarly, a TMZ in itself does not afford any benefit to the controller in resolving conflict; it merely indicates the presence of an aircraft, not identity or, more importantly, intention. SSR Mode C (altitude) data is unverified. Again, the avoidance minima to be applied by the radar controller against an SSR response in Class G airspace remain the same.

E.3.6. RMA in combination with a TMZ would enable the controller to positively associate and identify a particular aircraft radar return with a known aircraft. However, there would be no positive management capability as neither RMA nor TMZ require aircraft to participate in an ATS or comply with instructions. The avoidance minima to be applied by the radar controller to an aircraft receiving a Deconfliction Service remain the same.

E.3.7. Furthermore, in the LSA case, both RMA and TMZ airspace designations remain as Class G uncontrolled airspace, within which the lower VMC minima apply to certain categories of aircraft. Uncontrolled, but communicating and/or transponding, flights may still operate close to cloud when at or below 3000ft or in reduced flight visibilities.

## E.4. Use Class E controlled airspace classification

E.4.1. The use of Class E airspace classification would not require VFR flights to make their presence known to ATC and so would not establish a known and managed airspace environment. Non-communicating VFR flights would constitute "unknown traffic" and, furthermore, when Southend Radar was out of service, Southend ATC would be unable to provide even the most basic of traffic information on such flights to enable pilots of CAT flights to avoid collisions in accordance with the RotAR.

E.4.2. ICAO Standards at Annex 11 paragraph 2.6.1 preclude the use of Class E airspace classification for Control Zones. The UK does not register a Difference in respect of this Standard.

E.4.3. CAP725 at paragraph vii) a) Footnote 1 states that in the UK, controlled airspace will normally be classified as ICAO Airspace Classification A, C or D; Class E airspace is specifically excluded as an option.

E.4.4. The UK Policy for the Application of ICAO Airspace Classification in the UK indicates that it is the CAA intention for Class E, where appropriate, to be progressively replaced by classifications which are better suited to the operational conditions within the airspace structures in question.

E.4.5. Conversely, the CAA Policy Statement indicates that enhancements of Class E airspace with Transponder Mandatory or Radio Mandatory airspace may be considered where replacement by a more restrictive classification of airspace (Class A to D) cannot be justified. Thus the use of Class E plus Transponder or Radio Mandatory airspace is not an option because this ACP is not enhancement or replacement of existing Class E airspace.

## E.5. Use Class C controlled airspace classification

E.5.1. It is acknowledged that most airline operators prefer the application of Class C airspace over Class D airspace because it gives an assured level of separation, to be applied by ATC, between IFR flights and VFR flights. In Class C airspace, IFR flights are separated from VFR flights to the same separation criteria that are applied between IFR flights.

E.5.2. Therefore, in considering this ACP, the LSA airspace development team gave consideration to the use of Class C airspace classification.

E.5.3. However, LSA ATC consider that use of Class C airspace would be more restrictive on the operation of VFR flights as there would need to be a much greater intervention by ATC on their activities in order to establish the increased separation requirement against IFR flights. Effectively it would mean that a VFR flight would be accountable for the same volume of airspace as an IFR flight when considered against an IFR flight. LSA considered that this would be unnecessarily restrictive to VFR operations when adequate means and techniques exist to effectively manage the VFR/IFR traffic mix without recourse to formal separation standards.

E.5.4. Class C airspace classification requires the carriage of a transponder with Mode S functionality.

E.5.5. The use of Class C airspace has not yet been applied in the vicinity of airports in the UK, although it does remain available for use as detailed in the CAA's Policy Statement.

E.5.6. On balance, LSA concluded that the application of Class C airspace in the vicinity of LSA was not justified.

## E.6. Use Class D controlled airspace classification

E.6.1. Class D airspace is the controlled airspace classification most widely used in the UK for application in the vicinity of airports. It provides a known and managed airspace environment for the operation of both VFR and IFR traffic.

E.6.2. Effective management of the IFR/VFR traffic mix using conflict resolution techniques which do not extend to the formal establishment of separation standards can provide the safety assurances required by CAT operators whilst, at the same time, having the minimum impact on VFR GA and S&R operations. These techniques are well established in the UK ATC environment and empirical evidence indicates that they work well.

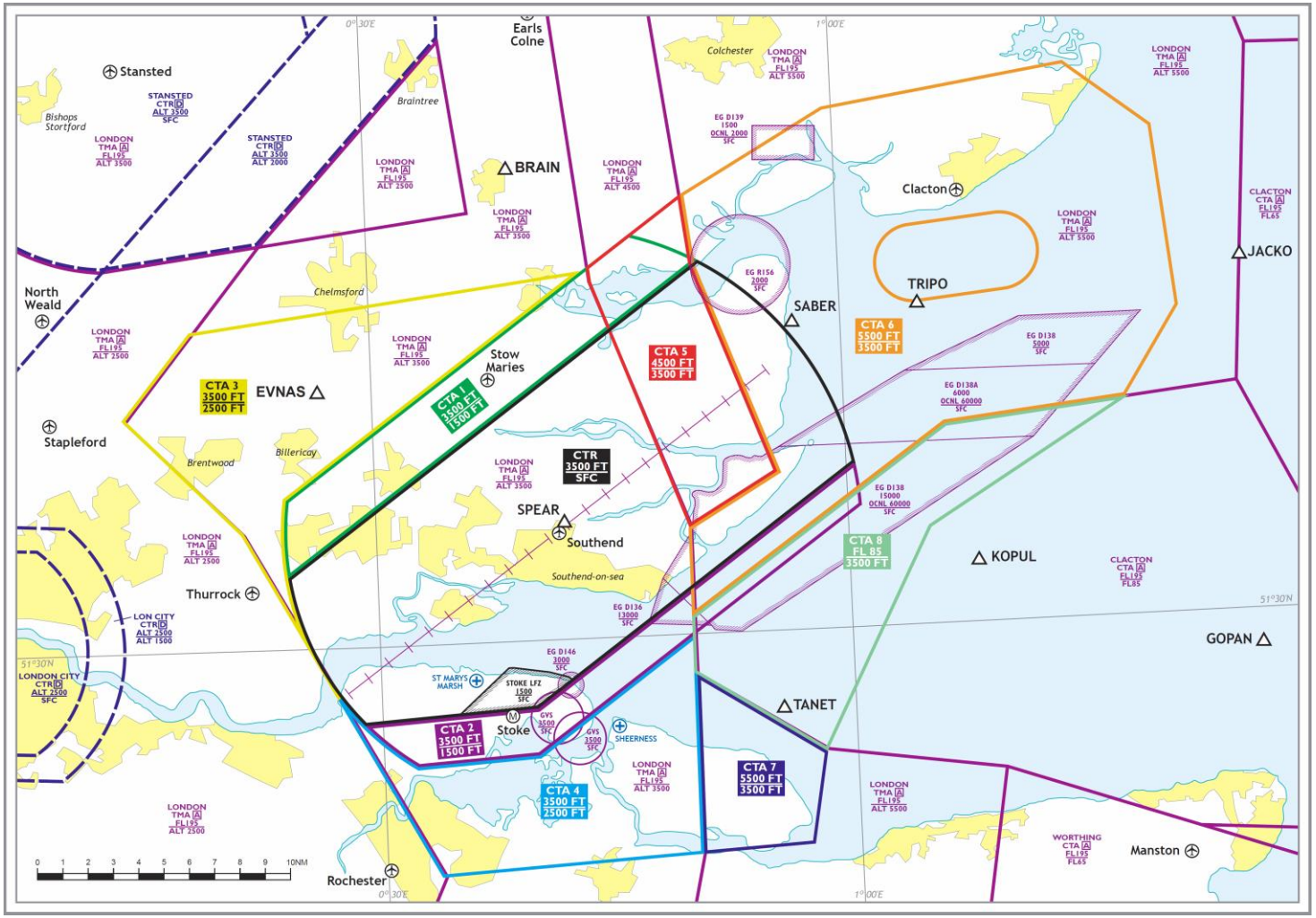
E.6.3. Class D airspace does not require the carriage of a transponder by VFR non-public transport flights.

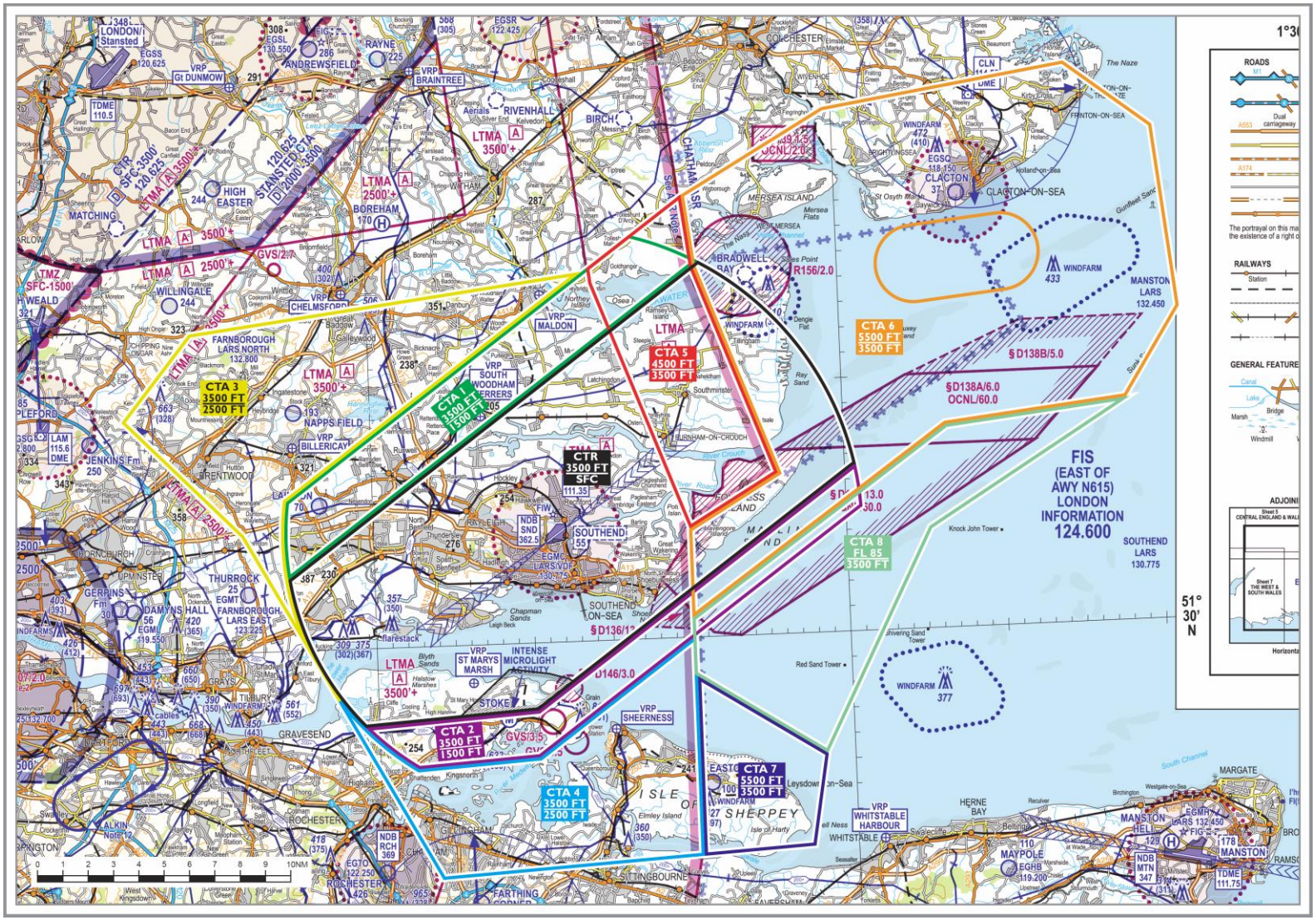
E.6.4. On balance, LSA has concluded that airspace classification D would be the most appropriate for application to the airspace in which CAT flights operate in the critical stages of flight prior to landing and immediately after departure and would enable LSA to continue to meet its obligations as an ANSP as CAT operations continue to grow. LSA has also concluded that the necessary Class D airspace should be contiguous with the overlying LTMA airspace to ensure continuous operations within controlled airspace by arriving and departing CAT flights.

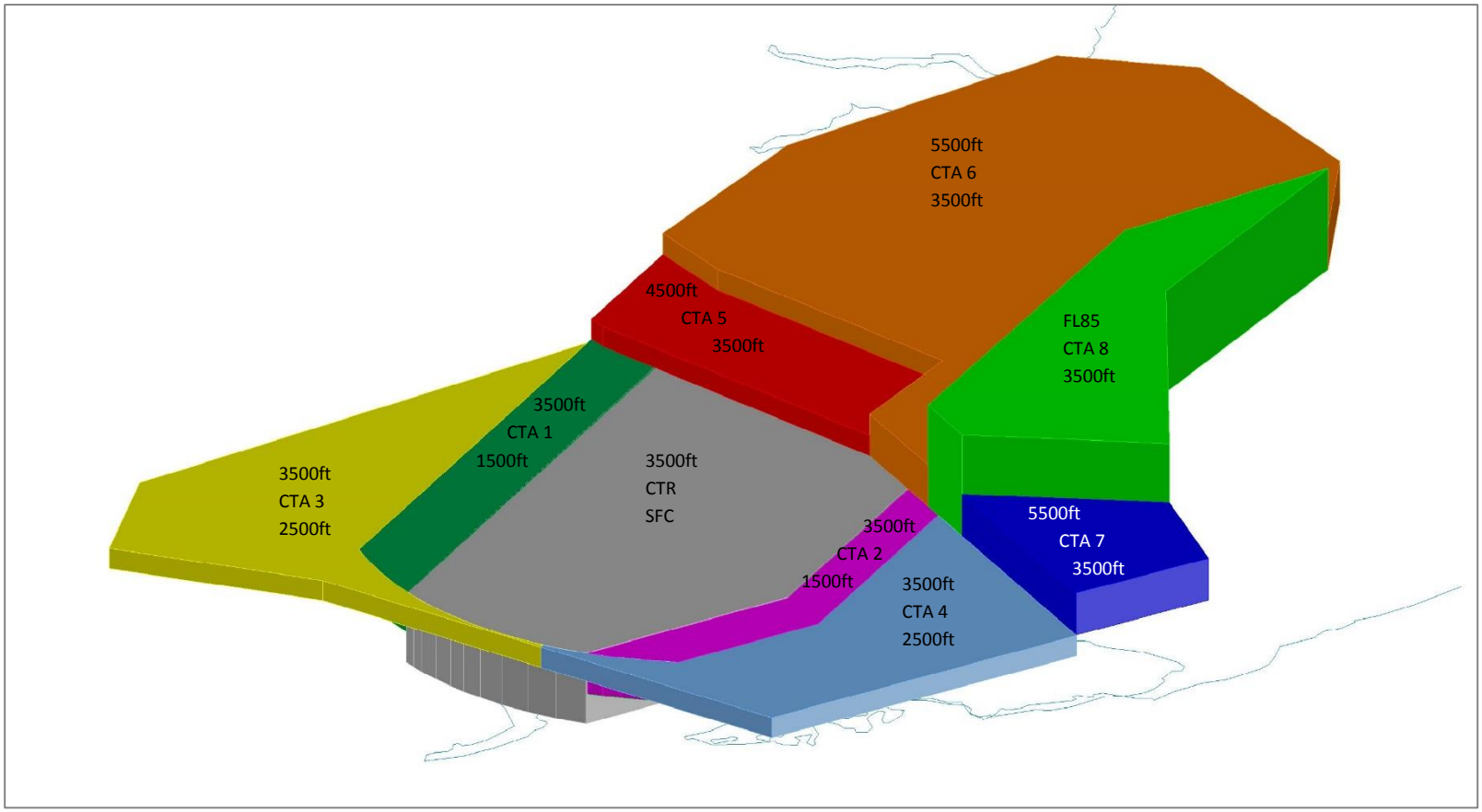
## E.7. Controlled airspace configuration

E.7.1. Having established that Class D airspace would be the most appropriate for application under this ACP, LSA has developed the airspace configuration detailed in the body of this consultation document as being, on balance, the most appropriate in meeting the operational requirements of LSA and the competing needs of the various airspace user communities and the environmental objectives.

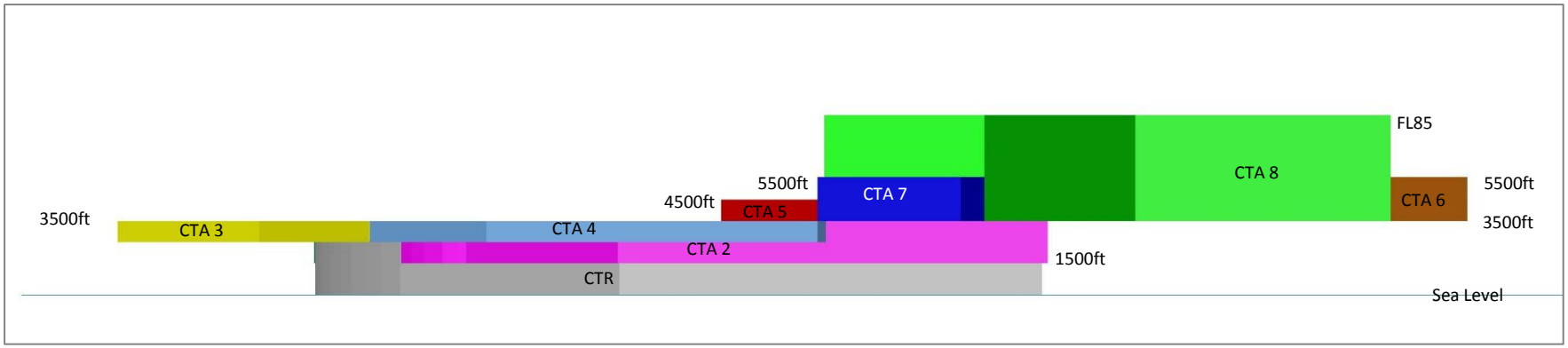
# F. Proposed airspace configuration



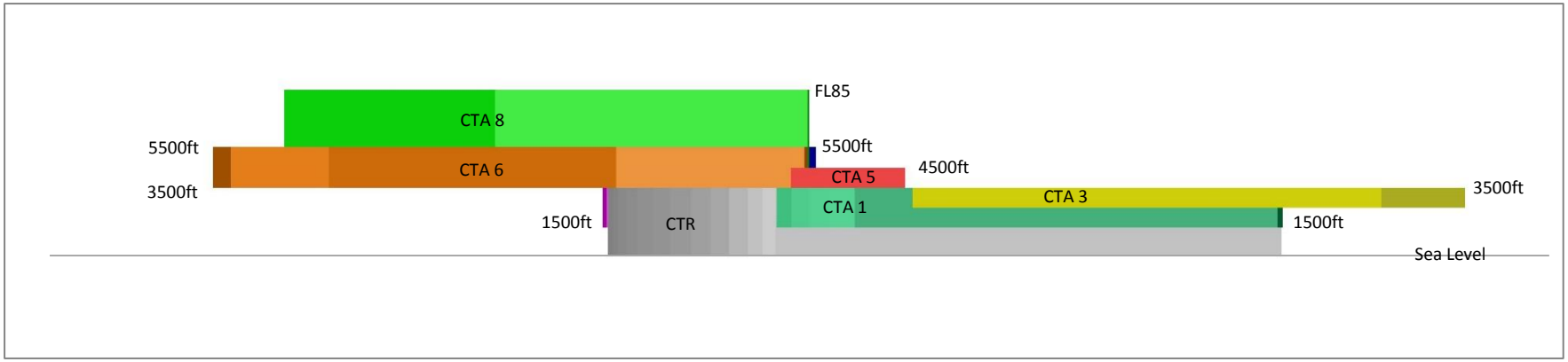





**Isometric Representation of the Proposed Class D CAS (vertical scale exaggerated for clarity)**




**Side Elevation of the Proposed Class D CAS viewed from the South**




**Side Elevation of the Proposed Class D CAS viewed from the North**