Addendum to ACP-2017-25 updated February 2020

London Southend Airport

Introduction of CTA-10X and CTA-11

10 February 2020

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Executive Summary

This Airspace Change Proposal (ACP) was initially submitted to the CAA and allocated CAA reference ACP-2017-25 on 31 March 2017 in accordance with the CAA's Decision Letter (dated 23 January 2015) pertaining to a previous ACP (ACP-15-01). ACP-15-01 provided for the establishment of Class D controlled airspace in the vicinity of London Southend Airport (LSA) to ensure the safety of the increasing Commercial Air Traffic (CAT) operating at the Airport.

The CAA Decision Letter, whilst approving the majority of the requested controlled airspace, did not approve the introduction of two portions (namely CTA-11 to the south-east and a major portion of CTA-10 to the north-east), as had been proposed in ACP-15-01. It appeared to the CAA that the then extant traffic levels and Air Traffic Management (ATM) complexity did not justify the introduction of these particular volumes of controlled airspace. The Class D controlled airspace approved by the CAA was implemented on 2 April 2015.

The Decision Letter[1] made provision for the future introduction of the CTA-10 and CTA-11 controlled airspace segments if increasing traffic levels and airspace complexity so justified. Furthermore, if submitted within 2 years of the implementation of the airspace approved in 2015, LSA could re-submit a case under the terms of Civil Aviation Publication (CAP)725[2] without additional consultation.

Since the introduction of the controlled airspace, approved under ACP-15-01, traffic levels have grown substantially at LSA and the number of passengers currently exceed those forecast in ACP-15-01. The developing network of routes served by LSA has added significantly to the complexity of Air Traffic Management operations in the tightly constrained airspace available to LSA Air Traffic Control (ATC). This is explained in the body of this document.

Accordingly, under the terms specified in the CAA Decision Letter, LSA submitted this ACP to the CAA on 31 March 2017 (within the 2-year deadline) for the necessary introduction of CTA-11 and that part of CTA-10 which had not previously been approved. For ease of reference in this document, the portion of CTA-10 which was consulted on but not previously approved, and is now being requested, is referenced as CTA-10X.

No controlled airspace over and above that sought in ACP-15-01 is sought in this ACP, nor are there any changes to the Instrument Flight Procedures. There are no changes being sought to the ATC operating procedures or use of the airspace and distribution of traffic beyond that which was detailed in ACP-15-01.

Notwithstanding the CAAs stated position in the Decision Letter that the CTA-10X and CTA-11 controlled airspace could be requested without additional consultation, given the time-lapse since the implementation of ACP-15-01 and with the agreement of the CAA, LSA has carried out an engagement exercise with potentially interested stakeholders to inform them of the proposal to now seek the

[1] Reference 2, at paragraph 2.6.

[2] CAP725: CAA Guidance on the Application of the Airspace Change Process. Note: CAP725 remained in force until January 2018 at which point it was superseded by a new process known as CAP1616.

introduction of the controlled airspace on which consultation had previously been carried out and the terms under which it is being sought.

Details of the subsequent discussions and dialogue between LSA and the CAA and between the CAA and the Department for Transport (DfT) are detailed in the body of this document[3]. It was determined by the DfT that, whilst this ACP would continue to be addressed under the old CAP725 process, certain elements of CAP1616[4] and the new Air Navigation Guidance (ANG) should be included in an Addendum to ACP-2017-25. These aspects are addressed in detail in the body of this document.

Following dialogue with the CAA in 2019, LSA now submits this Addendum to ACP-2017-25 expanding on the justification for the additional controlled airspace through a description of the complexities of the ATM operation and an update to the traffic statistics. This Addendum also seeks to address the additional requirements placed upon LSA by the DfT.

[3] References 7,8 and 9.

[4] CAP1616: Airspace Design. Guidance on the Regulatory Process for changing airspace design including community engagement requirements. CAP1616 came into force in January 2018 and replaced CAP725. However, the CAA undertook at the time that ACPs which had already been submitted or were at an advanced stage of development would continue to be assessed under the CAP725 process.

Abbreviations

aal	Above Aerodrome Level
ACP	Airspace Change Proposal
AIP	Integrated Aeronautical Information Package
AIRAC	Aeronautical Information Regulation and Control
ALT	Altitude
AMS	Airspace Modernisation Strategy
amsl	Above Mean Sea Level
ANG	Air Navigation Guidance
ANSP	Air Navigation Service Provider
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
ATC	Air Traffic Control
ATM[1]	Air Traffic Management
ATM[2]	Air Transport Movement
ATS	Air Traffic Services
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CAT	Commercial Air Transport
CTA	Control Area
CTR	Control Zone
DA	Danger Area
DfT	Department for Transport (which includes its predecessor organisations, e.g. DETR)
FAS	Future Airspace Strategy
FL	Flight Level
FMS	Flight Management Systems
GA	General Aviation
GNSS	Global Navigation Satellite Systems (space-based navigation aids, e.g. GPS)
ICAO	International Civil Aviation Organisation
IFP	Instrument Flight Procedure
IFR	Instrument Flight Rules
ILS	Instrument Landing System (a ground-based navigation aid)
LAMP	NATS London Area Management Programme
LCY	London City Airport

LoA	Letter(s) of Agreement
LSA	London Southend Airport
LTC	London Terminal Control (NATS)
LTMA	London Terminal Control Area
MATS	Manual of Air Traffic Services
NAP	Noise Abatement Procedure
NATS	The en-route and terminal ANSP (Previously National Air Traffic Services)
NDB	Non-Directional Beacon (a ground-based navigation aid)
PDR	Preferred Departure Route
RNAV	Area Navigation
RTF	Radio Telephony
SID	Standard Instrument Departure
SMS	Safety Management System
SSR	Secondary Surveillance Radar
TMA	Terminal Control Area
VFR	Visual Flight Rules
VOR	VHF Omni-Directional Radio Range (a ground-based navigation aid)
WGS-84	World Geodetic System (1984)

Glossary of Terms

Airspace Modernisation Strategy (AMS)	The Airspace Modernisation Strategy (AMS) fulfils the statutory duty placed upon the CAA by the Secretary of State to have a strategy and a plan for modernising airspace (as required by the Air Navigation Directions 2017). The AMS describes the objectives set in UK governmental and international policy for airspace to be modernised and sets out the work that industry and other entities are required to carry out to deliver that modernisation (the Initiatives). Details of the AMS can be found here: https://cms.caa.co.uk/cap1711 The AMS replaced the previous 2011 Future Airspace Strategy (FAS) in 2018.
Air Navigation Guidance (ANG)	A document published by the UK Government detailing how the government will implement its environmental, airspace and noise management policies in relation to air navigation. The Government published a new ANG in October 2017 which replaced the previous ANG issued in 2014 under which the LSA ACP-15-01 had been developed and assessed. (It should be noted that many of the provisions of the 2017 Guidance are incompatible with development previously carried out in accordance with the 2014 Guidance.)
Air Traffic Control Service (ATC)	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 traffic.
Air Traffic Management (ATM)	The aggregation of the airborne and ground- based functions (air traffic services, airspace management and air traffic flow management) required to ensure the safe and efficient movement of aircraft during all phases of operations.
Air Traffic Service (ATS)	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).
Air Transport Movement (ATM)	Landings and take-offs of aircraft engaged on the transport of passengers, cargo, mail on commercial terms. All scheduled movements, including those operated without a load, those loaded with cargo and air taxi movements, are included.

Altitude (ALT)	The distance, in feet, above mean sea level. This is the standard level reference for aircraft operations and airspace design at the lower levels to overcome variations in terrain. The aircraft altimeter is set to the barometric pressure at the aerodrome which has been adjusted to take account of the aerodrome elevation (known as QNH). **In this document all vertical distances are expressed as altitudes (e.g.) "3000ft equals 3000ft above mean sea level".**
AMSL (or amsl)	Above mean sea level
AONB	Area of Outstanding Natural Beauty
ATC	Air Traffic Control
ATM	Air Traffic Management
CAA	Civil Aviation Authority
Capacity	The term used to describe how many aircraft can be accommodated within an airspace area or by a runway without compromising safety or generating excessive delay.
Centreline	The nominal track of a published route
Commercial Air Transport (CAT)	An aircraft operation to transport passengers, cargo or mail for remuneration or other valuable consideration. (EU Reg 2018/1139)
CO_2	Carbon dioxide
Concentration	Refers to the density of aircraft flight paths over a given location. Generally, refers to high density where tracks are not spread out over a wide area. The opposite is Dispersion.
Continuous climb	A climb that is constant, i.e. without periods of level flight (sometimes referred to as "steps").
Continuous descent	A descent that is constant, without periods of level flight (sometimes referred to as "steps"). [However, for a Continuous Descent Approach a period of level flight is permitted to make speed adjustments and to reconfigure the aircraft.]
Controlled airspace	A generic term for airspace in which Air Traffic Control service is provided. There are different sub-classifications of airspace that define the particular types of air traffic services that are provided and the degree to which aircraft are required to participate.
Conventional navigation	The historic navigation standard by which aircraft fly, and routes are designed, with reference to ground-based navigation aids.

Dispersion	Refers to the density of flight paths over a given area and generally refers to low density operations where tracks or routes are "spread out" over a wide area. The opposite of Concentration.
Easterly operation	When a runway is operating so that aircraft take-off and land in a generally easterly orientation. At LSA this refers to Runway 05 which is aligned in a north-easterly direction.
Flight Level	A surface of constant atmosphere pressure which is related to a specific pressure datum, 1013.2hPa, and is separated from other such surfaces by specific pressure intervals. Altitude above sea-level in 100 feet units measured according to a standard atmosphere. e.g. FL80 = 8,000 feet above mean sea level when the pressure at sea level is 1013.2 mb.
Future Airspace Strategy (FAS)	The CAA's blueprint established in 2011 for modernising UK airspace in line with European and other worldwide initiatives. The CAA explains the FAS here: www.caa.co.uk/fas. The FAS was replaced by the Airspace Modernisation Strategy (AMS) in 2018.
General Aviation (GA)	All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire. It covers sport and recreational flying and corporate jet and non-jet flights
Holding; holding area; and Holding stacks	An airspace structure where aircraft circle one above the other in a racetrack pattern at 1000ft intervals when queuing to land.
Low altitude airspace	A generic term to describe airspace in the vicinity of an airport containing arrival and departure routes below 4000ft. Airports have primary accountability for the design of routes in this airspace as this and the local ATC operation is largely dictated by local environmental requirements, airport capacity and efficiency.
Movement	In relation to airport operations, a movement is one take-off or one landing (one arrival and one departure is counted as two movements).
NATS	An air traffic service provider licensed by Government to provide the air navigation services in en-route airspace which connects the airports with each other and with the airspace of neighbouring States. NATS also provides ATS, under contract, to some airports.

Nautical Mile (NM)	Aviation measures most horizontal distances in nautical miles. One nautical mile is 1852 metres, making it approximately 15% longer than a statute mile. (Aviation uses metres for some horizontal distances such as runway lengths and visibility.) (The standard measurement of vertical distance is feet.)
Noise Contours	The depiction of noise across a period of the day as a series of contours around the airport. Aircraft noise maps, which show lines joining points of equal noise, to illustrate the impact of aircraft noise around airports. Major airports publish annually or bi-annually the noise contours for the "daytime" period (0700 to 2300). These are referred to as the Leq (16 hours) noise contours.
Noise footprint	The depiction of noise from a single aircraft as a "footprint" around the airport. These are referred to as SEL footprints.
Performance-Based Navigation (PBN)	A generic term for modern standards for aircraft navigation capabilities (as opposed to conventional navigation standards). The design of future airspace routes and structures will be predicated on requiring a specified minimum navigation capability by all aircraft using the route or airspace structure. For more information see www.caa.co.uk/pbn and www.eurocontrol.int/navigation/pbn.
Preferred Departure Route (PDR)	The terminology used to identify departure routes to be used by departing aircraft to access the controlled airspace route network from aerodromes outside controlled airspace where it is identified that a structured system of departure routes is necessary. This term was introduced by the CAA in the 1970s to differentiate these "outside controlled airspace" routes from Standard Instrument Departure Procedures (SIDs) from airports inside controlled airspace. PDRs were introduced at LSA in the 1980s. Subsequent to the introduction of Controlled Airspace at LSA, an ACP was submitted to the CAA in 2016 to formally upgrade the PDRs to SIDs. This has not yet been approved by the CAA, so the PDRs remain in place in the interim.
Radar Vectoring / vectoring	Provision of direct navigational instructions to aircraft on a tactical basis by ATC in the form of specified headings based on the use of radar. The Radar Controller uses radar vectoring to marshal and sequence arriving flights into the correctly spaced arrival sequence and to separate arriving, departing and overflying flights from each other.

Route	Published routes that aircraft are required or plan to follow. Routes have a nominal centreline which gives an indication of where the aircraft would be expected to fly; however, aircraft will fly along routes or route segments with varying degrees of accuracy based on a range of operational factors such as weather, aircraft weight, aircraft speed and altitude, and technical factors such as PBN specification and ATC intervention. (The depiction of a nominal route on a map should not be taken as an indication that aircraft will not be seen elsewhere.)
Route system or Route structure	The network of routes linking airports to each other and to the airspace of neighbouring States.
Runway Designation	Airport runways are referenced by a 2-digit number which is derived from the orientation of the runway relative to magnetic north. For example, the runways at LSA are orientated on a bearing of 054°M/234°M, the rounded-down reference numbers given to them are 05 and 23. Magnetic variation in the UK is gradually reducing over time. Prior to November 2015 the runway designations relative to magnetic variation were 06 and 24.
Standard Instrument Departure procedure (SID)	A published route for departing aircraft to follow which links an airport or a runway at an airport to the en-route airspace structure. A SID incorporates both airport and en route ATC requirements for the integration of departure routes with routes to and from other airports together with the Airport Operator's noise abatement requirements in proximity to the airport. It is presented in the UK AIP in graphical format to assist pilots in briefing themselves on the route and levels to be flown after departure. It also includes sufficient information for loading into aircraft navigation databases for use by aircraft flight management systems.
Tactical air traffic control	Air traffic control methods which involve air traffic controllers directing aircraft off the established route structures for reasons of safety or efficiency.
Westerly operation	When a runway is operating such that aircraft are taking off in a generally westerly orientation. At LSA this means Runway 23 which is aligned in a south-westerly direction.

References

[1] CAP725 - CAA Guidance on the Application of the Airspace Change Process, Version 4.1, dated 15 March 2016;

[2] CAA Decision Letter (for ACP-15-01) dated 23 January 2015. A copy of the Decision Letter can be found here: https://www.caa.co.uk/WorkArea/DownloadAsset.aspx?id=4294972733

[3] LSA ACP-2017-25 submitted to CAA on 31 March 2017;

[4] Department for Transport 'Air Navigation Guidance' dated October 2017;

[5] CAP1616 - Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements, Version 3, dated 1 February 2020;

[6] Department for Transport 'Guidance to the Civil Aviation Authority on Environmental Objectives Relating to the Exercise of its Air Navigation Functions' dated January 2014;

[7] Letter from CAA to DfT dated 2 May 2019 seeking clarification of DfT expectations in respect of the 2017 Air Navigation Guidance and the 2018 CAP1616 with respect to this ACP being assessed under the CAP725 rules and process;

[8] Letter from DfT to CAA dated 10 June 2019 responding to Reference 3;

[9] Letter from CAA to LSA dated 1 July 2019;

[10] LSA 'Engagement Document – Update on previously consulted airspace to the North East and East of London Southend Airport';

[11] LSA 'Report of Engagement Activity – Previously Consulted on Airspace to the North East and East of LSA' dated 21 January 2020;

[12] ICAO Doc 8168 (PANS-OPS) Volume 2: Construction of Visual and Instrument Flight Procedures, 6th Edition, 2014;

[13] LSA ACP 15-01 submitted to the CAA on 29 May 2014 (Redacted)

[14] Draft AIP Amendment including list of Coordinates for new Airspace and Textual Data

[15] LSA-NATS TC LoA **(Not for Publication)**

[16] Draft Safety Assessment Documentation and Risk Assessment **(Not for Publication)**

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1. Introduction

1.1. In 2013/2014 London Southend Airport (LSA) developed a proposal for the re-introduction of Class D controlled airspace in the vicinity of LSA to ensure the safety of the increasing number of Commercial Air Transport (CAT) flights using the Airport and its planned development into a major Regional Airport (in line with the then established Government Policy for Regional Airports[5]).

1.2. A formal consultation with aviation and non-aviation parties who may have been affected by the proposal was carried out between 20 September and 19 December 2013 in accordance with the requirements of CAP725 [Reference 1]. A Report of the Consultation was published in May 2014. Consequent to the responses to the consultation certain aspects of the proposed airspace configuration were revised to accommodate the requirements largely related to the local General Aviation (GA) airspace user community.

1.3. An Airspace Change Proposal (ACP) for the revised controlled airspace configuration was formally submitted to the CAA in June 2014. (Allocated the CAA Reference ACP-15-01). Following dialogue with the CAA some further changes were incorporated into the proposed airspace configuration before approval was given.

1.4. The CAA Decision Letter (dated 23 January 2015 [Reference 2]), whilst approving the majority of the requested controlled airspace pertaining to ACP-15-01, did not approve the introduction of Control Area (CTA) -11[6][7] to the south east and a major portion of CTA-10 to the north-east. The CAA considered that the then extant CAT traffic levels did not appear to justify the introduction of these particular controlled airspace segments. The Class D controlled airspace approved by the CAA was introduced on 2 April 2015. The GEGMU holding pattern from 4000ft to 6000ft was also introduced on 2 April 2015, albeit the lower levels were not contained within controlled airspace. The CAA Decision Letter can be found here:

https://www.caa.co.uk/WorkArea/DownloadAsset.aspx?id=4294972733

1.5. However, this Decision Letter (at paragraph 2.6) made provision for the future introduction of the remaining CTA 10 and CTA-11 controlled airspace segments if increasing traffic levels and airspace complexity so justified. Furthermore, if submitted within 2 years of the implementation of the airspace approved in 2015, LSA could re-submit a case under the terms of CAP725 without further consultation.

1.6. Accordingly, under the terms specified in the CAA Decision Letter, LSA submitted this ACP to the CAA on 31 March 2017 (within the 2-year deadline) for the necessary introduction of CTA-11 and that part of CTA-10 which had not previously been approved. For ease of

[5] Air Transport White Paper 2003: The Future of Air Transport

[6] The various segments of controlled airspace have different base levels and upper limits determined by the flight paths contained within them and the vertical constraints of the overlying airspace. The individual segments are allocated segment numbers so that their respective upper and lower limits can be easily assimilated and depicted in aeronautical documents and on charts.

[7] Note: The CTA segment numbers allocated to the various airspace segments on approval and implementation are different to those allocated in the text of ACP-15-01 due to a different vertical delineation specified by the CAA. CTA-10 was CTA-6 in the LSA submission and CTA-11 was CTA-7.

reference in this ACP, that part of CTA-10 which was not originally approved, but is now being requested, is referenced as CTA-10X.

1.7. This ACP was allocated the CAA Reference ACP-2017-25 [Reference 3].

1.8. No controlled airspace over and above that sought in ACP-15-01 is sought in this ACP nor are changes to any Instrument Flight Procedures (IFPs) proposed.

1.9. There are no changes being sought to the ATC operating procedures or use of the airspace and distribution of traffic beyond that which was detailed in ACP-15-01.

1.10. This document will refer to "Enclosure 4". This was created by the CAA during its decision-making process and included at page 9 of the Decision Letter. Enclosure 4 depicts the airspace configuration submitted by LSA in ACP-15-01 (albeit with different CTA segment numbering) on which the CAA considered that adequate consultation had been carried out and met all the Regulatory requirements of CAP725. Enclosure 4 is shown at Figure 1 below (also included at Appendix A to this document) as the source depiction of the airspace already consulted on. Note that Enclosure 4 does not depict the current controlled airspace configuration, which is depicted at Appendix B.

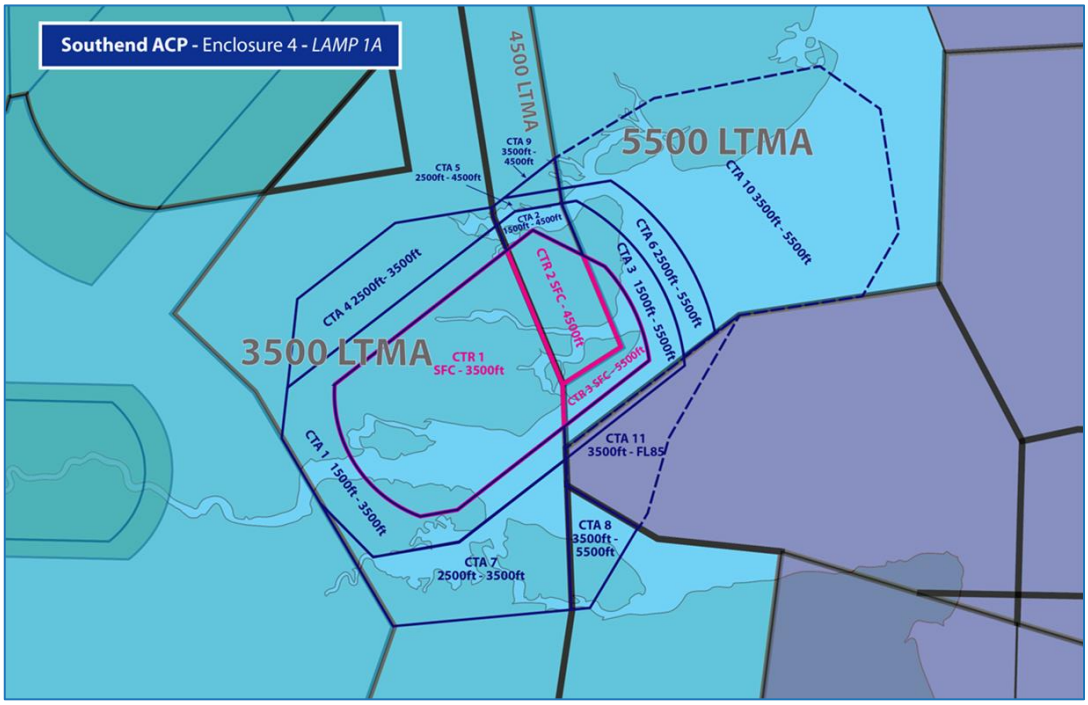


Figure 1: Enclosure 4 - Airspace configuration submitted by LSA in ACP-15-01

1.11. On 4 February 2016, following approval by the CAA, a major reconfiguration of routes within the London Terminal Control Area (LTMA) was introduced under the London Airspace Management Programme (LAMP) Phase 1A. This reconfiguration of routes primarily concerned the routes to/from London City Airport (LCY) and associated Air Traffic Management arrangements but also impacted on LSA operations. The LSA ACP-15-01 had been developed in co-operation with NATS and in full cognisance of these forthcoming changes. In ACP-15-01 it was stated that the upper portion (from 5500ft to FL85[8]) of what

[8] FL refers to Flight Level – See Glossary of Terms

LSA was then applying for as CTA-11 would necessarily become absorbed into the Clacton CTA (under the jurisdiction of NATS London Terminal Control (LTC)) as Class A controlled airspace with the implementation of LAMP Phase 1A. Notwithstanding that LSA CTA-11 was not approved by the CAA at the time, the upper levels were introduced as a necessary part of LAMP Phase 1A as Class A controlled airspace (Clacton CTA). Therefore, to clarify, the CTA-11 as applied for in this ACP extends only from 3500ft to 5500ft, at which level it is contiguous with the overlying Clacton CTA.

1.12. For ease of reference and clarity, the controlled airspace segments CTA-10X and CTA-11 which are being requested in this ACP are depicted at Figure 2 and Figure 3 (also at Appendices C and D respectively).

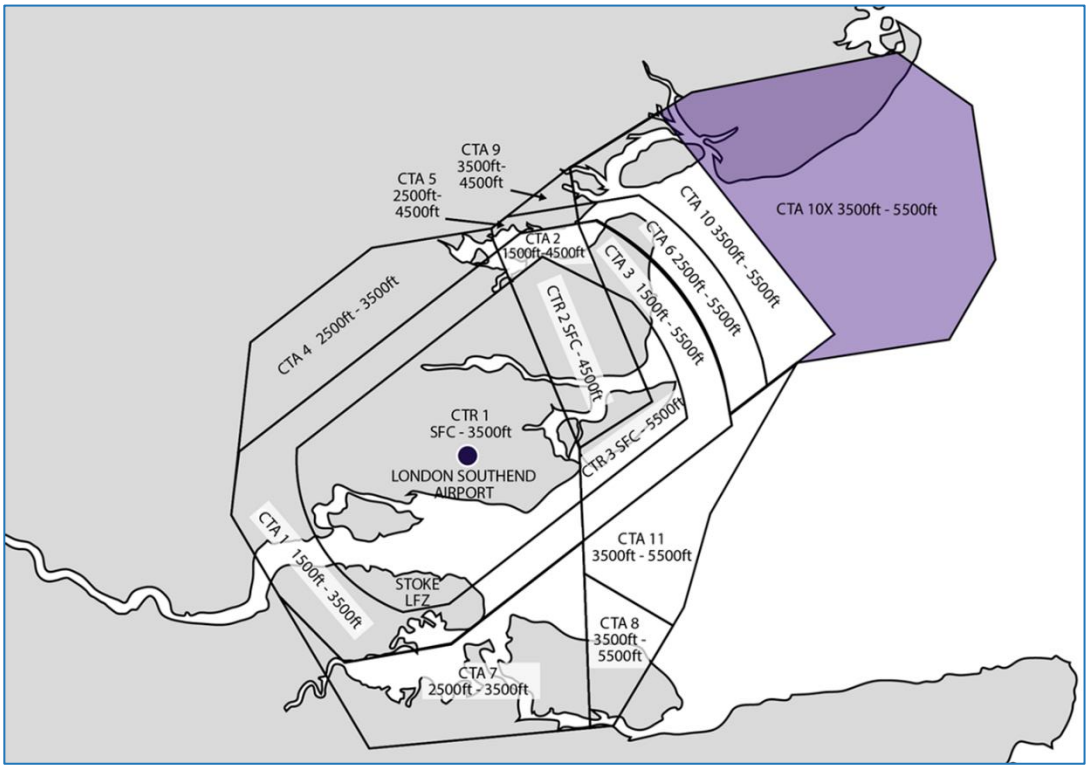


Figure 2: CTA-10X as applied for in this ACP

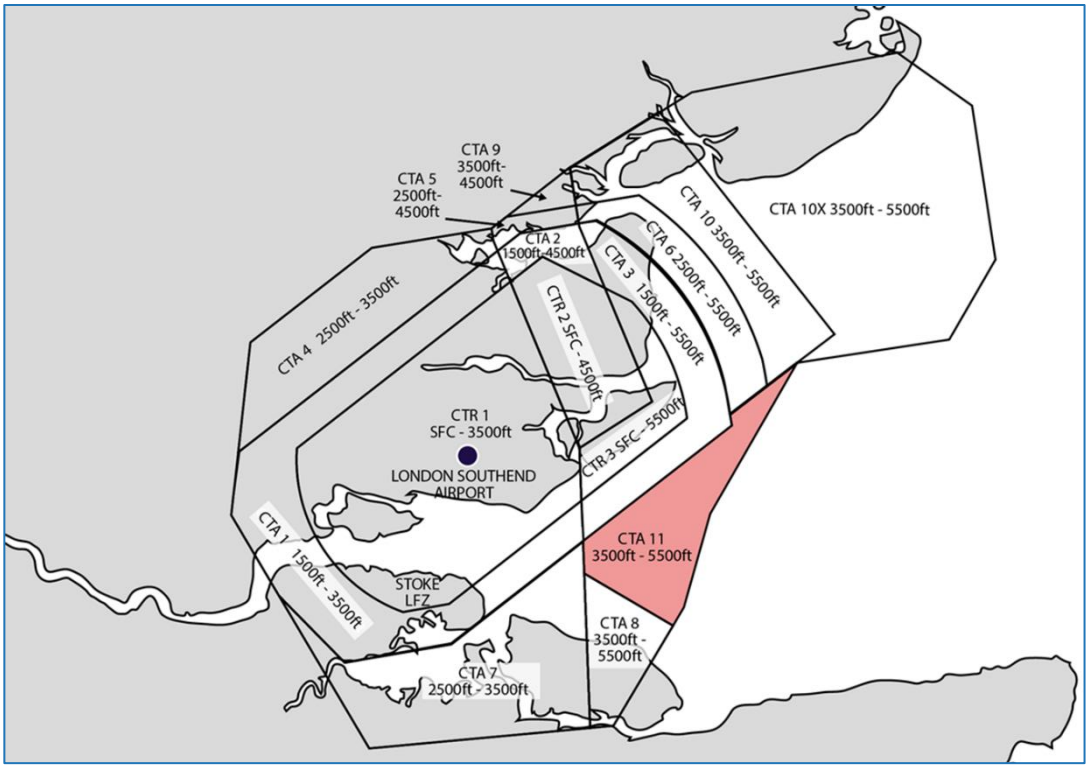


Figure 3: CTA-11 as applied for in this ACP

1.13. Notwithstanding the CAAs stated position in the Decision Letter that the CTA-10X and CTA-11 controlled airspace segments could be requested without additional consultation, given the time-lapse since the implementation of ACP-15-01 and with the agreement of the CAA, LSA has carried out an engagement exercise with potentially interested stakeholders to inform them of this proposal to now seek the introduction of the controlled airspace on which consultation had previously been carried out and the terms under which it is being sought. The engagement activity is detailed in Section 6 of this document.

1.14. Due to constraints within the CAA, the Airspace Regulator was unable to address this ACP within the timescales set out in CAP725. In the interim, DfT introduced the new Air Navigation Guidance (ANG 2017) [Reference 4] and the CAA introduced the new Airspace Change Process (CAP1616) [Reference 5]. Following discussions, it was agreed by the CAA on 14 September 2018 that LSA had met the conditions specified in the Decision Letter and therefore this ACP would continue to be assessed against the requirements of CAP725 and ANG 2014 [Reference 6].

1.15. Owing to different Environmental Objectives specified by the DfT being in place, the CAA sought guidance (2 May 2019 [Reference 7]) from the DfT on how these aspects should be addressed. The DfT duly responded to the CAA on 10 June 2019 [Reference 8] with their expectations of an environmental analysis based on their new requirements. Consequently, the CAA advised LSA (on 1 July 2019 [Reference 9]) that, although the ACP would be addressed under the CAP725 process, certain elements pertaining to the CAP1616 and the new ANG 2017 Environmental Objectives would need to be incorporated and that the deadline for submitting an updated proposal would be 31 January 2020.

1.16. Accordingly, this document is an Addendum to ACP-2017-25 and contains full details of the justification for the additional controlled airspace, the complexities of the current ATM

operation, options appraisal, the engagement carried out by LSA and consideration of the potential environmental impact of the proposal over and above that which was conducted for ACP-15-01.

1.17. It should be noted that the portion of airspace referred to as CTA-10X is proposed to be merged with the published CTA-10, rather than being implemented as a discrete CTA.

1.18. This document has been written in such a way that, it is hoped, it can be readily understood by readers who do not have an aviation background.

2. Traffic Growth and Statistics

2.1. In ACP-15-01 LSA submitted details of the planned development of LSA into a major Regional Airport. This planned development had the support of the Local Planning Authorities.

2.2. ACP-15-01 provided actual and forecast levels of Total Movements and Air Transport Movements (ATMs) and of anticipated passenger growth to 2020 as required by CAP725.

2.3. Details of itinerant (transiting) flights handled by LSA ATC were also included.

2.4. Table 1 and Figure 4 below depict the growth in total and ATM air traffic since 2014 and shows the comparison between the forecasts provided in ACP-15-01 and actual traffic levels and includes new forecasts for 2020 and 2021.

Year	Total Movements	ACP-15-01 Forecast	Forecast Update 2019	Total ATMs	ACP-15-01 Forecast	Forecast Update 2019
2014	30,514	42,065		12,588	11,942	
2015	23,538	44,057		9,985	14,696	
2016	23,449	45,088		9,201	16,335	
2017	26,674	46,565		12,158	18,271	
2018	32,531	48,254		17,613	20,520	
2019	36,296	50,451		18,378	23,168	
2020		53,347	45,931		26,412	27,104
2021			53,300			37,796

Table 1: Actual vs Forecast Total Movements & ATMs

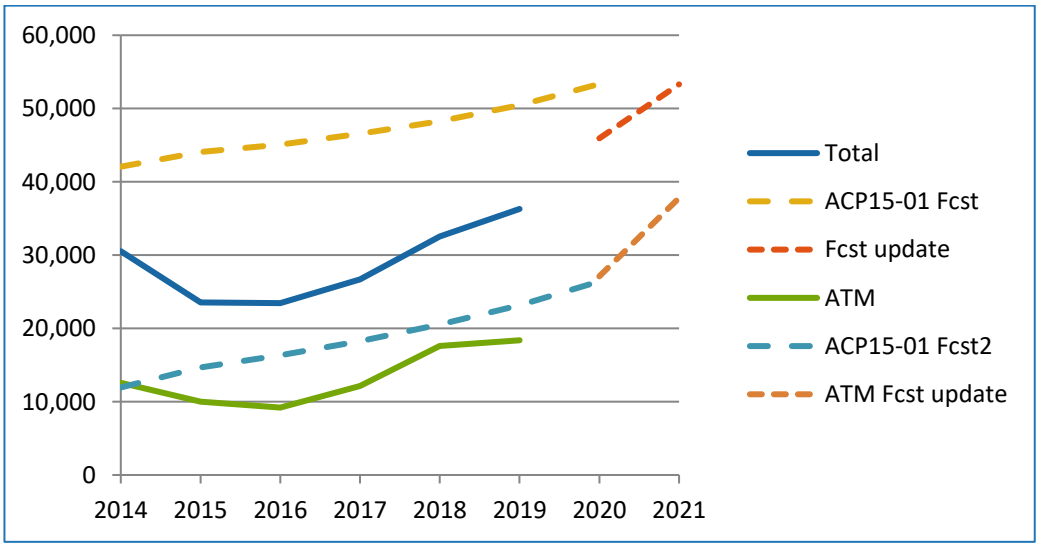


Figure 4: Actual vs Forecast Total Movements & ATMs

2.5. Whilst Table 1 and Figure 4 show that, following an initial downturn in 2015/16, overall traffic and ATM levels have not yet reached those previously forecast, Section 3 below explains why the addition of CTA-10X and CTA-11 have become essential even at the lower traffic levels. Had traffic grown as forecast, then the whole of the airspace sought in ACP-15-01 would have been essential even before 2017.

2.6. ACP-15-01 forecast that passenger levels of 2 million passengers per annum (ppa) would be reached in 2020. In fact, following an initial downturn in 2015/16, this number was surpassed in 2019. Table 2 and Figure 5 below depict the actual passenger numbers against those forecast for the years 2014 to 2019 and include current forecasts for 2020 and 2021.

Year	Total Pax	ACP-15-01 Forecast	Forecast Update
2019			
2014	1,102,260	919,794	
2015	900,634	1,158,721	
2016	874,411	1,278,626	
2017	1,091,738	1,415,872	
2018	1,480,139	1,574,161	
2019	2,041,556	1,758,240	
2020		1,974,236	2,839,064
2021			4,090,430

Table 2: Total Passengers vs Forecast

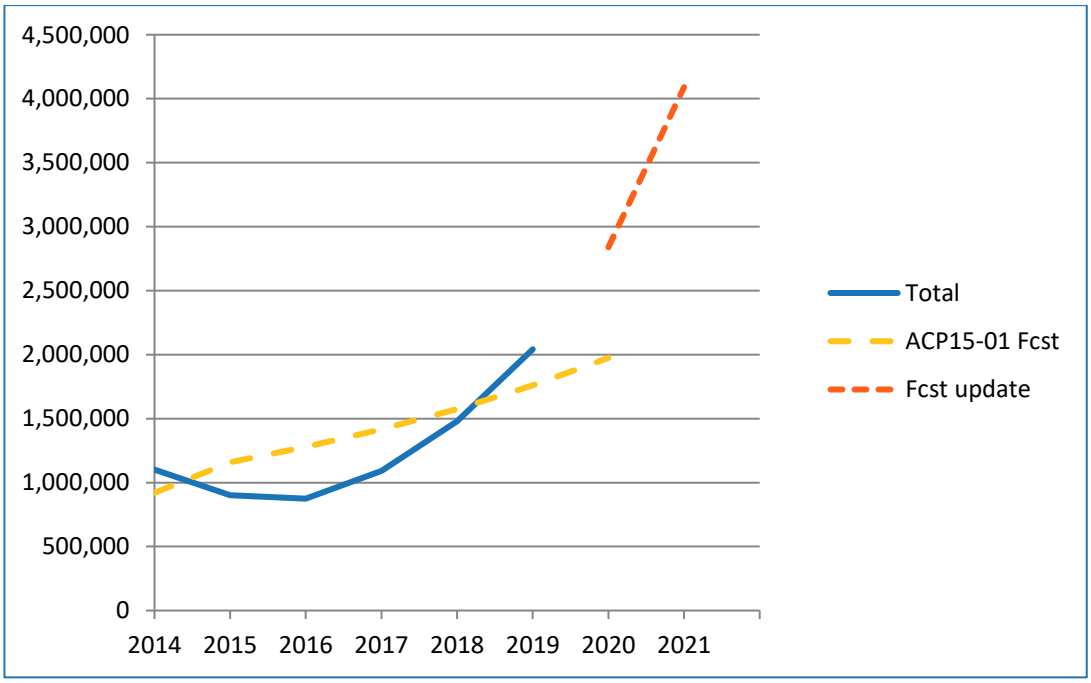


Figure 5: Total Passengers vs Forecast

2.7. At the time that ACP-15-01 was under development the principle CAT operator was easyJet. easyJet had based 3 aircraft at LSA from 2012 but increased this footprint to 4 aircraft in 2014. Aer Lingus Regional, operated by Stobart Air, provided services to Dublin for connection. Further scheduled services were established to seven Domestic and European destinations in 2014 by Flybe, with Thomson and First Choice operating from LSA in the summer season.

2.8. Since the introduction of the controlled airspace approved under ACP-15-01, following an initial downturn in 2015/16 caused by the general economic situation, CAT operations have consistently grown year-on-year such that by 2019 CAT operations include, inter alia:

- 4 easyJet aircraft based at LSA;
- 2 Flybe aircraft based at LSA serving 4 destinations;
- 3 Ryanair aircraft based at LSA serving 14 destinations;
- Domestic flights to 4 destinations by Loganair;
- Flights to 3 European destinations by Wizzair (2 aircraft);
- Scheduled services by Air Malta, Blue Island Airways and Voltea;
- Based airline Jota with fleet of 5 RJ/Bae146 aircraft offering cargo and freight aircraft for ACMI, contract and ad-hoc charter flights;
- New services by Fly One; and
- Cargo operations by ASL Airlines with 2 aircraft to Spanish and Italian destinations.

2.9. LSA has also seen a substantial growth in flights by Corporate and “high-end” GA flights which are advantaged by the introduction of the Stobart Jet Centre as a “Fixed-Base Operator”. Such flights are normally encompassed within the definition of ATMs and also arrive and depart via the same ATS route structure as passenger CAT. Traffic levels in this category are currently running at approximately 1600 movements per annum and growth is anticipated.

2.10. In addition to these services, LSA is home to Air Livery Ltd which provides aircraft maintenance and painting facilities for aircraft up to Airbus A320 / Boeing 737 size. Whilst delivery flights to/from Air Livery may not be encompassed as ATMs, they are of comparable aircraft types and arrive and depart via the same airspace routes and infrastructure as the ATMs. This currently contributes approximately 20 movements annually to the airspace utilisation.

2.11. A further consideration to be included in the statistics for airspace usage is use of the airspace by itinerant transiting aircraft, mainly operating under VFR but sometimes under IFR. LSA, like other ANSPs, is under obligation to accommodate such flights to the maximum extent practicable and is a condition of controlled airspace approval. The CAA required records to be kept of refusals of clearance by LSA ATC, following the introduction of the Class D airspace in 2015, in order to inform the Post-Implementation Review (PIR) carried out in 2017. LSA has undertaken to continue to record refusals of access as a means of monitoring its service provision performance to GA airspace users. Demand for transit clearance has

remained reasonably stable over the years, as depicted in Table 3, and refusal of clearance has been consistently at or below 0.1% of requests[9].

Year	CTA/CTR Transits		
	Requested	**Accepted**	**Refused**
2015	8,428	8,421	7
2016	10,062	10,059	3
2017	9,994	9,984	10
2018	9.062	9,060	2
2019	7,955	7,937	18

Table 3: Controlled Airspace Transits

2.12. Furthermore, LSA ATC provides, on request between 0900 and 1800, a surveillance-based (i.e. using radar) ATS to aircraft operating outside controlled airspace in proximity to the Control Zone/Control Area (CTR/CTA) to a range of 25NM from LSA. This ATS, known as the Lower Airspace Radar Service (LARS), contributes substantially to the overall ATS workload and is therefore included in this analysis. The number of aircraft provided with the LARS ATS in the years 2015 to 2019 is depicted in Table 4 below.

Year	LARS
2015	24,628
2016	25,075
2017	24,075
2018	21,941
2019	20,649

Table 4: Provision of LARS Services

2.13. LSA also endeavours to remain a "good neighbour" to the nearby aerodromes, in particular Stapleford Tawney and North Weald, which are home to a number of flying training organisations. As well as granting access to the LSA CTA and CTR to the maximum extent practicable for VFR flights, LSA also allows IFR training flights to use the LSA Instrument Flight Procedures (IFPs) whenever possible. Whilst such training flights cannot be afforded the same operating priority as other CAT passenger flights and are not normally accommodated during peak traffic periods they do, nonetheless, contribute to controller workload through

[9] The majority (approximately 75%) of refusals have been transits to the west of the aerodrome when there have been multiple IFR arrivals to Runway 05. Others are a mix of ATCO workload, pilot lack of knowledge or understanding of the airspace, poor weather or controller training.

integration measures necessary against other flights. Whilst this airspace activity does not count within the justification for the provision of controlled airspace, nonetheless the inevitable gradual refusal of this facility, as overall airspace congestion and controller workload increases, will impact on the non-CAT airspace user community. This does not dilute the case for CTA-10X and CTA-11 as detailed in this ACP.

3. Current Airspace and ATM Arrangements

3.1. LSA is situated in a complex airspace environment in which operations must be coordinated and integrated with other providers of ATS. The current controlled airspace configuration, comprising the Southend CTR/CTA segments and the overlying LTMA and Clacton CTA are depicted at Appendix B. This Section will discuss the vertical and lateral constraints placed on the LSA ATC operation by the interface requirements and agreements between LSA ATC and NATS LTC who have jurisdiction over the overlying LTMA/Clacton CTA and the associated ATM operation for LCY and other London Area Airports.

3.2. Equally pertinent to the complexity of the LSA operation is the configuration of the Airport itself.

3.3. Airport Configuration

3.3.1. LSA has a very constrained physical layout; the single runway (Runway 23 for aircraft landing from the north-east and Runway 05 for aircraft landing from the south-west (see Glossary for the explanation of runway designation)) is used by both landing and departing aircraft. The airport layout is depicted at Figure 6.

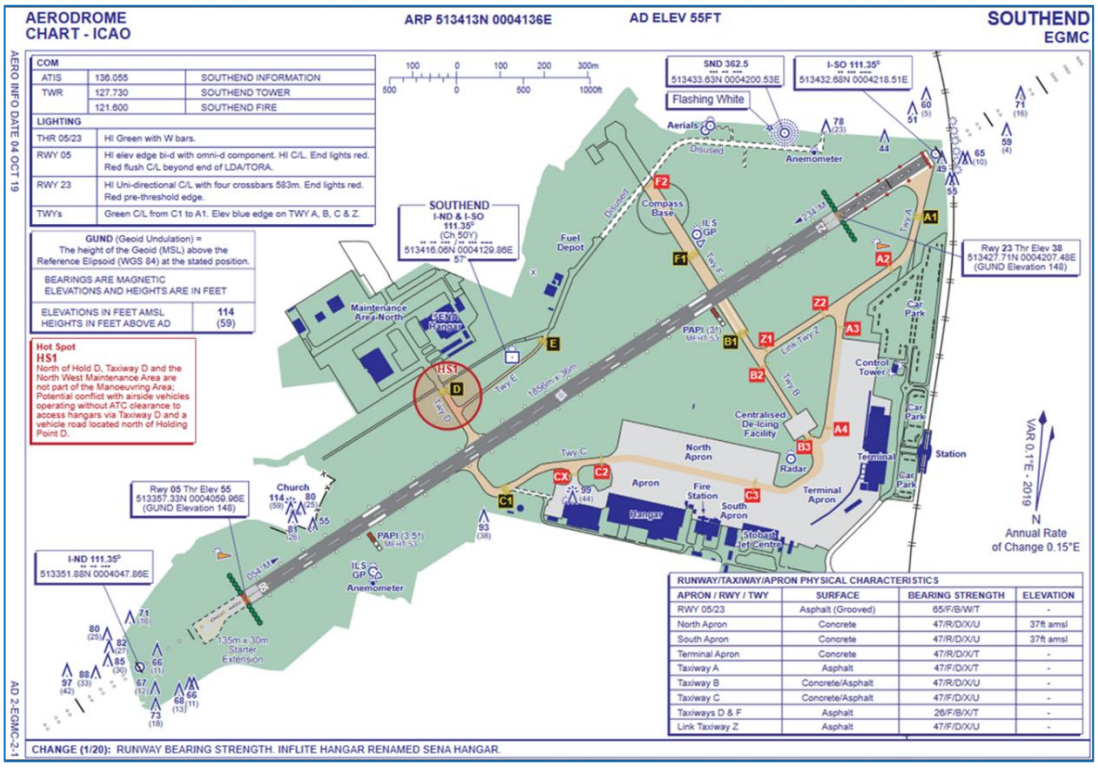


Figure 6: LSA Aerodrome Chart - UK AIP

3.3.2. The runway has only a limited associated taxiway system for aircraft to enter and leave the runway. There are no Rapid Exit Taxiways (RETs) which would allow landing aircraft to exit the runway at a relatively high speed. Instead the runway exit points are at 90° to the runway alignment, which means that aircraft must slow down to a walking pace in order to exit the runway.

3.3.3. There is no taxiway from the aircraft parking areas (apron) to the south-westerly end of the runway. Taxiway C provides the principle access to/from the runway for departures from Runway 05 and Runway 23 arrivals yet it is some 840m from that end of the runway[10]. Taxiway C can be used by aircraft up to Category C size (e.g. Airbus A320/Boeing B738).

3.3.4. For the north-easterly end of the runway there is an entry/exit taxiway at the runway extremity plus an alternative exit/entry at Taxiway B which is some 550m from the north-easterly end of the runway.

3.3.5. The predominant landing/departure runway is Runway 23 (towards the south-west) due to the generally prevailing weather conditions over the UK. Runway 05 is used when the prevailing winds are from the north/east/south-east. LSA is also required to apply a Noise Preferential Runway scheme whereby whenever practicable and weather/traffic conditions allow, landing aircraft should land on Runway 23 and departing aircraft should take-off on Runway 05. This can sometimes add to the airspace complexity due to the potentially opposing traffic flows imposed for environmental reasons.

3.3.6. Generally speaking, for Runway 23 operations, landing aircraft exit the runway at Taxiway C or, in the case of smaller aircraft with a short landing run, make a short backtrack to Taxiway B. If a larger[11] aircraft has not slowed sufficiently to make the turn onto Taxiway C then it must taxi to the end of the Runway, turn in the turning circle at the end and then taxi back (backtrack) to Taxiway C. Smaller aircraft can turn within the runway width without rolling to the end of the runway. This is a time-consuming requirement, particularly if the landing aircraft has only just failed to make the Taxiway C turn-off, and the landing aircraft occupies the Runway for a lengthy period. Whilst most non-jet aircraft routinely make the turn-off directly onto Taxiway C, the majority of landing jet aircraft are not able to make the turn-off directly. Thus, the approach spacing which must be applied by the Radar Controller between successive landing aircraft is 10NM. Furthermore, if there is a departing aircraft awaiting departure after a landing jet aircraft then the arrival spacing must be increased to as much as 14NM to allow time for the landing, backtrack and subsequent departure before the next landing aircraft reaches the runway.

3.3.7. For Runway 05 operations, departing aircraft enter the runway at Taxiway C. Larger aircraft must backtrack to the runway end, turn in the turning circle and then commence their take-off run. This can take a considerable time and so the approach spacing applied by the Radar Controller between successive arrivals when there is a departure to be integrated is 15NM. When there are no departures pending, the availability of exits at Taxiways B and A allows the spacing of successive arrivals to be 6NM.

3.3.8. As traffic numbers have grown, the interaction in the air between simultaneous arriving flights as well as between arriving and departing aircraft has become more complex, the volume of airspace needed to resolve those interactions is affected to an increasing extent by the aerodrome configuration and the Noise Preferential Runway scheme.

[10] Occasionally, aircraft departing from Runway 05 which do not need to use the full runway length, may use Taxiway B to enter the runway (1300m from the 05 threshold) and make a short backtrack.

[11] In this context, a "larger" aircraft is A319 or larger. These aircraft are not permitted to turn within the runway width.

3.4. Vertical Limitations

3.4.1. The overlying LTMA and Clacton CTA, under the jurisdiction of NATS LTC, contain a complex network of ATS routes, principally including the arrival and departure routes to/from LCY. LCY departure routes/procedures are, in themselves, constrained by the overlying approach paths to London Heathrow Airport (LHR) and restrict the airspace available to LSA.

3.4.2. A Letter of Agreement (LoA) is established between NATS and LSA ATC which details the operational ATC interface arrangements (including standing agreements), procedures and the demarcations of airspace allocation.

3.4.3. Four LTC Sectors merge in proximity to the LSA overhead. This increases the complexity of integrating and sequencing aircraft inbound from and outbound to different LTC Sectors and frequently generates substantial inter-controller co-ordination workload.

3.4.4. The LoA establishes a Radar Manoeuvring Area (RMA) which specifies the upper limits within which LSA ATC can operate. The RMA is depicted in Figure 7. The RMA is segmented with upper limits variously of 3000ft (blue area), 4000ft (green area) and 5000ft (yellow area). The base levels of the RMA segments are the base of controlled airspace. *Note: All vertical distances in this document refer to Altitude, i.e. vertical distance above mean sea level.*

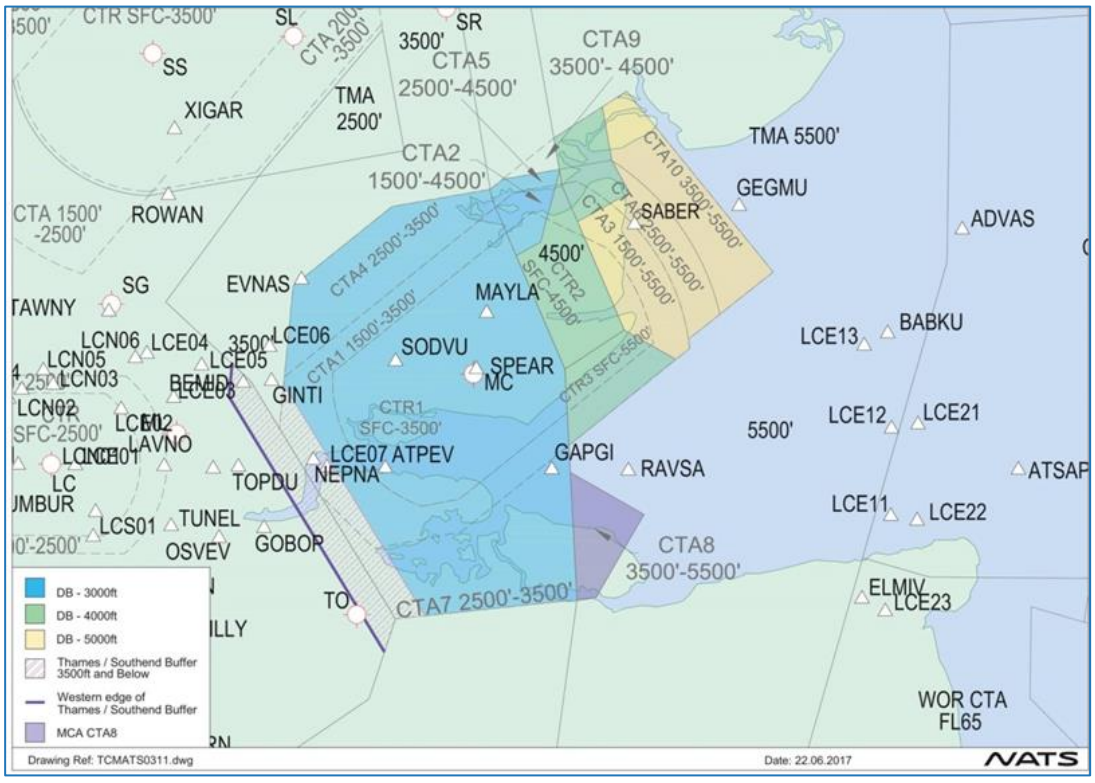


Figure 7: Southend Radar Manoeuvring Area

3.4.5. The RMA segment boundaries in the western parts generally align with the CTR/CTA segment boundary alignments and the highest level available to LSA ATC is 3000ft. Further to the north and east the RMA segments are less aligned with the CTR/CTA segment boundaries and the highest levels available to LSA ATC are as much as 1500ft below the CTA

upper limits. The limitations on LSA level availability arise because vertical separation to be applied by ATC (whether LSA ATC or LTC) between IFR flights is 1000ft.

3.4.6. The limited level availability to LSA ATC places significant constraints on airspace flexibility and the routing of aircraft inbound to LSA. For example, if an aircraft is routing inbound to LSA from the west when Runway 05 is the landing runway, the aircraft must be vectored a considerable distance to the north-east of LSA before turning back onto the downwind leg for Runway 05 descending to be at 3000ft within the RMA constraint.

3.5. Standard Arrival Routes (STARs) and Holding Patterns

3.5.1. Standard Arrival Routes (STARs) within the ATS Route network for aircraft inbound to the London Area Airports are published in the UK Aeronautical Information Package (AIP). STARs are contained wholly within the LTMA (under the jurisdiction of NATS LTC) and terminate at a Terminal Holding Fix on which a holding pattern (see Glossary) is aligned.

3.5.2. There are two basic STAR networks for aircraft inbound to LSA from the ATS Route network as outlined below.

3.5.3. STARS - Inbound from the South and East

3.5.3.1. A network of STARs for aircraft inbound to LSA from the east, south-east and south route to a position north-east of LSA known as GEGMU[12] which is offshore to the south of Clacton. A Terminal holding pattern is established at GEGMU, with a published lowest holding level of 4000ft (i.e. below controlled airspace) and an upper holding limit of 6000ft. The STARs and associated GEGMU hold are depicted at Figure 8 and Figure 9 (and larger versions can be found at Appendices F and G).

[12] Navigational Fixes and Waypoints which are not co-incident with a ground-based navigational facility are given a 5 Letter pronounceable Name Code (5LNC).

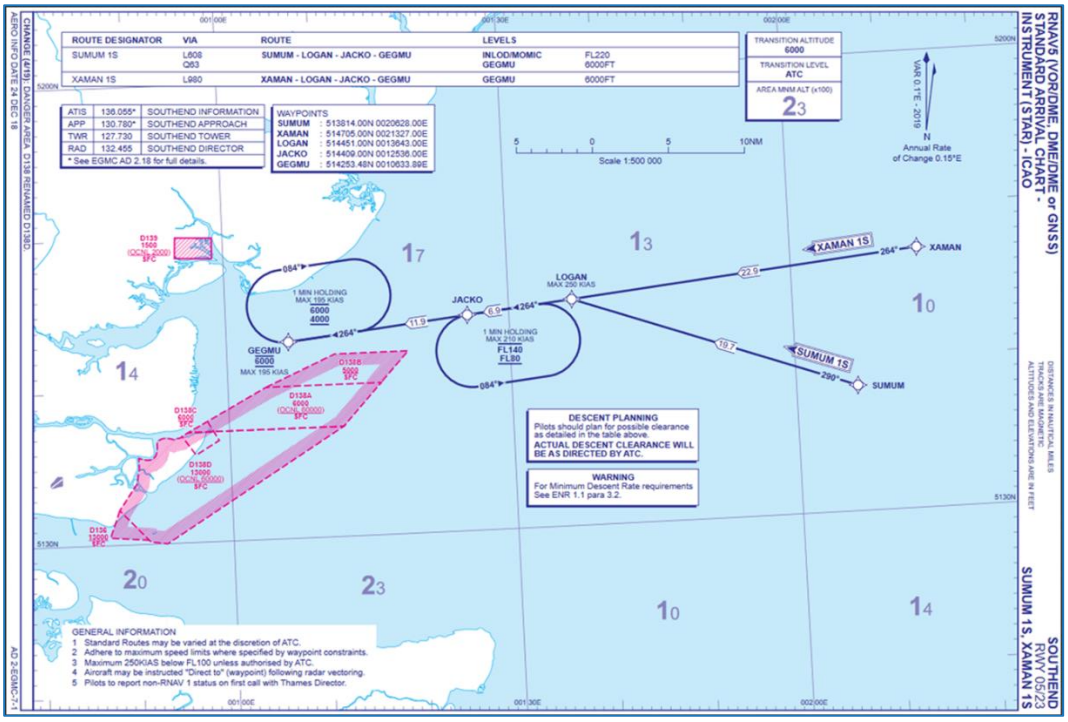


Figure 8: Arrivals from the East - Standard Arrival Chart - SUMUM 1S, XAMAN 1S - UK AIP

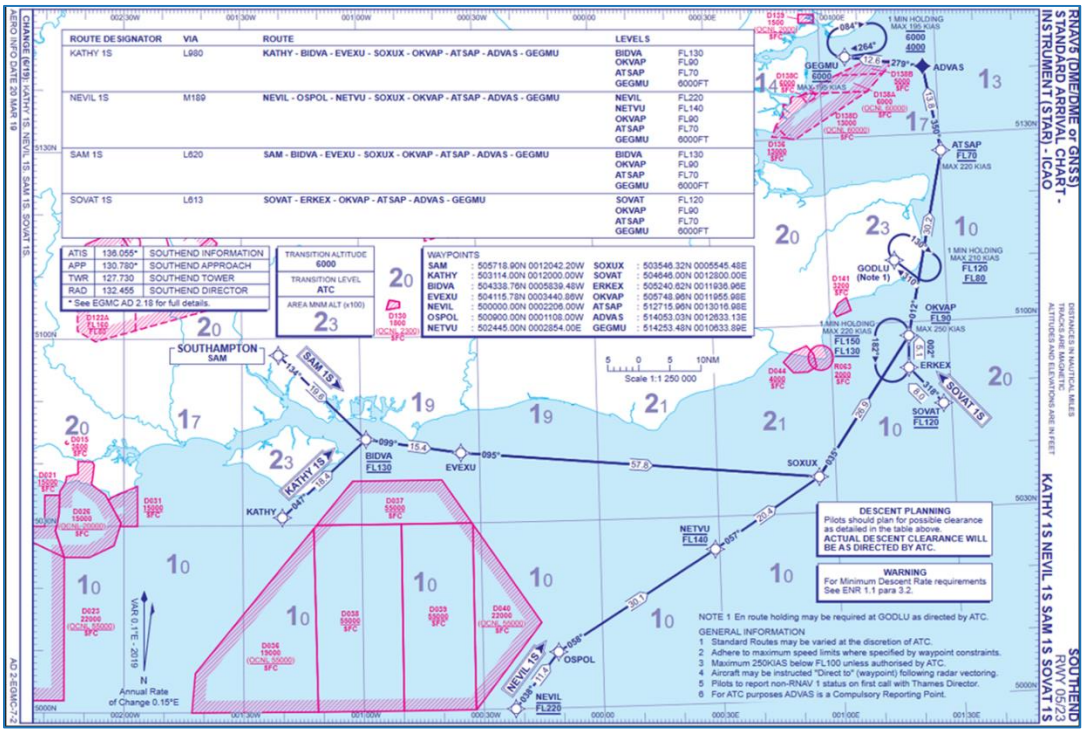


Figure 9: Arrivals from the South - Standard Arrival Chart - KATHY 1S, NEVIL 1S, SAM 1S, SOVAT 1S - UK AIP

3.5.4. STARS - Inbound from the North and West

3.5.5. For flights inbound to LSA from the west, and northwest STARs (as per Figure 10 and Figure 11) are procedurally routed to a position overhead LSA known as SPEAR. An associated Terminal holding pattern is established at SPEAR. The STARs associated with SPEAR are depicted at Appendices G and H. SPEAR is a historic Terminal arrival fix within the LTMA

which was originally developed for the use of LCY arrivals with shared use by the few LSA arrivals that existed before the Airport's development. On implementation of the LAMP Phase 1A airspace changes the SPEAR STARs were inherited for sole use of LSA arrivals and technical ownership was transferred to LSA, albeit that the STAR and holding pattern lie wholly within the LTMA. The position of SPEAR is co-located with the Southend 'SND' Non-Directional Beacon (NDB)[13] which defines a differently oriented holding pattern within the Southend CTR/CTA. The lowest holding level at SPEAR is 4000ft (i.e. within the LTMA) and the available holding levels at SND NDB are 2000ft and 3000ft.

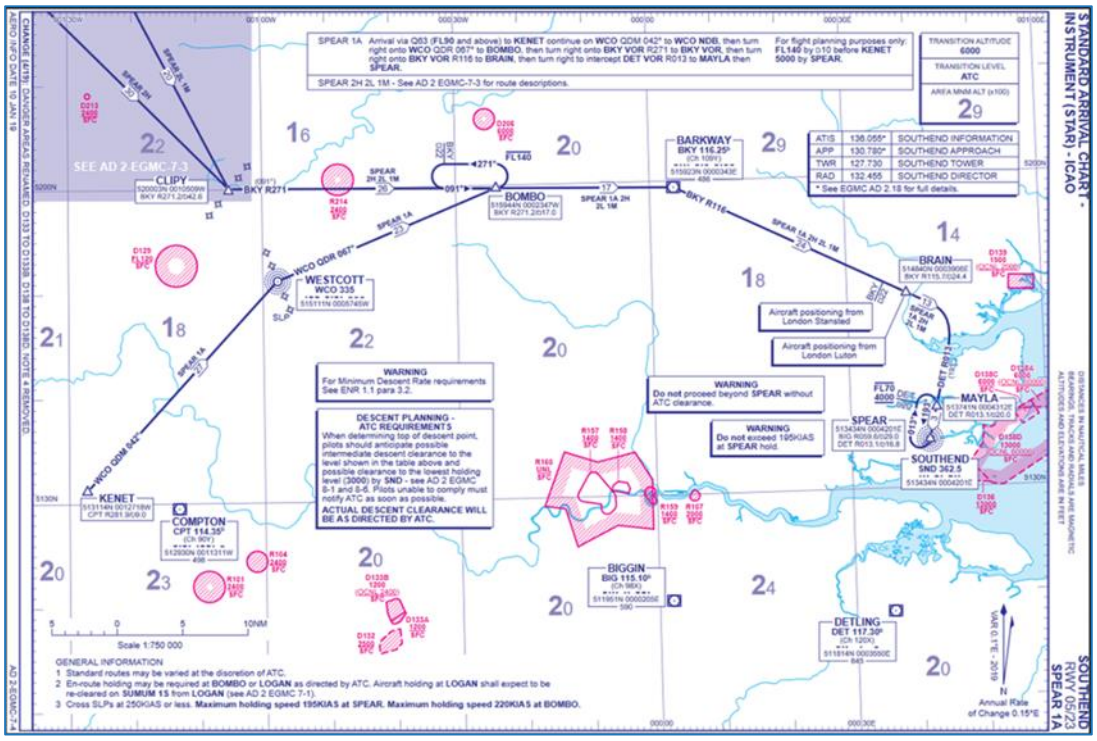


Figure 10: Arrivals from the West - Standard Arrival Chart - SPEAR 1A - UK AIP

[13] Non-Directional Beacon (NDB): A ground-based navigational aid located on Southend Airport.

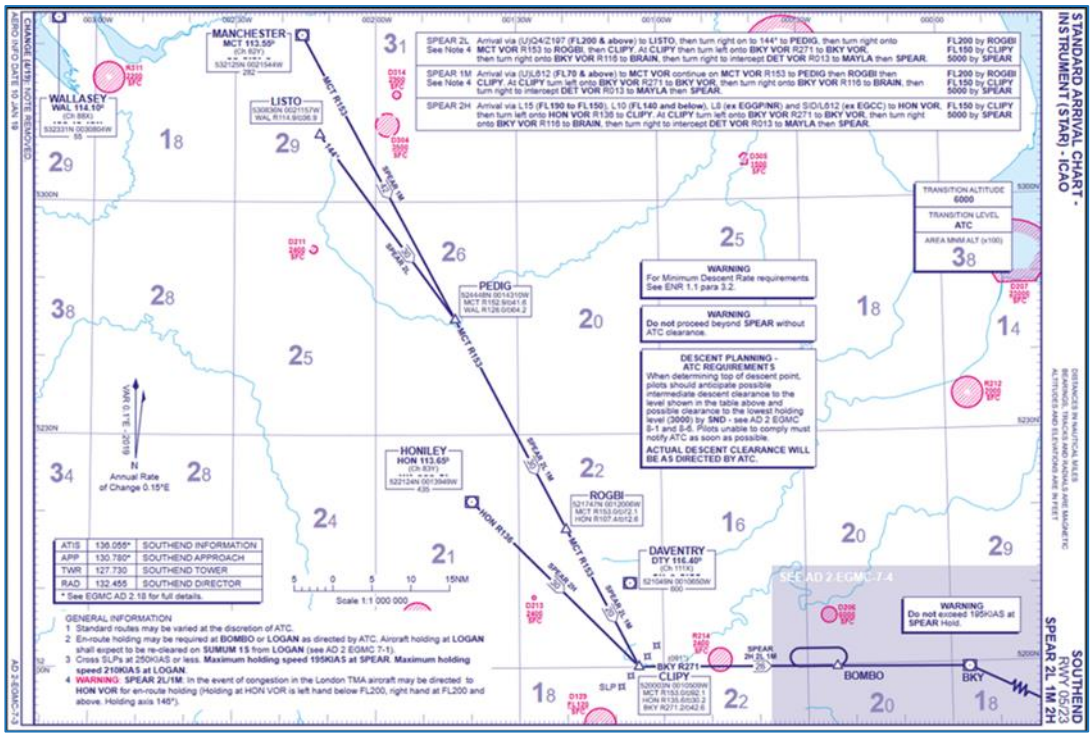


Figure 11: Arrivals from the North-West - Standard Arrival Chart - SPEAR 2L 1M 2H - UK AIP

3.5.6. In practice, the routing of arriving aircraft into the Airport overhead via SPEAR is a very inefficient use of airspace and is generally impracticable for use by ATC as a sequencing or spacing technique due to the consequential constraints on departing traffic on all LSA departure routes below. Furthermore, it conflicts with the LCY Point Merge Arrival Procedures under the jurisdiction of LTC, requiring extensive inter-Sector co-ordination. Therefore, by standing agreement written in the LoA, LTC tactically routes (radar vectors) arriving aircraft further to the east (towards a position known as SABER[14] prior to transfer to LSA ATC. Actual routing via SPEAR and use of the SPEAR and SND holds by LSA arrivals is exceptionally rare due to, as noted above, the blocking effect on departing aircraft. Larger versions of the STAR charts can be found at Appendix H and I.

3.6. Runway 23 Operations

3.6.1. Arriving flights via GEGMU are transferred to LSA ATC (from LTC) at or descending to 6000ft when approaching GEGMU. LTC undertakes, by Standing Agreement, to deliver aircraft through GEGMU with at least 10NM in-trail spacing but the Agreement places level and routing restrictions on LSA ATC.

3.6.2. Where no path-stretching is necessary for approach spacing reasons (as detailed earlier) then aircraft will be vectored directly to intercept the final approach track at approximately 10NM from touchdown. However, descent clearance below 6000ft should only be given once the aircraft has crossed the current eastern boundary of CTA-10 (16NM from touchdown) which:

[14] SABER: A routing fix, which is not part of LSA formally published IFPs, located over the east Essex coast over the Dengie Flats.

a. places it approximately 1000ft above the optimum descent profile for Continuous Descent Approach (CDA), and

b. places it in a technical "head-on" conflict with LCY departures under the jurisdiction of LTC.

Alternatively, the aircraft may require an earlier descent clearance in order to achieve the CDA descent profile. This action places the aircraft into uncontrolled airspace or to have less than the regulatory requirement of a minimum of 500ft above the base of controlled airspace, depending on the descent rate set up by the pilot. This necessitates the pilot's agreement and a change to the ATS provided (and then a reversion once the aircraft is once again contained within controlled airspace).

3.6.3. Where additional track miles are needed to establish the spacing required between successive arrivals (e.g. where more than 10NM may be required due to departures or for integration with aircraft from other directions) then LSA ATC must vector the aircraft in a dog-leg either north or south of the extended runway centre-line. There is limited airspace availability to the south if the Shoeburyness Danger Areas are active and limited flexibility to the north if the arrival sequence involves aircraft from the west (via SABER) or there is departing aircraft via CLN. Again, descent clearance should be delayed until the aircraft is within the existing CTA-10 but, at the same time, any resolution action taken at 6000ft (in LTC airspace) must be co-ordinated with LTC.

3.6.4. When traffic levels inbound to and outbound from LCY are light and when the outer segments of the Shoeburyness Danger Areas are not active, the opportunity may arise for LTC, in co-ordination with LSA ATC, to offer a shortened routing by turning aircraft towards GEGMU without following the full extent of the STAR. However, routing and level restrictions are imposed on LSA ATC until the aircraft has descended into the LSA RMA.

3.6.5. For arriving flights via the SPEAR STAR, as noted previously, actual routing via SPEAR is not a good option. Therefore, by Standing Agreement, LTC tactically vectors arriving aircraft towards SABER descending to 4000ft (i.e. still within LTMA levels). Transfer of communications takes place approximately 10NM before SABER but, again, level and routing restrictions apply until the aircraft is within the LSA RMA. Whilst LTC delivers successive aircraft towards SABER with a minimum of 10NM in-trail spacing, it is LSA ATC's responsibility to integrate the arrival flows from SABER and GEGMU and establish the correct arrival spacing for the overall traffic sequence.

3.6.6. Where additional track spacing (or path stretching) is necessary to sequence a SPEAR/SABER arrival behind one or more GEGMU arrivals, options are limited. Additional track miles must be applied by either:

a. vectoring the aircraft on a dog-leg to the north towards/over Mersea Island, within the limited extent of the current CTA-10, (at the same time taking due regard of the MATS Part 1 requirement to retain aircraft at least 2nm within the boundary of controlled airspace) before turning back southwards to join the final approach path (the airspace available for this is severely constrained by the current configuration of CTA-10), or

b. early co-ordination with the LTC Sector to vector the aircraft southwards towards LSA before reaching SABER and then vectoring into a right-hand radar vectored circuit with multiple dog-legs to establish the necessary spacing (this impinges on the operation of LSA departures via CLN and sometimes EVNAS as aircraft must be quickly descended to LSA RMA levels (3000ft)), or

c. early co-ordination with two LTC sectors to vector the aircraft southwards towards SPEAR and then into a left hand radar vectored circuit (the airspace available for a left-hand circuit being severely limited when Shoeburyness Danger Areas are active and routing via SPEAR impinges on the smooth operation of departing aircraft on all routes as arriving aircraft must be descended to LSA RMA levels (3000ft) on transfer).

d. both options b) and c) above also impact on the operation of LCY departures by LTC as these route eastwards towards LSA and climb clearance above LSA traffic must be achieved before lateral conflict with LSA exists. Hence the LTC/LSA Standing Agreement places restrictions on the vectoring freedom of LSA ATC until aircraft are within the RMA available levels.

3.6.7. Whichever course of action is taken requires extensive co-ordination with LTC, sometimes involving co-ordination with more than one LTC Sector and descent clearance below LTC levels must be achieved as soon as possible i.e. the workload of both LSA and LTC controllers is increased.

3.7. Runway 05 Operations

3.7.1. Aircraft inbound via GEGMU are transferred to LSA ATC approaching GEGMU at or descending to 6000ft. LTC, by Standing Agreement provides at least 10NM in-trail spacing between LSA arrivals. Routing and level restrictions are placed upon LSA ATC until the aircraft has descended into the LSA RMA levels.

3.7.2. Normal operating practice is for LSA ATC to vector the aircraft into a left-hand radar directed circuit whilst issuing descent instructions to ensure aircraft are retained within the LSA RMA vertical limits. Radar vectored dog-legs may be necessary to increase the arrival spacing between successive arrivals where necessary. Occasionally a right-hand radar vectored circuit may be used when the Shoeburyness Danger Areas are not active, particularly if there are simultaneous arrivals presented via SPEAR/SABER.

3.7.3. Occasionally, when the traffic flow in or out of LCY is light, and the Shoeburyness Danger Areas are not active, the opportunity may arise for LTC, in co-ordination with LSA ATC, to offer aircraft a shortened routing directly towards the Runway 05 final approach track from the south or south-east. This offers a substantial reduction in track mileage to the arriving aircraft and can, in some cases, facilitate a CDA descent profile to be achieved more readily than with the full standard routing via GEGMU and left-hand circuit. Whilst such shortened routing may take place partly over land, it is over sparsely populated areas and occupies the same airspace as used for shortened routing of LCY arrivals and CDA descent profiles minimises noise exposure to communities.

3.7.4. For arrivals via the SPEAR STAR. LTC again tactically routes aircraft further to the east towards SABER descending to be at 4000ft in the vicinity of BRAIN (see STAR Chart at

Appendix H). Transfer to LSA ATC takes place approximately 10NM before SABER and LTC delivers aircraft to LSA ATC with at least 10NM in-trail spacing but does not provide spacing against any traffic flow inbound via GEGMU. On transfer to LSA ATC, routing and level restrictions apply to LSA ATC until the aircraft has descended to LSA RMA levels.

3.7.5. Where no further integration is required between successive SPEAR/SABER arrivals and other flights, normal practice is to turn aircraft right towards a downwind left-hand radar directed circuit and descend the aircraft to 3000ft as soon as the controlled airspace base levels allow. Note that the RMA constraints require the aircraft to be at 3000ft whilst still to the north-east of LSA, i.e. by the beginning of the downwind leg.

3.7.6. Where it is necessary to provide increased in-trail spacing between successive SPEAR/STAR arrivals or to integrate this arrival traffic flow with arrivals via GEGMU, additional path-stretching to the north of SABER may be required. The airspace available to do this within the current boundaries of CTA-10, together with the restrictions on LSA vectoring flexibility from the Standing Agreement and the requirement to retain the aircraft at least 2NM within the boundary of CTA-10, are limiting in this respect. Once re-established in the left-hand radar directed circuit, further dog-legs or orbits into CTA-1 and CTA-4 may be necessary to further increase arrival spacing.

3.7.7. At all times when vectoring traffic towards final approach to Runway 05, due regard must be taken of the westerly limit of radar vectoring available to LSA due to the Buffer Zone arrangements between LSA operations and LCY operations as laid down in the NATS/LTC LoA. Base Leg and Closing Heading to Final Approach must not extend more than 10NM south-west of LSA.

3.8. Departing Flights

3.8.1. All departing flights into the ATS Route Network are subject to individual prior co-ordination with LTC Sectors, in some cases with more than one Sector.

3.8.2. In some cases, release is granted without significant delay (but is subject to a 5-minute expiry time). In other cases, a release can be subject to a delay of 10-minutes or more (and is still subject to a 5-minute expiry). This makes not only departure planning difficult for Aerodrome Control (ADC) particularly with the extensive back-tracking requirements for Runway 05 departures and Runway 23 landers, but also can impinge on the arrival traffic flow and spacing established by the Radar Controller.

3.8.3. Furthermore, the RMA vertical limitations for arriving flights requires arriving aircraft to be at or below 3000ft within most of the airspace west of a line approximately 5NM north-east of LSA itself, thus departing aircraft must be temporarily limited to 2000ft until integrated with the flight paths of arriving flights. On some occasions a ground delay may be necessarily imposed by LSA ATC to enable traffic integration, in which case a departure release must be re-negotiated with LTC Sectors.

3.8.4. Direct conflict resolution must be applied by LSA ATC between:

- Runway 23 departures via CLN and arrivals via SPEAR/SABER and path-stretching of arrivals via GEGMU;
- Runway 23 departures via EVNAS and arrivals via SPEAR/SABER;

- Runway 23 departures on all routes and arrivals via SPEAR/SABER if routing via SPEAR or overhead LSA becomes necessary;
- Runway 05 departures via EVNAS and CLN and arrivals via SPEAR/SABER and the left-hand radar-directed traffic pattern for arrivals via GEGMU and SPEAR/SABER; and
- Runway 05 departures via DET and right-hand radar directed traffic pattern to Runway 05 and shortened (direct) routing to Runway 05 right-hand base leg.

3.9. Wake Vortex

3.9.1. Whilst LSA does not handle aircraft in the "Heavy" wake vortex categories, wake vortex separation considerations can come into play in the integration of flight paths at higher altitudes.

3.9.2. The majority of aircraft operating CAT flights at LSA are in the "Lower-Medium" (A320 series, B737 series, E195, etc), "Small" (ATR72, CRJ, Saab 2000, DHC-8, etc) and "Light" (J31, B200, Saab 340, D328, etc) wake vortex categories, as specified in MATS Part 1.

3.9.3. Whilst in the majority of cases no wake vortex considerations over and above the minimum radar separation of 3NM are necessary, in the case of a "Light" aircraft following or crossing behind a "Lower-Medium" aircraft then a minimum of 5NM separation must be applied when the "Light" aircraft is at the same level or less than 1000ft below the "Lower-Medium" aircraft. Similarly, a minimum of 4NM separation must be applied when a "Light" aircraft is following or crossing behind a "Small" aircraft.

3.9.4. This becomes an operational factor for consideration in the airspace availability and other restrictions to the flexibility of LSA ATC when a "Light" aircraft is transiting through the CTR/CTA or is being manoeuvred to establish the required final approach spacing. It is also a factor to consider when a "light" aircraft is being held in the aerodrome traffic circuit waiting for a suitable space in the arrival traffic flow.

3.10. Far-Out Holding

3.10.1. Increasing congestion in the CTR/CTA close-in to LSA arising from the operating constraints detailed above leads to an increasing need for arriving aircraft to be held "further out" in LTC airspace before reaching GEGMU or SPEAR/SABER.

3.10.2. Provision is made within the GEGMU STAR from the east for en-route holding at JACKO (11.9NM before GEGMU) and within the GEGMU STAR from the south for en-route holding at OKVAP (56.6NM before GEGMU) or GODLU[15]. JACKO and GODLU holding patterns are primarily for use by LCY arrivals prior to entering the Point Merge Initial Approach Procedures. Thus, use by LSA arrivals is likely to generate delay to LCY arrivals. Use of JACKO or GODLU by LSA arrivals requires prior co-ordination between multiple LTC Sectors.

3.10.3. Provision is made in the SPEAR STAR for en-route holding at BOMBO (57NM before SPEAR). However, the BOMBO hold is also an en-route hold within the London Stansted and London

[15] On a tactical basis LTC may hold aircraft at GODLU instead of OKVAP, but as the GODLU hold is not notified within the GEGMU STAR it would not be programmed into the aircraft navigation database for LSA arrivals. Thus, LTC controllers would need to provide navigation assistance to LSA aircraft to enable them to find and establish in the GODLU hold.

Luton STAR network. It is also in close proximity to London Stansted departure routes to the west. Thus, holding LSA arrivals at BOMBO is not optimum and is likely to cause commensurate delay to London Stansted and London Luton traffic.

3.10.4. Where en-route holding is likely to become necessary due to congestion, or shortage of capacity or operational flexibility in closer proximity to LSA then the LoA requires a substantial measure of prior notification and co-ordination between LTC Sectors. It is not suitable for short-notice metering of traffic into the LSA ATC traffic flow.

3.11. Current Airspace – General Conclusion

3.11.1. With the recent significant growth in domestic scheduled services flight planned via the SPEAR STAR, conflict between SPEAR traffic and GEGMU traffic, and multiples thereof, has become a regular occurrence whichever runway is in use for landing.

3.11.2. The availability of airspace within which LSA ATC can manoeuvre aircraft to achieve the approach spacing necessary to suit the runway configuration is severely constrained by the limited dimensions of the current CTA-10 to the north-east and the vertical constraints placed upon LSA ATC by the overlying LTMA ATM arrangements. This is exacerbated by the limitations imposed in the RMA upper limits close-in to the Airport and the MATS Part 1 requirement to retain aircraft at least 2nm within the controlled airspace boundary when being vectored.

3.11.3. The airspace complexity is further exacerbated by the requirement to accommodate VFR flights (transits and arrivals/departures) and integrate them effectively into the overall traffic flow. In doing so controllers must also take due regard of the need to avoid generation of TCAS Resolution Advisory (RA) alerts as a consequence of ATC actions.

3.11.4. The current airspace configuration has reached the limits of its suitability to handle current and future traffic levels and requires the additional flexibility that CTA-10X and CTA-11 will afford.

4. Justification for CTA-10 and CTA-11

4.1. At the traffic levels extant at the introduction of controlled airspace in 2015, the scheduling of traffic resulted in very few occasions when direct interaction occurred between successive arriving flights or between arriving and departing flights. The approved airspace configuration was adequate to allow radar positioning of arriving aircraft on an individual basis with very little by way of path-stretching needed to create the necessary spacing.

4.2. As traffic has grown and new destinations served, the simultaneous interaction between arriving flights, and between arriving and departing flights, has significantly increased and now requires substantially greater intervention and path-stretching by LSA ATC to achieve the necessary presentation of aircraft to the runway as detailed in Section 2.

4.3. This is particularly the case with respect to arriving flights from the north-west for which the published STAR is not operationally suitable.

4.4. The tactical use of holding patterns by LSA arrivals as a means of tactical delay or path stretching is not available to LSA due to the availability of only a single level within LTC controlled airspace at GEGMU (which, in turn, requires extensive co-ordination between LSA and LTC Sectors)[16] and the inappropriateness of the SPEAR and SND holding patterns due to blockage of departing traffic.

4.5. Further traffic growth will engender increasing traffic interactions close-in to LSA and the increasing radar vectored path-stretching required will be unable to be contained within the existing boundary of CTA-10. This is likely to result in more aircraft, of necessity, being vectored outside controlled airspace at short notice, with the associated detrimental impacts to controller and pilot workload in the critical stages of flight.

4.6. Consequently, further traffic growth will also result in a greater requirement for holding aircraft further back in the ATS Route structure (i.e. JACKO/GODLU for GEGMU arrivals and BOMBO for SPEAR arrivals) in order to meter the flow of traffic into the LSA arrival sequence. This would be to the significant detriment of LTMA traffic flows to and from other Airports.

4.7. As a result, the currently available controlled airspace and route structure has reached the limit of its capacity for ATC to effectively integrate arriving and departing traffic flows to achieve the necessary spacing between arriving aircraft whilst maintaining the necessary flow of departing aircraft.

4.8. CTA-10X

4.8.1. The availability of two additional discrete holding levels within controlled airspace for arrivals via GEGMU will enable holding to be used as a tactical means of delay and path-stretching at peak periods without prior co-ordination. This was recognised in the development of the controlled airspace configuration detailed in ACP-15-01. The availability of two discrete holding levels at GEGMU under the jurisdiction of LSA ATC will enable LSA

[16] ACP-15-01 (ref para 8.8) made clear that the availability of 6000ft holding at GEGMU was a concession additional to the availability of 4000ft and 5000ft as would be enabled by the then proposed airspace design (i.e. CTA-10 as a whole) and its availability was subject to prior co-ordination.

ATC to invoke tactical holding at short notice and will not impinge on the smooth operation of other LTMA traffic flows through far-out holding at JACKO/GODLU.

4.8.2. The environmental impact of tactical holding at GEGMU will be no greater than that specified in ACP-15-01 and accepted as such by the CAA.

4.8.3. The availability of the additional controlled airspace of CTA-10X will provide LSA ATC with greater off-shore path-stretching options for arrivals, particularly from the west but also from the east, to achieve the necessary arrival spacing between successive arrivals at higher levels than the "close-in" levels available in the RMA, whilst both retaining aircraft within controlled airspace and meeting the vertical limitations imposed by the RMA arrangements. The availability of this airspace utilisation for tactical vectoring is as detailed in ACP-15-01[17].

4.8.4. The availability of CTA-10X will enhance the ability for aircraft to plan and achieve Continuous Descent Approach (CDA) flight profiles from higher levels, with the full protection of controlled airspace, when tactical delay and path-stretching is not necessary for individual flights.

4.8.5. The availability of CTA-10X is compatible with the future introduction of RNAV IAPs and Transition procedures which are the subject of a separate ACP.

4.9. CTA-11

4.9.1. The availability of CTA-11 below the Clacton CTA will enable more path-shortening opportunities to be considered by both LTC and LSA ATC when the Shoeburyness Danger Area Complex is inactive and the arrival and departure traffic flows to/from LCY permit.

4.9.2. Whilst only available on an opportunity basis which cannot be quantified, the potential for track-shortening in this area would, in turn, sometimes alleviate the need for track-stretching of other arrivals from other directions and ease the overall airspace congestion arising, as well as providing fuel burn and emissions benefit for those individual flights which can be accommodated.

4.9.3. The availability of CTA-11 is compatible with the future introduction of RNAV IAPs and Transition procedures which are the subject of a separate ACP.

4.10. Airspace Justification Conclusion

4.10.1. LSA concludes that the current airspace configuration has reached the limits of its flexibility and capacity to handle current traffic levels and to enable traffic growth and the development of new CAT services to and from LSA. It will not permit continued airport development to the traffic levels on which ACP-15-01 was based.

4.10.2. LSA concludes that the introduction of CTA-10X and CTA-11, as detailed in ACP-15-01 and provided for in the CAA Decision Letter, is now justified and is urgent and essential.

[17] ACP-15-01 (ref para 8.8) made clear that CTA-10 provided for radar vectoring in the Initial Approach phase of approaches to runways 05 and 24.

5. Options Appraisal

5.1. CAP725 and CAP1616

5.1.1. It is important to emphasise that the airspace sought in this ACP has previously been assessed by the CAA under the regulatory requirements specified under CAP725 and was designed in compliance with the many regulatory Design Principles which were then embraced within CAA Policy. Numerous airspace design options were considered throughout the airspace development; indeed, several further design changes were incorporated at the request of the CAA after the submission of ACP-15-01.

5.1.2. CAP1616 has introduced a new process for determining how Design Principles should be developed for a new airspace proposal. The DfT has also introduced in the interim a completely different methodology and requirement for environmental aspects of airspace design to be considered (ANG2017) which were not applicable to the CAP725 process.

5.1.3. However, the CAA has re-affirmed that this airspace change will be considered under the CAP725 principles. It is essentially, therefore, an "implementation" of what has already been subject to the regulatory process, albeit that the DfT has specified that some aspects of the new CAP1616 and ANG2017 are now to be applied retrospectively.

5.1.4. Because the CAA specified in the Decision Letter that only the residual portions of controlled airspace detailed in ACP-15-01 could be reapplied for without invoking a new consultation process, this limits the options available for LSA to consider without the request becoming a re-design and thus subject to CAP1616 and a new development process and consultation.

5.1.5. For example, if LSA was to consider application of a different Airspace Classification (Class E with the possible enhancement with Radio Mandatory and/or Transponder Mandatory Airspace) then that would represent a substantial change to the previously consulted upon and proposed airspace arrangements and any associated impact on the aviation community. If LSA was to propose moving the GEGMU hold in order to reduce the boundaries of the airspace applied for, then that would be a substantial change to the previously consulted arrangements and would have a significant impact on airspace users and the wider ATM infrastructure. Therefore, in this application LSA has made no further assessment of these options.

5.1.6. LSA has considered only the "Do Nothing" Option and the "As Previously Requested" Option in its technical appraisal of Options in reaching its conclusions on this ACP.

5.1.7. Whilst under the CAP1616 process Design Principles would be developed prior to airspace design through a formal two-way engagement process with aviation and non-aviation stakeholders, LSA has had to reverse engineer the CAP725 process to identify the Design Principles associated with this proposal. In this context, the basic Design Principles upon which the configuration of CTA-10X and CTA-11 were originally developed were those specified by the Regulator in CAP725 and various Airspace Policy Documents/Statements. These regulatory design requirements are summarised below for completeness. Other regulatory Design Principles pertained to the overall ACP-15-01 airspace design and development which are not pertinent specifically to the design of CTA-10X and CTA-11 and are, therefore, not listed here.

5.2. Design Principles

5.2.1. The following Design Principles have been identified as those originally associated with the CAP725 proposal:

- 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;
- IFPs shall be designed in accordance with the design criteria set out in ICAO PANS-OPS (Doc 8168) Aircraft Operations Volume II, Construction of Visual and Instrument Flight Procedures;
- The controlled airspace configuration must be of sufficient dimensions to contain the Primary Area (as specified in PANS-OPS) of IFPs;
- The airspace must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain the 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;
- The Air Traffic Management 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;
- Air Traffic Control procedures are to ensure required separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures;
- The airspace configuration should take due regard of other aviation activity in the vicinity of the new airspace structure and suitable operating agreements or ATC operating procedures should be devised;
- All new IFPs should, whenever possible, incorporate Continuous Descent Approach (CDA) profiles after leaving the holding facility associated with the procedure; and
- Controlled airspace should be of the minimum practicable dimensions commensurate with the regulatory requirements.

5.2.2. In addition to the generally applicable Design Principles detailed above, some locally specific Design Principles were set. These Design Principles were developed through dialogue with stakeholders at the Focus Group stage of the airspace development which included local and national aviation organisations and local planning authority and organisations having an environmental interest in aircraft operations. Locally developed Design Principles included:

- The resulting airspace and procedure design must be compatible with the (then) forthcoming LTMA changes associated with NATS LAMP Phase 1A;
- Establish a new offshore terminal holding fix for LSA traffic;
- As far as practicable, flight paths should be designed to be offshore and wherever practicable provide a reduced environmental impact to communities on the ground;
- Areas of uncontrolled airspace traditionally used by training and other GA airspace activity should be preserved;
- GA airspace activity should be routinely granted access to any controlled airspace arising from the proposal; and
- Due regard should be taken of known future housing development.

5.2.3. The CAA was satisfied that the airspace configuration developed under the established Design Principles, and submitted in ACP-15-01, complied as far as practicable with the Design Principles and suitable mitigations were in place where the regulatory requirements could not be met in full.

5.3. Options Considered and Appraisal

5.3.1. Do Nothing

5.3.1.1. It is clear from more than four years of operational experience of the existing airspace configuration and recent traffic growth, particularly the significant growth of domestic scheduled services arriving from the north-west of LSA (SPEAR STARs), that the dimensions and configuration of the existing airspace configuration have reached operational capacity at peak periods.

5.3.1.2. The current configuration of the CTAs to the north and north-east of LSA do not allow LSA ATC to always contain path-stretching radar vectoring operations within controlled airspace as specified in MATS Part 1 at current traffic levels.

5.3.1.3. Further traffic increases are likely to result in increasing use of Terminal Holding and Far-Out Holding to invoke the tactical delay and path-stretching necessitated by the Airport configuration. However, this cannot be quantified or forecast to any specific extent as holding is a "last resort" in ATM terms and its use would be entirely dependent on traffic flows, prevailing weather conditions and ATC workload at the time.

5.3.1.4. Currently only one holding level is available within controlled airspace at GEGMU, although the hold is published to levels below controlled airspace. The only level available in controlled airspace is not under the jurisdiction of LSA ATC and therefore cannot be used on a tactical basis at short notice by LSA. Increased use of terminal holding for tactical delay would require aircraft to hold at levels below controlled airspace.

5.3.1.5. Tactical delay through holding LSA arrivals at the only controlled airspace level available at GEGMU hold further impinges on the operational efficiency within LTC for handling LCY arriving and departing flights due to interaction between procedures[18].

5.3.1.6. Increased use of SPEAR/SND for terminal holding for tactical delay is not a viable option as it effectively curtails or significantly limits the operation of departing aircraft and impinges on the operation of LCY arrivals and departures. Limiting LSA departing aircraft to a maximum of 2000ft to ensure separation from holding traffic is a significant environmental (noise and emissions) disbenefit.

5.3.1.7. "Doing Nothing" does not meet the Design Principles (regulatory requirements) on which the originally proposed airspace configuration in ACP-15-01 was developed. The existing airspace configuration does not fully contain IFPs (GEGMU holding pattern at all published levels) nor the airspace now required for radar vectoring flight paths within controlled

[18] Whilst far-out holding at JACKO is included on the two STARs via LOGAN, the JACKO hold is the primary northerly feeder hold for the LCY Point-Merge approach procedures. Its use by LSA arrivals impinges on the LCY traffic flow and any increased use of JACKO for LSA arrivals would be unacceptable.

airspace and within a known and managed airspace environment in accordance with the regulatory requirement detailed above.

5.3.1.8. Increasing use of the GEGMU hold by CAT flights at the published levels below controlled airspace (in Class G airspace) does not meet the CAA specified Design Principles for procedure containment detailed above and potentially impinges on airspace safety. Conversely, ACP-15-01 recognised the future requirement (with traffic growth) for increasing tactical use of holding and the levels at which it would be required.

5.3.1.9. Thus, LSA concludes that "Doing Nothing" is not an operationally or environmentally acceptable option.

5.3.2. Implement CTA-10X and CTA-11 as submitted in ACP-15-01

5.3.2.1. Submission of CTA-10X and CTA-11 in this application fully complies with the regulatory and environmental Design Principles and requirements detailed above against which they have already been assessed and found satisfactory by the Airspace Regulator.

5.3.2.2. Any changes to the previously accepted airspace configuration (including potential changes to notified IFPs) would render this application outside the terms stated in the Decision Letter.

5.3.2.3. The introduction of CTA-10X and CAT-11 enables overall operational and consequential environmental benefits to the management of the airspace to be realised, albeit the benefit to individual flights cannot be specifically quantified as they are tactically dependent.

5.3.2.4. Therefore, this ACP seeks the introduction of CTA-10X (3500ft to 5500ft) and CTA-11 (3500ft to 5500ft) under the configuration and operating terms and conditions specified in ACP-15-01 in order to complete the controlled airspace structure necessary for the continued safe, efficient and effective management of CAT flights to/from LSA, as detailed in ACP-15-01.

5.4. Quantitative vs Qualitative Assessment

5.4.1. The proposed controlled airspace development and the configuration submitted to the CAA in ACP-15-01 had been subject to environmental considerations and evaluations in accordance with the requirements of CAP725 and ANG2007 (updated to reflect ANG2014) then in force. The environmental evaluations were considered acceptable to the CAA at the time.

5.4.2. However, as a result of dialogue between the CAA and the DfT in May/June 2019 [References 7 and 8], LSA were directed to provide an Options Appraisal considering, at least, the "Do Nothing" and the "Proposed" Options. The DfT considered that the Options Appraisal should use WebTAG [19] (the DfT's Transport Appraisal Tool) in its evaluation of potential environmental impact, including quantitative evaluation of emissions and fuel burn and, where relevant, noise data.

5.4.3. WebTAG requires data of a quantitative nature as it consists of series of guides and spreadsheet tools based on up-to-date evidence following the principles of HM Treasury's

[19] https://www.gov.uk/guidance/transport-analysis-guidance-webtag

'Green Book'[20] that 'monetise' the relative impacts of a given option. The DfT acknowledges in ANG 2017[21] that it is not possible to quantify, and therefore monetise, all impacts.

5.4.4. Having taken further detailed advice on this issue LSA has reached the conclusion that a quantitative methodology is not appropriate to conducting the Options Appraisal in this case for the following reasons:

- Except for the GEGMU holding pattern in CTA-10X (as detailed in Section 4 above), there are no published IFPs or predetermined flight paths within either CTA-10X or CTA-11;
- The use of the GEGMU hold at the altitudes afforded by the introduction of CTA-10X is no different to that proposed in ACP-15-01. Aircraft may currently use the GEGMU hold below controlled airspace, as accepted by the CAA in its deliberations on ACP-15-01;
- All traffic, other than holding traffic at GEGMU, will utilise the airspace on a wholly tactical radar vectored basis on flight paths determined by the radar controller based on his requirement to sequence and separate arriving, departing and overflying flights;
- The flight paths by which individual aircraft may be vectored is dependent solely on the disposition of other aircraft in the traffic sequence vicinity and the separation and approach spacing requirements applicable at the time. The path-stretching or path-shortening flight paths needed are unpredictable and randomly determined by the radar controller based on the traffic situation presented to him at the time. Use of tactical vectoring was explained in detail in ACP-15-01 and is not varied by this ACP;
- It is not possible to quantify what percentage of arriving flights would need to be vectored into CTA-10X and/or CTA-11 from time to time in order to either expedite or extend their flight path. The distribution of traffic is not changed from that detailed in ACP-15-01;
- It is not possible to quantify either the shortened or extended flight paths (either longitudinally or vertically) that might be applied to individual flights;
- CTA-11 is wholly over water so no new populations are affected by aircraft that may be vectored through this airspace;
- The availability of CTA-11 will offer more tactically available path-shortening opportunities when Runway 05 is in use. However, this is dependent on the LCY arrival traffic flow in the Point Merge System as well as the overall LSA traffic flow at the time and the activity of the Shoeburyness Danger Areas. The occasions on which this benefit will materialise and the amount of path-shortening that can be accomplished in individual cases cannot be forecast or quantified. Nonetheless, when it is available, fuel saving benefits will occur and overland flight will be reduced when compared to the full published routing.
- CTA-10X is predominantly over water and the northern extremity which does lie overland was designed (in accordance with the CAAs airspace design requirements) to encompass the holding area protection (as specified in ICAO PANS-OPS) of the GEGMU holding pattern. The overland portion of CTA-10X does not contain any part of the nominal flight path of the GEGMU holding pattern[22]. The GEGMU hold nominal flight

20 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

21 ANG 2017, paragraph 2.7 'It is not intended, nor is it possible that all impacts are monetised; some will be quantified, and some will be qualitatively described'.

22 Note the depiction of the holding pattern on the STAR chart uses a standard sized template which does not represent the nominal flightpath of a holding pattern to ICAO PANS-OPS (Doc 8168) criteria [Reference 12]. Thus,

path was deliberately designed (in ACP-15-01) to be wholly offshore up to 6000ft. To make any changes to the GEGMU hold within this ACP would render it outside the terms of the Decision Letter on which this ACP is based.

- Aircraft which may be radar vectored into CTA-10X, whether from the easterly/southerly STARs via GEGMU or from the SPEAR STAR from the west would be most unlikely to be vectored into the overland portions of CTA-10X due to the MATS Part 1 requirement to retain aircraft being vectored at least 2NM within the controlled airspace boundary.
- The arrival sequence and spacing pertaining to the traffic flow at the time might result in one aircraft gaining from a shortened routing whilst another aircraft at the same time may need to be given extended routing to preserve the overall airspace efficiency and arrival spacing. The track mileage pertaining to each is not predetermined and cannot be quantified.
- The overall distribution of traffic will be no different to that put forward in ACP-15-01.
- LSA considers that any attempt to graphically define these 'random' flightpaths simply to devise "something" which could be quantified would be misleading and could potentially lead to a conclusion that there are actual procedures being proposed in this ACP. Furthermore, environmental assessments which attempt to quantify artificial changes to fuel burn, emissions and noise, resulting from the introduction of CTA-10X and CTA-11, would be flawed.

5.4.5. To further clarify that LSA's view reflects the Environmental and Options Appraisal objectives set out in CAP1616, the proforma at Appendix J considers relevant extracts from CAP1616 and presents an LSA overview of their application to this ACP.

5.4.6. LSA concludes that it would be not only impractical to attempt to apply any quantitative analysis of any noise/emissions/fuel burn aspects associated with CTA-10X and CTA-11 and the day-to-day ATM operation, but to do so could be misleading.

5.4.7. Suffice to say that the availability of CTA-10X and CTA-11 for tactical use as proposed in ACP-15-01 will, in itself, substantially improve the flexibility and ability for ATC (both at LSA itself and within LTC) to maximise airspace efficiency overall, which in turn are likely to result in environmental benefits, whilst sustaining the forecast traffic growth, albeit these benefits cannot be specifically quantified in any way.

5.4.8. These benefits are likely to be manifested through the better facilitation of Continuous Descent Approach techniques (i.e. a reduction in stepped descents which will improve fuel efficiency and reduce emissions).

5.4.9. Table 5 demonstrates how the Options Appraisal requirements at CAP1616 Appendix E[23] have been met by ACP-15-01 and the additional documentation presented in this Addendum to ACP-2017-25.

although the STAR Chart depicts that part of the holding pattern is overland, this is not actually the case as the holding pattern is altitude limited and speed limited to reduce the size of its footprint and required airspace volume.

[23] CAP1616 Appendix E, Table E2 provides a guide to expected approach to key analysis for a typical airspace change. Table 5 above has been developed using the list of impacts as defined in Table E2.

Group	Impact	Level of Analysis	LSA Comment
Communities	Noise impact on health and quality of life	Monetise and quantify	As has been stated throughout this document, the use of these proposed volumes of airspace would be tactical and random as there are no IFPs or structures (other than the GEGMU hold) contained within them. It is therefore impossible to quantify the levels of traffic that would be diverted from other areas into these CTAs, moreover, it would be unhelpful and misleading to attempt to do so. Without quantitative data, it is not possible to conduct noise assessments or utilise WebTAG to monetise the impact on health and quality of life. However, from a qualitative perspective it can be surmised that, given CTA-11 is wholly over water, no new populations would be exposed to the noise of any aircraft that may be vectored through this airspace. CTA-10X is largely over water and the GEGMU hold that would be contained within it is entirely over water. The availability of CTA-10X will enhance the ability for aircraft to plan and achieve Continuous Descent Approach (CDA) flight profiles from higher levels reducing the noise footprint albeit again, this cannot be quantified. **LSA Conclusion:** **Do Nothing** – Results in continued tactical delay of aircraft over land and therefore greater likelihood of noise impact on health and quality of life. **Implement Change** – Results in flights being displaced over sea reducing the likelihood of noise impact on health and quality of life.
Communities	Air quality	Qualitative or monetise and quantify, depending on the scope of the proposal	Air Quality assessments were not required of this CAP725 ACP. Owing to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant effect on local air quality. There are no changes affecting flight paths below 1,000 feet in this proposal, accordingly no assessment is required.

Group	Impact	Level of Analysis	LSA Comment
Wider Society	Greenhouse Gas Impact	Monetise and quantify	As with the noise impacts, it has not been possible to conduct a quantitative assessment of the impact on carbon emissions owing to the proposed tactical and random use of the airspace in question. LSA's qualitative assessment is that the additional airspace provides for more efficient arrivals/approaches with less stepped descents and greater potential for CDAs to be achieved. Furthermore, it can be surmised that the availability of these CTAs will mean that there will be less unnecessary 'dog-legs' required and therefore the track mileage flown by aircraft inbound to LSA should, by virtue of this, be reduced. **LSA Conclusion:** **Do Nothing** – Results in continued use of stepped descents and inefficient arrival profiles to ensure controlled airspace containment and therefore the carbon emissions are likely to be greater than the alternative. **Implement Change** – Results in opportunities for more efficient arrival profiles, less over-land track mileage and greater potential for achieving CDAs and therefore carbon emissions are likely to be reduced by comparison.
Wider Society	Capacity / Resilience	Qualitative	The proposal is in keeping with the UK AMS and was coordinated through consultation with LAMP1A and all relevant ATM stakeholders. The implementation of these CTAs does not constitute a negative impact on the overall UK airspace infrastructure or a change to the planned distribution of traffic. **LSA Conclusion:** **Do Nothing** – Existing airspace configuration presents a challenging environment to LSA ATC increasing the workload of both LSA controllers, neighbouring ATC agencies and the pilots of the aircraft under their control. **Implement Change** – The complexity of the airspace is reduced with the added flexibility that CTA-10X and CTA-11 provide. This will increase controller capacity to manage traffic, including itinerant GA transit traffic.

Group	Impact	Level of Analysis	LSA Comment
GA	Access	Qualitative	Table 3 within Section 2 shows the raw data relating to access requests and refusal of clearance has remained consistently at or below 0.1% of requests. Whilst there was a degree of objection from the GA community during the original consultation, LSA remain committed to providing equitable and efficient access to the controlled airspace for which it is custodian. LSA's assessment is that the addition of more airspace within which ATC can manage CAT traffic should result in greater flexibility and capacity to manage the access requirements of itinerant GA traffic. **LSA Conclusion:** **Do Nothing** – Existing airspace configuration presents a challenging environment to LSA ATC increasing the workload of LSA controllers and in turn reducing their capacity required to facilitate the access as requested in a tighter volume of controlled airspace. Access is not denied as has already been demonstrated; more instances of access refusals or re-routings could start to emerge as traffic levels increase should no additional airspace be granted. **Implement Change** – The complexity of the airspace is reduced with the added flexibility that CTA-10X and CTA-11 provide. This will increase controller capacity to manage traffic, including itinerant GA transit traffic, reducing the likelihood of access denials and increasing the flexibility of routings.

Group	Impact	Level of Analysis	LSA Comment
GA/Commercial Airlines	Economic impact from increased effective capacity	Quantify	Whilst the forecast increase in passengers and ATMs is provided in Section 2 of this document, it is not possible to attribute these increases to the establishment of CAT-10X and CTA-11. From a GA perspective, ATC having more airspace within which to flexibly manage CAT traffic should result in commensurate greater capacity to manage the access requirements of itinerant GA traffic, thereby reducing any additional track miles required of GA transits (and the cost of the associated fuel). Note - Light GA transit flights tend to operate overland rather than at a considerable distance offshore. **LSA Conclusion:** **Do Nothing** – Existing airspace configuration presents a challenging environment to LSA ATC resulting in inefficiencies ultimately felt by those using the airspace owing to delays and unnecessary track mileage. **Implement Change** – The added flexibility that CTA-10X and CTA-11 will provide will increase the options available to controllers resulting in more efficient routings being applied to airspace users.
GA/Commercial Airlines	Fuel Burn	Monetise and quantify	As there are no actual flight paths (formal procedures) to compare it is not possible to provide a quantitative assessment. Any attempt to define such routings would be misleading to both the CAA and stakeholders. Even use of the GEGMU hold is not predictable, nor is the length of the delay within the hold. Accordingly, any attempt to quantify any change in fuel burn brought about by the occupancy of the GEGMU hold by a given aircraft would be guesswork and therefore meaningless. LSA's qualitative assessment aligns with the assessment on emissions in that the availability of the additional airspace will result in more efficient arrival and approach profiles reducing the overall fuel burn. **LSA Conclusion:** **Do Nothing** – Existing airspace configuration results in inefficient profiles and routings which will, by comparison to the option available, lead to increased fuel burn. **Implement Change** – Intuitively, the profiles and routings made possible by the additional airspace will lead to a reduction in fuel burn by comparison.

Group	Impact	Level of Analysis	LSA Comment
Commercial Airlines	Training Costs	Monetise and quantify	Qualitative assessment - No training burden on CAT as the tactical control experienced today will continue. **LSA Conclusion:** **Do Nothing** – Nil. **Implement Change** – Nil.
Commercial Airlines	Other Costs	Qualitative	No additional costs have been identified. **LSA Conclusion:** **Do Nothing** – Potential increase in overhead holding would impact adversely on initial climb for departing aircraft, leading to increased fuel burn at low altitude (cost) and increased noise impact to communities. Potential increase in far-out holding would require intricate integration with LCY arrivals and probable increased track mileage and associated fuel burn costs. Increase in overall system complexity which could impact adversely on the operation of aircraft to/from LCY. **Implement Change** – Likelihood of increased holding is minimised.
Airport/ANSP	Infrastructure Costs	Monetise and quantify	The only costs associated with infrastructure are those associated with the conduct of this ACP, required to bring about changes to airspace infrastructure. **LSA Conclusion:** **Do Nothing** – Nil. **Implement Change** – Minimal.
Airport/ANSP	Operational Costs	Monetise and quantify	Qualitative assessment – No operational costs have been identified for quantification. **LSA Conclusion:** **Do Nothing** – Nil. **Implement Change** – Nil.
Airport/ANSP	Deployment Costs	Monetise and quantify	Qualitative assessment – No deployment costs have been identified for quantification. **LSA Conclusion:** **Do Nothing** – Nil. **Implement Change** – Nil.

Table 5: Impact Assessment

6. Engagement Strategy

6.1. Engagement Activity

6.1.1. Notwithstanding that the CAA Decision Letter stated that LSA could apply for the residual portions of airspace detailed in ACP-15-01 to be implemented without further consultation, due to the time-lag between the original consultation and the permitted re-application LSA considered that an engagement should be carried out with stakeholders who may have an interest in the proposed airspace. The engagement should be a means to inform stakeholders of the proposal and the terms under which it was being carried out. The CAA concurred with this approach and in a letter of 1 July 2019 [Reference 9] formally requested that it should be undertaken as part of the ACP submission.

6.1.2. It is important to recognise that the engagement was an informative exercise and, although inviting comment, it was not a re-consultation on the subject airspace.

6.1.3. Accordingly, LSA issued an Engagement Document [Reference 10] on 19 July 2019, addressed to previous and newly identified stakeholders who may have an interest in the airspace concerned. The Engagement Document was also posted on the LSA website. Furthermore, an Engagement Event was held at LSA on 20 August 2019 so that any interested parties could attend and discuss the proposal. The Engagement Event was attended by 3 people. The Engagement Document invited comment to be submitted by 30 August 2019 for consideration by LSA and inclusion in any further correspondence with the CAA. LSA continued to engage with stakeholders even after this date had elapsed.

6.1.4. A member of the LSA Airspace Team attended the LSA Consultative Committee Meeting on 4 September 2019 to update them on the proposal and provide more information as necessary.

6.1.5. Following the engagement LSA considered the responses received. A Report of the Engagement [Reference 11] is complete and is provided alongside this ACP submission.

6.1.6. The Engagement document and Report of the Engagement are submitted separately in support of this ACP.

6.2. Overview of Engagement Feedback

6.2.1. A detailed statistical analysis of feedback from the engagement exercise is given in the Engagement Report [Reference 11]. In summary, 23 responses were received from 185 engagement invitations sent to stakeholder organisations or individuals and from other non-stakeholder individuals.

6.2.2. 14 (61%) of the 23 responses supported or had no objections to the LSA proposal.

6.2.3. Positive comments on the proposal included:

- Improvement to safety;
- Improvement to the operation;
- Revitalisation of LSA;

- Noise and pollution impact minimised as most of the airspace is over the sea;
- Holding over the sea;
- Commercial efficiency;
- Fuel saving;
- Flight time saving; and
- Better flow of air traffic.

LSA comment on the positive responses is given in the Engagement Report. The positive feedback given echoes LSA's perception of the proposal.

6.2.4. 5 (22%) of the 23 responses included objection or negative comment on the proposals. These comments separately covered General Aviation (GA) concerns, overflight concerns and wildlife concerns and are summarised below.

6.2.5. GA concerns included:

- Aircraft "forced" to fly at lower altitudes over the sea and increased track miles over the sea;
- Access to controlled airspace will be delayed or refused due to increasing controller workload;
- Increased volume of controlled airspace will complicate flight planning and confine non-participating flights into smaller areas.

In its consideration of these issues, LSA has noted its consistently good record of granting access to the existing controlled airspace under its jurisdiction. GA will continue to be able to access the additional controlled airspace on request and planned flight paths/altitudes will seldom be restricted. Indeed, the ability for controllers to use 3NM radar separation rather than 5NM separation and the "easier" integration of arriving CAT flights will reduce controller workload rather than increasing it. It is also noted by LSA that the majority of light-end GA flights making a North Sea crossing tend to route overland towards the South Coast in order to minimise the over-water crossing and thus would not be affected by the proposed additional controlled airspace. Larger GA aircraft types generally have no concerns over direct over-water routing at higher levels and will not be inhibited by the proposed additional controlled airspace.

6.2.6. Thus, LSA concludes that the concerns expressed by GA responses do not dilute the justification for the introduction of CTA-10X and CTA-11.

6.2.7. A concern was expressed about potentially increasing the number of overflights over the Dengie Hundred Peninsular, including an increase in night flights and of the increase in forecast movements from those in the original consultation. LSA has commented that the existing controlled airspace lies over the Dengie Peninsular and the approach path to LSA necessarily already overflies the Dengie Peninsular. The proposed new airspace segments do not overlie the Dengie Peninsular and the way aircraft operate over the Peninsular will not change. There is no relaxation to the traffic limits imposed on LSA by the Section 106 agreement with the Local Planning Authority, including the operation of night flights.

6.2.8. Thus, LSA concludes that these concerns do not materially affect the proposed introduction of CTA-10X and CTA-11.

6.2.9. Some concerns were raised on the possible effects on bird life around Mersea Island. Natural England identified that the CAA may be required to carry out a Habitat Regulations Assessment in respect of the Outer Thames Special Protection Area. LSA has noted that most of Mersea Island is already overlaid by controlled airspace with base level 3500ft and that is not changed by the proposal. Aircraft which are not under the jurisdiction of LSA may currently operate over Mersea Island below 3500ft without restriction. The UK AIP provides general advice to pilots when flying over areas where there may be concentrations of birds but does not include a prohibition.

6.2.10. Thus, LSA concludes that bird habitats on Mersea Island do not materially affect the proposed introduction of CTA-10X or CTA-11. LSA's further consideration of Natural England's comments are detailed in Section 6.3 below.

6.2.11. One response considered that this application should be conducted under the CAP1616 Airspace Change Process. However, LSA considers that it is for the DfT and the CAA to determine the process relevant to the application, not LSA or stakeholders. It is re-iterated that the application was submitted before both CAP1616 or the ANG2017 were published, when CAP725 remained in force.

6.3. Natural England

6.3.1. In its response to the Engagement, submitted on 13 September 2019, Natural England raised the possibility that Habitat Regulations Assessment (HRA) may need to be carried out by the CAA in respect of a new Outer Thames Estuary Special Protected Area (SPA) that had been established in 2017 and may be affected by the introduction of CTA-10X and CTA-11.

6.3.2. As stated by Natural England, the CAA is the designated Competent Body for determining the need for HRA.

6.3.3. E-mail and telephone correspondence have subsequently been held between LSA and Natural England and between LSA and CAA. Following a conversation and e-mail on 7 January 2020 (in response to an e-mail sent by LSA on 20 December 2019), CAA confirmed that it required LSA's consideration of the Natural England submission to be included in this submission.

6.3.4. LSA has considered the published documentation in respect of SPAs in general, and specifically the Outer Thames Estuary SPA, in the context of their application to air navigation.

6.3.5. It is noted that the Outer Thames Estuary SPA directly abuts a number of existing on-shore SPAs, none of which as far as LSA is aware, has been the subject of HRA and none of which attracts any air navigation restriction or reference. A Note of LSAs consideration is given at Appendix K.

6.3.6. Therefore, LSA concludes that, in its opinion, the CAA does not need to conduct an HRA in respect of the introduction of CTA-10X or CTA-11.

6.4. Engagement Conclusions

6.4.1. LSA has carried out an effective engagement with stakeholders who may have an interest in the airspace which is the subject of this ACP.

6.4.2. No issues have been identified in the engagement which would preclude or otherwise affect the introduction of CTA-10X and CTA-11 as proposed in ACP-15-01.

6.4.3. Positive responses to the engagement from stakeholders and others echo LSA's perception of the proposal.

6.4.4. Thus, the justification for the introduction of CTA-10X and CTA-11 remains valid.

7. Safety Assessment

7.1. Safety Management is an intrinsic element of any airspace change. LSA has an obligation to provide ATS and IFPs which are safe.

7.2. LSA operates a Safety Management System (SMS) in accordance with the provisions of CAP670[24] and Single European Sky Common Requirements.

7.3. LSA applied sound Safety Management principles throughout the development of the airspace configuration detailed in ACP-15-01, including the development of options, which were accepted by the CAA.

7.4. The proposed airspace configuration submitted in ACP-15-01 was subject to a Hazard Identification (HAZID) and Risk Analysis by a group of representative stakeholders from ATC, aircraft operators, and safety specialists prior to the Regulatory Decision by the CAA. The airspace configuration approved by the CAA was subject to HAZID and Risk Analysis and documented in the LSA SMS.

7.5. Due to the passage of time between the introduction of the controlled airspace approved by the CAA from ACP-15-01, LSA has carried out a new HAZID to ensure that this ACP for the introduction of the residual portions of the airspace identified in ACP-15-01 continue to meet the Safety Management requirements.

7.6. HAZID and Risk Analysis will be submitted separately[25] to CAA Safety Regulation Group in support of this ACP Addendum.

7.7. LSA has continued engagement with NATS/LTC throughout this process and changes to our LoA/procedures will be co-ordinated in a timely manner.

[24] CAP670: ATS Safety Requirements

[25] Safety Management documentation is submitted in confidence and is not to be subject to disclosure in the public domain.

8. Summary

8.1. The controlled airspace applied for in this ACP reflects that applied for in ACP-15-01 but not approved, at that time, by CAA.

8.2. The CAA Decision Letter for ACP-15-01 specified that LSA could re-submit application for the subject airspace at a later date when traffic growth and ATM complexity so required.

8.3. LSA considers that the growth of CAT and the increased ATM complexity, which arises from the development of new destinations served by CAT operators at LSA, now makes the introduction of the residual controlled airspace submitted in ACP-15-01 urgent, essential and justified.

8.4. The Decision Letter stated that if LSA's future application was submitted within 2 years of the implementation of the controlled airspace arrangements approved in the Decision letter, then LSA would not need to re-consult.

8.5. LSA has submitted this application within the 2-year option specified in the Decision Letter.

8.6. CAA has confirmed that this application will be assessed under the CAP725 and ANG2014 which were in force when this application was submitted and under which ACP-15-01 was assessed.

8.7. Notwithstanding, the DfT and the CAA have subsequently specified additional conditions over and above the requirements of CAP725 which reflect new provisions introduced in CAP1616 and ANG2017. Within this document LSA has complied with the additional conditions specified and, in doing so, has taken due regard of the relevant provisions of CAP1616 Stage 2 and Appendix E. LSA considers that it has adequately met the additional requirements specified.

8.8. Notwithstanding the statement in the CAA Decision Letter that re-consultation would not be required, due to the time-lag between the initial implementation of ACP-15-01 and this application, LSA has engaged with appropriate stakeholders to remind them of the airspace proposed under ACP-15-01 and the terms under which the residual airspace segments were now being sought.

8.9. The configuration of CTA-10X and the residual (lower) portion of CTA-11 are as described in ACP-15-01. No changes to IFPs or use of the airspace are proposed from those specified in ACP-15-01. The introduction of CTA-10X and CTA-11 will not change the overall distribution of traffic from that specified in ACP-15-01.

8.10. The boundary co-ordinates of the expanded CTA-10 (i.e. the existing CTA-10 plus CTA-10X) and CTA-11 arising from implementation of this ACP are the same as those detailed in ACP-15-01.

9. Conclusions and Recommendations

9.1. LSA has concluded that the residual controlled airspace identified in ACP-15-01 but not approved by the CAA at that time is now urgent, essential and justified.

9.2. In submitting this ACP, LSA has met the conditions for re-application of the subject airspace specified in the CAA Decision Letter and the CAA has confirmed that this ACP will be considered under the terms set out in CAP725.

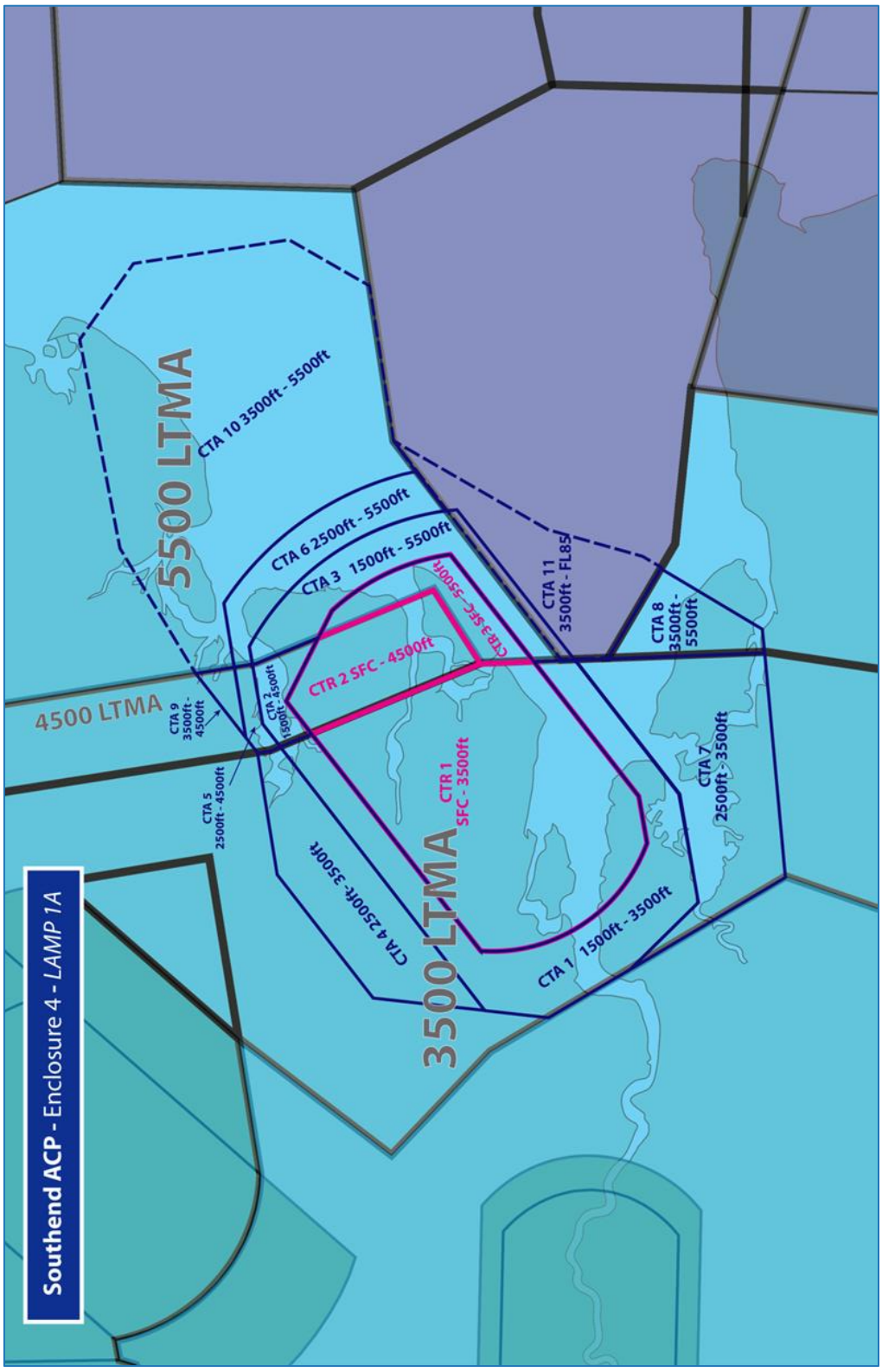
9.3. LSA has met the additional conditions specified by DfT and CAA in References 7 and 8. In doing so it has taken due regard of the provisions of CAP1616 Stage 2 and Appendix E.

9.4. Furthermore, notwithstanding the provisions set out in the Decision Letter, LSA has engaged with interested stakeholders.

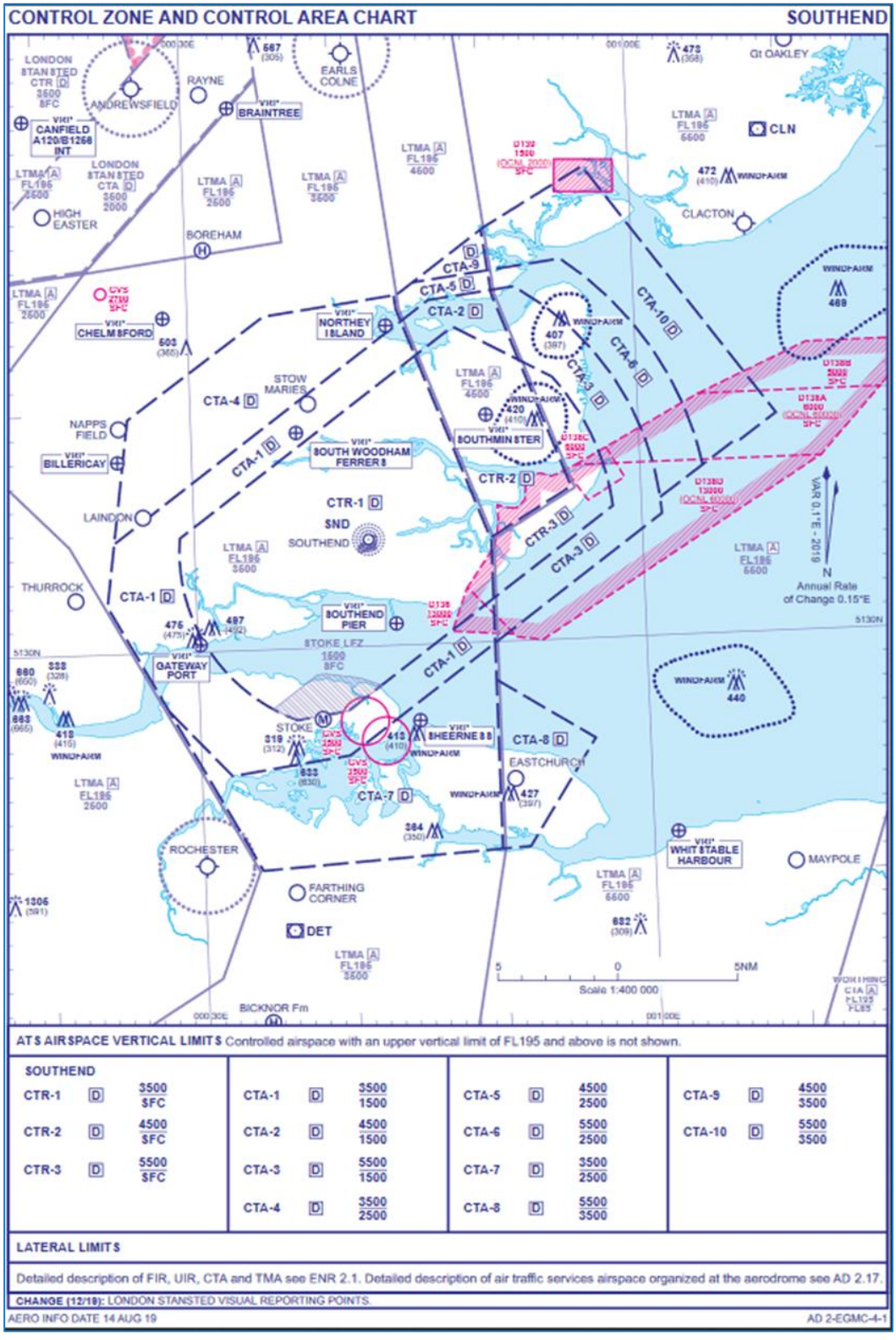
9.5. LSA recommends that CAA approval for the introduction of CTA-10X and CTA-11 should be specified for AIRAC Cycle 10/2020[26] (implementation 10 September 2020). This will allow sufficient time for consideration by CAA in accordance with the schedule set out in CAP725 plus allowance for a further 4 weeks assessment by DfT if a "Call-In" is necessary under recently introduced new process. AIRAC 10/2020 is also compatible with NATS requirements for NAS update.

[26] AIRAC 10/2020: Data to AIS 20 June latest; publication 30 July 2020; effective date 10 September 2020)

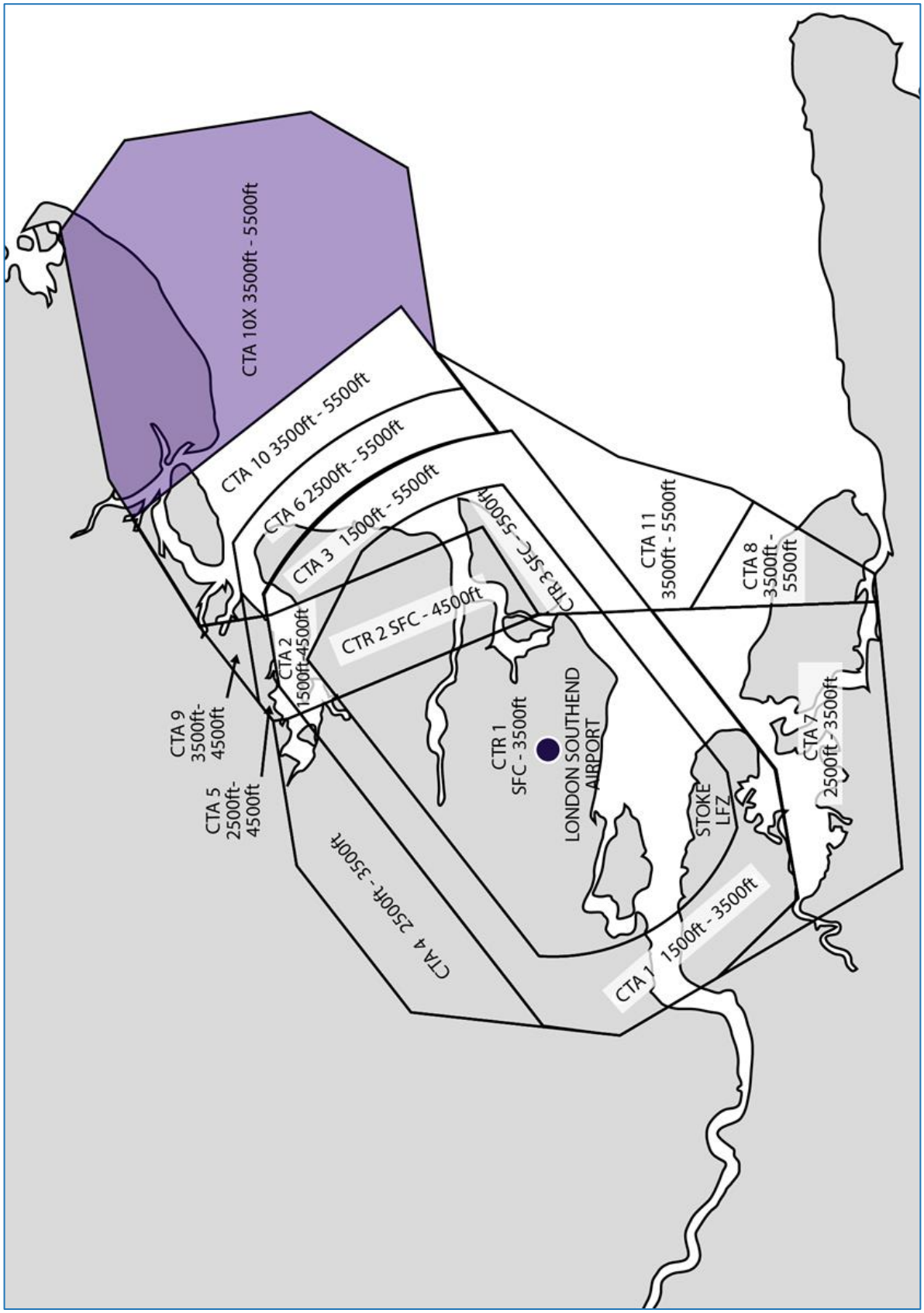
A. Copy of "Enclosure 4" to CAA Decision Letter of 23 January 2015 depicting the airspace configuration already consulted on



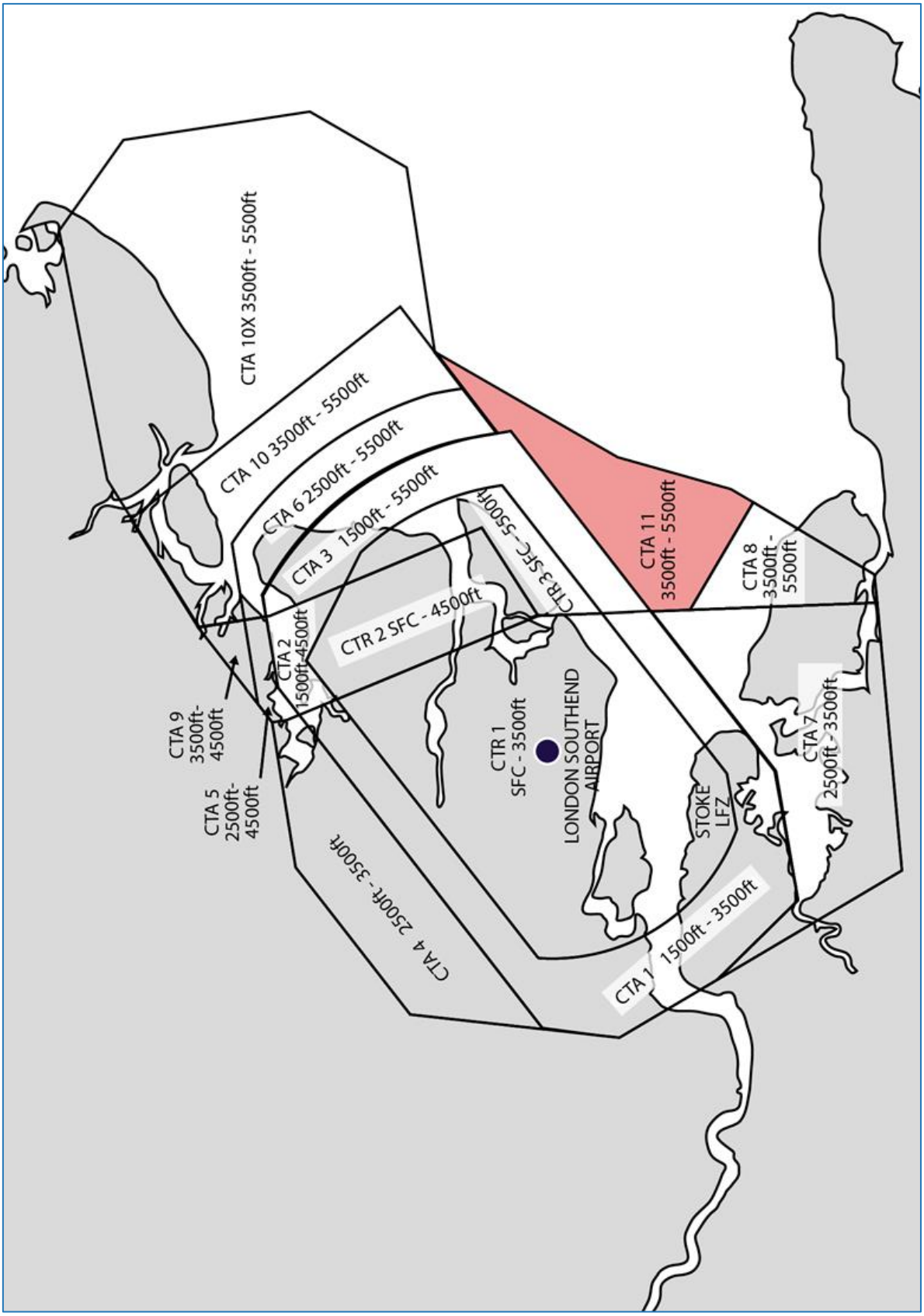
B. Current configuration of controlled airspace as approved by CAA in Decision Letter dated 23 January 2015



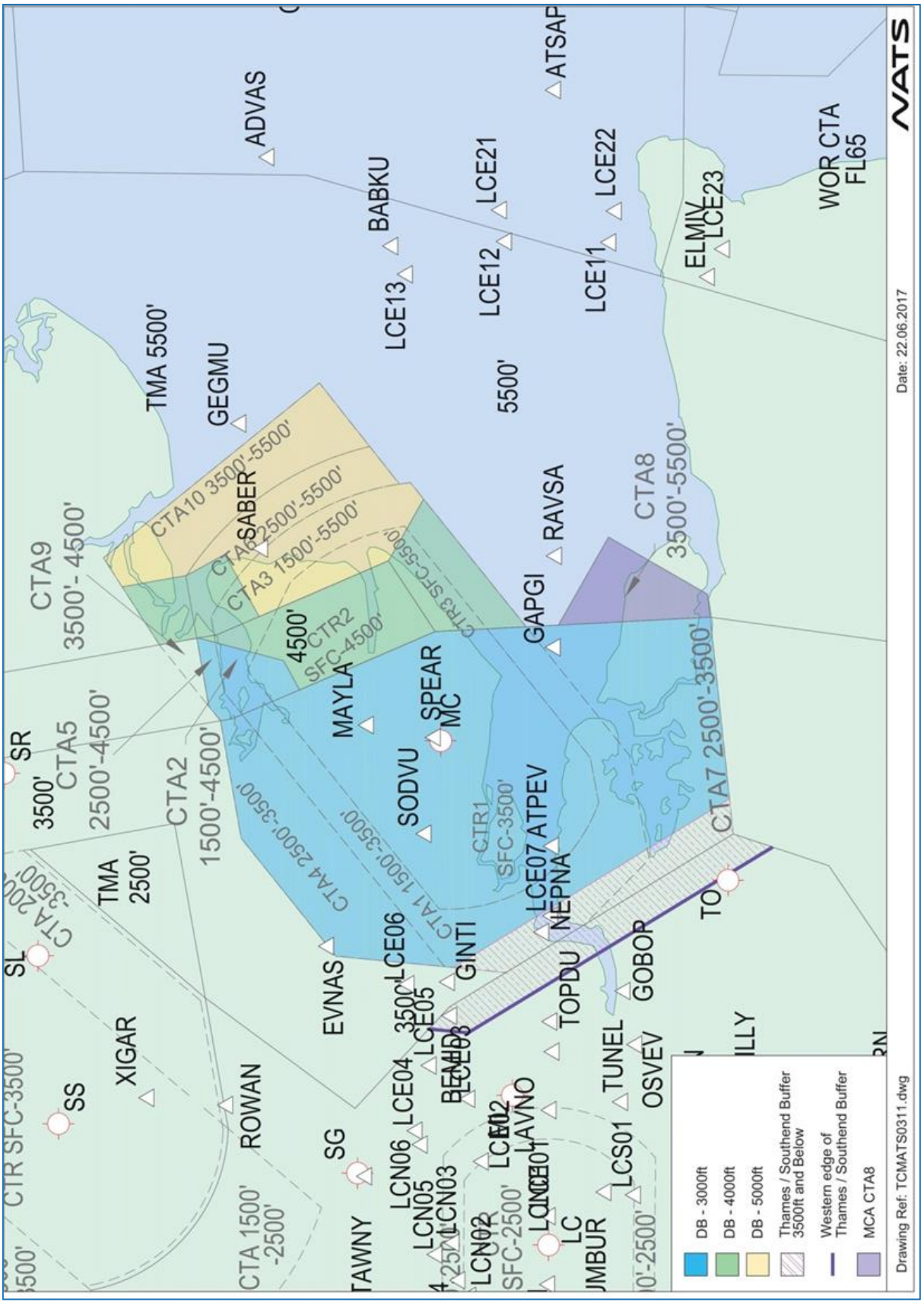
C. CTA-10X as applied for in this ACP



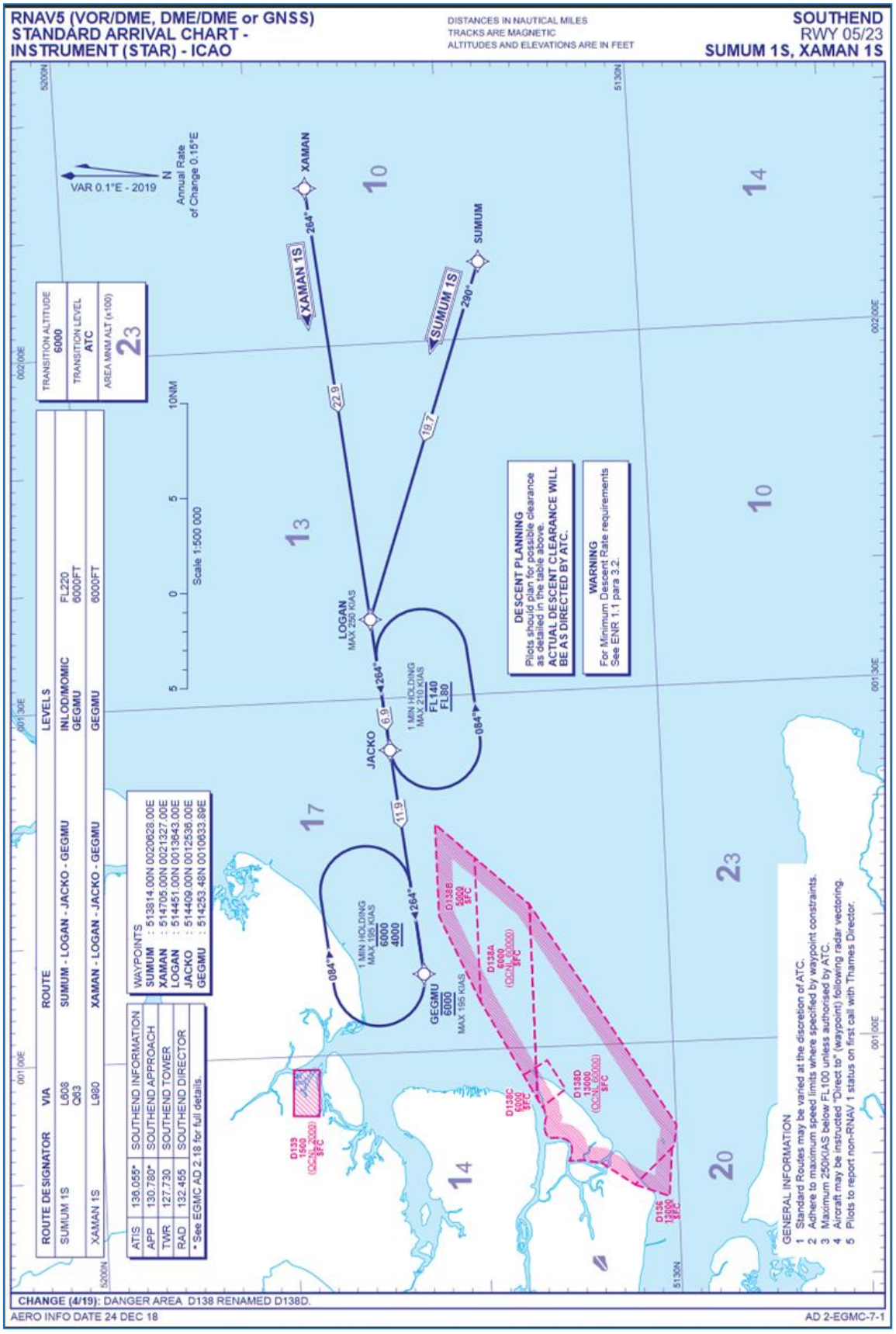
D. CTA-11 as applied for in this ACP



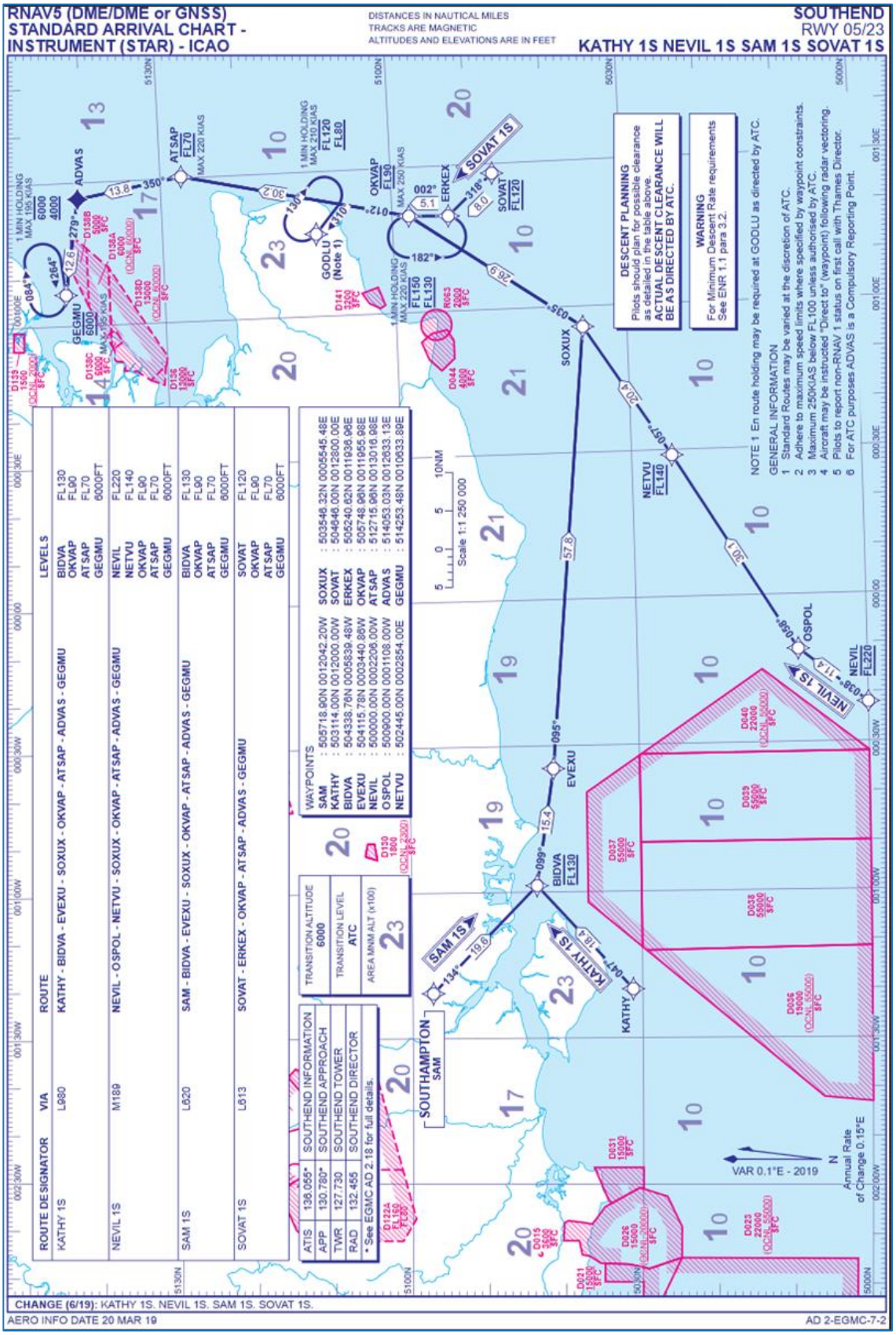
E. Southend ATC Radar Manoeuvring Area (RMA)



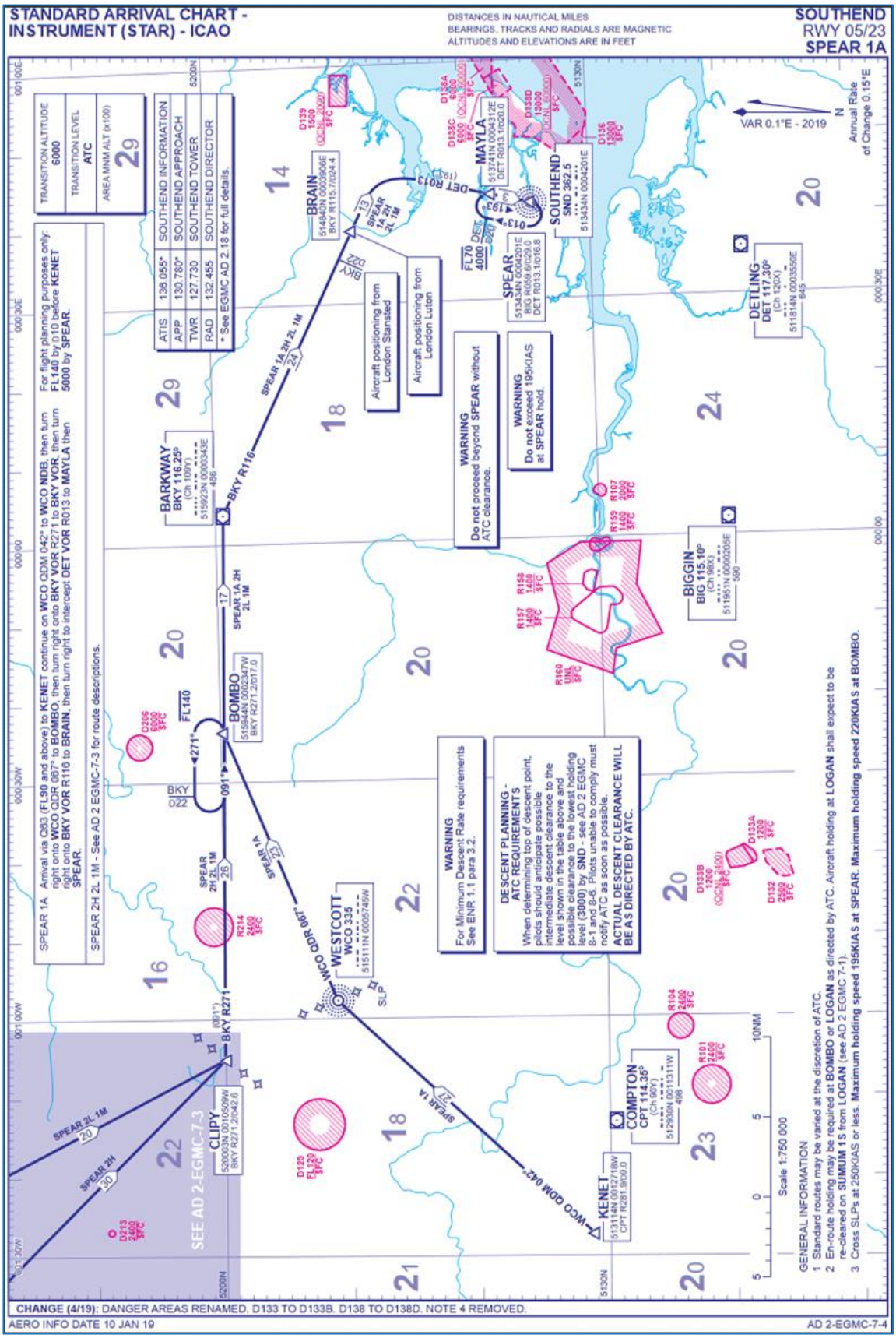
F. Standard Arrival Chart: GEGMU from the East



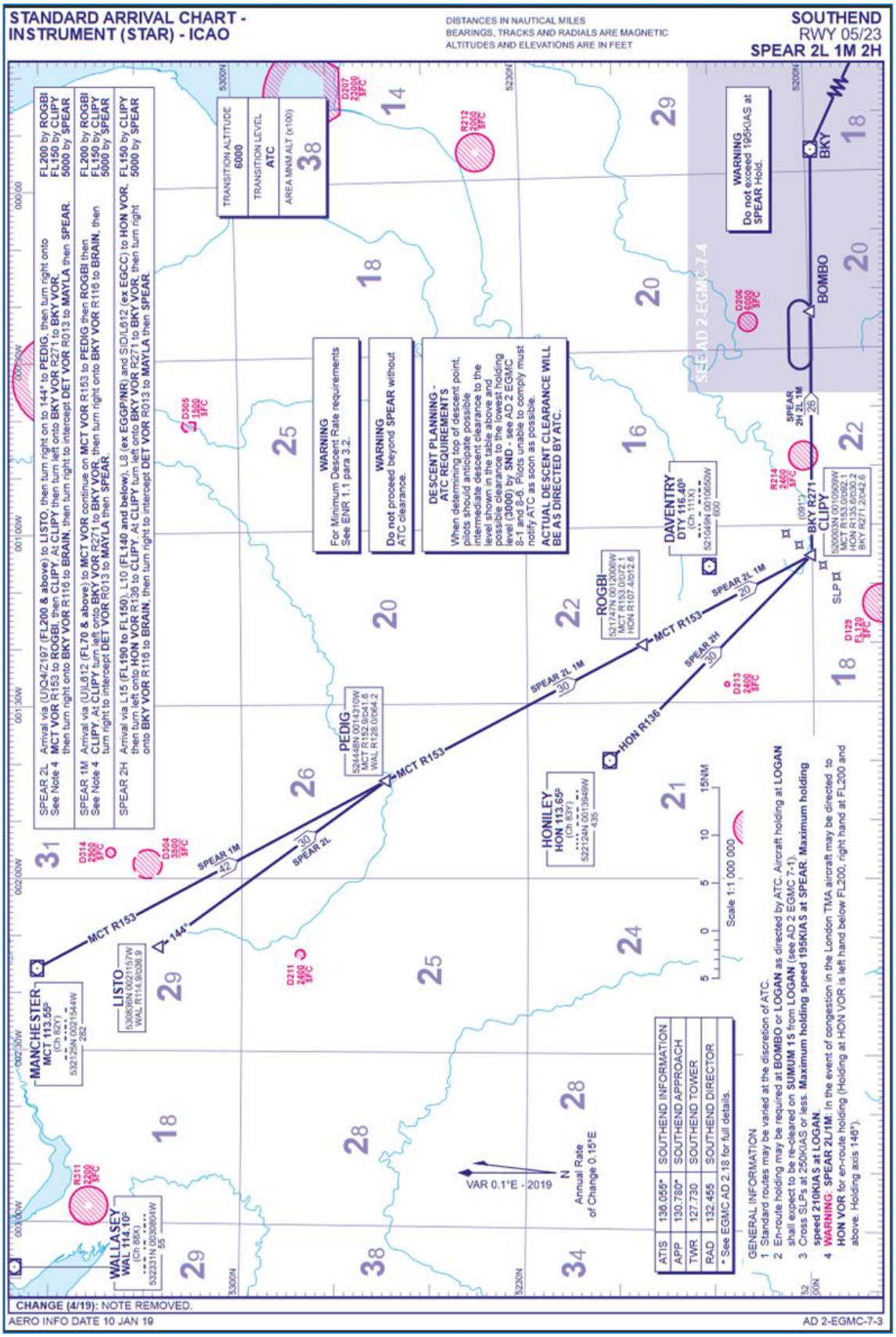
G. Standard Arrival Chart: GEGMU from the South



H. Standard Arrival Chart: SPEAR from the West



I. Standard Arrival Chart: SPEAR from the North



J. Options Appraisal: CAP1616 extracts and LSA Comment

CAP 1616 Extract	LSA Comment
Appendix B Environmental Requirements	
B26. The requirements for environmental assessment include a number of specific metrics that must be used in order to derive a quantitative output, as set out in this guidance. However, if a change sponsor believes that a quantitative assessment using the metrics identified by the CAA will result in no difference in the outputs for a metric (i.e. neither the pre- and post-implementation scenario, nor the forecast scenarios are affected by the change proposal for that metric), then a qualitative assessment of that impact may be used instead. In such circumstances, the change sponsor must present its rationale to justify that a quantitative assessment is unnecessary plus supporting evidence to the CAA for us to consider. After consideration, the CAA will confirm whether or not we have accepted the case made by the change sponsor. In all instances, if the CAA agrees and accepts the change sponsor's rationale, that same rationale plus the supporting evidence needs to be clearly explained in any consultation material and in the final proposal submitted to the CAA	CAP1616 recognises the challenges that some ACP Sponsors will face in quantifying change and gives an alternative means of compliance through a qualitative assessment of the impact. LSA has provided rationale as to why a quantitative assessment is unnecessary along with supporting evidence.

CAP 1616 Extract	LSA Comment
B35. The requirements for environmental assessment will be scalable and proportionate and are primarily determined by the Level of the airspace change proposal. The Levels are categories that are defined on the basis of the potential for a proposal to have a noise impact, based upon the Government's altitude-based priorities as set out in its Air Navigation Guidance. In all cases, if a change sponsor can provide a robust rationale supported with appropriate evidence that undertaking a specific metric or quantitative assessment of a proposed option would result in no environmental impact, and the CAA is satisfied with that rationale, then there will be no need to undertake that assessment. However, consultation material and the final formal proposal to the CAA must explain this rationale.	LSA believes it has provided a robust rationale supported with appropriate evidence that undertaking the various quantitative assessments of this proposal would result would essentially be guesswork as there are no formal IFPs or operational procedures that define the specific use of the airspace. It is likely however that there will be an environmental benefit realised by the establishment of this airspace in terms of fuel burn, emissions and noise.
B38. The key difference for any Level 1 airspace change proposals is that sponsors must demonstrate a clear consideration of noise impacts. This is likely to necessitate noise modelling, use of WebTAG and noise metrics to measure and portray the noise impacts. However, in some cases the change sponsor may believe that its proposed change will not result in a change to noise impacts that will result in a demonstrable change in a measurable output (in other words, that the impact is not quantifiable using either WebTAG or noise metrics). If the change sponsor can provide a robust justification for that assertion for the CAA's consideration and the CAA accepts that justification, then quantitative noise assessment may not be required.	The lack of IFPs associated with this proposal and the tactical/random nature of the operation renders noise modelling unviable. Accordingly, WebTAG cannot be used as there is no data for WebTAG to process. The qualitative assessment remains that as this airspace is largely over the sea, it will result in more flexibility to position aircraft over the sea for descent and accordingly a reduction in noise impact overland.

CAP 1616 Extract	LSA Comment
B49. As well as total significant adverse impacts, sponsors must adequately explain how communities will be affected as a result of the proposal, such as the expected change in noise exposure communities will experience. In this respect, sponsors should use Leq noise contours to portray noise impacts (down to 51dB LAeq16hr for daytime noise and 45dB LAeq8hr for night-time noise) particularly if the proposal is associated with an airport that has 50,000 or more air transport movements in a year.	See comment above.
Appendix E Options Appraisal	
E23. For the Full appraisal, we expect the Initial appraisal to be developed into a more detailed quantitative assessment, moving from qualitatively defined shortlist options to the selection of the preferred option. The Full appraisal must include: • each shortlist option fully developed, including the 'do nothing/minimum' option, in particular: – all reasonable costs and benefits quantified; – all other costs and benefits described qualitatively; – reasons why costs and benefits have not been quantified; • detail on the preferred option, setting out reasons for the preference.	This Options Appraisal has been reverse engineered to fit with the new CAP1616 process. The Initial and Full Options Appraisals required at Stages 2 and 3 of CAP1616 were not done as these were not required under the CAP725 process that this ACP was subject to. The reasonable costs and benefits associated with the proposal have been compared against the 'do nothing' in a qualitative manner and the reasons why a quantitative assessment could not be achieved have been clearly stated.

CAP 1616 Extract	LSA Comment
E26. As noted earlier, it is not always possible or proportionate to quantify costs and benefits. The frameworks set out in this guidance, the Green Book and WebTAG are designed to be applied flexibly to match the circumstances of the proposal. We expect sponsors to carry out a comprehensive appraisal of the options. However, a Full appraisal for an airspace change that affects all movements in a dense area of airspace with multiple routes and airports is likely to require significantly more detailed analysis than, for example, moving an approach at an airport further away from densely populated areas. In some cases, a qualitative assessment may be all that is required, for example a proposed change to airspace over the sea with no consequential impacts on populated areas.	LSA has determined that a qualitative assessment is all that is required and this paragraph from CAP1616, referring to changes over the sea, supports this decision.

CAP 1616 Extract	LSA Comment
E27. We cannot provide precise detail on the level of analysis required as this will depend on local factors and the specifics of the particular airspace change. However, when considering the level of detail required, sponsors should include the following: • a full history of airspace change in the area; • whether the change is likely to involve a wide range of stakeholders with conflicting requirements; • the extent of the change in terms of both airspace users affected and those likely to be affected on the ground; • whether the proposal affects more than one airport; • whether there may be other forthcoming changes in the same area.	The history of this ACP and the development of the existing airspace has been captured within this report as have the impacts and stakeholders that are affected. Other ACPs already submitted by LSA and under consideration by CAA are not affected by this proposal.
E28. We consider that, as a rule of thumb, more detailed analysis should be provided where the proposal is likely to affect more stakeholders and/or affect more than one airport. We will be able to provide more guidance when the change sponsor is carrying out the Initial appraisal.	A significant level of analysis of the impacts on other airports and stakeholders was captured in the original ACP. This Addendum has focussed specifically on the additional volumes of airspace that were not granted in 2015 and the engagement that has been carried out with stakeholders in the completion of this ACP.

CAP 1616 Extract	LSA Comment
E29. Proportionality should not be used as an excuse to avoid undertaking reasonably achievable quantitative analysis, for example where quantitative estimates are readily available such as from the WebTAG data book or other published sources. We expect the change sponsor to set out why it has not undertaken specific quantitative analysis as part of its assessment. The CAA may ask the change sponsor to carry out quantitative analysis if we decide that its rationale is not sufficiently compelling.	LSA has not used proportionality as an excuse to avoid quantitative analysis. The rationale for not undertaking it has been set out in this document.
Safety Assessment	
E48. The change sponsor will be required to provide a plain English summary of the final safety assessment and the CAA will provide a plain English summary of its review (i.e. a summary of the Letter of Acceptance, which forms the CAA's review of the safety assessment) when it makes a decision. These summaries will be published on the online portal as part of the associated options appraisal material. The purpose of a summary is not to limit the information made available, but to ensure that it is clear and comprehensible. When the airspace change is likely to have a detrimental effect on a significant number of stakeholders (such as General Aviation or local communities), those stakeholders have a reasonable expectation that the change sponsor has demonstrated that it has properly considered the potential safety impacts of its proposal. The summary can exclude material which the CAA is satisfied should be kept confidential.	LSA submitted a plain language Safety Assurance Document to the CAA in March 2015 for the Class D airspace that was introduced on 2nd April 2015 under the previously approved ACP-15-01. Fundamentally the same safety assurance still applies for the airspace (CTA10x and CTA11) that is being applied for under this ACP-2017-25. However as LSA has now had operational experience with Class D airspace, the safety document has been reviewed and updated to demonstrate that LSA has met these safety assurances and will provide further mitigation for the safe operation of the proposed two new pieces of airspace, CTA10x and CTA11.

CAP 1616 Extract	LSA Comment
E54. A final safety assessment will need to be included in the Final options appraisal at Step 4B of Stage 4 (Submit proposal to CAA). At Step 4B, the change sponsor will submit its formal airspace change proposal to the CAA including a complete set of supporting documents, of which the final safety assessment will be one. The change sponsor must publish a summary version of the safety assessment and a summary of the quantitative data on the online portal. The CAA will review this as part of its assessment at Stage 5.	An updated Safety Assurance document has been produced and will be submitted to the CAA with the Addendum to the ACP. If the airspace is approved, it is accepted that LSA will review this Safety Assurance document along with associated HAZID and risk assessments closer to the introduction date following engagement with the key stakeholders and taking into consideration any changes that LSA are not aware of at this stage of the ACP process.

K. LSA Note on Natural England response to Engagement

NOTE ON NATURAL ENGLAND RESPONSE TO ENGAGEMENT

OUTER THAMES ESTUARY SPECIAL PROTECTION AREA

1. The portions of the SPA overlaid by CTA-10X and CTA-11 are the Dengie Flats and mid-Thames to the south of Shoeburyness. The SPA itself is a massive designated area stretching from Great Yarmouth to the North-Kent coast and offshore to approx. 20nm in places.

2. The landward boundary of the SPA directly abuts existing SPAs: Dengie SPA, Foulness SPA, Southend & Benfleet Marshes SPA, Thames Estuary and Marshes SPA; for which there are no air navigation avoidance requirements or restrictions.

3. The particular bird species that qualifies the area for SPA designation is the Red-throated Diver. (Approx. 6466 individuals during the winter period, 38% of the GB population). The SPA document gives no indication of the likely flight altitudes of this bird species.

4. Numerous commercial and leisure sea-going activities and off-shore development take place without restriction within the SPA, as identified in the SPA document.

5. The UK AIP does not list SPAs and they attract no air navigation avoidance status. (The UK AIP lists certain Bird Sanctuaries but does not afford them mandatory air navigation avoidance status.)

6. Other than the above, the only navigation advice given is a request to avoid overflying the specified bird sanctuaries below an individually specified altitude and general air navigation advice to avoid flying below 1500ft over areas where birds are likely to congregate (with additional advice where flight below 1500ft is necessary). The UK AIP advice is given in the context of both avoiding airframe damage from bird strikes and of the potential disturbance to bird colonies and breeding grounds.

7. Under the current airspace configuration, aircraft of any category (which may or may not be receiving an ATS outside controlled airspace from LSA ATC) may operate freely at any altitude over the SPA. LSA ATC has no authority to direct aircraft to avoid overflight of the SPA.

8. With reference to CTA-10X and CTA-11, the base level of these airspace segments when introduced will be 3500ft amsl. No IFR flights under the jurisdiction of LSA ATC within the controlled airspace system will operate below 4000ft amsl over the SPA. (VFR flights (generally light aircraft types) may occasionally operate down to the base level.) Other flights may continue to operate below the base of controlled airspace without restriction.

9. Thus, LSA concludes that the introduction of the proposed controlled airspace will not impinge on the existing air navigation arrangements in respect of SPAs and, in its opinion, no additional Habitats Regulation Assessment (HRA) is necessary to be conducted by the CAA.

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