NATS

Performance
through Innovation

LAMP Phase 1A

Airspace Change Proposal - Module E

South Coast Changes

Issue 2.0 Redacted
March 2015
Doc ref. 4165/RPT/131 (Module E)

Prepared by:
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Airspace Change Assurance

Issue	Month/ Year	Changes in this issue
Issue 1	February 2015	Initial issue submitted to CAA SARG.
Issue 2	March 2015	Revised following queries
Issue 2 redacted	Nov 2015	Names redacted pre-CAA publication

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1 Introduction

This ACP is sponsored by NATS; sponsorship has been transferred from TAG Farnborough with their support.

Flights that currently arrive at Southampton and Bournemouth airports from the east do so via Goodwood. Arrivals to Farnborough from the south and east also interact with these flights, and also with Gatwick departures to the west. Departures from all three airports towards Dover also have interactions with Gatwick and Heathrow arrivals. This leads to complexity and inefficiencies in the wider route network (discussed further in para 4.4 below).

This proposal seeks to move the arrival routes further south offshore and the departure routes further north, reducing these interactions, and enabling the ATC sectorisation which is an integral part of LAMP Phase 1A (see para 6.1 below).

Simultaneously this proposal would mean fewer flights overland below 7,000ft by moving some routes over the sea.

There would be an enabled fuel **disbenefit** from this Module of c. 248 tonnes per annum (2016) and c. 400 tonnes in 2020. However, as part of the wider LAMP Phase 1A proposal this Module indirectly contributes to the significant overall CO_2 saving described in the Bridging ACP.

Note also that as an enabler for the wider LAMP Phase 1A proposal this Module is also justifiable indirectly on the grounds of the operational and overall noise benefits of the wider LAMP Phase 1A proposal.

Note that this proposal is not dependent on TAG Farnborough making local changes at a later date, however it would complement any such development should TAG Farnborough seek to progress it.

2 How to Read this Airspace Change Proposal

This document forms Module E of the LAMP Phase 1 ACP package. The structure of the ACP is shown in Figure 1 below. (This document highlighted in red).

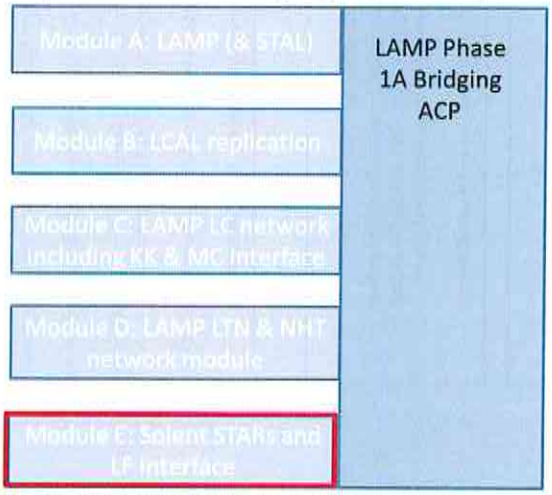

Figure 1: LAMP Phase 1 ACP structure

Much of the evidence of meeting CAP725 requirements has already been documented in other consultation and technical documents.

This ACP document is designed to be a reference document to demonstrate compliance with CAP725 requirements. As such it provides cross references to relevant evidence where it exists elsewhere, as well as presenting some additional detail where required.

Whilst this proposal has been designed so it could stand alone, it forms part of the LAMP set of ACPs which will meet CAP725 requirements for the whole of the LAMP Phase 1A airspace development. It is also associated with, but not dependent on, TAG Farnborough's proposal.

The document map below details the reference documents for all modules of the ACP.

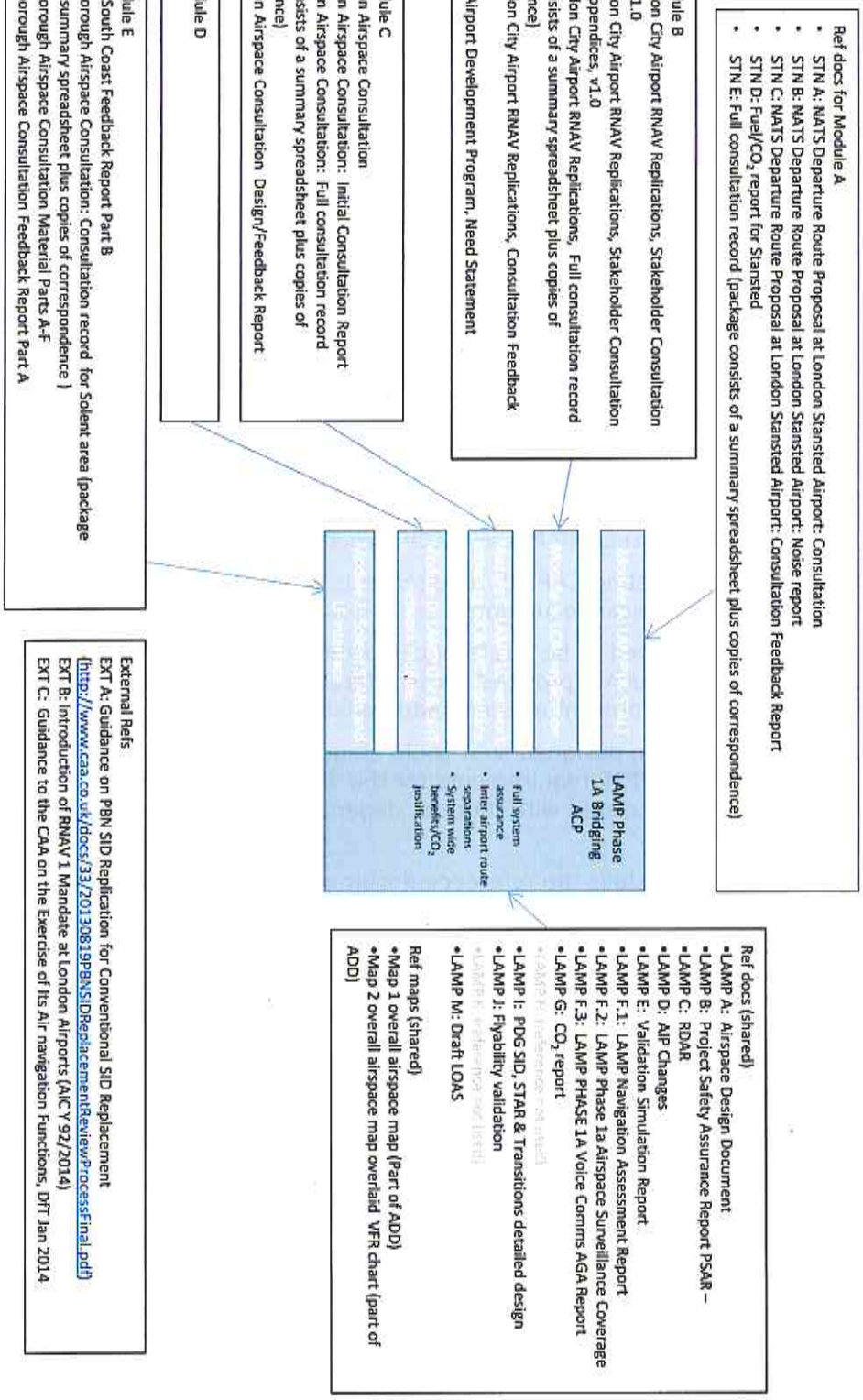

Figure 2: Document Map & References

3 Justification

See:

SOL A para 2.5-2.7 page 6

SOL C Part D para 3.4 page D15

Paras 4.4 and 5.1 below.

4 Current Airspace Description

4.1 Existing Airspace & Traffic Routings

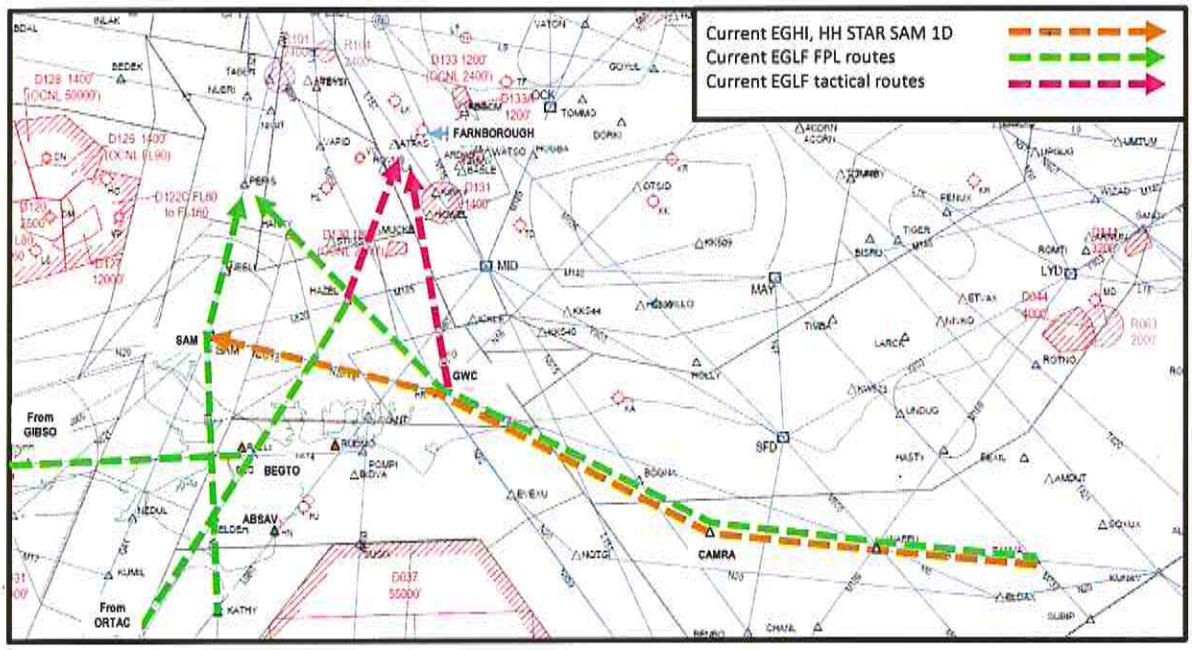

Figure 3 Current arrival routes relevant to this proposal (illustration THIS CHART UPDATED)

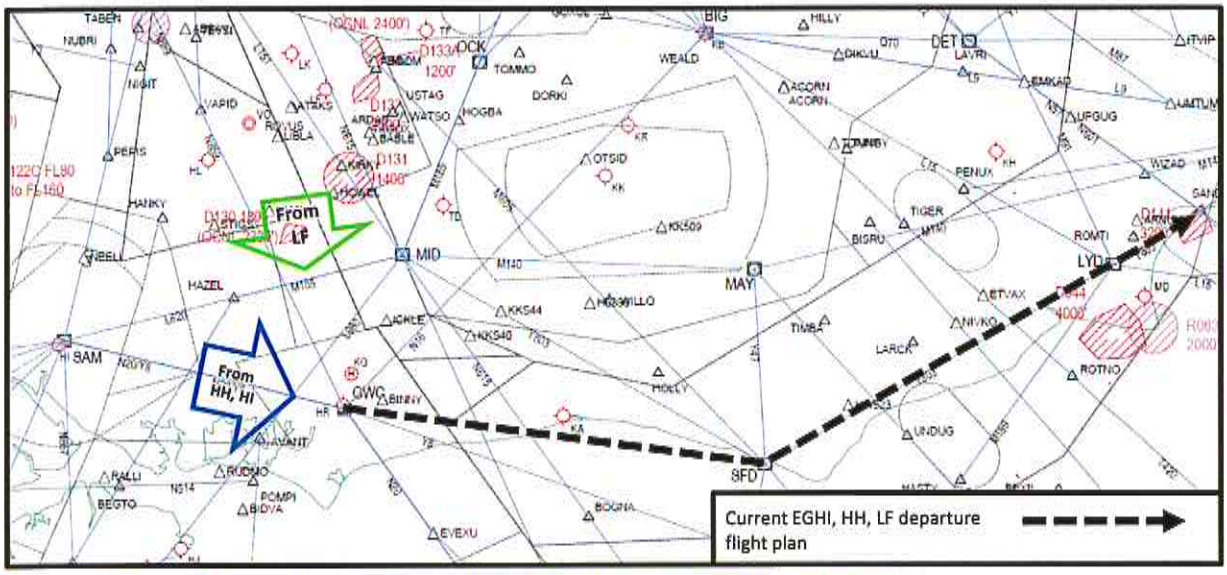

Figure 4 Current departure routes relevant to this proposal (illustration)

Figure 3 illustrates today's flight plan routeings[1] which this ACP module seeks to change.

In reality Farnborough flights head directly towards Farnborough in broad swathes:

- From the east this swathe is roughly from Worthing to GWC, with a concentration of flights via GWC
- From the south and southwest the swathe is the breadth of the Isle of Wight with a slight concentration around the FPL route heading towards Farnborough via HAZEL

Solent Group arrivals are in a swathe centred on the SAM 1D STAR as shown.

Figure 4 shows the flight plan route for Southampton, Bournemouth and Farnborough departures via DVR. In practice the flights are distributed in a wide swathe along the south coast around GWC.

For trajectory density plots see SOL C Part C (Farnborough) and SOL C Part D (Solent).

4.2 Traffic Figures

See Bridging ACP (the equivalent paragraph number to this para).

4.3 Aircraft Types

See Bridging ACP (the equivalent paragraph number to this para).

4.4 Operational Efficiency, Complexity, Delays & Choke Points

The operational efficiency of the route network in the South East is constrained by the confluence of routes in this area. Figure 3 demonstrates how the defined routes for Farnborough arrivals are complex in the vicinity of HAZEL, BEGTO and the Isle of Wight.

The Southampton and Bournemouth arrival routes from the east (SAM 1D STAR) interact with eastbound departures – both route via Goodwood VOR GWC causing opposite-direction conflictions east of GWC, reducing the opportunity for continuous climb by the GWC departures and increasing controller workload. It also interacts with southbound Gatwick departures and with Farnborough Group traffic. Additionally, extant CAS bases mean the Farnborough Group arrivals from the south and southwest need to stay high and then dive low to get under Gatwick departures via SAM/KENET.

Farnborough arrivals from the south and southwest do not need to hold often, but when they do they hold at PEPIS (between Winchester and Basingstoke at the M3/A303 junction). PEPIS is in the middle of a complex sector, and acts like a 'dam' in the way of Solent northbound departures and southbound arrivals. Immediately PEPIS holding is activated, LTC's workload increases significantly.

[1] From AIP and SRD

When these interactions are taken as a whole, there is a constraint to efficiency in the region.

4.5 Environmental Issues

There are no specific environmental issues associated with the routes at the levels relevant to this ACP module.

5 Proposed Airspace Description

5.1 Objectives/Requirements for Proposed Design

The objective is to reduce complexity and increase efficiency of the route network by supporting the wider LAMP Phase 1A programme.

Reducing over-flight of populated areas is a benefit but was not a specific objective.

The proposed solution is to realign the arrival routes from the east, further south (mainly over the Solent) for as long as possible, before crossing the coast to re-join the existing landing pattern at lower altitudes. Doing this will remove the GWC conflict between Solent departures and arrivals, and also with Gatwick southbound departures.

Farnborough departures routing via DVR will be improved[2] in the GWC conflict area by climbing towards the HAZEL vicinity to gain altitude before turning east.

The lowering of the CAS bases would mean that the Solent arrivals could descend clear of Gatwick traffic in an area to the south. Farnborough Group arrivals from the south could descend earlier below the Gatwick traffic, but would not need to drop outside CAS as early as they do today. Counter-intuitively, descending Farnborough arrivals slightly earlier (below the interaction) would allow them to stay slightly higher overall during the rest of their arrival route.

For a full description of the proposed CAS changes see ref SOL A (Feedback report) Section 4 in combination with SOL C (Consultation material) Part D. For more detailed charts see Figure 8 to Figure 11 starting on page 43.

Finally, the establishment of a hold over the Solent would remove the 'dam' from the PEPIS area should holding be required for affected Farnborough Group arrivals. Thus Solent traffic would be far less impacted in that area and LTC's workload would not increase so much.

See also SOL C Part D Section 3 page D15.

[2] Other Farnborough traffic would still route via GWC

5.2 Proposed New Airspace/Route Definition & Usage

The proposed routes are shown in Figure 6 and Figure 7, and are summarised below. For full descriptions see Airspace Design Document (ref LAMP A). Draft AIP data (Ref LAMP D) will include coordinates, true tracks, CAS bases etc to be supplied in due course.

Solent STAR Requirements

Conventional SAM1D STARs removed

New SAM RNAV5 SAM2D STARs into conventional SAM hold, with new RNAV5 intermediate contingency hold at RUDMO

SAM2D STARs apply to EGHI and EGHH and are as follows:
ELDAX (new)-NOTGI (new)-EVEXU (new)-RUDMO (new)-MIVLA (new)-SAM

Solent Departure Route Requirements–

This is an AIP 'procedure for outbound aircraft' and not a SID

Departures via DVR RFL200+ to now route GWC-new ATS route (U)N16-BIG-(U)L9-DVR etc. Currently such flights route GWC-SFD-DVR. See below for details of (U)N16.

Farnborough Arrival Route Requirements

These are AIP 'procedures for inbound aircraft' and not STARs

Arrivals from south (KATHY or ORTAC) to route KATHY ABSAV (new) RUDMO (new) GWC PEPIS

Arrivals from southwest to route GIBSO BILNI KUMIL ABSAV RUDMO GWC PEPIS

Arrivals from Paris FIR to route N20 GWC PEPIS (See below for details of (U)N20).

AIP to retain notes detailing the expectation to route via ROVUS (a tactical waypoint for Farnborough arrivals), with PEPIS remaining as the FPL clearance limit for RT Fail purposes. Tactically, all arrivals are routed to ROVUS. Arrivals rarely route to PEPIS in practice. (AIP AD-2-EGLF-2.22 item d (i) Note 1 clarifies the expected use of ROVUS and PEPIS).

Farnborough Departure Route Requirements

This is an AIP 'procedure for outbound aircraft' and not a SID

Departures via DVR RFL200+ to now route HAZEL-GWC-new ATS route (U)N16-BIG-(U)L9-DVR. Currently such flights route GWC-SFD-DVR.

ATS Route Requirements

An extension to French route (U)N20 is required within UK airspace to feed the Southampton and Bournemouth STARs and the Farnborough arrival routes. The route (U)N20 would be: KUNAV-ELDAX (new)-NOTGI (new)-EVEXU (new)-GWC-SAM

A new link route (U)N16 is required from GWC to link DVR departures from Solent and Farnborough to L9 eastbound. The route (U)N16 would be:
GWC-OTSID (new)-BIG-BPK-BKY

Both ATS routes would be RNAV5 defined 5nm either side of the relevant centrelines.

The charts below and in Section 13 illustrate the current and proposed CAS, arrival, departure, and ATS routes for this proposal. The ADD (Ref LAMP A) is considered the master repository for this data.

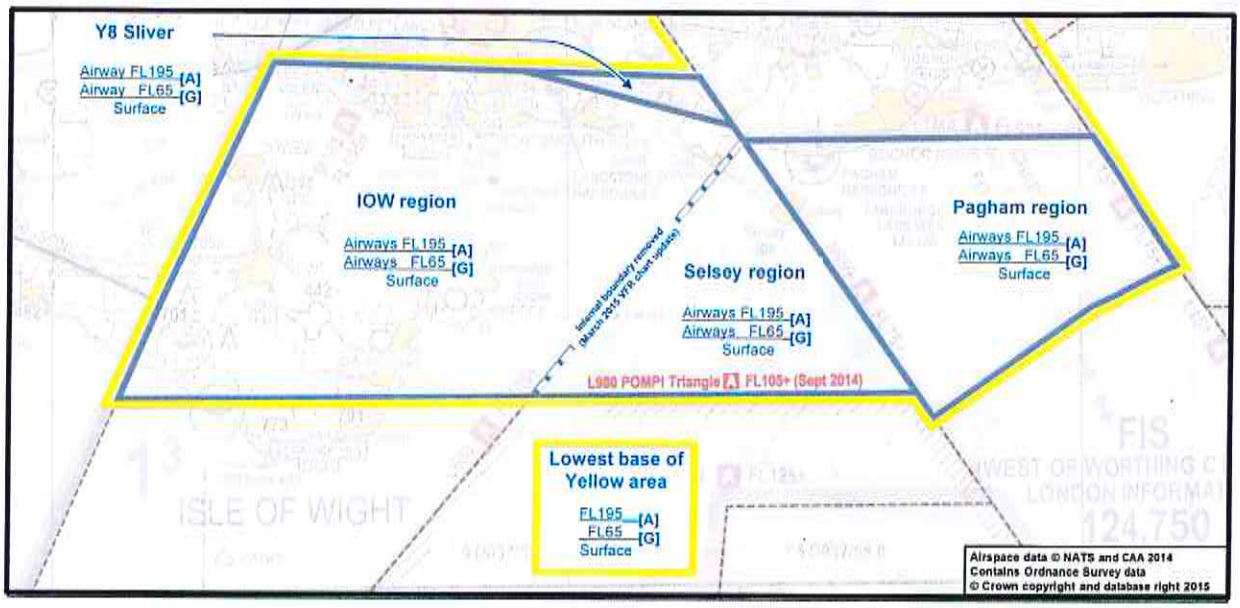

Figure 5 Proposed CAS volumes overlaid on current VFR chart (illustration)
See Section 13

Revisions for Issue 2.0' for clarified version of this CAS chart

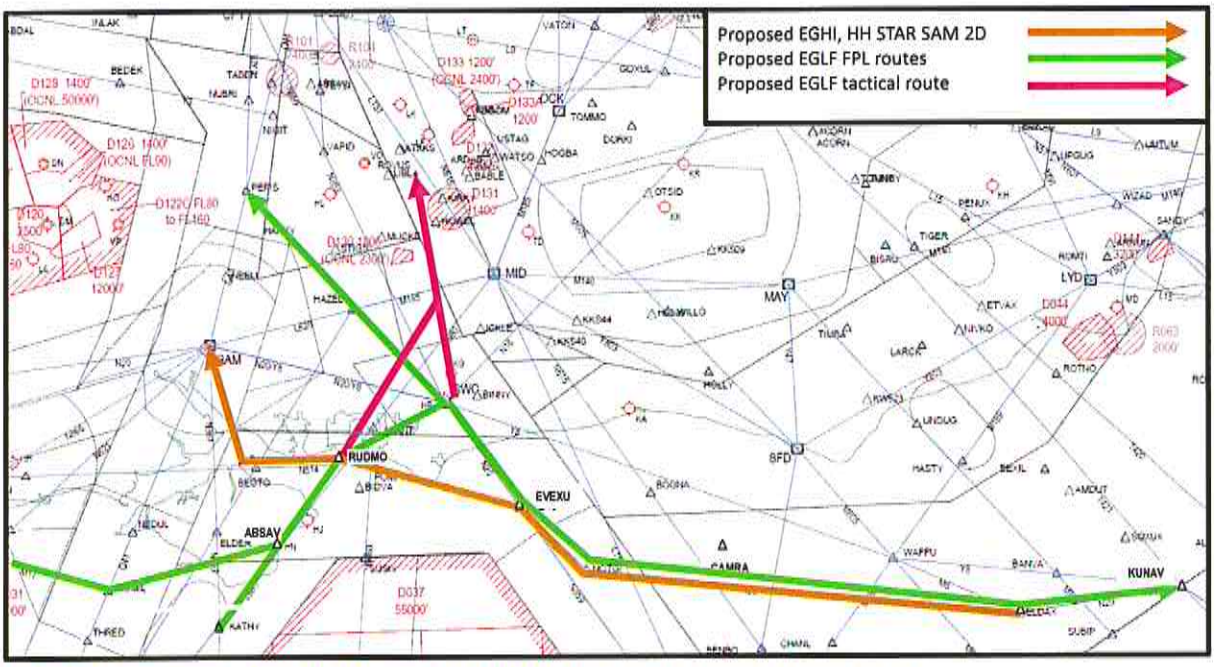

Figure 6 Proposed arrival FPL routes (illustration THIS CHART UPDATED)

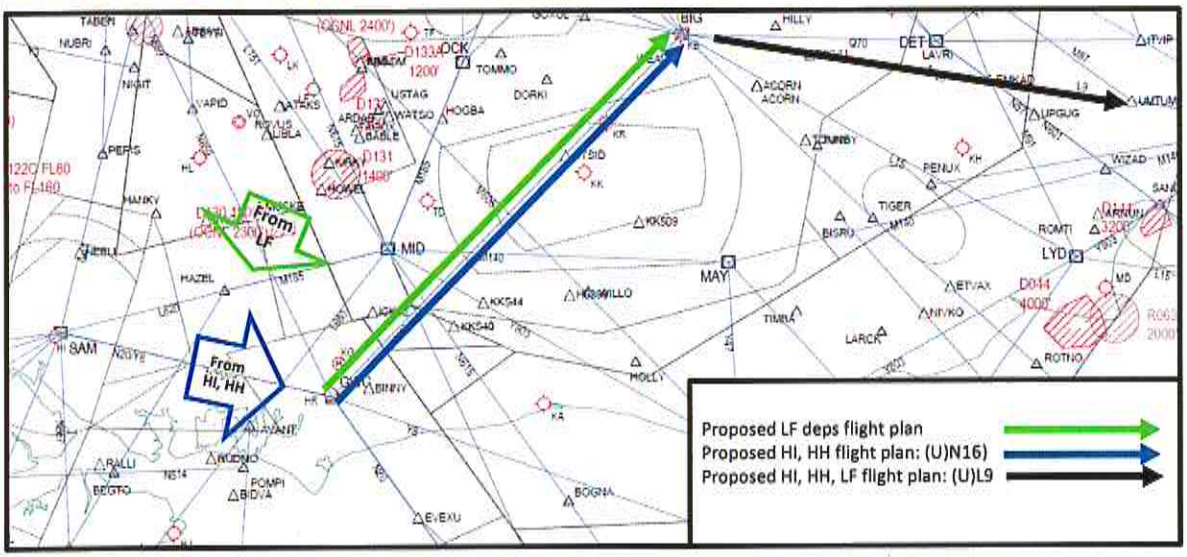

Figure 7 Proposed DVR departure FPL routes relevant to this proposal (illustration)

5.3 Procedural Usage

Figure 6 shows the procedures for arrivals. Farnborough arrivals from the south will route via ABSAV to the proposed hold at RUDMO at FL70. The route then continues GWC PEPIS from where there is a defined radio fail procedure via the TAGOX hold (this is no change from today).

From the east Farnborough arrivals route via GWC with contingency hold at PEPIS.

Southampton and Bournemouth arrivals would also route via the proposed hold at RUDMO, FL70 the lowest level of the hold.

Figure 7 shows the procedures for outbound aircraft. These are not SIDs and so have no defined track from the runways. For flight planning purposes the Farnborough departures will file HAZEL GWC OTSID, whereas Solent departures will file GWC (U)N16.

The procedures require all these flights to be FL170 by OTSID

5.4 Tactical Usage

Farnborough and Solent flights operate in a highly tactical environment, which will remain tactical after this proposal. The impacts on traffic patterns in this tactical environment below 7,000ft would be as consulted upon in SOL C Parts C and D.

Holding

In practice holding for Farnborough arrivals is rare. Apart from emergency circumstances, holding occasionally happens when long-haul traffic arrives early (e.g. due to tailwinds) before the airport opens.

Holding for Southampton and Bournemouth also only occurs in unusual or emergency situations.

The addition of the RUDMO hold will not change this situation, therefore this hold is for contingency use, rather than part of the normal day to day operation.

Arrivals

Farnborough arrivals would follow the new routes but are expected to be vectored into the same broad swathes as seen today on making landfall.

Southampton and Bournemouth arrivals from the east will follow the more southerly STAR (over the Solent) and are expected to route via RUDMO as per the consultation document SOL C Part D.

Departures

Farnborough DVR departures would be vectored to the south towards HAZEL, then towards GWC and northeast towards OTSID, not following the flight plan route *per se* but in a broad swathe around it as the traffic situation tactically develops. The high performance of the Farnborough fleet means that aircraft are expected to be c.7,000ft by the turn at HAZEL. Some Farnborough southbound departures route via HAZEL at lower altitudes today, and others route via GWC at lower altitudes today.

Solent departures would be vectored towards GWC (as they are today) before being turned northeast towards OTSID. This would generally happen before reaching GWC resulting in a broad swathe heading towards OTSID (from between c.15nm west of GWC, to GWC itself). Flights will be turned north as the traffic situation allows, all flights are expected to have reached 7,000ft by the time they make the left turn.

6 Impacts & Consultation

6.1 Units Affected by the Proposal

This proposal affects London Terminal Control, Swanwick, Southampton Airport, Bournemouth Airport and TAG Farnborough Airport.

The proposal is sponsored by NATS and supported by the airports .

ATC Complexity, Workload and Sectorisation

The extant alignment of the Solent and Farnborough departures is GWC-SFD-LYD. Maintaining this alignment would introduce a new interaction with the proposed TIMBA STARs from the direction of the Thames estuary (as described in Module C). This would not be acceptable as it would introduce additional complexity and workload, and lead to less efficient profiles for both the Farnborough and Gatwick flows as level segments would be allocated by ATC to manage the interactions. This Solent and Farnborough Module is therefore an enabler for the TIMBA STAR changes which is in turn an enabler for the London City point merge system.

In addition the proposed departure route changes enable the resectorisation necessary for LAMP Phase 1A which involves TC TIMBA increasing in size and taking on additional tasks from S17 (these are responsible for separating LC/KB/MC departures to the SW via WAFFU, from LL BIG and KK TIMBA arrivals from the SE). If the Solent and Farnborough Group departures via DVR were to still route via SFD and Y803, TC TIMBA would also have to take on this traffic. As TC TIMBA only goes up to FL195, they would have to co-ordinate higher with S17 and S18 for every departure going this way generating more workload. If that co-ordination couldn't be made for any reason, these departures could still be as low as FL190 until SANDY.

By re-routing them via OTSID and into TC CAP airspace, they are away from TC TIMBA, and Heathrow and Gatwick arrivals from the SE and can be guaranteed a better vertical profile. It also reduces the interactions with the outbound flow via DVR with S15.

6.2 Safety Issues/Analysis

The proposed SID allocation and link routes have been simulated in the context of the wider LAMP Phase 1A changes.

Full safety analysis and RDAR in the context of Phase 1A is provided as part of the Bridging ACP.

Regarding the application of the **SARG Buffer Policy** para 1.3 with respect to L980 POMPI Triangle and EGD037:

The proposed airspace between FL65 and FL105 would operate as it has done in the POMPI Triangle previously, above FL105. The operational practices have been in force since September 2014 above FL105 (and for a number of years previously above FL125), with aircraft being tactically vectored across the POMPI Triangle on a regular basis.

NATS respectfully contends that continuation of these operational practices would meet the spirit of the Buffer Policy para 1.3 for the proposed CAS base of FL65.

6.3 Military Implications & Consultation

The UK MOD has raised no objections to the establishment of FL65 CAS. NATS agrees to continue standard operations with regard to FOST. Except from DAATM-SO2 email:

I have consulted MUACT members and can confirm that the MOD has no objections to the proposed changes provided that any safety buffer requirements are provided outside the extant Danger Areas to allow the MOD to continue to carry out hazardous activity up to the lateral confines of these areas.

If you have any questions then please get in touch.

Regards, <<redacted>>

<<redacted>> | DAATM | 6th Floor | CAA House | 45-59 Kingsway | London | WC2B 6TE

(For safety buffer info see para 6.2 above.)

Full email embedded in Word document here: *<<redacted>>*

6.4 General Aviation Airspace Users Impact & Consultation

See SOL A Section 4.

6.5 Commercial Air Transport Impact & Consultation

Whilst there were no responses from airlines for this part of the consultation, the Commercial Air Transport (CAT) community is generally supportive of LAMP and the wider benefits.

6.6 CO_2 Environmental Analysis Impact & Consultation

See equivalent paragraph in LAMP Bridging ACP.

This Module alone would result in an increase in fuel and therefore CO_2. However, it is an enabler for the wider fuel benefits described in the Bridging ACP.

For a summary of the route by route breakdown see Ref LAMP G (Bridging Module Fast Time Sim Report) Section 7 para 5, and Tables 52 and 53 on pages 30-31 of that report.

6.7 Local Environmental Impacts & Consultation

Overall the South Coast Proposal would reduce the geographic area exposed to noise from flights below 7,000ft due to most of the Southampton and Bournemouth arrival flight-paths

shifting over the Solent more of the time. Fewer towns would be over-flown by these flights, and consequently the net impacts would be reduced.

Further data can be found at:

EGHI – 7,000ft-4,000ft

See Ref SOL C Consultation Doc Part D Fig D8 on page D35.
Compare with Fig D5 on page D32 of same doc.

EGHH – 7,000ft-2,500ft

See Ref SOL C Consultation Doc Part D Fig D9 on page D36.
Compare with Fig D6 and D7 on pages D33 and D34 of same doc.

Farnborough arrivals would still tactically route via ROVUS (tactical arrivals waypoint near to EGLF) but we would expect them to be marginally higher.

SOL A Section 3 provides an overview of the consultation response. In summary, environmental stakeholders raised generic concerns about noise, tranquillity, fuel/emissions and other quality of life issues. These factors are covered in DfT guidance that has been considered in the development of the proposal, in particular we are taking into account the generic guidance on noise being significant below 7,000ft by seeking to put some routes used by flights below this level over the sea. The consultation highlighted no specific local characteristics that are not already covered by the generic guidance.

Southampton and Bournemouth departures remain on the same flight planned route as they take today to GWC, from where they would turn northeast rather than following the extant route to SFD. No environmental consultation has been undertaken for this route because there would be, on average, fewer than 2[see footnote 3] flights per day and they would have reached or exceeded 7,000ft by the time they turn off today's route.

Changes to Farnborough departures routes were consulted upon, routing via HAZEL then wrapping around to the west and the north. Following real time simulation this design was deemed unworkable and was modified to route HAZEL then turn east to GWC then northeast as per the Solent DVR departures. No further environmental consultation has been undertaken for this route because there would be, on average, fewer than 5[see footnote 4] flights per day and they would have reached or exceeded 7,000ft by HAZEL.

See Bridging Module Section 4.2 Table 1 for full details of forecast traffic figures.

6.8 Economic Valuation of Environmental Impact

NATS is not aware of any established methodology that is widely accepted as providing a complete and robust economic valuation of the environmental impacts of changes to airspace structure. Furthermore, NATS will not base the case for change on an economic

[3] Combined EGHH and EGHI forecast departures via DVR, high case in 2020, is 293+186=479, or 1.3 per day
[4] EGLF forecast departures via DVR, high-case in 2010, is 1,752 or 4.8 per day

valuation of environmental impact and therefore does not propose to attempt to provide or develop such analysis for this ACP.

7 Analysis of Options

7.1 Do Nothing

The current operation could be maintained however the benefits of the wider LAMP proposal would not be realised.

The interactions described in para 4.4 would continue.

7.2 Implement the Change as Originally Consulted Upon

This was considered to have an avoidable impact on GA, and modifications could be made to mitigate some of these impacts.

See SOL A Section 4 para 4.15 and para 7.3 below.

7.3 Make Changes to Dimensions of Proposed CAS

This was progressed. See SOL A Section 4 paras 4.6-4.28.

7.4 Make Changes to Classification of Proposed CAS

This was considered and rejected. See SOL A Section 4 paras 4.29-4.33 (duplicated at end of Section 13 on page 40 of this document).

8 Airspace Description Requirement

CAP 725, Appendix A Paragraph 5, provides a list of requirements for a proposed airspace description. These are listed below:

	CAA CAP725, Appendix A paragraph 5 Requirement. "The proposal should provide a full description of the proposed change including the following:"	**Description for this Proposal**
a	The type of route or structure; e.g. Airway, UAR, Conditional Route, Advisory Route, CTR, SIDs/STARs, Holding Patterns, etc;	See Section 5
b	The hours of operation of the airspace and any seasonal variations;	See Section 5
c	Interaction with domestic and international en-route structures, TMAs or CTAs with an explanation of how connectivity is to be achieved. Connectivity to aerodromes not connected to CAS should be covered;	See Section 5
d	Airspace buffer requirements (if any);	See para 6.2
e	Supporting information on traffic data including statistics and forecasts for the various categories of aircraft movements (Passenger, Freight, Test and Training, Aero Club, Other) and Terminal Passenger numbers;	See Section 4
f	Analysis of the impact of the traffic mix on complexity and workload of operations;	Not applicable (no impact)
g	Evidence of relevant draft Letters of Agreement, including any arising out of consultation and/or Airspace Management requirements;	The wider Phase LAMP phase 1A will affect some LOAs - see bridging ACP
h	Evidence that the Airspace Design is compliant with ICAO Standards and Recommended Practices (SARPs) and any other UK Policy or filed differences, and UK policy on the Flexible Use of Airspace (or evidence of mitigation where it is not);	The routings, as described in Section 5, are compliant with the required standards and policies

i	The proposed airspace classification with justification for that classification;	Proposed class is A. Lower classes were investigated but unworkable, see SOL A Section 4 para 4.29.
j	Demonstration of commitment to provide airspace users equitable access to the airspace as per the classification and where necessary indicate resources to be applied or a commitment to provide them in-line with forecast traffic growth. 'Management by exclusion' would not be acceptable;	Class A used by LAC and LTC IFR CAT. See also SOL A Section 4
k	Details of and justification for any delegation of ATS.	There are no proposed changes to delegation of ATS relating to this module of LAMP

9 Operational Impact

CAA CAP725, Appendix A Paragraph 7, provides a list of requirements for operational impact. These are listed below:

	CAA CAP725, Appendix A paragraph 7 requirements. "An analysis of the impact of the change on all airspace users, airfields and traffic levels must be provided, and include an outline concept of operations describing how operations within the new airspace will be managed. Specifically, consideration should be given to:"	**Evidence of Compliance/Proposed Mitigation**
a	Impact on IFR General Air Traffic and Operational Air Traffic or on VFR General Aviation (GA) traffic flow in or through the area;	See SOL A Section 4 Also see paras 6.3 and 6.5
b	Impact on VFR operations (including VFR Routes where applicable);	See SOL A Section 4
c	Consequential effects on procedures and capacity, i.e. on SIDS, STARS, and/or holding patterns. Details of existing or planned routes and holds;	See Sections 5 and 6
d	Impact on aerodromes and other specific activities within or adjacent to the proposed airspace;	See SOL A Section 4 Also see paras 6.3 and 6.5
e	Any flight planning restrictions and/or route requirements.	See para 5.2

10 Supporting Infrastructure & Resources

CAA CAP725, Appendix A Paragraph 6, provides a list of requirements for supporting infrastructure/resources. These are listed below:

	CAA CAP725, Appendix A Paragraph 6, general Requirements	**Evidence of Compliance/Proposed Mitigation**
a	Evidence to support RNAV and conventional navigation as appropriate with details of planned availability and contingency procedures.	The proposed STAR and airway/UAR would be contained within airspace where the CNS infrastructure is well proven and appropriate contingency procedures already exist. Changes to the wider LTMA as part of the LAMP Bridging ACP will provide CNS assurance for the wider Phase 1A.
b	Evidence to support primary and secondary surveillance radar (SSR) with details of planned availability and contingency procedures.	As per item **a**
c	Evidence of communications infrastructure including R/T coverage, with availability and contingency procedures.	As per item **a**
d	The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered.	As per item **a**
e	The Proposal must provide effective responses to the failure modes that will enable the functions associated with airspace to be carried out including details of navigation aid coverage, unit personnel levels, separation standards and the design of the airspace in respect of existing international standards or guidance material.	As per item **a**
f	A clear statement on SSR code assignment requirements is also required.	No changes to the extant methods of SSR code allocation to traffic using these routes is required.
g	Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change.	The proposed routes would be contained within airspace managed by Swanwick ATC. The procedures do not require any changes to staffing requirements at this unit, who would be trained appropriately before implementation. There would be no change to staffing requirements at Southampton, Bournemouth or Farnborough airports due to this proposal.

11 Airspace & Infrastructure Requirements

CAA CAP725, Appendix A Paragraphs 11-14, provides a list of requirements for airspace and infrastructure. These are listed below:

	CAA CAP725, Appendix A paragraph 11: General Requirements	**Evidence of Compliance/Proposed Mitigation**
a	The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments;.	See Section 5 especially para 5.2
b	Where an 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. This safety buffer shall be in accordance with agreed parameters as set down in DAP Policy Statement 'Safety Buffer Policy for Airspace Design Purposes Segregated Airspace';	See para 6.2
c	The Air Traffic Management (ATM) system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures;	Changes to the wider LTMA as part of the LAMP Bridging ACP will consider all these points.
d	Air Traffic Control (ATC) procedures are to ensure required separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures;	See LAMP Bridging ACP especially RDAR LAMP C (supplied later and separately)
e	Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable;	See SOL A Section 4 paras 4.29-4.33
f	There must be assurance, as far as practicable, against unauthorised incursions. This is usually done through the classification and promulgation.	Details of the airspace changes associated with this proposal will be published two AIRAC cycles in advance.
g	Pilots shall be notified of any failure of navigational facilities and of any suitable alternative facilities available and the method of identifying failure and notification should be specified;	Failure of navigational facilities will be promulgated by NOTAM and ATC will provide navigational assistance using radar when necessary.

h	The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements. This is normally done through the AIRAC cycle;	Changes will be published via the normal AIRAC cycles. Two AIRAC cycles' notice will be given.
i	There must be sufficient R/T coverage to support the ATM system within the totality of proposed controlled airspace.	Changes to the wider LTMA as part of the LAMP Bridging ACP will consider all these points.
j	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered;	See LAMP Bridging ACP especially RDAR LAMP C (supplied later and separately) See paras 6.2 and 6.3.
k	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc.) in the vicinity of the new airspace structure and no suitable operating agreements or ATC Procedures can be devised, the Change Sponsor shall act to resolve any conflicting interests;	If such a conflict occurred then we would act accordingly

	CAA CAP725, Appendix A paragraph 12: ATS Route Requirements	**Evidence of Compliance/Proposed Mitigation**
a	There must be sufficient accurate navigational guidance based on in-line VOR/DME or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/EuroControl Standards;	The proposed STAR and airway/UAR would be contained within airspace where the CNS infrastructure is well proven and appropriate contingency procedures already exist. Changes to the wider LTMA as part of the LAMP Bridging ACP will provide CNS assurance for the wider Phase 1A.
b	Where ATS routes adjoin Terminal Airspace there shall be suitable link routes as necessary for the ATM task;	Changes to the wider LTMA as part of the LAMP Bridging ACP will consider all these points.
c	All new routes should be designed to accommodate P-RNAV navigational requirements.	Proposed STAR and air routes are RNAV5. Arrival route to Farnborough remains conventional (no change) after RNAV5 airway portion ends. Farnborough is progressing its own separate proposal.

	CAA CAP725, Appendix A paragraph 13: Terminal Airspace Requirements	Evidence of Compliance/Proposed Mitigation
a	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas;	See Section 5 especially para 0 and also para 6.2
b	There shall be effective integration of departure and arrival routes associated with the airspace structure and linking to designated runways and published IAPs;	See Section 5 especially para 0
c	Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure;	See Section 5 especially para 0
d	The airspace structure shall be designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace;	All procedures and routes are compliant with PANS Ops standards
e	Suitable arrangements for the control of all classes of aircraft (including transits) operating within or adjacent to the airspace in question, in all meteorological conditions and under all flight rules, shall be in place or will be put into effect by Change Sponsors upon implementation of the change in question (if these do not already exist);.	See Section 5
f	Change Sponsors shall ensure that sufficient VRPs are established within or adjacent to the subject airspace to facilitate the effective integration of VFR arrivals, departures and transits of the airspace with IFR traffic;	No change to extant VRPs
g	There shall be suitable availability of radar control facilities;	No change to extant availability
h	Change Sponsors shall, upon implementation of any airspace change, devise the means of gathering (if these do not already exist) and of maintaining statistics on the number of aircraft transiting the airspace in question. Similarly, Change Sponsors shall maintain records on the numbers of aircraft refused permission to transit the airspace in question, and the reasons why. Change Sponsors should note that such records would enable ATS Managers to plan staffing requirements necessary to effectively manage the airspace under their control;	Current methods of record-keeping will continue under this proposal.
i	All new procedures should, wherever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding	Where possible CDA would be applied

	facility associated with that procedure.	

	CAA CAP725, Appendix A paragraph 14: Off Route Airspace Requirements	**Evidence of Compliance/Proposed Mitigation**
	There are no proposed changes to off route airspace structures as part of this proposal.	

12 Environmental Requirements

This section details the required elements of an Environmental Assessment for the Phase 2 ACP development, based upon CAP 725 Appendix B.

The requirements in this section are grouped by the degree of compliance expected from airspace change sponsors. In following this guidance:

- **Must** – change sponsors are to meet the requirements in full when this term is used.
- **Should** – change sponsors are to meet these requirements unless there is sufficient reason which must be agreed in writing with the DAP case officer and the circumstances recorded in the formal airspace change documentation.
- **May** – change sponsors decide whether this guidance is appropriate to the circumstances of the airspace change.

	Requirement		Ref.	Page	Evidence
1	In order to ensure that the various areas for environmental assessment by DAP are addressed, Change Sponsors should submit the documentation with the following clearly defined sections: Description of the airspace change (refer to 28 – 33); Traffic forecasts (refer to 34 – 38); An assessment of the effects on noise (refer to Sections 4 and 5); An assessment of the change in fuel burn/CO2 (refer to Section 6); An assessment of the effect on local air quality (refer to Section 7); and An economic valuation of environmental impact, if appropriate (refer to Section 9).	General	Para 2	B-1	Airspace description see Section 5 Traffic figures see Bridging ACP and para 4.2 Local environmental impacts (noise, local air quality) see SOL A Section 3 Fuel/CO_2 see Bridging ACP Economic valuation of environmental impact see para 6.8
2	It is considered unlikely that airspace changes will have a direct impact on animals, livestock and biodiversity. However, Change Sponsors should remain alert to the possibility and may be required to include these topics in their environmental assessment.	General	Para 18	B-4	See SOL A Section 5 para 5.10
3	Environmental assessment should set out the base case or current situation so that changes can be clearly identified.	General	Para 19	B-4	See Section 4
4	Environmental assessment should follow the Basic Principles listed in CAP 725.	General	Para 20	B-4	The basic principles have been followed. See Section 6
5	A technical document containing a comprehensive and complete description of the airspace change including the environmental impact will be required and must be produced for all airspace changes.	General	Para 25	B-6	See Sections 5 & 6 and Bridging ACP

	Requirement		Ref.	Page	Evidence
6	It may be appropriate for Change Sponsors to produce a more general description of the airspace change and the rationale for its proposal in an easy-to-read style for public consumption. If such an additional separate document is produced, it must contain details of the environmental impact of the proposal.	General	Para 25	B-6	See SOL C Part D
7	The environmental assessment must include a high quality paper diagram of the airspace change in its entirety as well as supplementary diagrams illustrating different parts of the change. This diagram must show the extent of the airspace change in relation to known geographical features and centres of population	Airspace Design	Para 28	B-7	See SOL C Part D
8	The proposal should consider and assess more than one option, then demonstrate why the selected option meets safety and operational requirements and will generate an overall environmental benefit or, if not, why it is being proposed.	Airspace Design	Para 29	B-7	See Section 7
9	The Change Sponsor must provide DAP with a complete set of coordinates describing the proposed change in electronic format using World Geodetic System 1984 (WGS 84). In addition, the Sponsor must supply these locations in the form of Ordnance Survey (OS) national grid coordinates.	Airspace Design	Para 30	B-7	See Section 5 especially para 5.2 and the Bridging ACP
10	This electronic version must provide a full description of the horizontal and vertical extent of the zones and areas contained within the airspace change. It must also include coordinates in both WGS 84 and OS national grid formats that define the centre lines of routes including airways, standard instrument departures (SID), standard arrival routes (STAR), noise preferential routes (NPR) or any other arrangement that has the effect of concentrating traffic over a particular geographical area.	Airspace Design	Para 30	B-7	See Section 5 especially para 5.2 and the Bridging ACP
11	Change Sponsors should provide indications of the likely lateral dispersion of traffic about the centre line of each route. This should take the form of a statistical measure of variation such as the standard deviation of lateral distance from the centre line for given distances along track in circumstances where the dispersion is variable.	Airspace Design	Para 31	B-7	See para 5.4

12	Sponsors may supply the outputs from simulation to demonstrate the lateral dispersion of traffic within the proposed airspace change or bring forward evidence based on actual performance on a similar kind of route. It may be appropriate for Sponsors to explain different aspects of dispersion e.g. dispersion within NPRs when following a departure routeing and when vectoring – where the aircraft will go and their likely frequency	Airspace Design	Para 31	B-7	See para 5.4 and Bridging ACP Sim Report (LAMP E)
13	Change Sponsors must provide a description of the vertical distribution of traffic in airways, SIDs, STARs, NPRs and other arrangements that have the effect of concentrating traffic over a particular geographical area	Airspace Design	Para 32	B-7	See para 5.4 and Bridging ACP Sim Report (LAMP E)
14	For departing traffic, sponsors should produce profiles of the most frequent type(s) of aircraft operating within the airspace. They should show vertical profiles for the maximum, typical and minimum climb rates achievable by those aircraft.	Airspace Design	Para 32	B-7	See para 5.4 and Bridging ACP Sim Report (LAMP E)
15	A vertical profile for the slowest climbing aircraft likely to use the airspace should also be produced.	Airspace Design	Para 32	B-8	See para 5.4 and Bridging ACP Sim Report (LAMP E)
16	All profiles should be shown graphically and the underlying data provided in a spread sheet with all planning assumptions clearly documented.	Airspace Design	Para 32	B-8	See para 5.4 and Bridging ACP Sim Report (LAMP E)
17	Change Sponsors should explain how consideration of CDA and LPLD is taken into account within their proposals	Airspace Design	Para 33	B-8	See para 5.4 and Bridging ACP Sim Report (LAMP E)
18	In planning changes to airspace arrangements, sponsors may have conducted real and/or fast time simulations of air traffic for a number of options.	Traffic Forecasts	Para 34	B-8	See Bridging ACP Sim Report (LAMP E)
19	Change Sponsors must include traffic forecasts in their environmental assessment.	Traffic Forecasts	Para 35	B-8	See Bridging ACP and Appendix A
20	Information on air traffic must include the current level of traffic using the present airspace arrangement and a forecast. The forecast will need to indicate the traffic growth on the different routes contained within the airspace change volume.	Traffic Forecasts	Para 35	B-8	Traffic figures see Bridging ACP and para 4.2
21	The sources used for the forecast must be documented.	Traffic Forecasts	Para 35	B-8	Traffic figures see Bridging ACP and para 4.2

22	Typically, forecasts should be for five years from the planned implementation date of the airspace change. There may be good reasons for varying this – for example, to use data that has already been made available to the general public at planning inquiries, in airport master plans or other business plans	Traffic Forecasts	Para 36	B-8	Because LAMP Phase 2 is expected to come into being by 2020 it was agreed with ERCD that a 2020 forecast (ie implementation + 4 years) was more appropriate than 2021 (+5 years).
23	It may also be appropriate to provide forecasts further into the future than five years: examples are extensive airspace changes or where traffic is forecast to grow slowly in the five-year period but faster thereafter.	Traffic Forecasts	Para 36	B-8	See above
24	It may be appropriate for Change Sponsors to outline the key factors [affecting traffic forecasts] and their likely impact. In these circumstances, Sponsors should consider generating a range of forecasts based on several scenarios that reflect those uncertainties – this would help prevent iterations in the assessment process.	Traffic Forecasts	Para 37	B-8	A range of forecasts has not been produced. The justification for change is not sensitive to the degree to which traffic grows (all the benefits and impacts increase or decrease proportionately).
25	Traffic forecasts should contain not only numbers but also types of aircraft. Change Sponsors should provide this information by runway (for arrivals/departures) and/or by route with information on vertical distribution by height/altitude/flight level as appropriate.	Traffic Forecasts	Para 38	B-9	Type mix see Bridging ACP and para 4.2
26	Types of aircraft may be given by aircraft type/engine fit using ICAO type designators. If this is not a straightforward exercise, then designation by the UK Aircraft Noise Contour Model (ANCON) types or by seat size categories would be acceptable	Traffic Forecasts	Para 38	B-9	Type mix see Bridging ACP and para 4.2 - not expected to change due to this proposal
27	Change Sponsors must produce Leq, 16 hours noise exposure contours for airports where the proposed option entails changes to departure and arrival routes for traffic below 4,000 feet agl based on the published minimum departure and arrival gradients. Under these circumstances, at least three sets of contours must be produced: Current situation – these may already be available as part of the airport's regular environmental reporting or as part of the airport master plan; Situation immediately following the airspace change; and Situation after traffic has increased under the new arrangements (typically five years after implementation although this should be discussed with the DAP Project Leader).	Noise	Para 44	B-11	Not applicable – no noticeable changes below 4,000ft agl in this module.

28	The contours should be produced using either the UK Aircraft Noise Contour Model (ANCON) or the US Integrated Noise Model (INM) but ANCON must be used when it is currently in use at the airport for other purposes.	Noise	Para 46	B-12	Not applicable
29	Terrain adjustments should be included in the calculation process (i.e. the height of the air routes relative to the ground are accounted for).	Noise	Para 47	B-12	Not applicable
30	Contours must be portrayed from 57 dBA Leq, 16 hours at 3 dB intervals.	Noise	Para 48	B-12	Not applicable
31	Contours should not be produced at levels below 54 dBA Leq, 16 hours because this corresponds to generally low disturbance to most people.	Noise	Para 48	B-12	Not applicable
32	Change Sponsors may include the 54 dBA Leq, 16 hours contour as a sensitivity analysis but this level has no particular relevance in policy making.	Noise	Para 48	B-12	Not applicable
33	A table should be produced showing the following data for each 3 dB contour interval: Area (km2); and Population (thousands) - rounded to the nearest hundred.	Noise	Para 49	B-12	Not applicable
34	It is sometimes useful to include the number of households within each contour, especially if issues of mitigation and compensation are relevant: This table should show cumulative totals for areas/populations/households. For example, the population for 57 dBA will include residents living in all higher contours. The source and date of population data used should be noted adjacent to the table. Population data should be based on the latest available national census as a minimum but more recent updated population data is preferred. The areas calculated should be cumulative and specify total area within each contour including that within the airport perimeter.	Noise	Para 50	B-12	Not applicable

35	Contours for assessment should be provided to DAP in both of the following formats: Electronic files in the form of a comma delimited ASC2 text file containing three fields as an ordered set (i.e. coordinates should be in the order that describes the closed curve) defining the contours in Ordnance Survey National Grid in metres: Field Name Units 1 Level dB 2 Easting six figure easting OS national grid reference (metres) 3 Northing six figure northing OS national grid reference (metres) Paper version overlaid on a good quality 1:50 000 Ordnance Survey map. However, it may be more appropriate to present contours on 1:25 000 or 1:10 000 Ordnance Survey maps.	Noise	Para 51	B-13	Not applicable
36	Contours for a general audience may be provided overlaid on a more convenient map (e.g. an ordinary road map with a more suitable scale for publication in documents). The underlying map and contours should be sufficiently clear for an affected resident to be able to identify the extent of the contours in relation to their home and other geographical features. Hence, the underlying map must show key geographical features, e.g. street, rail lines and rivers.	Noise	Para 53	B-13	Not applicable
37	SEL footprints must be used when the proposed airspace includes changes to the distribution of flights at night below 7,000 feet agl and within 25 km of a runway. Night is defined here as the period between 2300 and 0700 local time. If the noisiest and most frequent night operations are different, then footprints should be calculated for both of them. A separate footprint for each of these types should be calculated for each arrival and departure route. If SEL footprints are provided, they should be calculated at both 90 dBA SEL and 80 dBA SEL.	Noise	Para 56	B-13	Not applicable
38	SEL footprints may be used when the airspace change is relevant to daytime only operations. If SEL footprints are provided, they should be calculated at both 90 dBA SEL and 80 dBA SEL.	Noise	Para 56	B-14	Not applicable

39	SEL footprints for assessment should be provided to DAP in both of the following formats: Electronic files in the form of a comma delimited ASC2 text file containing three fields as an ordered set (i.e. coordinates should be in the order that describes the closed curve) defining the footprints in Ordnance Survey National Grid in metres: Field Field Name Units 1 Level dB 2 Easting six figure easting OS national grid reference (metres) 3 Northing six figure northing OS national grid reference (metres) Paper version overlaid on a good quality 1:50 000 Ordnance Survey map. However, it may be more appropriate to present footprints on 1:25 000 or 1:10 000 Ordnance Survey maps.	Noise	Para 57	B-14	Not applicable
40	SEL footprints for a general audience may be provided overlaid on a more convenient map (e.g. an ordinary road map with a more suitable scale for publication in documents). The underlying map and footprints should be sufficiently clear for an affected resident to identify the extent of the footprints in relation to their home or other geographical features. Hence, this underlying map must show key geographical features, e.g. streets, rail lines and rivers. Calculations should include terrain adjustments as described in the section on Leq contours	Noise	Para 58	B-14	Not applicable
41	Change Sponsors may use the percentage highly annoyed measure in the assessment of options in terminal airspace to supplement Leq. If they choose to use this method, then the guidance on population data for noise exposure contours set out should be followed. Sponsors should use the expression and associated results in calculating the number of those highly annoyed. If they wish to use a variant method, then this would need to be supported by appropriate research references.	Noise	Para 65	B-15	Not applicable
42	Change Sponsors may use the LDEN metric but, if they choose to do so, they must still produce the standard Leq, 16 hours contours as previously described. If airspace change sponsors wish to use the LDEN metric they must do so in a way that is compliant with the technical aspects of the Directive and any supplementary instructions issued by DEFRA. Sponsors should note the requirement for noise levels to be calculated as received at 4 metres above ground level. In particular, the guidance on how contours are to be portrayed, as described in the section dealing with Leq contours applies. Calculations should include terrain adjustments as described in the section on Leq contours. An exception regarding LDEN contours is the production of a table showing numerical data on area, population and households which should be	Noise	Para 67 & 69 & 70	B-15 & B-16	Not applicable

	presented by band (e.g. 55 dBA to 60 dBA) rather than cumulatively as for UK Leq contours (e.g. >55 dBA). Change Sponsors should make it clear where areas/counts are by band or cumulative.				
43	Change Sponsors may use the LNight metric within their environmental assessment and consultation. If they do so, SEL footprints must also be produced. Calculations should include terrain adjustments as described in the section on Leq contours.	Noise	Para 73	B-16	Not applicable
44	Change Sponsors may use difference contours if it is considered that redistribution of noise impact is a potentially important issue.	Noise	Para 78	B-17	Not applicable
45	Change Sponsors may use PEI as a supplementary assessment metric.	Noise	Para 85	B-19	Not applicable
46	Change Sponsors may use the AIE metric as a supplementary assessment metric. If the sponsor uses PEI as a supplementary metric then AIE should also be calculated as both metrics are complementary.	Noise	Para 87	B-19	Not applicable
47	Change Sponsors may vary the information displayed in Operations Diagrams providing that the diagram is a fair and accurate representation of the situation portrayed.	Noise	Para 88	B-20	See SOL C Part D Figures D5-D9
48	Change Sponsors may use maximum sound levels (Lmax) in presenting aircraft noise footprints for public consumption if they think that this would be helpful. This does not replace the obligation to comply with the requirement to produce sound exposure level (SEL) footprints, where applicable.	Noise	Para 95	B-21	Not applicable
49	Change Sponsors may produce diagrams portraying maximum sound event levels (Lmax) for specific aircraft types at a number of locations at ground level beneath the airspace under consideration. This may be helpful in describing the impact on individuals. It is usual to include a table showing the sound levels of typical phenomenon e.g. a motor vehicle travelling at 30 mph at a distance of 50 metres.	Noise	Para 96	B-21	See SOL C Part D
50	Change Sponsors must demonstrate how the design and operation of airspace will impact on emissions. The kinds of questions that need to be answered by the sponsor are: Are there options which reduce fuel burn in the vertical dimension, particularly when fuel burn is high e.g. initial climb? Are there options that produce more direct routeing of aircraft, so that fuel burn is minimised? Are there arrangements that ensure that aircraft in cruise operate at their most fuel-efficient altitude, possibly with step-climbs or cruise	Climate Change	Para 102	B-22	See Sections 6 & 7

	climbs?				
51	Change Sponsors should estimate the total annual fuel burn/mass of carbon dioxide in metric tonnes emitted for the current situation, the situation immediately following the airspace change and the situation after traffic has increased under the new arrangements – typically five years after implementation. Sponsors should produce estimates for each airspace option considered.	Climate Change	Para 106	B-23	See Bridging ACP
52	Change Sponsors should provide the input data for their calculations including any modelling assumptions made. They should state details of the aircraft performance model used including the version numbers of software employed.	Climate Change	Para 107	B-23	See Bridging ACP
53	Where the need to provide additional airspace capacity, reduce delays or mitigate other environmental impact results in an increase in the total annual fuel burn/ mass of carbon dioxide in metric tonnes between the current situation and the situation following the airspace change, Sponsors should provide justification.	Climate Change	Para 108	B-23	See Bridging ACP
54	Change Sponsors must produce information on local air quality only where there is the possibility of pollutants breaching legal limits following the implementation of an airspace change. The requirement for local air quality modelling will be determined on a case by case basis as discussed with the DAP Project Leader and ERCD. This discussion will include recommendations of the appropriate local air quality model to be used. Concentrations should be portrayed in micrograms per cubic metre (µg.m-3). They should include concentrations from all sources whether related to aviation and the airport or not. Three sets of concentration contours should be produced: Current situation – these may already be available as part of the airport's regular environmental reporting or as part of the airport master plan; Situation immediately following the airspace change; and Situation after traffic has increased under the new arrangements – typically five years after implementation although this should be discussed with the DAP Project Leader.	Local Air Quality	Para 115	B-25	Not Applicable. No changes below 1,000ft
55	Contours for assessment should be provided to DAP in similar formats to those used for noise exposure contours. Where Change Sponsors are required to produce concentration contours they should also produce a table showing the following data for concentrations at 10 µ.m-3 intervals: Area (km^2); and Population (thousands) – rounded to the nearest hundred.	Local Air Quality	Para 116	B-25	Not Applicable

55	Contours for assessment should be provided to DAP in similar formats to those used for noise exposure contours. Where Change Sponsors are required to produce concentration contours they should also produce a table showing the following data for concentrations at 10 μ.m-3 intervals: Area (km^2); and Population (thousands) – rounded to the nearest hundred.	Local Air Quality	Para 116	B-25	Not Applicable
56	The source and date of population data used should be noted adjacent to the table. Population data should be based on the latest available national census as a minimum but more recent updated population data is preferred.	Local Air Quality	Para 117	B-25	Not Applicable
57	Change Sponsors may wish to conduct an economic appraisal of the environmental impact of the airspace change, assessing the economic benefits generated by the change. If undertaken, this should be conducted in accordance with the guidance from HM Treasury in the Green Book (HM Treasury, 2003). If Change Sponsors include a calculation of NPV then they must show financial discount rates, cash flows and their timings and any other assumptions employed. The discount rate must include that recommended in the Green Book currently set at 3.5%. Additionally, other discount rates may be used in a sensitivity analysis or because they are representative of realistic commercial considerations	Economic Valuation	Para 124 & 126	B-27	No such appraisal has been undertaken

13 Revisions for Issue 2.0

13.1 Text re: CAS Partial Extract from Feedback Report

Ref SOL A is the Feedback Report and here we copy/paste text extracts from Section 4 of that report. Figure numbers have been changed from those in SOL A in order to refer to the charts in this section of the ACP

Revised design for South Coast CAS

In the following paragraphs we use aviation-technical language and abbreviations when referring to the four proposed CAS regions off the south coast. These were originally illustrated in TAG Farnborough's Consultation Document Part E Figures E2 and E3 (Ref 3).

In this document they are called (from west to east): The IOW region, the Y8 sliver, the Selsey region , and the Pagham region.

These blocks were proposed to accommodate new or amended arrival routes into Southampton, Bournemouth and Farnborough airports, and to contain a new contingency hold shared between the three airports. These arrivals would be descended below other LTMA flights in this area and removed from their current position further to the north.

This would provide separation between Southampton, Bournemouth and Farnborough flights and LTMA flights, which would reduce the complexity of the LTMA airspace tasks and improve the efficiency of the air traffic control function in the region.

Figure 8 shows today's CAS. Figure 9 and Figure 10 respectively show the CAS originally proposed for the South Coast region by the TAG Farnborough consultation, and the revised CAS now being proposed by NATS considering the consultation feedback. All CAS to the north would be unaffected by the South Coast proposal.

The alignment of the arrival routes within the CAS will remain as per the consultation as far as the Goodwood (GWC) VOR. Low level route changes and CAS to the north are not proposed here; these would also be the responsibility of TAG Farnborough to progress at a later date.

Reduction in Proposed Class A volume in the Y8 Sliver

We have identified that, rather than make the CAS base of this airway sliver 5,500ft to match the LTMA to the northwest, as originally planned, it could be made FL65 to match the consulted-upon CAS to the south.

In line with consultation feedback and comments this would make the region's FL65 base more uniform and easier to navigate & to chart.

Reduction in the proposed Class A volume in the IOW region. Removal of impact on VFR Recommended Route.

We modified the proposal so that arrivals from the southwest do not descend as early as originally envisaged.

The Southampton and Bournemouth radar-vectored arrival flows from the east would follow the paths described in TAG Farnborough's Consultation Document Part D Figures D8 and D9 (Ref SOL C), but we have developed procedures so they would not proceed further south than illustrated. This allows us to truncate the IOW region to the same southern edge as the Selsey triangular region.

The revised CAS boundary between FL105 and FL65 is now proposed to run roughly east-west between southern Shanklin and Brighstone. This would leave an area of approximately 100nm^2 in the southern IOW region with a base of FL105 as it is today.

Some stakeholders were concerned that the VFR recommended route to France and the Channel Islands would be impacted by the proposal. This route is marked on VFR charts as a southbound blue dashed line starting west of St Catherine's Point lighthouse VRP.

Higher-altitude spin/stall training and aerobatics were also mentioned by some stakeholders as being impacted.

The proposed shrinking of the IOW region would mitigate the concerns of the users of that VFR route, and would partly mitigate concerns of compression with respect to aerobatics and spin/stall flight training.

Funnelling and compression concerns over the South Coast

Funnelling/compression of GA aircraft beneath the Class A areas was a concern raised during consultation.

TAG Farnborough's Consultation Document Part E (Ref SOL C) Section 15 stated that, based on expert operational view, the majority of GA VFR activity occurs below FL65 in these regions.

TAG acknowledged that some activity would be impacted, but stated that the potential capping of GA VFR activity below FL65 due to this proposal would still meet the requirements of as many users as possible most of the time.

Question E13 (Ref SOL C) asked specifically about how often the proposed capping would impact VFR operations in these regions.

Figure E13 on page A73 of TAG Farnborough's Consultation Feedback Report Part A (Ref SOL D) provides the results of consultation feedback for this question. 6% of stakeholders who answered questions in Part E of the consultation (Ref SOL C) stated it would impact them 'often'.

In response to this consultation result, TAG commissioned an analysis of one month's radar data in these regions to identify the amount of transponding GA VFR that would be impacted as a result of the proposal. The flights were counted if they were within the proposed volumes for more than sixty seconds .

The average number of eligible flights in the busiest region was 1.6 per day.

While the analysis is not able to capture aircraft that are not transponding, we believe that the data for transponding aircraft provides a good indication of the order of magnitude of GA/S&RA usage of the airspace, particularly as aircraft operating at the altitudes involved are more likely to be transponding than those at lower altitudes. Considering this, NATS contends that the likely number of aircraft per day being capped at FL65 would not constitute a significant increase to funnelling/compression.

Operational opinion was sought from Solent Radar at Southampton Airport for this feedback report. Solent agreed that TAG's statements are valid, and that the results of TAG's radar analysis were in line with Solent's operational experience.

Chart simplification

Some comments concerned the predicted complexity of VFR charts, should the proposal be implemented.

Combining the changes means that the FL65 base across the wider region would be a slightly simpler set of shapes – see the yellow area highlighted in Figure 11 below.

We believe the proposed design would meet the operational requirements and would make this area of the south coast easier to show on a VFR chart, consequently improving readability and slightly reducing pilot workload during airborne navigation.

The Pagham region's internal division line between FL65 airway and FL65 LTMA would remain on the VFR chart for now. NATS is looking into the technicalities of moving this boundary line in due course but not within the timescale of this proposal.

Consideration and rejection of a lower classification for these regions

TAG Farnborough's Consultation Document Part E (Ref SOL C) paragraph 5.31 on page E23 stated that the classification is proposed to be Class A from FL65. The controlling authority would be London Terminal Control (LTC), and the CAS volumes were planned for definition as Worthing CTA. Discussion was undertaken with LTC with respect to Class C arrangements, but LTC explained that it would be difficult for their controllers to integrate IFR and VFR aircraft successfully especially with low numbers and infrequent procedures.

The workload created by GA free-calling LTC for entry, causing frequency congestion, is another issue. Notwithstanding this, NATS investigated establishing Class D volumes, delegated to Solent Radar, as an alternate option, but it became apparent that LTC flights would need to operate in, and through, Solent Class D airspace whilst retaining communications with LTC.

Complex management procedures were discussed between Solent and LTC but crucially it would increase the workload of both controllers. Their workloads would increase even further if VFR traffic was operating in that region.

Ultimately, the complexity of the airspace management between LTC and Solent Radar ruled out Class C and D volumes from further consideration, and those volumes would remain associated with the relevant Class A airway.

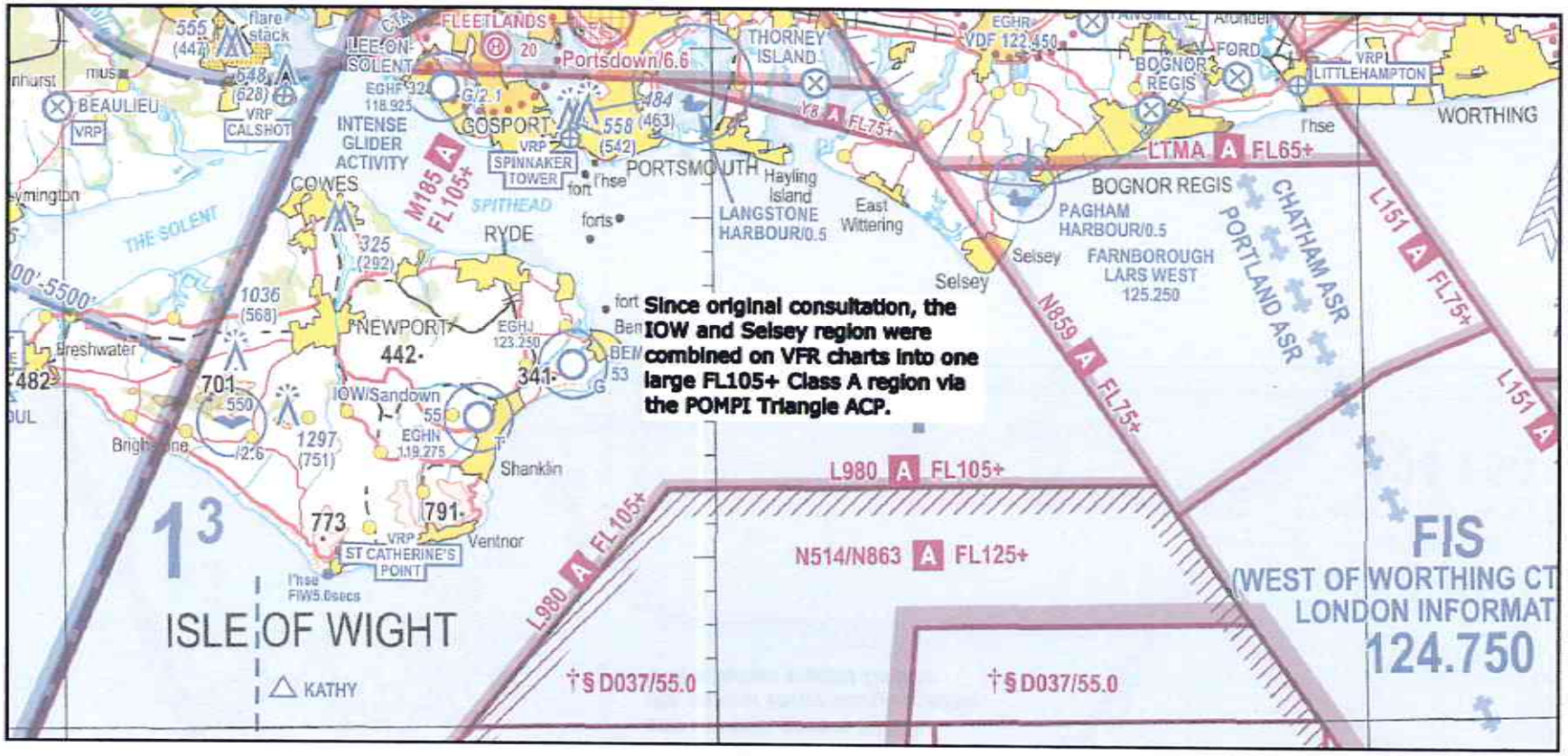

Figure 8 Today's South Coast CAS

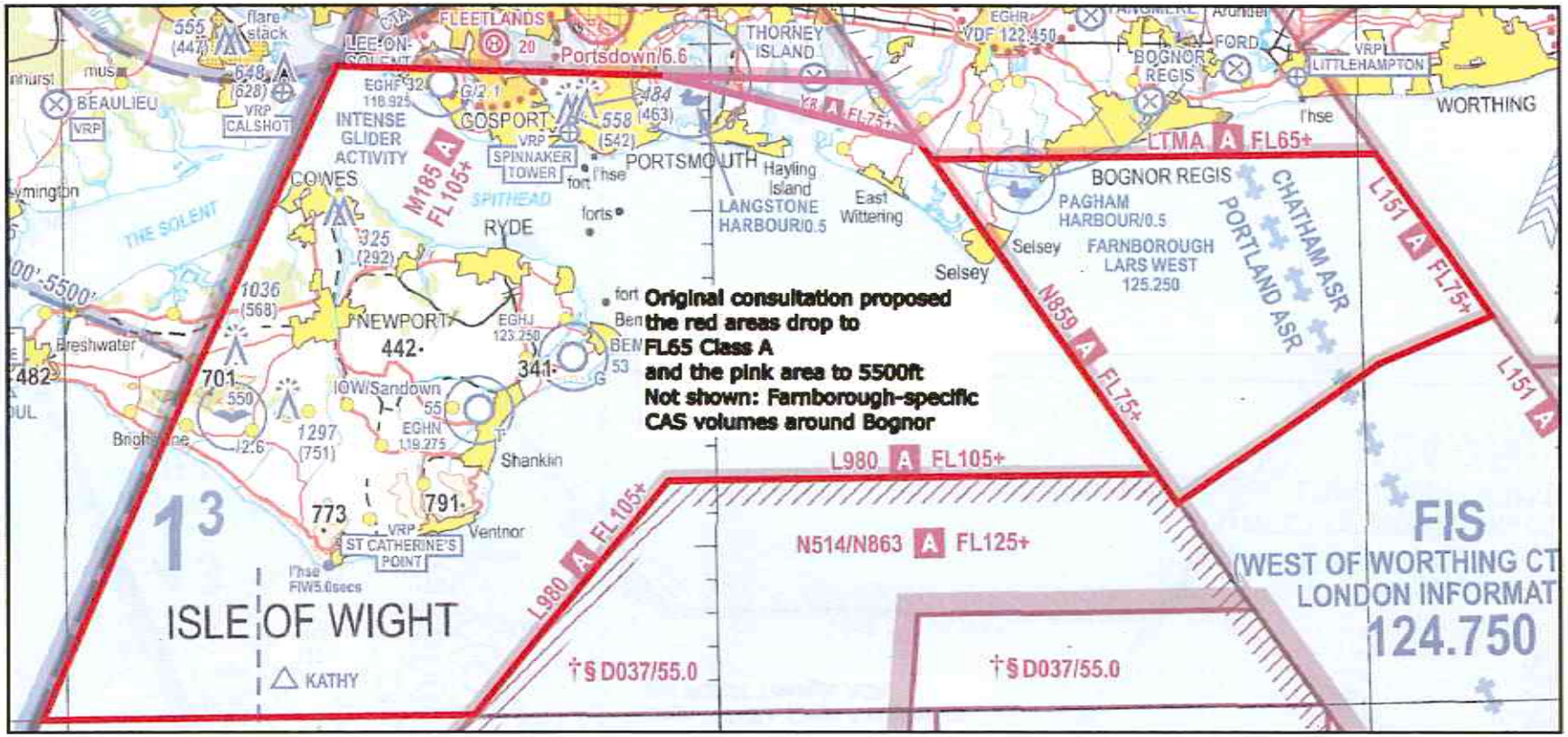

Figure 9 CAS as consulted upon

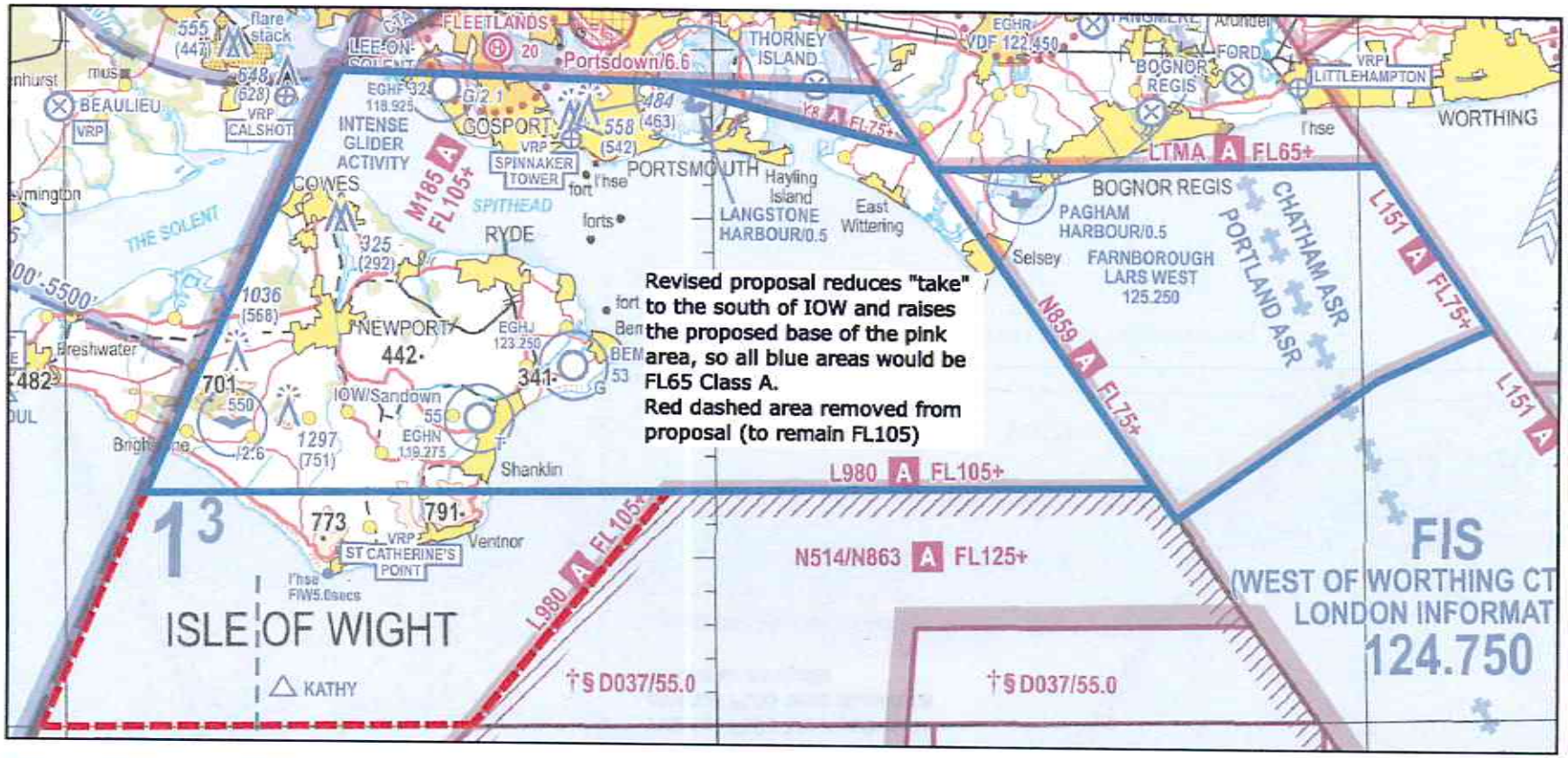

Figure 10 Proposed CAS revised following consultation feedback

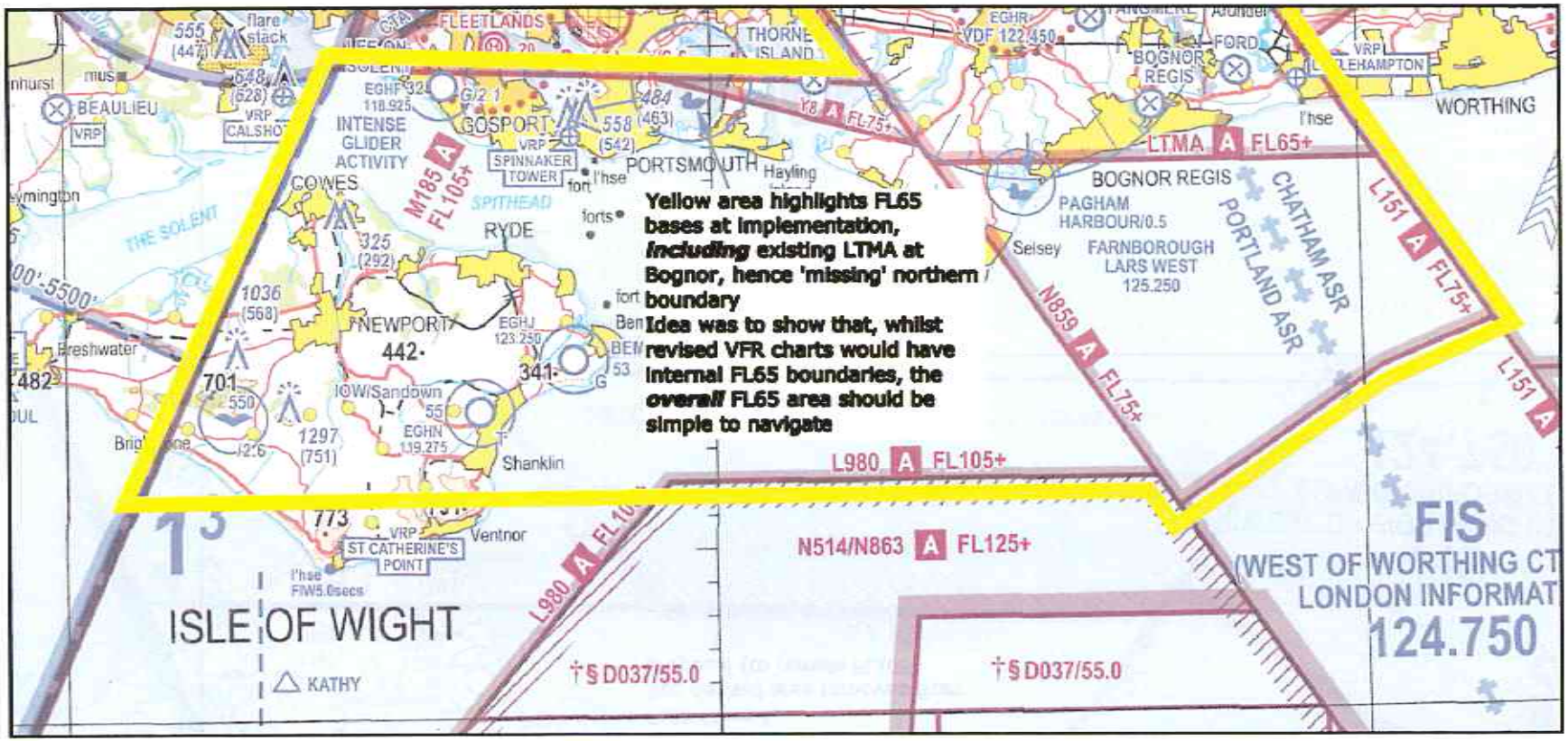

Figure 11 Highlighting combined FL65 base in the region, should the proposal be approved and implemented