IRISH SEA
AIRSPACE CHANGE PROPOSAL

PART B: Technical details of sub-proposals

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Introduction

1. This part of the consultation document provides technical details of the changes; as such it contains some technical terms and commonly used aviation abbreviations. In addition routes are described using the alphanumeric route designators and three/five letter name codes for significant points (referred to in CAPITAL letters), these designators and points are described in sections ENR 3.1, ENR 3.2, ENR 4.1 and ENR 4.4 of the UK Aeronautical Information Publication which can be found at http://www.nats-uk.ead-it.com.
(A beginner's guide to the UK airspace system can be found at Appendices C and D. These explain the basic principles of air traffic control and airspace structure in the UK.)

2. See Part A for an overview of the proposal, details of the consultation process and details of how this consultation document is structured. Part C provides details of potential environmental impact over Snowdonia National Park, Anglesey Area of Outstanding Natural Beauty (AONB) and Clwydian Range AONB. Part D provides details of potential environmental impact over parts of Lancashire. All parts of this document, including Appendices, are available at www.consultation.nats.co.uk.

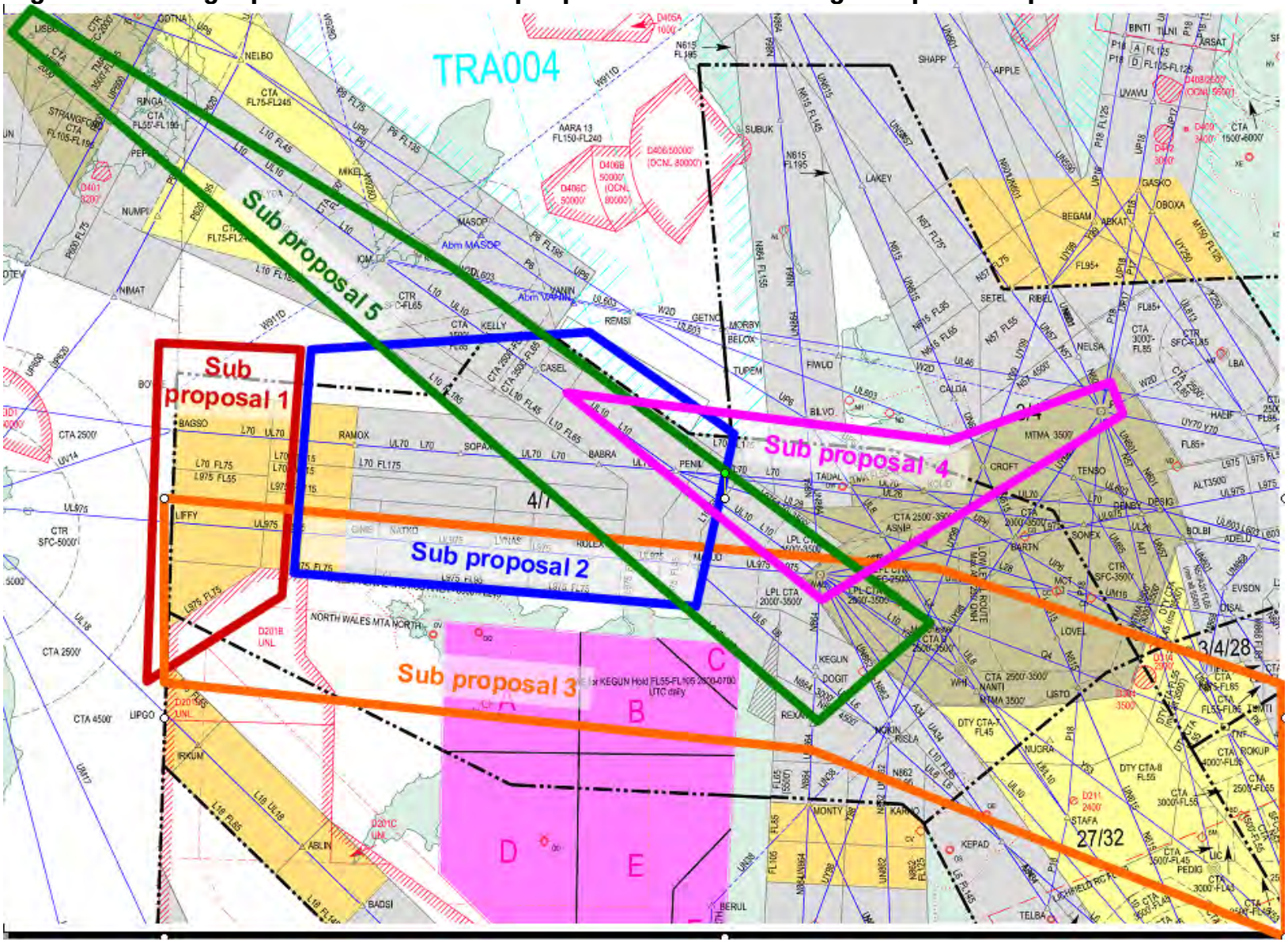
Sub-Proposals

3. This proposal comprises five distinct sub-proposals, each of which is described in turn in this Part of the consultation material. These sub-proposals are:

Sub-proposal 1: Provide Controlled Airspace (CAS) to Protect Dublin Point-Merge Operations (Page 5)
Sub-proposal 2: L70/L975 CAS amendments west of PENIL (Page 9)
Sub-proposal 3: Conditional Route (U)Y124 (Page 14)
Sub-proposal 4: Lower L70 at KOLID – PENIL (Page 20)
Sub-proposal 5: (U)L6 extension and lowering (Page 24)

4. Figure 1 shows the approximate geographic extent of each of the sub-proposals. This diagram is to help navigate the consultation material.

Figure 1: Geographic extent of sub proposals over Existing Airspace Map

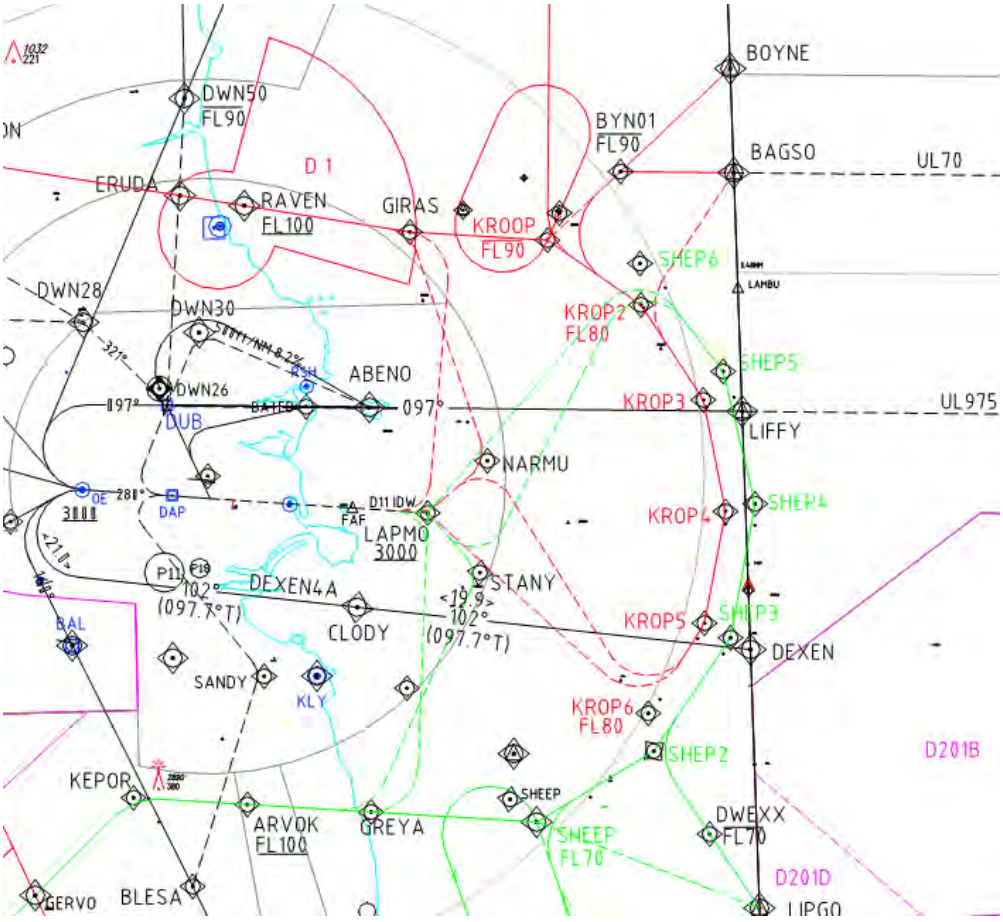


Sub-proposal 1: Provide Controlled Airspace (CAS) to protect Dublin Point-Merge Operations

5. Point-Merge is a method of managing arrival streams which improves environmental and operational efficiency by positioning arrival streams on arcs rather than in Holds[1].

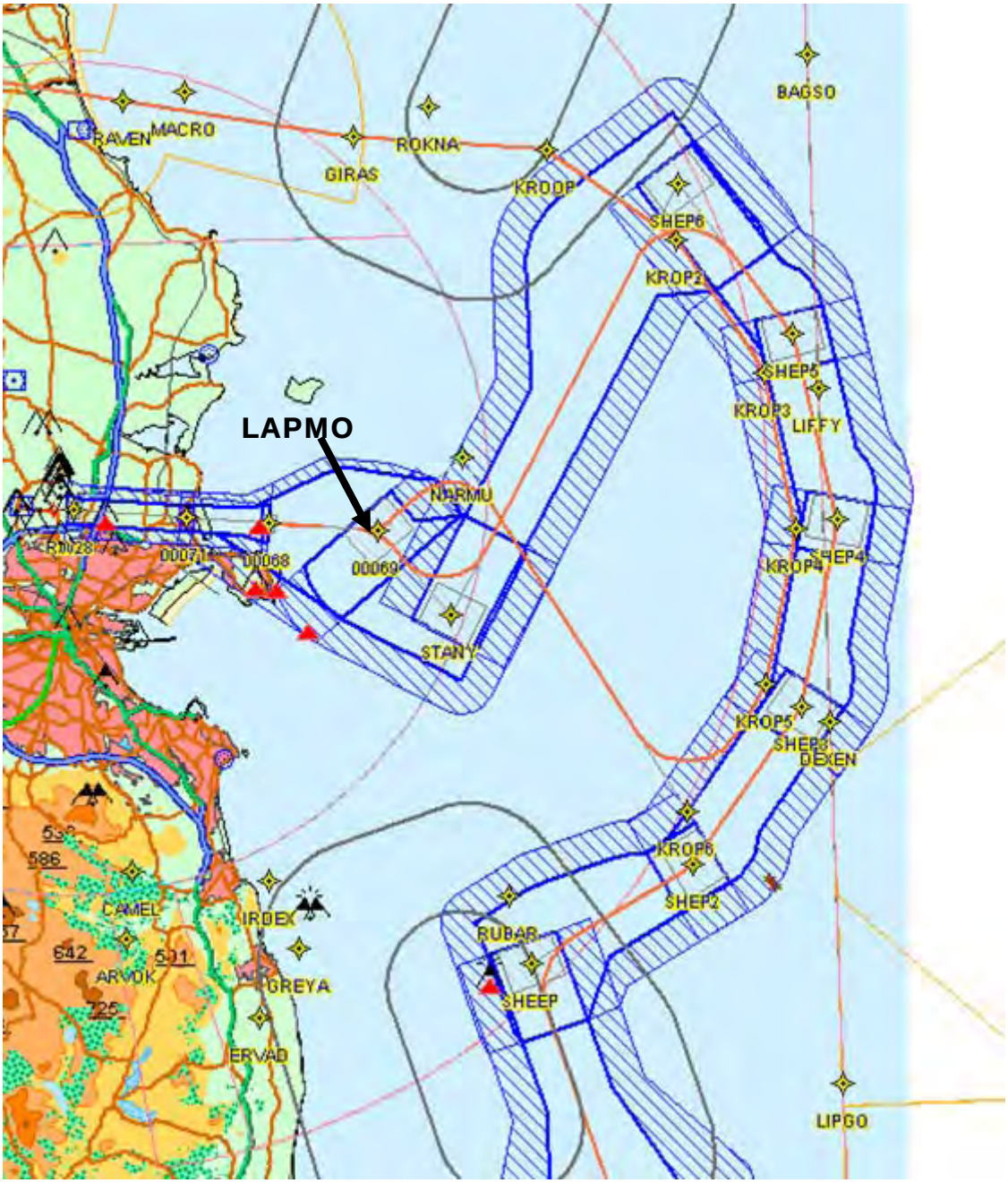
6. Figure 2 shows the proposed draft positioning of the Point-Merge arcs for Dublin westerly arrivals (these arcs are known as the 'sequencing legs' and are referred to as such from herein). There are two sequencing legs; the red inner leg for aircraft at FL90 and FL80, and the green outer leg for aircraft at FL70 and 5,000ft. It can be seen that the inner leg is wholly contained within the area enclosed by the outer leg, and is wholly contained within the Dublin TMA. The inner leg therefore has no impact on the airspace requirements in the UK FIR.

Figure 2: Dublin Point-Merge design for runway 28



[1] Background on Point-Merge operations can be found at http://www.eurocontrol.int/eec/public/standard_page/proj_Point_Merge.html

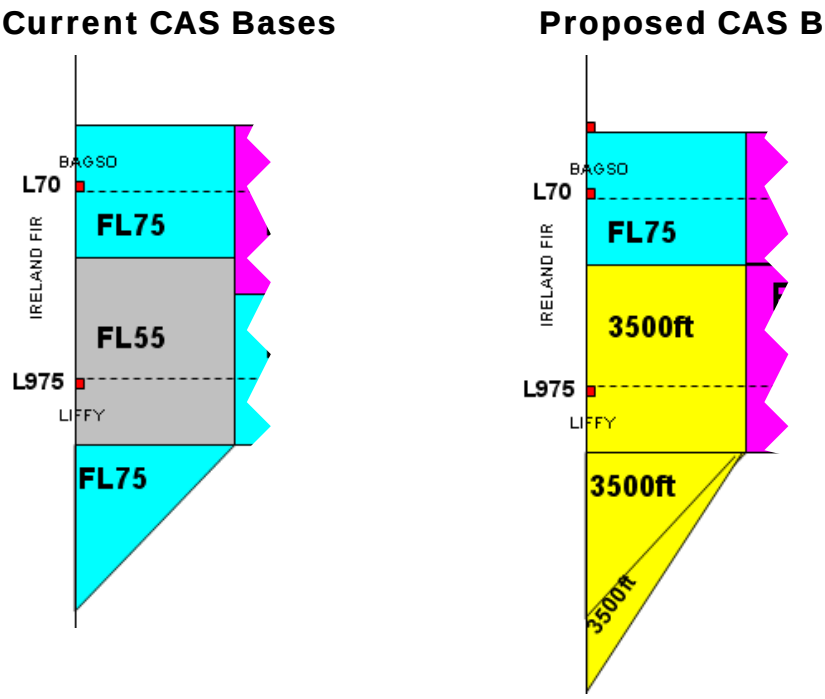
Figure 3: Protected area for Dublin Point-Merge outer sequencing leg for runway 28



7. The outer leg encroaches on UK airspace, and furthermore the protected area (drawn to PANS-OPS requirements) encroaches still further as shown in Figure 3. This figure shows an inner and outer protected area calculated to the "PANS-OPS" internal airspace design requirements. The blue hatched area is the difference between the inner and outer areas, and so represents a buffer area around the sequencing legs for normal operations. CAS is proposed within the UK FIR to cover the outer sequencing leg, and the furthest extent of the protected areas.

8. An extension and lowering of existing CAS is being proposed as illustrated in Figure 4. This extension has been drawn following consultation with the MoD who are the principle users of Class G airspace in this region, and have authority in the EGD201B Danger Area.

Figure 4: Current and proposed UK CAS at the FIR boundary



9. The objective of the proposed design is to provide CAS protection for the protected area for the outer leg without overcomplicating the airspace structure. For this reason the proposed CAS lowers the entire segment of L975 CAS that abuts the FIR boundary, rather than subdividing it and lowering only a subsection that encompasses the protected area. For the same reason the extension to the south-east is proposed as a uniform sliver of airspace , rather than a smaller area that just encompasses the protected area but is less easy to define.

10. A base of 3,500ft is proposed for the lowered/extended CAS. This is to enable IAA to issue a clearance to commence descent from 5,000ft towards the merge point (marked as LAPMO on Figure 2).

11. The existing and proposed CAS in this area is shown in the airspace maps in Figure 18 and Figure 19 respectively at the end of this document. Note that Figure 19 shows the combined airspace incorporating sub-proposals 1 through to 5 as described in this document.

General Aviation Impact

12. The changes proposed to the airspace are wholly over the sea. These airspace routes are not commonly used by General Aviation flights, and NATS does not foresee any significant impact on General Aviation. This sub-proposal would not affect low level transits into Dublin airspace, except

that those flying through the proposed CAS at or above 3,500ft would be required to contact Dublin prior to the edge of the lowered CAS rather than the FIR boundary as they do today.

Fuel Burn and CO_2 Impact

13. Point-Merge for Dublin is expected to provide an environmental benefit as it enables fuel efficient continuous descent approaches. It is, however, beyond the scope of this proposal to consider benefits accrued from changes to the Dublin operation. This sub-proposal for additional CAS will not lead to changed profiles in UK airspace.

Local Impact

14. The proposed airspace is wholly over the sea and therefore NATS is not aware of any significant local environmental impact.

Sub-proposal 2: L70/L975 CAS amendments west of PENIL

15. The airspace in the L70/L975 complex over the Irish Sea has evolved over decades to accommodate changes in traffic patterns. Whilst the resultant airspace is fit for purpose, it would benefit from rationalisation. This sub-proposal aims to rationalise the existing structure so that it is both simpler and more efficient.

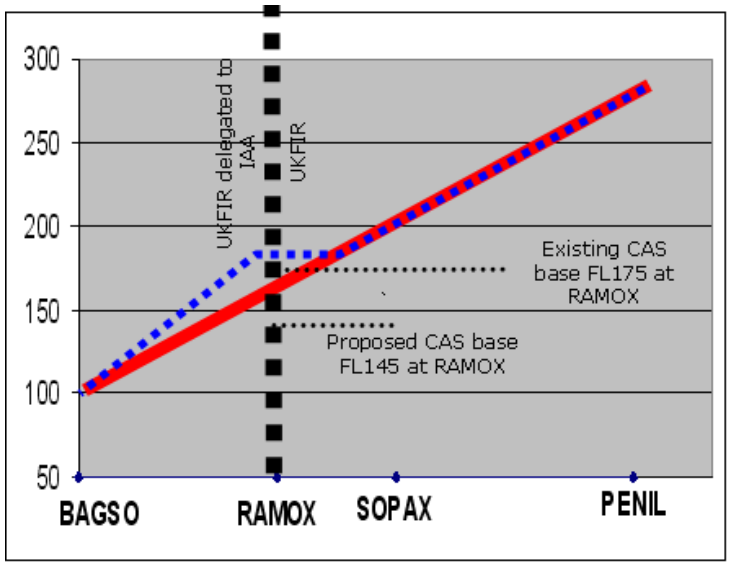
16. Two specific objectives have been identified:

a) provide sufficient CAS to reduce the likelihood of stepped descents for Dublin arrivals; and

b) rationalise the airspace bases, providing commonality between L70 and L975 bases and a structure in which the airspace boundaries are clear – thus reducing the risk from infringement or aircraft unexpectedly leaving CAS.

17. Analysis of track data (see Appendix E) has demonstrated that some aircraft level off at FL180 as a result of the base of CAS being FL175 east of RAMOX. This is illustrated in Figure 5 by the blue track. The red track shows the theoretical benefit of lowering the base of this airspace to FL145, as it would allow aircraft to follow a more continuous descent to FL100. This is the level required for joining the Point-Merge Sequencing legs and achieving a continuous descent to Dublin RWY28.

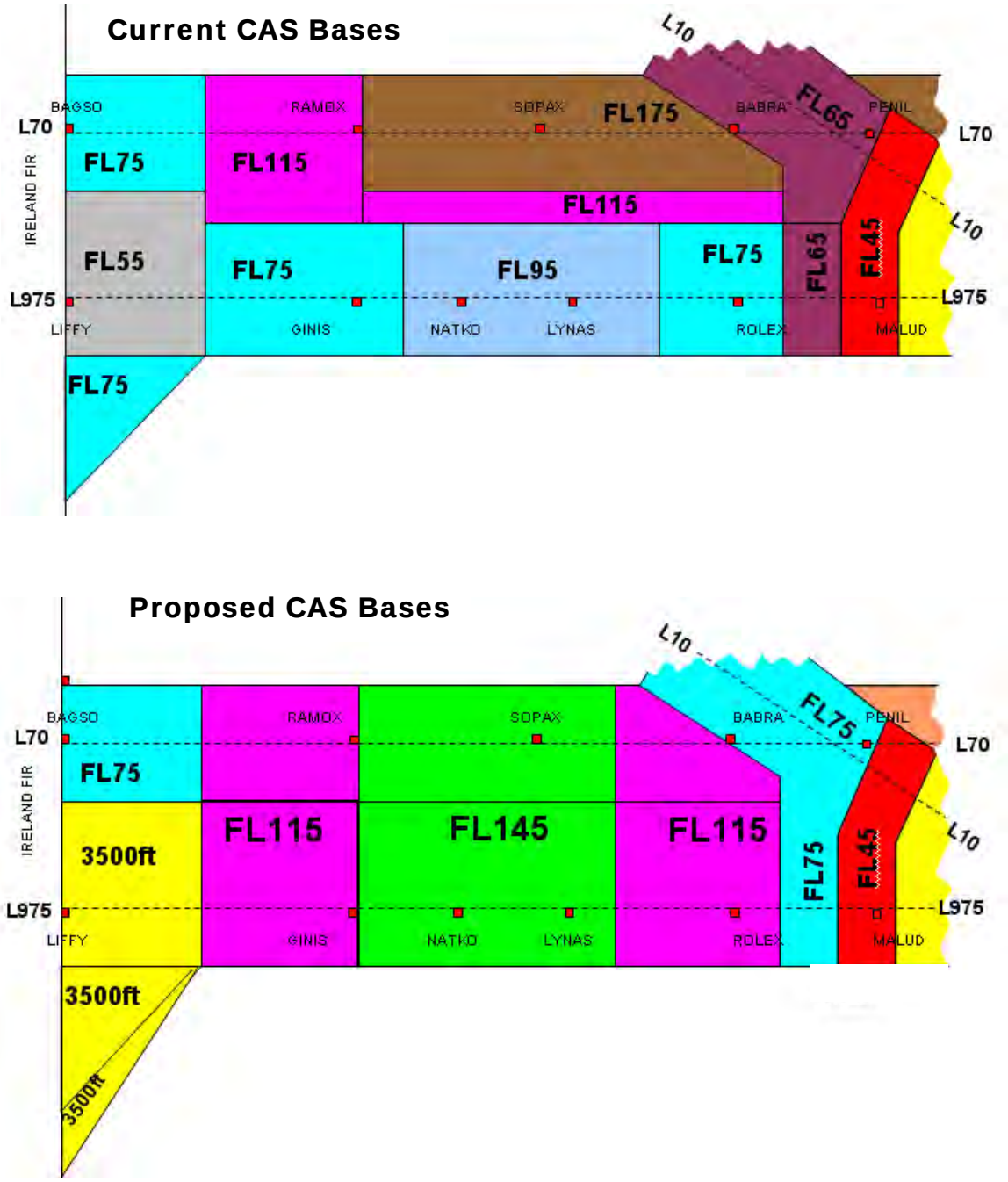
Figure 5: Illustration of continuous descent through proposed lowering of the base of CAS



Blue dotted track shows descent from PENIL to BAGSO is likely to need a step at RAMOX

Red solid track shows continuous descent is facilitated by a lowered base at RAMOX

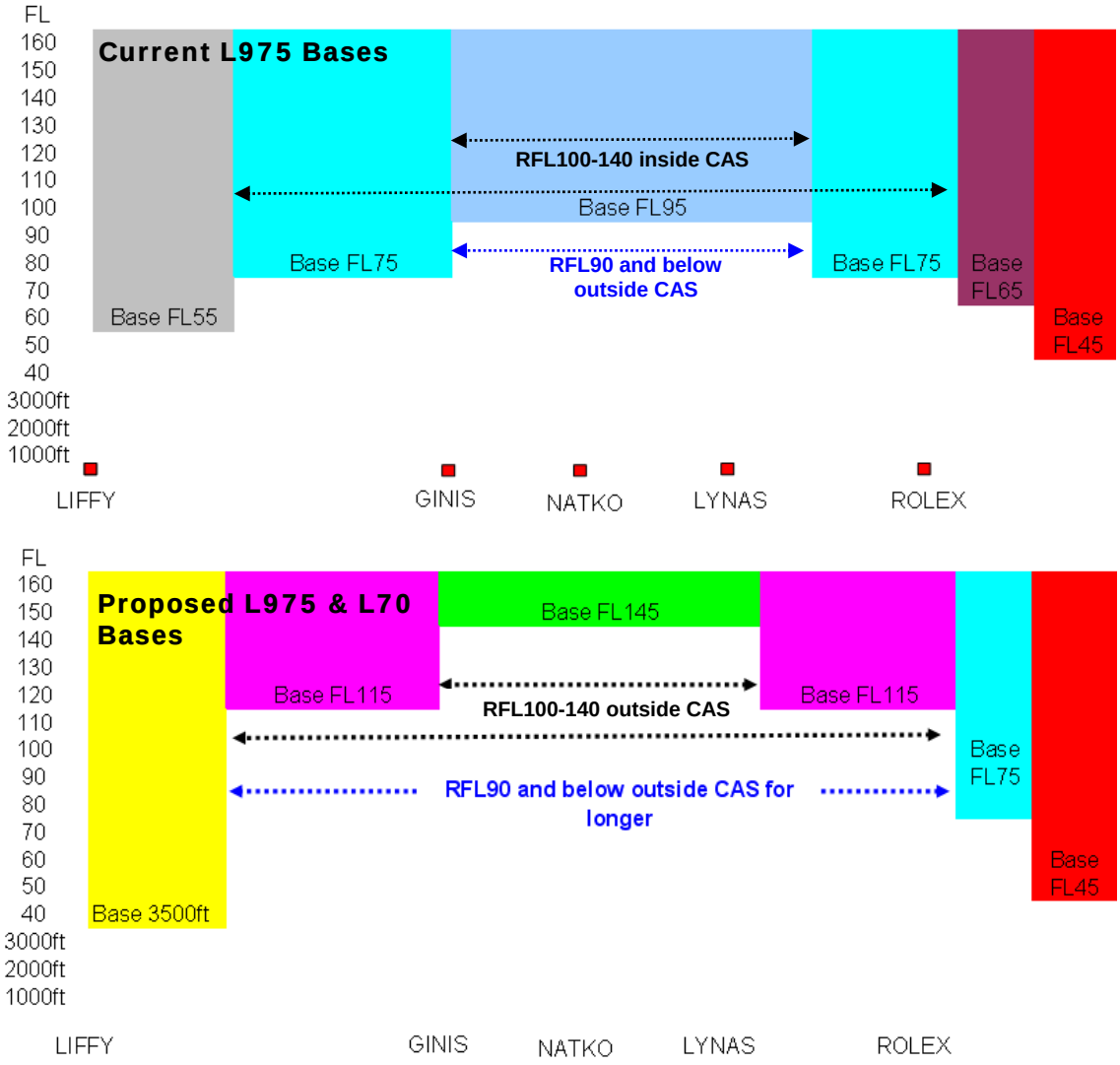
Figure 6: Current and proposed CAS bases for L70/L975 (plan view - not to scale)



18. The upper diagram within Figure 6 is an illustration of existing CAS for L70 and L975, with the lower diagram illustrating the proposed airspace which is clearly less complex. The sub-proposal for revised CAS includes some lowering of some existing CAS; however this is balanced by raising CAS in other areas. A military corridor – referred to as the LYNAS Corridor - is also proposed to maintain MoD access across the L70/L975 complex at FL115/145-175.

19. The existing and proposed CAS in this area is shown in the airspace maps in Figure 18 and Figure 19 respectively at the end of this document. Note that Figure 19 shows the combined airspace incorporating sub-proposals 1 through to 5 as described in this document.

Figure 7: Current and proposed CAS bases for L975 (side elevation view- not to scale)



20. The proposed airspace would meet the objectives described in 16; however, raising the base of L975 CAS would impact low level traffic. This proposed raising of L975 bases is illustrated in Figure 7. As a result of the sub-proposal, aircraft on L975 with a Requested Flight Level (RFL) 100-140 would fly outside CAS for a portion of their route that is currently inside CAS. Aircraft on L975 RFL90 and below would leave CAS earlier than they do today. Analysis of 2010 flight data has shown that 385 flights on L975 had RFL 100-140, while a further 547 had RFL 90 or below. Of these a significant proportion (approximately 30-50%) fly during quiet periods

when aircraft request and receive direct routings that take them outside CAS anyway.

21. Aircraft leaving CAS or leaving CAS earlier may request an ATSOCAS service from RAF Valley, London Joint Area Organisation (LJAO) or NATS.

General Aviation Impact

22. The proposed lowered airspace is wholly over the sea and therefore NATS is not aware of any significant impact on General Aviation.

Fuel and CO_2 Impact

23. This part of the proposal would not affect profiles, except for the facilitation of continuous descent as described at paragraphs 17 and 24.

24. However, this benefit is unpredictable as the need for a step will depend on the optimal descent profile for the aircraft, and the point at which aircraft are cleared to descend. Many aircraft can therefore currently descend to BAGSO at FL100 without a step. Whilst Appendix E demonstrates clearly that some aircraft do level off at FL180, NATS has not been able to identify typical circumstances in which this occurs and therefore predictions of how often it occurs have not been possible.

25. Furthermore, the data NATS has for assessing fuel burn is not appropriate for these particular circumstances. This is because the NATS fuel burn model builds typical tracks using industry standard BADA[2] performance data. This approach has been primarily developed for assessing differences in route length and differences in level flight.

26. The benefit of this proposal is that some aircraft would not have a level segment followed by a high rate descent to reach FL100 as illustrated by the blue track in Figure 5. The BADA data provides a basis for constructing the level segments but cannot account for non standard manoeuvres such as a high descent rate. The BADA licence precludes us from altering the performance data contained within BADA. As a result, we do not currently have the information available to us to be able to reliably estimate the effect on fuel performance of aircraft that currently level off[3]. In turn that means we do not have a baseline with which to compare the revised, optimal descent profile.

27. Therefore, whilst qualitative arguments and illustrations (i.e. Appendix E and Figure 5) can be made for the potential benefit of this change, it has not been possible to undertake a quantitative analysis of the potential benefit. However, it can be concluded that Sub-proposal 2 would have a benefit (albeit unquantified) to fuel efficiency because:

a) there is no negative consequence of this change on any profile, and

[2] (**B**ase of **A**ircraft **DA**ta) http://www.eurocontrol.int/eec/public/standard_page/proj_BADA.html

[3] Development of a bespoke data set would be a complex, time consuming and costly task that is beyond the scope of this proposal.

b) some aircraft that currently level off at FL180 to stay within CAS (as shown in Appendix E) will no longer have to do so (this assumes that a continuous descent to FL100 at BAGSO would be more efficient than a stepped descent.

Local Impact

28. The proposed airspace is wholly over the sea and therefore NATS is not aware of any significant local environmental impact.

Sub-proposal 3: Conditional Route (CDR) (U)Y124

29. (U)L975 is used by all eastbound traffic through LIFFY as illustrated in Figure 8. Separating the traffic flows is achieved through tactical intervention by ATC; this can be a highly complex function particularly at peak times.

Figure 8: Current eastbound traffic flows across the Irish Sea

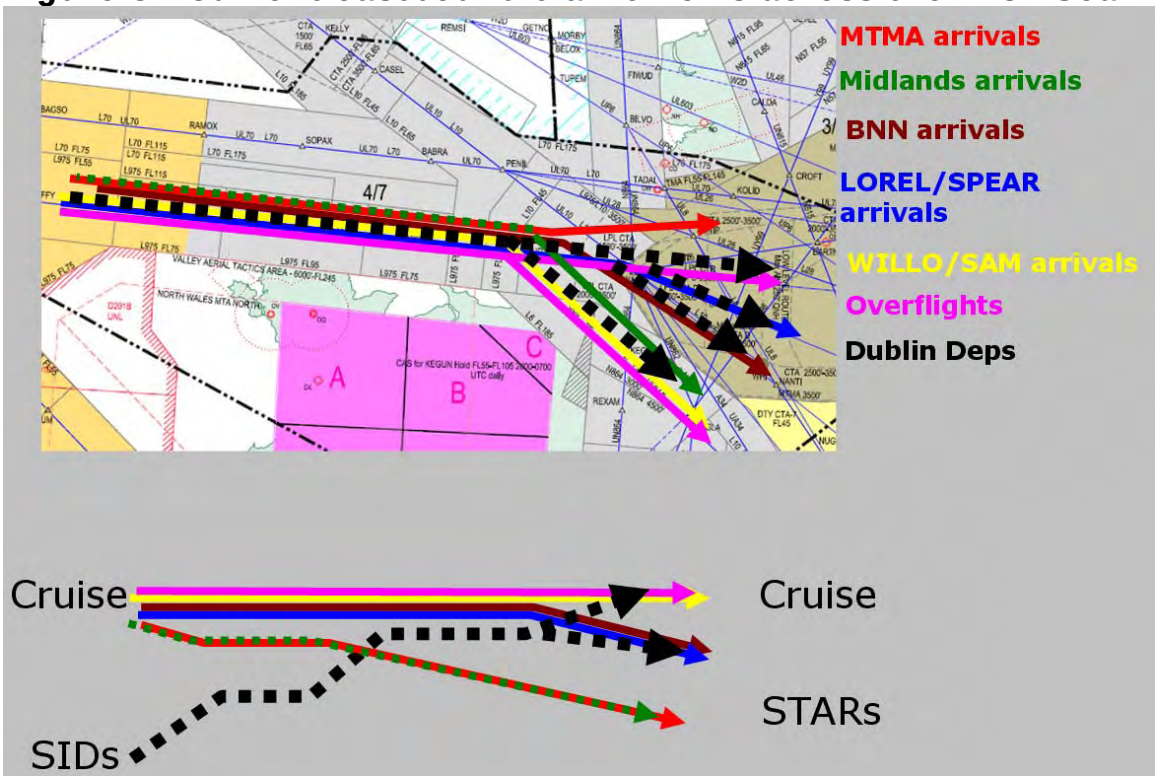
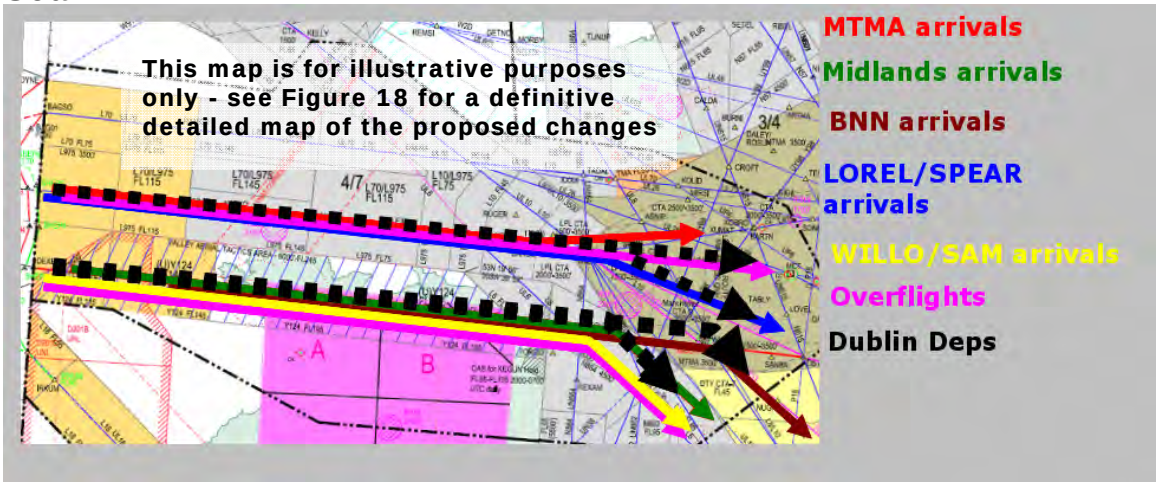


Figure 9: Proposed eastbound traffic flows across the Irish Sea



30. The airspace available for (U)L975 is constrained by the North Wales Military Training Area (NWMTA), the D201B danger area and gliding areas to the south. The relative lack of airspace compared to the volume of traffic on (U)L975 often necessitates the use of level segments to ensure separation for climbing and descending traffic, in particular the Dublin departures. Traffic flows are heaviest in the early morning 'first rotation' of scheduled flights leaving Dublin for destinations in Britain and further to the east.

31. The sub-proposal is to establish a new CDR (U)Y124 aligned parallel 12nm to the south of (U)L975, for use in the morning, evening, weekends and public holidays when there is generally no military traffic over North Wales. This will enable the traffic currently concentrated on (U)L975 to be spread across the two available routes as illustrated in Figure 9. The proposed alignment of (U)Y124 is shown in Figure 19. The proposed (U)Y124 alignment runs from a new point DEXEN (12nm south of LIFFY) to LISTO. New points LUTIP, SOSIM, BAGIT, DOLOP, AMPIT and MOGTA are proposed along the route between DEXEN and LISTO.

32. Establishing this CDR will reduce the number of interactions that ATC are required to manage, reducing complexity in the IoM Sector at Prestwick Centre and Sector 7 at Swanwick Centre (which will in turn reduce the likelihood of delays being generated through these sectors).

33. The sub-proposal would also improve fuel efficiency for traffic currently on (U)L975, both by reducing stepped climbs (as illustrated in Figure 8) and reducing track mileage. This is discussed further in paragraphs 45 to 47.

34. Figure 9 shows the following flows would be able to utilise (U)Y124:

    a) Overflights to the southeast

    b) WILLO and SAM arrivals to Gatwick and Solent & Farnborough Group airfields

    c) Bovingdon (BNN) arrivals to Heathrow and Northolt

    d) Dublin departures to the destinations listed in a) to c)

    e) Midlands arrivals to Birmingham, Coventry & East Midlands

    Note that some of these traffic flows are already tactically positioned by ATC in the airspace that would become UY124 under this proposal.

35. It is not planned for LOREL (Luton and Stansted) or SPEAR (London City) arrivals to use (U)Y124 initially, as it is unclear whether this complexity is best reduced by moving this flow or keeping them separated from the Heathrow arrivals. However, assuming this sub-proposal is accepted, NATS will reconsider use of (U)Y124 for LOREL and SPEAR arrivals drawing on experience of how the route has worked in practice. Utilising (U)Y124 is therefore an option that should be considered in this consultation and will be articulated in the subsequent airspace change sub-proposal to be submitted to the CAA.

CAS requirement

36. Traffic on Y124 climbing from Dublin would require CAS steps at FL115 and FL145 to allow aircraft to climb to FL195 by landfall at Holyhead. This CAS is shown in Figure 19. Note that Figure 19 shows the combined airspace incorporating sub-proposals 1 through to 5 as described in this document.

37. The Y124 CAS would only exist when the CDR is active.

Flexible Use of Airspace (FUA)

38. The sub-proposal is for (U)Y124 to be defined as a CDR 1 & 3. CDR 1 proposed times of availability for (U)Y124 is proposed as 1800-0800 (local) Monday-Friday and 24 hours on weekends and public holidays.

39. Should there be planned activity by MoD or gliders in either NWMTA or D201B during these hours, notification via the Airspace Management Cell the previous day (D-1) can close the route during the promulgated hours. For unplanned MoD or gliding activity during promulgated hours there would be a 2 hour notice period for route closure.

40. It is proposed that (U)Y124 is made available as a CDR 3 outside promulgated hours when there is no MoD or gliding activity, for instance during adverse weather conditions.

41. In the event that the CDR 3 is made available outside promulgated hours, but then circumstances change so that MoD or gliding activity is to commence, a 30 minute notice period for route closure is proposed.

General Aviation Impact

42. Access to the Welsh Gliding Areas A, B and C will remain unchanged. Any activation of the areas will close (U)Y124. Notification procedures for activation will be developed in conjunction with the BGA.

43. NATS is not aware of any significant impact on gliding activity or other General Aviation airspace users of the proposed (U)Y124 changes.

Quantified fuel & CO_2 benefit

44. Being further to the south (U)Y124 will reduce route mileage for Dublin departures routeing to or via south-east England by approximately 2.3nm – as illustrated in Figure 10. Table 1 shows the saving that this would generate per aircraft. Table 2 shows how this translates to a saving across the fleet given the proportion of aircraft types typically seen on the route.

Figure 10: Dublin departures to BNN via (U)L975 (red) and (U)Y124 (green)

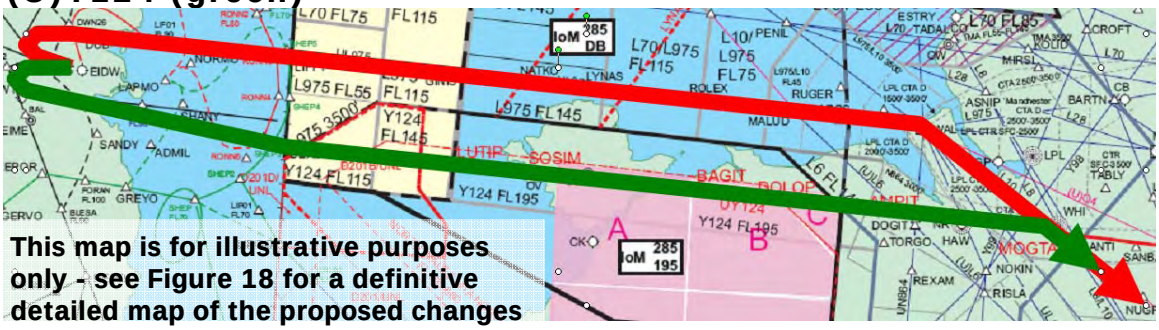


Table 1: Fuel and CO_2 saving for shortened route shown in Figure 10

aircraft	%,[4,5]	RFL	fuel for extra 2.3nm (kg)	CO_2 for extra 2.3nm (kg)
A320	50.5%	310	13.6	43.3
B738	17.7%	310	15.3	48.8
A319	10.9%	310	13.6	43.7
A321	7.6%	310	14.3	45.8
PA31	3.4%	90	2.1	6.7
A30B	2.7%	230	44.6	142.3
ATP	2.6%	150	5.6	17.8
other	4.7%			
weighted average			14.3	45.4

Table 2: Fuel and CO_2 saving for shortened route shown in Figure 10

Year	(U)Y124 eligible traffic (flights per year) [4,5]	Fuel saving (tonnes)	CO_2 saving (tonnes)
2010	5,100-7,620	70-110	230-350
2012	5,570-8,330	80-120	250-380
2017	6,420-9,600	90-140	290-440

[4] These figures have been calculated from a 31 day sample of flight data from August 2010 – See Appendix F for details. The August traffic numbers were increased by a factor of approximately 10 to estimate annual traffic (the factor was calculated by considering August traffic levels compared to annual traffic levels for the whole of the UK in 2010). 2012 and 2017 scenarios were grown from 2010 based on the NATS UK forecast generated in September 2010. This forecasts that 2010 traffic would have grown by 9% and 26% respectively by 2012 and 2017.

[5] Analyses are based on analysis of August 2010 Dublin departures operating in periods when (U)Y124 would be available. The lower end of the range is a pessimistic assumption that military activity will preclude use of (U) Y124 in the evenings. The upper value assumes availability every evening. No account is taken of periods when military activity prevents use of the route during its published hours, nor does it account for periods of use when military release the airspace for use outside of published hours.

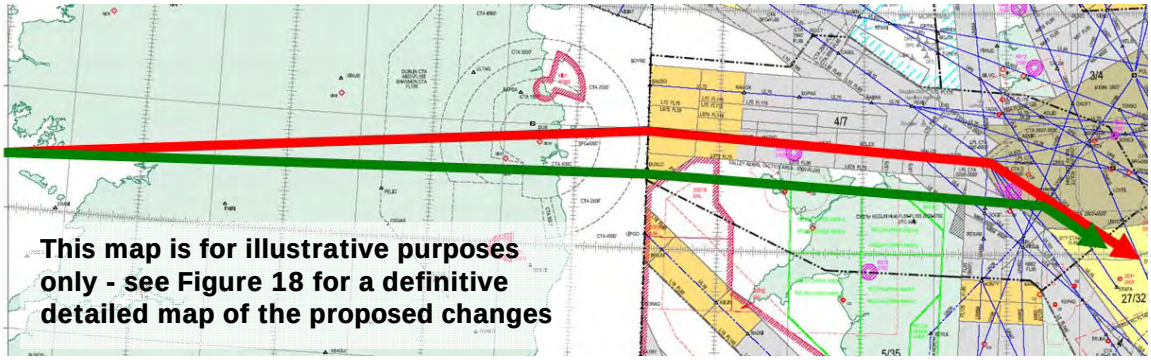
Un-quantified fuel & CO_2 benefit

45. Fuel burn and CO_2 benefits would also be expected as a result of reduced stepped climbs for Dublin departures and also reduced stepped descents for MTMA and Midlands arrivals as illustrated in the vertical slice shown in the lower part of Figure 8. However, these benefits are unpredictable as the need for a stepped climb/descent is heavily dependent on the tactical situation at any given time, which is highly variable. NATS has therefore not been able to quantify this benefit.

46. Furthermore there will be a potential route mileage reduction for some overflights heading to the south-east via (U)L975 in particular those coming from a more southerly latitude than LIFFY, as illustrated in Figure 11. NATS has not quantified this because the benefit on any given day is dependent both on where the traffic is coming from, and the amount of traffic that would seek to use the route. In turn, these factors are respectively dependent on the location of the oceanic entry points and delays in neighbouring 'West End' sectors providing ATC over southern Wales, both of which are difficult to predict.

47. Given that there is no expected disbenefit in terms of fuel burn or CO_2 efficiency it is proposed that the quantified benefit alone provides sufficient justification for making this change.

Figure 11: Example overflights via (U)L975 (red) and (U)Y124 (green)



Local impact

48. Utilising (U)Y124 would mean more traffic overflying Snowdonia National Park and the Anglesey & Clwydian Range Areas of Outstanding Natural Beauty. The potential local impact is considered in Part C of the consultation document available as a separate download at www.consultation.nats.co.uk.

Link routes

49. In order to ensure connectively between (U)L975 and the BNN, LOREL and SPEAR STARs the sub-proposal includes the following changes to definitions for BNN, LOREL and SPEAR STARs and link routes.

L975

50. NATS proposes a link route between LIFFY and the new point LUTIP on Y124 west of Anglesey (see Figure 19). This is to allow flight plan connectivity for Dublin departures should the proposed DEXEN SID from Dublin not be available for a period of time. This will also enable Y124 to be flight plannable for Dublin departures should the implementation of the DEXEN SID by the Irish (planned for May 2012) be delayed.

BNN connectivity

51. A new route UY53 is proposed between WAL and NUGRA (start of BNN STAR), replacing an existing 'allowable direct' (DCT) between WAL and NUGRA (see Figure 19). This would include a new point MOGTA at the intersection of UY53 and UY124.

52. In addition it is proposed to realign Y53 to WAL - MOGTA – NANTI – NUGRA – PEDIG to match UY53 alignment (WAL – MOGTA – NANTI – NUGRA only)

LOREL / SPEAR connectivity

53. It is proposed that the WAL-LISTO segment of existing LOREL 4F and SPEAR 1L STARs are removed so that (U)Y124 can feed into both STARs at LISTO which will become the start of the STARs. This will also require a new route, UQ4, between WAL and LISTO to retain connectivity to the LOREL & SPEAR STARs from WAL (see Figure 19).

54. In addition it is proposed to realign Q4 WAL - LISTO – TNT to match the alignment of UQ4.

55. Introduction of UY53 and UQ4 would have no bearing on actual or flight plan tracks for BNN, LOREL & SPEAR arrivals respectively.

56. Aircraft on Y53 and Q4 are currently routinely vectored along the routes proposed .The change will not impact actual tracks flown and therefore local environmental impact on noise, visual intrusion or tranquillity will also remain unchanged. The realignment will result in a small increase to the flight plan track for aircraft currently filing Y53 or Q4 (0.5nm and 2nm respectively for Y53 and Q4). However this change in route mileage is minimal and the route usage is minimal (220 and 360 respectively for Y53 and Q4 in 2010). Therefore no further environmental analysis or consultation is being undertaken for these routes.

57. The existing and proposed airspace structure is shown in the airspace maps in Figure 18 and Figure 19 respectively at the end of this document. Note that Figure 19 shows the combined airspace incorporating sub-proposals 1 through to 5 as described in this document.

Sub-proposal 4: Lowering L70 East of PENIL

58. Manchester arrivals from (U)L10 descending towards Minimum Stack Level (MSL) at MIRSI currently have to fly further south-east towards WAL before turning east to MIRSI within the Manchester TMA (MTMA). This is shown in Figure 12 which shows a density plot of flights from a week of traffic into MIRSI. Colour coding on the density plots denote how many flights there were in each area across the sample (01 to 07/08/10).

Figure 12: Current tracks of (U)L10 Manchester Arrivals into MIRSI within MTMA boundary

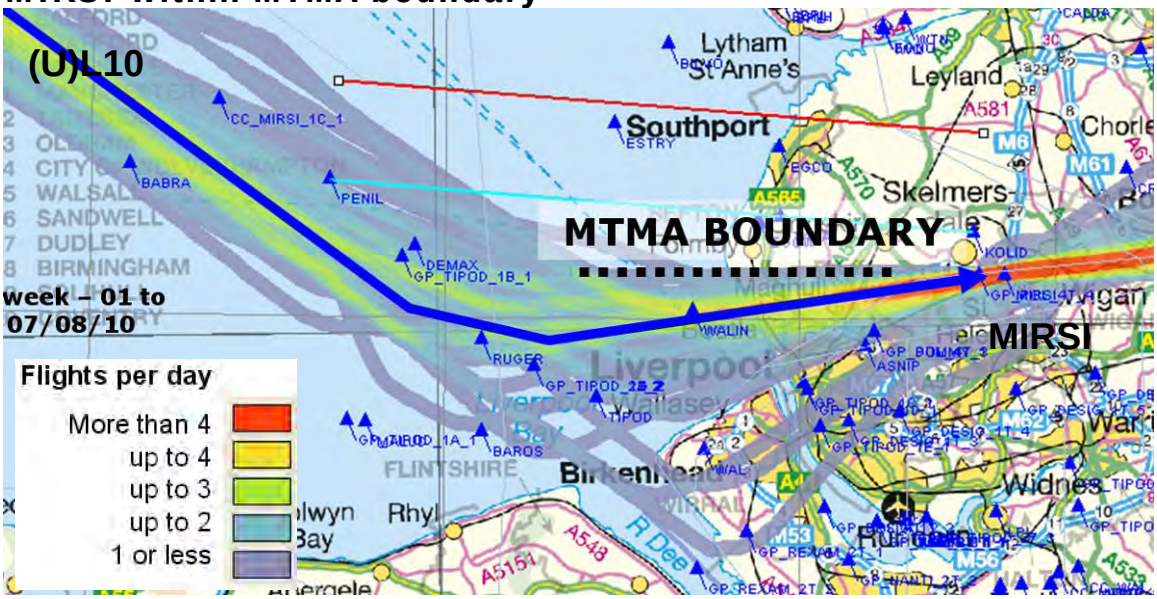
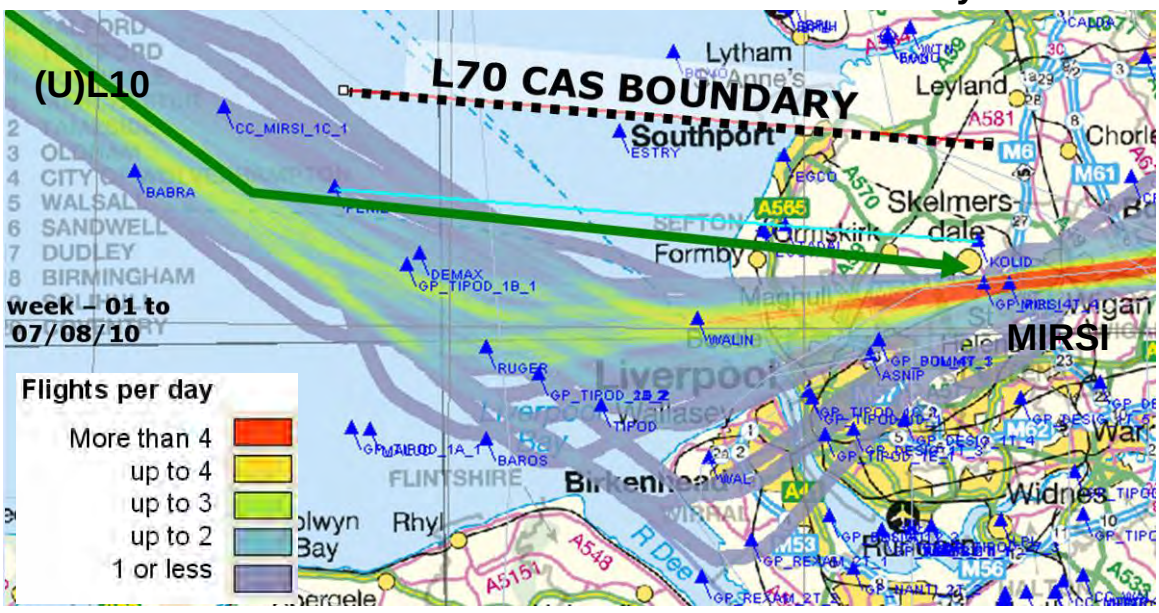


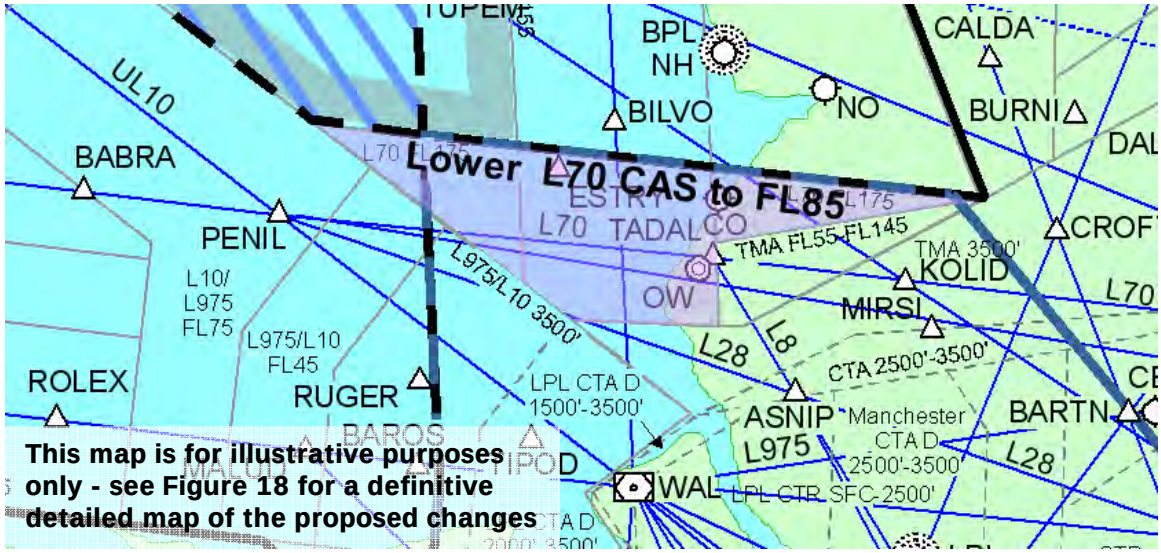
Figure 13: Expected typical route for tracks of (U)L10 Manchester arrivals into MIRSI within MTMA boundary



59. The airspace north of the existing MTMA boundary is associated with L70 currently and has a base of FL175. This sub-proposal is to lower the segment of L70 east of PENIL up to a new point GIGIL at the intersection of L70 and Y98. Availability of the proposed lower L70 airspace would be subject to activity at BAE Warton. The lowered base would be from FL85 to enable MIRSI arrivals from (U)L10 to follow a more direct route as shown in Figure 13, reducing track miles flown by 1.8nm.

60. The lowering of L70 in this area would mean the segment of Class G airspace FL85-FL175 shown in Figure 14 as the purple shaded area would become Class A CAS.

Figure 14: Proposed area of lowered L70 CAS



61. In addition to the benefit for (U)L10 MIRSI arrivals, this sub-proposal would:

a) Provide a shorter flight plan route for Leeds/Doncaster traffic requesting FL170 and above. Most Leeds departures that flight plan via WAL climb above FL175 by the time they cross L70 near KOLID and are therefore vectored direct towards PENIL. However, as the SID ends at WAL they must flight plan an extra 9.7nm via WAL, increasing fuel uplift.

b) Provide a shorter route for Leeds/Doncaster traffic requesting FL90-170.

c) Provide additional vectoring space for the Wallasey ATC sector

d) Facilitate additional higher holding levels at MIRSI (subject to separation with ROSUN)

e) Provide additional CAS for Warton and Blackpool movements joining/leaving CAS.

Flexible Use of Airspace (FUA)

62. It is proposed that the lowered L70 CAS is subject to Flexible Use of Airspace (FUA) principles that allow 15/30 minutes “claw back” (to be

confirmed) by BAE Warton up to the level required – maximum FL195 (even though current base is FL175).

General Aviation Impact

63. In the development of this proposal, NATS has liaised with the BGA. NATS is not aware of any significant impact on gliding activity or other General Aviation airspace users.

Quantified Fuel and CO_2 Impact

64. Table 3 shows the fuel and CO_2 saving per aircraft expected from a typical reduction in route miles of 1.8nm for (U)L10 MIRSI arrivals as shown in Figure 12 and Figure 13. The green arrow in Figure 13 is 1.8nm shorter than the blue arrow in Figure 12. Table 4 shows how this translates to a saving across the fleet given proportion of aircraft types typically seen on the route.

Table 3: Fuel and CO_2 saving for shortened route shown in Figure 13

aircraft	% *	RFL	fuel saving for 1.8nm (kg)	CO_2 saving for 1.8nm (kg)
B733	19.8%	230	15.9	50.2
B752	8.1%	370	16.0	50.8
DH8D	39.5%	190	6.4	20.3
E190	25.4%	210	13.4	42.6
A332	3.6%	390	21.9	69.5
other	3.6%	0		
weighted average			11.2	35.4

Table 4: Fuel and CO_2 saving for shortened route shown in Figure 13

year	Eligible MIRSI arrivals (flights per year) [6]	Fuel saving (tonnes)	CO_2 saving (tonnes)
2010	2,810	30	100
2012	3,070	30	110
2017	3,530	40	130

Un-quantified Fuel and CO_2 Impact

65. A potential benefit would be accrued for Leeds departures requesting FL170 or below routeing via PENIL. This route requires aircraft from POL to fly

[6] These figures have been calculated from a 31 day sample of flight data from August 2010 – see Appendix F for details. The August traffic numbers were increased by a factor of approximately 10 to estimate annual traffic (the factor was calculated by considering August traffic levels compared to annual traffic levels for the whole of the UK in 2010). 2012 and 2017 scenarios were grown from 2010 based on the NATS UK forecast generated in September 2010. This forecasts that 2010 traffic would have grown by 9% and 26% respectively by 2012 and 2017.

past L70 towards WAL before turning back towards PENIL to remain in CAS. However analysis has shown that there are currently insignificant numbers routeing this way (low level transits to Belfast TMA tend to route via W2D) – see Appendix G.

Link Routes

66. A small additional benefit would be achieved by reducing the flight plan track miles for Leeds departures via PENIL. The current flight plan is WAL SID - L10 - PENIL. This proposal is for a new route to connect POL to KOLID via CROFT reducing the flight plan track miles by 9-10nm per flight. This link route is shown in Figure 19 (note that no designator has yet been allocated).

67. The NATS fuel burn and emissions models have been developed to produce an aggregate view of fuel burn across the fleet. As such they are not sensitive enough to measure relatively subtle changes in fuel efficiency resulting from reduced fuel uplift. Therefore no calculations of the scale of this potential benefit have been undertaken.

68. Given that there is no expected disbenefit in terms of fuel burn or CO_2 efficiency it is proposed that the quantified benefit alone provides sufficient justification for making this change.

Local impact

69. Lowering L70 airspace would mean more traffic overflying the area around Southport as aircraft may follow tracks south of the L70 CAS boundary shown in Figure 13. The potential local impact is considered in Part D of the consultation document available as a separate download at www.consultation.nats.co.uk.

Sub-proposal 5: (U)L6 extension and lowering

70. Figure 15 shows the current flight planned route for traffic on (U)L10 to the south. This is predominantly departures from the Belfast TMA, plus occasional oceanic overflights. Figure 16 illustrates this same route over a track picture. This track picture shows aircraft regularly being vectored onto a more direct, shorter, routeing. This part of the sub-proposal aims to provide a route that will bring the flight plan closer to what is flown in reality, which will provide three benefits:

a) Reduced fuel uplift: Less weight, therefore more fuel efficiency for flights even if the actual track flown does not alter

b) Reduced controller and pilot workload: Fewer tactical instructions would be required

c) Improved controller flexibility to deal with busy or unusual traffic scenarios.

71. Figure 16 illustrates a revised flight plannable route enabled by a proposed extension of (U)L6 which would provide connectivity from LISBO – PEPOD – ABM KELLY – MALUD - KEPAD (see Figure 19 for detailed airspace view showing the proposed L6 extension). Note that the existing (U)L6 runs from MALUD to KEPAD, but does not provide connectivity from the IOM area to MALUD.

Reduced Fuel Uplift

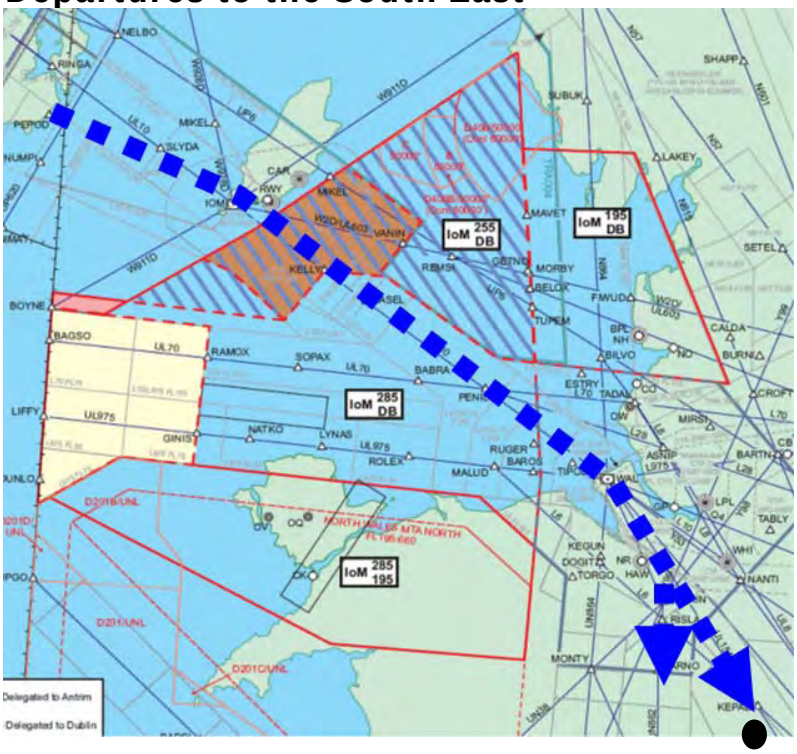
72. Aircraft have to carry sufficient fuel to fly the flight plan route; even if in reality they are always given a shorter route by ATC. Carrying more fuel means carrying more weight, which in turn means more fuel is burnt. Ensuring that the flight plan matches what is flown in reality therefore improves overall fuel efficiency.

73. This change would bring the flight plan route for (U)L10 traffic flows more into line with what is actually flown. This would reduce the flight planned route mileage for Belfast TMA Departures travelling between PEPOD and KEPAD by 2.5nm.

Reduced ATC workload

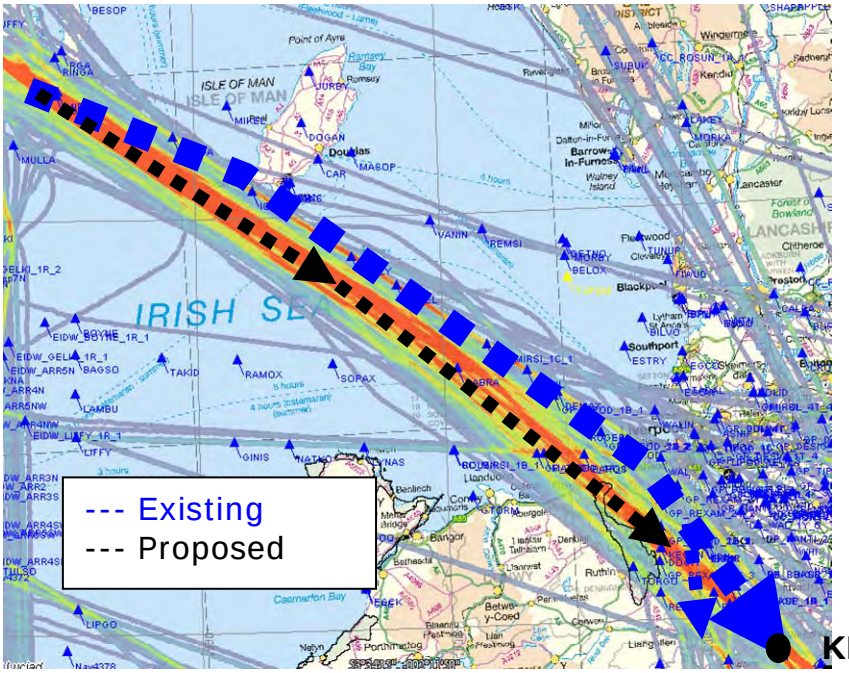
74. ATC position the (U)L6 traffic via KEPAD to the south of the flight planned route (U)L10. This is done to separate traffic on (U)L10 going to the south via KEPAD from those turning east in the vicinity of Wallasey.

Figure 15: Existing Flight Plan Route for Belfast TMA Departures to the South East



KEPAD

Figure 16: Existing and Proposed Flight Plan Route for Belfast TMA Departures to the South East



75. Positioning the (U)L10 traffic to the south of the route currently requires ATC to put aircraft routing south on appropriate headings towards KEPAD. Use of headings is a relatively complex and high-workload ATC/pilot task. Extending (U)L6 will allow aircraft to flight plan a similar track to that actually flown, cutting down on the need for tactical vectoring by ATC in the vicinity of Wallasey (which is a key ATC reporting point at the confluence of a number of busy routes). Like the reduced fuel uplift benefit, this represents a relatively small benefit on an individual flight basis. However, aggregating it across the fleet will reduce the workload required to manage this flow, which ultimately reduces the likelihood of workload-related ATC delay.

Increased Flexibility

76. In addition the proposal includes lowering/extending three fillets of airspace associated with L6 shown as the blue, green and red polygons on Figure 17. The green and red fillets provide controlled airspace for the extended L6. It would therefore potentially be used by aircraft departing Belfast requesting cruising levels between FL145 and FL195.

77. The proposal lowers the blue fillet in Figure 17 from FL185 to FL145. This fillet would increase controller flexibility to position aircraft tactically during busy periods in the busy Wallasey air traffic control sectors. .

78. As this airspace would be used flexibly it is not possible to predict usage patterns with accuracy. However, as it would not be part of a standard route for any particular traffic flow, it would not be used regularly.

Link routes

79. A number of link routes are proposed in order to ensure connectivity between the extended (U)L6 and the route structure for aircraft heading east and towards the London TMA. These link routes are shown on Figure 19 and described below. In each case the link routes will provide flight planning connectivity but will not affect where aircraft actually fly (see Appendix H for track analysis).

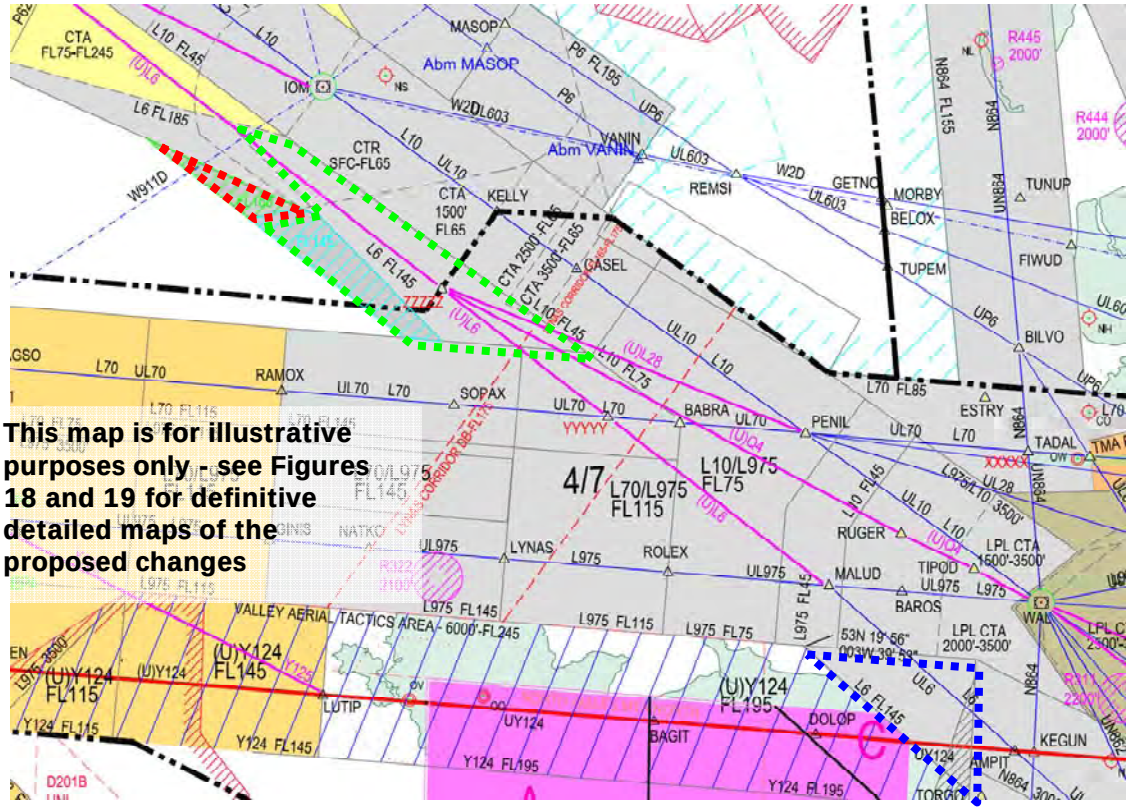
80. **Extend (U)L28 between ZZZZZ (new point abeam KELLY; no 5 letter name code allocated yet) and PENIL**. This provides connectivity to PENIL. It is also proposed to make the existing (U)L28 between PENIL and MCT bi-directional (currently westbound only). This would enable flight plan connectivity between ZZZZZ/PENIL and MCT. Currently aircraft flying from PENIL to MCT flight plan via WAL which adds approximately 1.5 nm to the flight planned route. Appendix H shows that in reality aircraft are vectored by ATC. …..

81. **Extend (U)Q4 between (ZZZZZ new point abeam Kelly; no 5 letter name code allocated yet) and WAL (via TIPOD and RUGER).** This would provide connectivity for Belfast departures heading towards the LOREL and BNN STARs (primarily for Luton, Stansted and Heathrow). Appendix H shows that in reality aircraft are vectored by ATC.

82. **Introduce a new route Lxx (no designator allocated yet), this connects DUFFY - PEPOD – IOM**. The DUFFY – PEPOD segment would replace the existing DCT between DUFFY and PEPOD for Belfast City departures, and the PEPOD-IOM would replace the existing PEPOD-IOM

DCT for Belfast City and Aldergrove departures to Ronaldsway and connecting to W2D or UL603. Appendix H shows that in reality aircraft are vectored by ATC.

Figure 17: Link Routes and Lowered CAS fillets associated with L6



83. The existing and proposed airspace structure is shown in the airspace maps in Figure 18 and Figure 19 respectively at the end of this document. Note that Figure 19 shows the combined airspace incorporating sub-proposals 1 through to 5 as described in this document.

84. Liaison with the MoD has been undertaken throughout the development of this sub-proposal. It is not envisaged that the L6 extension will have a significant impact on MoD operations.

General Aviation Impact

85. In the development of this proposal NATS has also liaised with the BGA. It is not envisaged that the loss of Class G airspace between FL145 and FL185 under L6 (blue dotted boundary) will have a significant impact on gliding activities from Lleweni Parc. Access to the Welsh Gliding Area C will remain unchanged (see also paragraph 42).

86. Two areas of new/lowered CAS proposed over the Irish Sea are shown in Figure 17. An area of CAS with a base FL145 is shown with a green dotted boundary and CAS with base FL185 a red dotted boundary. Both areas provide CAS for the proposed L6 extension and would complement the CAS changes for the L70/L975 complex in Sub-proposal 2 by further simplifying the CAS structure over the Irish Sea.

87. NATS is not aware of any significant impact on gliding activity or other General Aviation airspace users of the proposed L6 changes.

Fuel & CO_2 benefit

88. The NATS fuel burn and emissions models have been developed to produce an aggregate view of fuel burn across the fleet. They do not attempt to capture the changes in fuel efficiency resulting from reduced fuel uplift described in paragraphs 72-73. Therefore no calculations of the scale of this potential benefit have been undertaken. However, this benefit, albeit relatively small for each affected flight, would be accrued by all (U)L6 traffic departing Belfast City and Belfast Aldergrove with their destination Gatwick, Farnborough and Solent clutch airfields[7] and overflights exiting UK airspace via the south coast, primarily France. It is estimated that this would benefit approximately 4,000[8] flights per year in 2012 rising to approximately 4,500 in 2017. Hence, whilst the benefit to individual flights is small, the aggregate benefit across the fleet would be more significant.

Local impact

89. Lowering L6 to FL145 over North Wales would mean more traffic overflying the Clwydian Range Area of Outstanding Natural Beauty. The potential local impact is considered in Part C of the consultation document available as a separate download at www.consultation.nats.co.uk.

Complete proposal

90. The impact of the complete proposal is effectively the sum of its five sub-proposals as their impact on one another is limited, hence their separate consideration in this consultation document. However, they would each contribute to a revised airspace map for the area which is shown alongside the existing airspace map in Figure 18 and Figure 19.

[7] e.g. Southampton, Bournemouth

[8] Based on analysis of August 2010 traffic numbers – see Appendix F

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Figure 18: Existing airspace

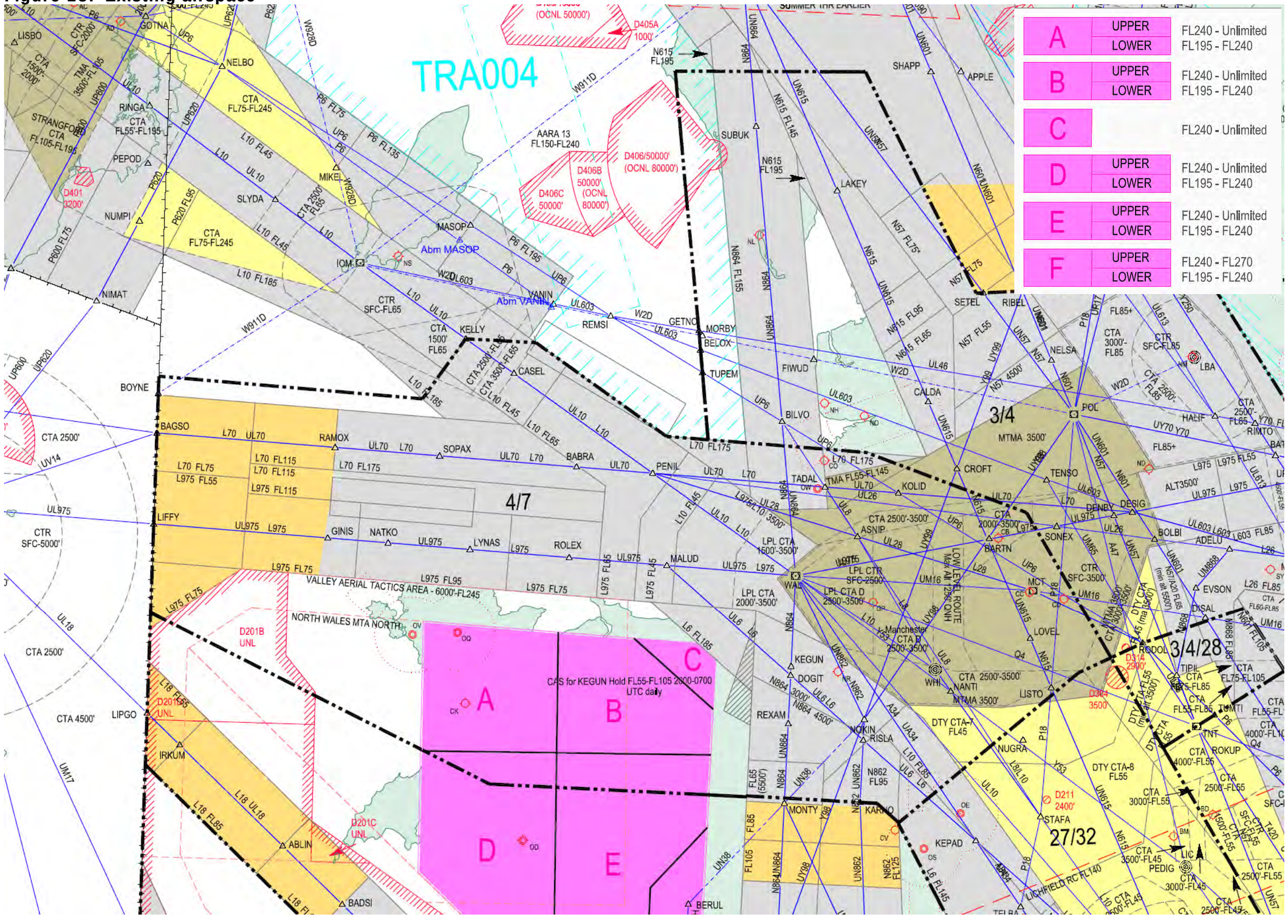
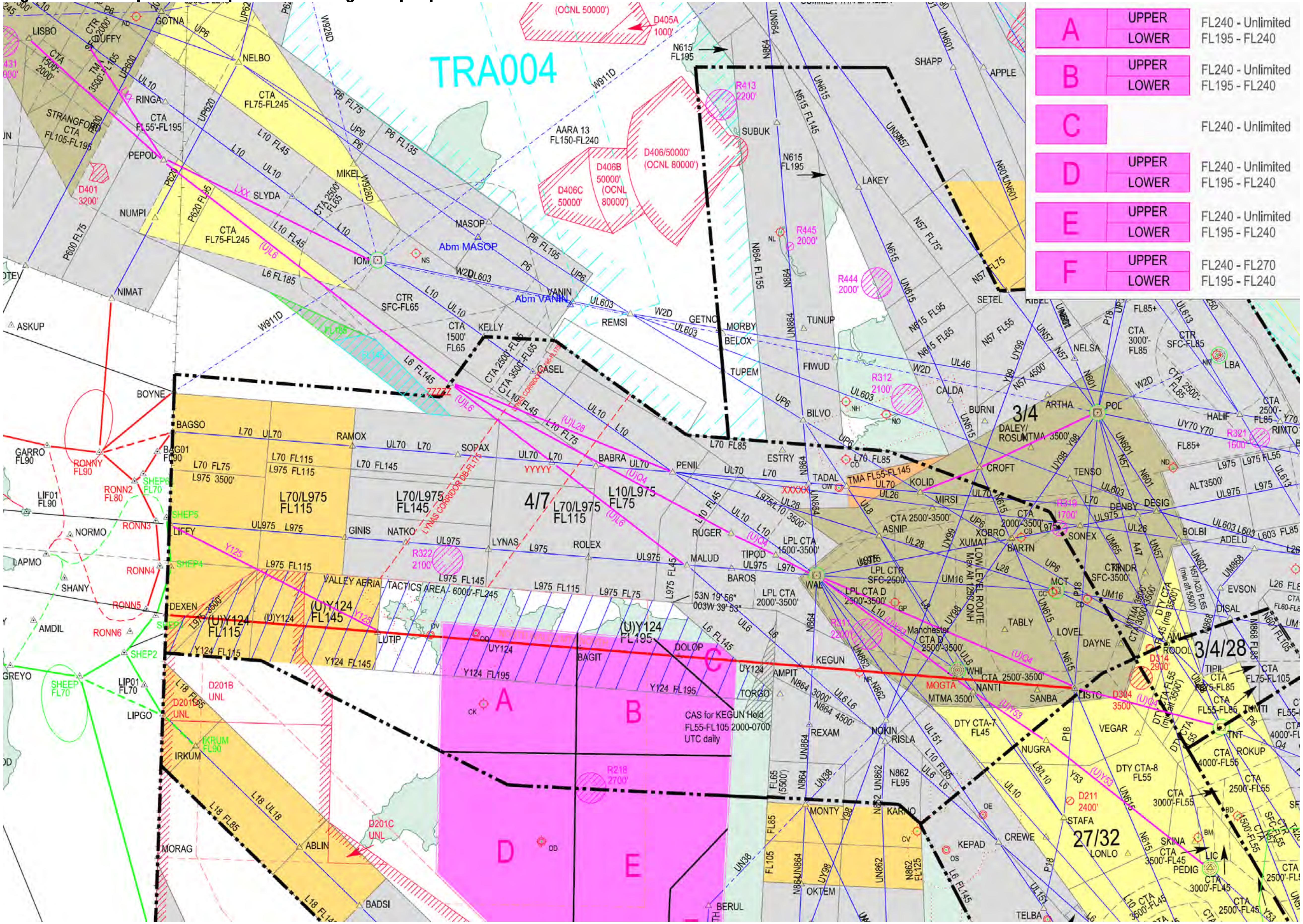


Figure 19: Proposed airspace including sub proposals 1-5



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