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**IRISH SEA
AIRSPACE CHANGE PROPOSAL**

**PART C: Potential environmental impact of
proposals affecting Snowdonia National Park and the
Anglesey and Clwydian Range AONBs**

Introduction

1. This part of the consultation document provides details of potential environmental impacts of the proposed changes over Snowdonia National Park, Anglesey Area of Outstanding Natural Beauty (AONB) and Clwydian Range AONB.
2. 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 (ATC) and airspace structure in the UK.
3. See Part A for an overview of the proposal, details of the consultation process and detail of how this consultation document is structured. Part B provides a full technical description for the whole proposal, and Part D provides details of potential environmental impacts over parts of Lancashire. All parts of the document are available at www.consultation.nats.co.uk.
4. The proposal is split into five distinct sub-proposals, all of which are described in Part B. Of these, sub-proposal number 3 is relevant to Snowdonia National Park, Anglesey AONB and Clwydian Range AONB. Sub-proposal 5 is relevant to Clwydian Range AONB only. This Part of the consultation document describes the potential environmental effect of these two sub-proposals on the above areas.

Proposals affecting Snowdonia National Park, Anglesey Area of Outstanding Natural Beauty (AONB) and Clwydian Range AONB

Sub-Proposal 3: (U)Y124

5. Traffic flying from Irish airspace to the east currently flies along a route that crosses the Irish Sea known as (U)L975 and spoken as 'upper lima nine-seven-five'. This route passes to the north of Anglesey reaching landfall at Liverpool (as shown in Figure 1 on page 4). This route is particularly busy with a number of different traffic flows which generate a complex air traffic control environment. In order to manage the complex interactions of the various traffic flows, ATC often has to issue extra instructions to stop aircraft climbing or descending until they have crossed any conflicting traffic flows. Stopping climbs and descents is inefficient both in terms of the economic cost of fuel burnt and the environmental cost of CO₂ emissions.
6. One way in which the ATC system is kept safe is by ensuring that controllers are not overloaded, i.e. there is a limit on the number of aircraft that they can handle at any given time. This limit is defined by how much interaction and workload there is associated with each flight. In order to stop this limit being reached, aircraft may be delayed on the ground until such time as they can be safely managed. The need to issue extra instructions to aircraft as described above adds to this workload, and

therefore adds to the likelihood that a pre-departure delay is allocated during busy periods to ensure safety.

7. A new route, to be known as (U)Y124 and spoken as 'upper yankee one-two-four', is proposed to run parallel to (U)L975 to the south – see Figure 1 on page 4. This will allow the traffic currently concentrated on (U)L975 to be distributed across two routes during some of the busier periods of the day. This would reduce the complexity and therefore reduce both the fuel/CO₂ cost, and the likelihood of delay.
8. In addition to the above benefits, the proposed route is shorter than the existing route for some of the major traffic flows, in particular Dublin departures that head south east on crossing the Irish sea. The tracks for these flights would shorten by approximately 2.3 nautical miles (nm), generating an extra benefit in terms of reduced fuel/CO₂ cost (the basis of this fuel/CO₂ saving is described in more detail in Part B).
9. Note that some aircraft can already be manually positioned by ATC along tracks that are similar to the proposed alignment of (U)Y124. The ability to manually position tracks depends on the complexity of the traffic situation and whether ATC has the time to co-ordinate the aircraft to fly off route. Formalising and publishing (U)Y124 would enable this airspace to be used more consistently during the hours when MoD and/or gliding activity is not taking place.

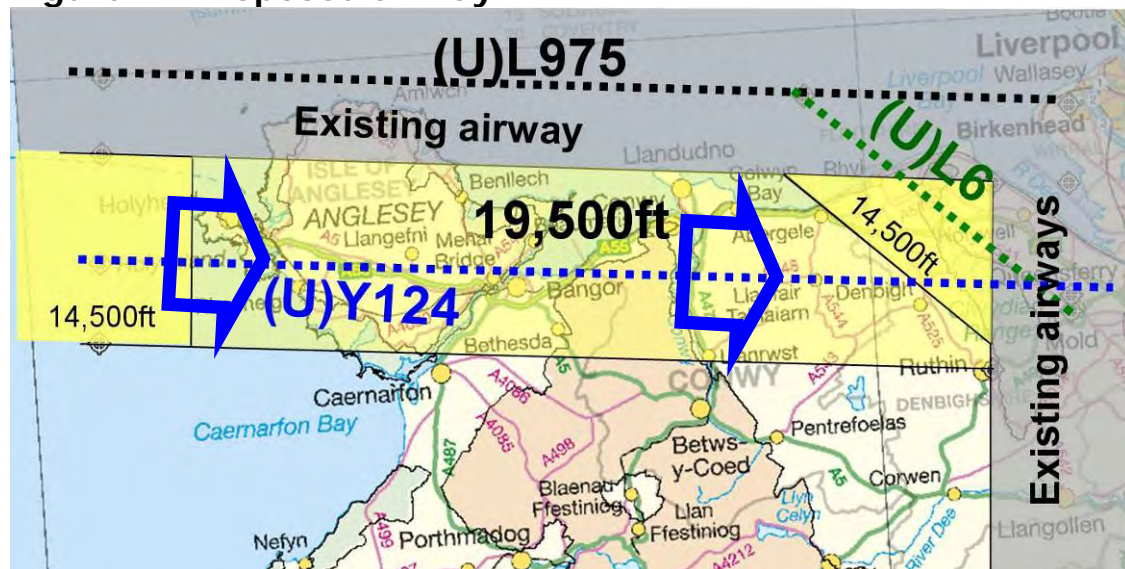
(U)Y124 Hours of operation

10. The Ministry of Defence (MoD) regularly utilises the airspace above North Wales for military training exercises. The MoD will continue to have primacy for utilising this airspace. This means that the times of availability of the proposed (U)Y124 route will be limited to when there is no MoD activity. Usage of the proposed route would therefore generally be limited to weekends, public holidays, and on weekdays between 1800 and 0800 (local time).
11. Availability and usage of (U)Y124 on weekday evenings is being planned as the normal mode of operation, however, the MoD have indicated that military training exercises will potentially block the route on a regular basis (in particular during the summer as the MoD have extended daylight operations to make use of lighter evenings).
12. Arrangements will also be made with the MoD to enable use of (U)Y124 at other times if MoD activity is not planned, for example during the daytime in the event of bad weather preventing planned military operations taking place.

Figure 1: Existing and proposed routes



Figure 2: Proposed airway



(U)Y124 Airway

13. An airway is airspace either side of a route (generally 5nm either side) within which traffic on the route may be spread. Airways also have a ‘floor’ which defines the lowest height an aircraft on the airway can fly. For an overview of airways see Appendices C and D.
14. The overland portion of the (U)Y124 airway would be from Flight Level (FL) 195 (approximately 19,500ft) upwards as shown in Figure 2. A lower area from FL145 (approximately 14,500ft) would be required over the sea to the west of Anglesey to allow aircraft to climb out from Dublin. The blue arrows on Figure 2 indicate how traffic on (U)Y124 may be spread across the extent of the airway.

Sub-proposal 5: L6

15. The proposal includes the lowering of a segment of route L6 ('Lima six') which passes over part of Clwydian Range AONB from FL145 to FL185 (approx 14,500ft to 18,500ft) –see Figure 1 and Figure 2). This is part of Sub-proposal 5 as described in Part B of the consultation material. The area to the north east of this segment is a very busy area known as the Wallasey sector. This sector is the confluence of a number of major routes and is highly complex.
16. The segment of airspace from FL185 upwards is already part of airway L6 and is regularly used by air traffic control for traffic heading south east from the Belfast area. It is also used flexibly to help keep aircraft safely separated during periods when the routes through Wallasey become particularly busy. Whilst there are no regular traffic flows that would utilise the FL145-FL185 segment that is proposed, it would be available for air traffic control to use flexibly to deal with unexpected and/or high traffic volume scenarios. It would therefore help to reduce the complexity and enhance the overall efficiency of the Wallasey sector. Note that (U)Y124 traffic would utilise the existing airspace above Clwydian Range AONB at levels above FL195.
17. The amount of traffic expected in the new controlled airspace is described in paragraph 24. Full details of the proposals for (U)Y124 and L6 can be found in Part B.

Over-flight of Snowdonia National Park, Anglesey Area of Outstanding Natural Beauty (AONB) and Clwydian Range AONB

18. Figures 3-5¹ on page 7 show how the airspace above North Wales is already used at various levels. These are density plots where the colour coding indicates the number of flights that used the airspace in the sample period. A key to the colour coding for Figures 3-5 is included. Note that these diagrams do not capture all MoD flights as these are not always visible to our radar. Note also that (U)Y124 and the boundaries of the proposed airspace are shown on these figures for reference only – they do not currently exist.
19. NATS has no control over the general aviation and military flights that regularly operate outside controlled airspace – tracks for these aircraft can be seen in Figures 3-5. It can also be seen from the yellow/green areas in Figure 1 that a proportion of tracks cut across North Wales flying to/from (U)L975 as it passes over the Irish Sea and the northern part of Anglesey. These tracks are flown to shorten the route between England and the Dublin area² and so save fuel and CO₂. These tracks are therefore already seen across the proposed area of the (U)Y124 route.

¹ Figures 3-5 show density plots of daily usage rates based on analysis of 1 week's traffic across the region (sample period 01-07/08/2010).

² Note that flying outside controlled airspace like this to shorten a route is standard practice where agreed by air traffic control and pilots.

20. Whilst the region is overflowed today, the proposal would mean an increase in overflights on (U)Y124 at FL195 (approx 19,500ft) and above (expected traffic figures are presented below in paragraph 23 & 24) during the hours of operation described in paragraph 10. Flights on (U)Y124 at this height would also fly above Clwydian Range AONB utilising the controlled airspace established as part of L6. This traffic would be seen on weekends, public holidays, weekdays 1800-0800 and occasionally other periods when the military is not operating.
21. Figure 1 also shows that the northern coast of Anglesey is regularly over-flown today by (U)L975 traffic. As a consequence of the proposal some of this traffic would no longer over-fly the northern coast of Anglesey and would instead utilise the proposed (U)Y124 further to the south.
22. Figure 1 shows that the L6 area is also over-flown regularly today, particularly because controlled airspace already exists in this region above FL185 (approx 18,500ft) and it is not part of any area where the MoD has priority usage.

Traffic forecast

23. Forecast traffic numbers for (U)Y124 are provided in Figures 6-9. These are based on August 2010 traffic numbers grown to 2012 and 2017³. Further details on the aircraft types expected to use the airspace can be found in Tables 1 and 2 in Part B.
24. As discussed in paragraph 16, the lowered airspace proposed for L6 would be used flexibly. This additional usage would not be systematic, and therefore it is not possible to predict usage patterns with any accuracy. However, NATS estimates that the proposal would mean on average around 10 additional flights through the FL145-185 (14,500-18,500ft) segment per day.

³ These figures have been calculated from a 31 day sample of flight data from August 2010 (see Appendix F). 2012 and 2017 scenarios are 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.



Figure 3: Existing flights all levels

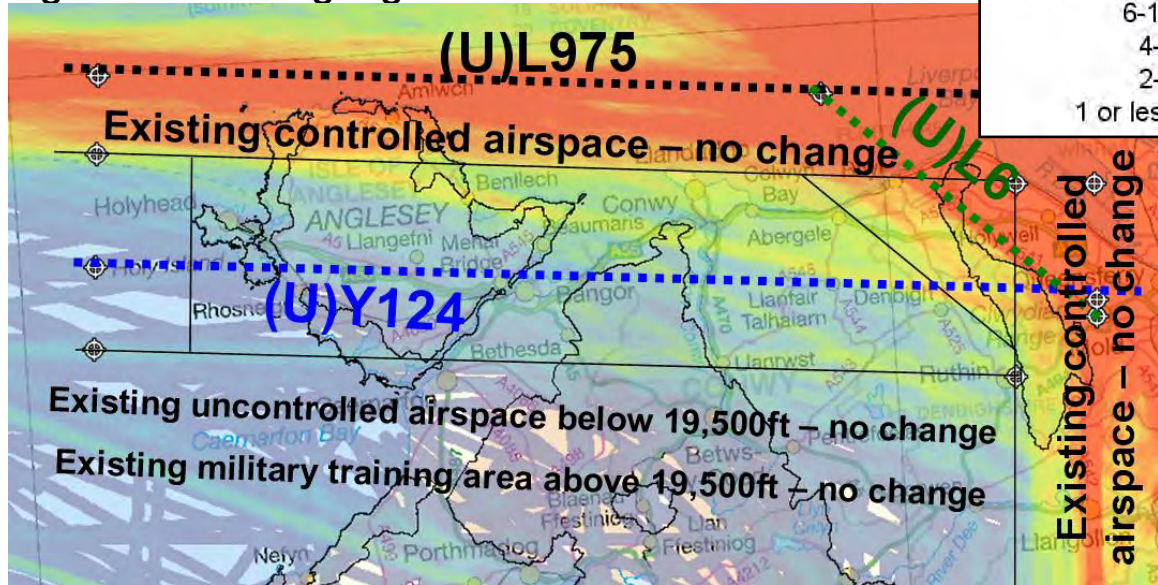


Figure 4: Existing flights 0- FL195 (approx 19,500ft)

See Figure 3 for key

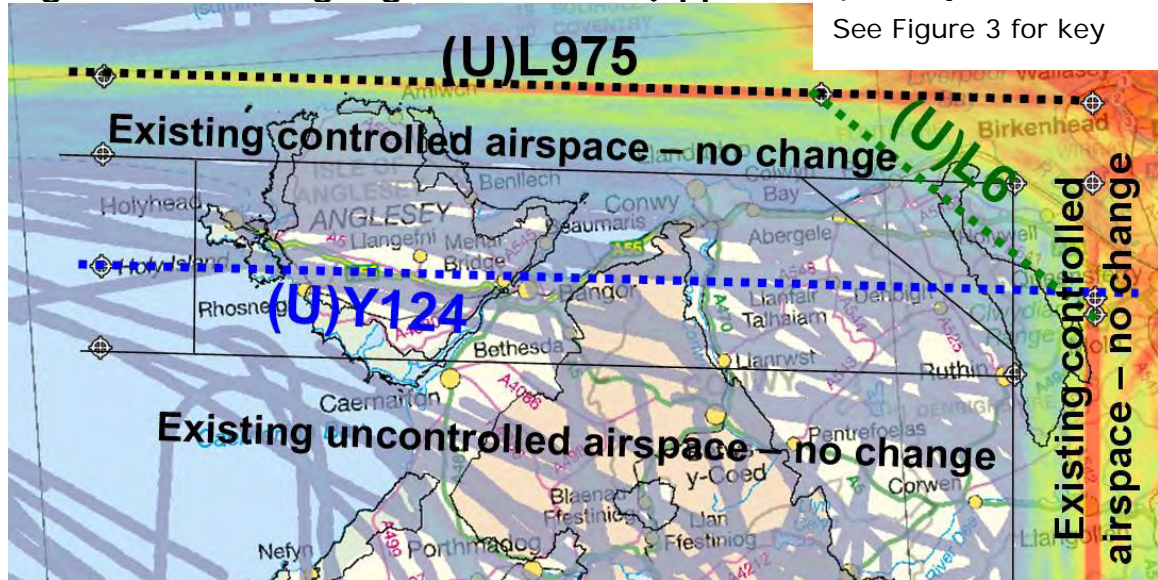


Figure 5: Existing flights 0- FL145 (approx 14,500ft)

See Figure 3 for key

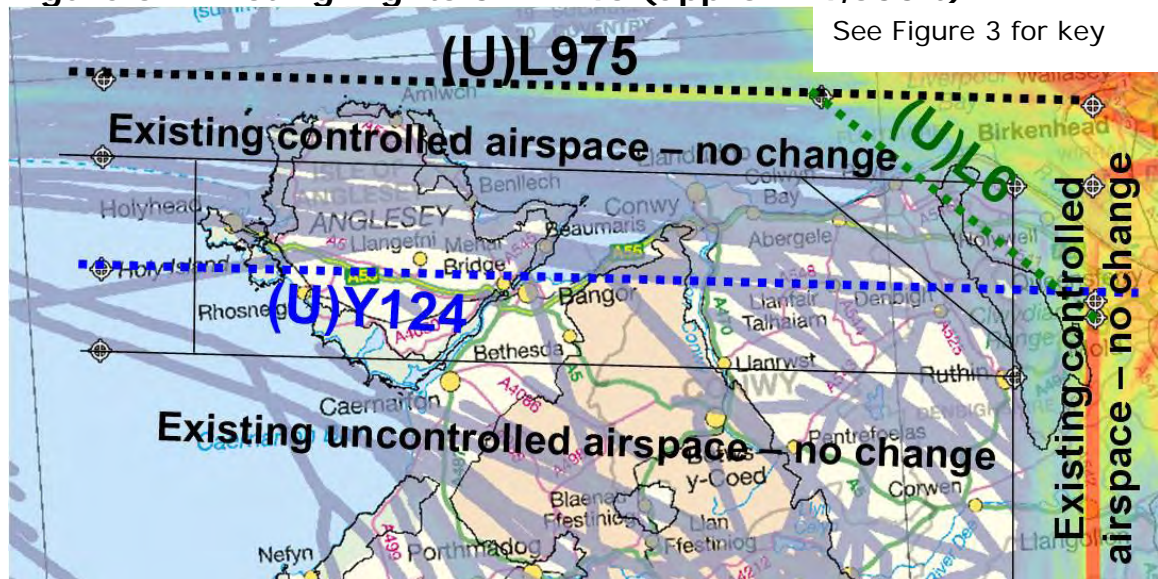


Figure 6: (U)Y124 flights per hour 2012 – weekend and public holiday

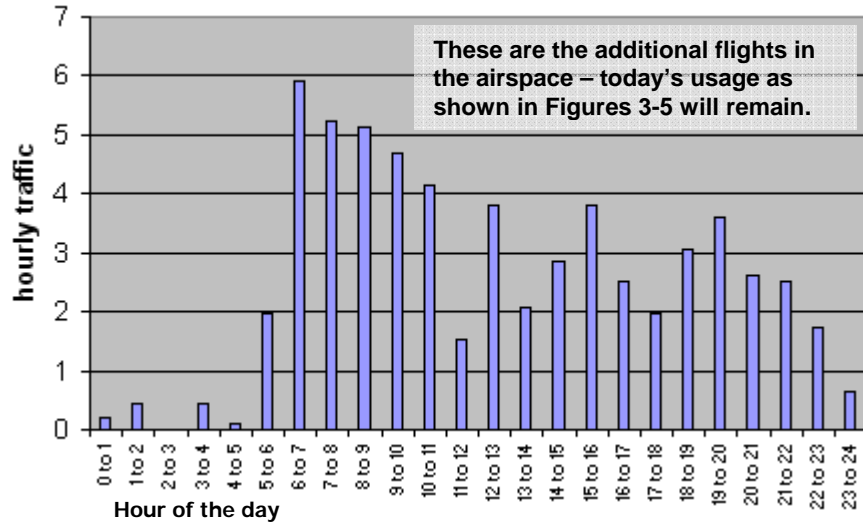


Figure 7: (U)Y124 flights per hour 2012 – weekday

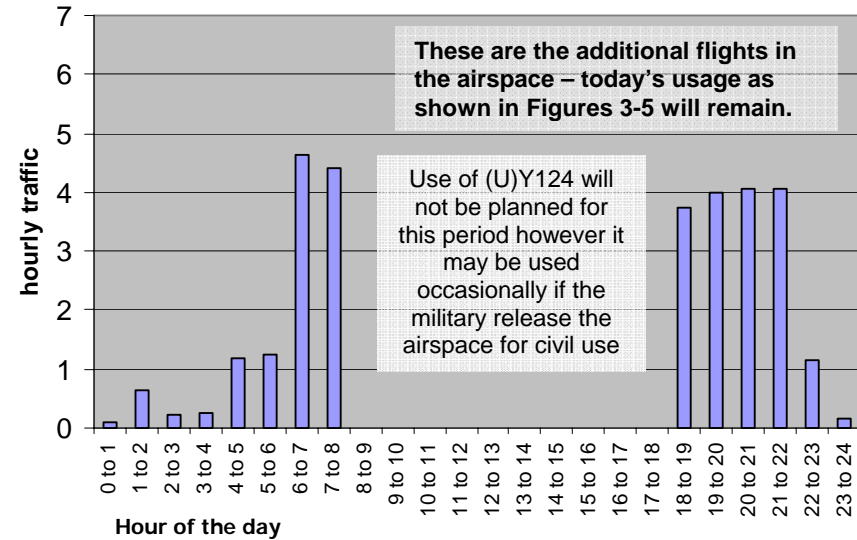


Figure 8: (U)Y124 flights per hour 2017 – weekend and public holiday

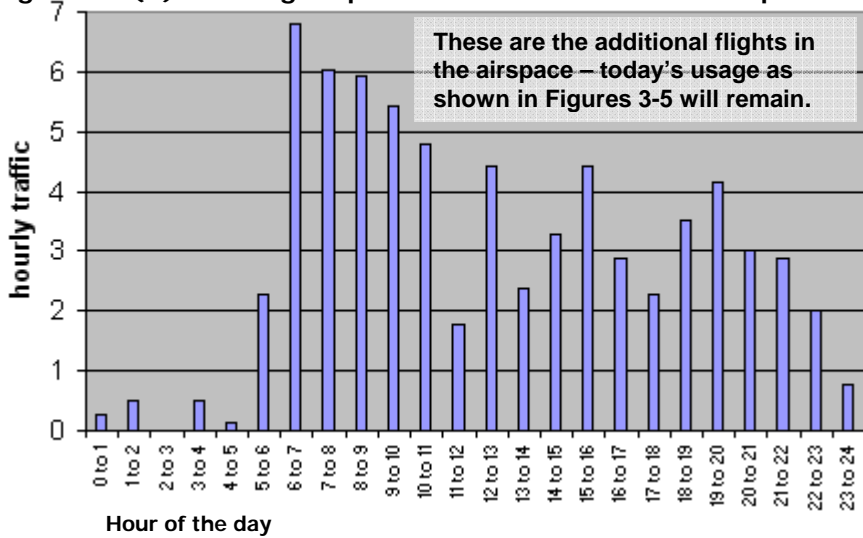
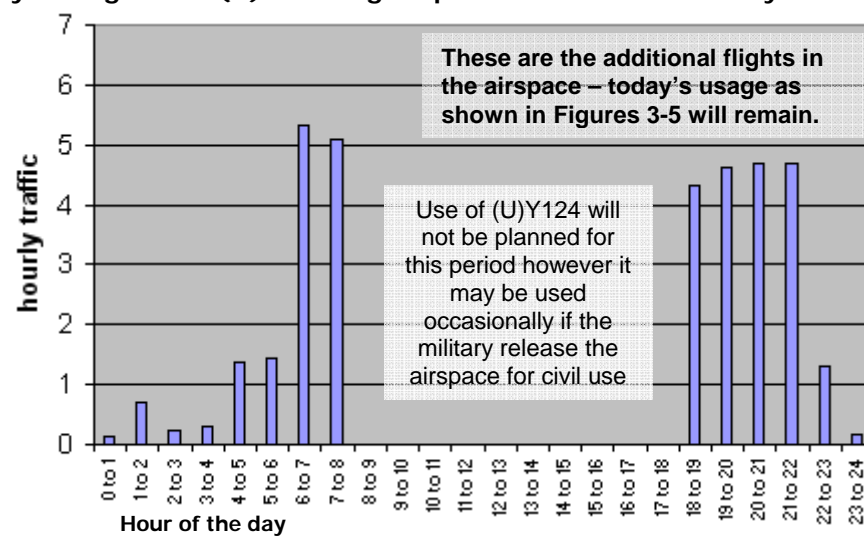


Figure 9: (U)Y124 flights per hour 2017 – weekday



Environmental effects – CO₂ exhaust emissions

25. Due to the complexity of the current interactions it has not been possible for NATS to quantify the anticipated CO₂ benefits of the (U)Y124 sub proposal as described in paragraph 7. However, it is estimated that the benefit described in paragraph 8 alone will result in a reduction in CO₂ emissions of an average of 45kg per aircraft. This would mean a saving for Dublin departures of between 250-380 tonnes per year in 2012, depending on how MoD requirements restrict the route availability. This saving would be expected to increase to 290-440 tonnes by 2017.
26. It is worth emphasising that this quantified benefit does not capture all the anticipated benefits, however, NATS proposes that this quantified benefit alone represents a sufficient justification for progressing the (U)Y124 change.
27. Further details of the CO₂ analysis are available in Part B.

Environmental effects - noise

28. Whilst the additional flights may be audible, the noise will be beyond the range of the standard noise measures used for the CAA's airspace change process (see Part A Ref 1). This process requires that the "Leq" noise metric is to be produced for airspace changes affecting airspace below 4,000ft, and that the "SEL" noise metric is required for changes below 7,000ft and within 25km of the runway. These thresholds are set because changes beyond them are extremely unlikely to have any effect on the metrics. The proposed changes described in this part are all significantly beyond these thresholds (the minimum altitude of changes over Snowdonia and Anglesey is 19,500ft, and for Clwydian Range is 14,500ft) and so no Leq or SEL analyses have been performed.
29. Another measure of noise that is also sometimes used to illustrate noise impacts further from airports is the "Lmax" noise metric. NATS has previously used this to illustrate noise effects, but only up to 7,000ft. Lmax provides an indication of how loud an aircraft might sound at its loudest as it passes directly overhead. Noise results are presented in 'A' weighted decibels (dBA) which is a standard unit for measuring aircraft noise. Response to noise varies between individuals, and is often affected by local circumstances, such as background noise levels. However, we have drawn some broad parallels between Lmax noise levels from aircraft and those experienced from other everyday situations. These are shown in Table 1.

Table 1: Table of Lmax Equivalence to Typical Sounds

Typical sound	Approx noise (dBA)
Pneumatic drill, 23 ft away	95
Heavy diesel lorry at 25 miles per hour, 23 ft away	85
Car at 40 miles per hour, 23 ft away	70
Busy general office	60
Quiet office	50
Quiet bedroom, library	35

30. NATS has previously analysed Lmax for a departing Boeing 737-800⁴ up to 7,000ft; this is representative of a common medium sized aircraft that would depart from Dublin and use (U)Y124. At 7,000ft this analysis suggested an Lmax range of 63 for the worst case down to less than 55dBA. The sensitivity of Lmax noise modelling is not able to produce reliable results when the Lmax value drops below 55dBA, therefore where the modelling suggests results below this threshold it is simply stated as *less than 55 dBA*; the actual low end of the range may be somewhat below 55dBA.
31. The lowest usable level of an airway is generally 500ft above its base. Therefore the lowest level for an aircraft on (U)Y124 and L6 overhead the National Park and AONBs would be 20,000ft and 15,000ft above sea level respectively (with most aircraft cruising at even higher levels). The highest point of Snowdonia National Park, Mount Snowdon, is around 3,500ft. Therefore the lowest possible height of an aircraft on (U)Y124 above the highest point in Snowdonia is approximately 16,500ft. The highest ground in the Clwydian range, Moel Famau, is around 1,800ft. The lowest possible height of an aircraft on L6 is approximately 13,200ft above ground (the summit of Moel Famau).
32. Given that the Lmax measure for an aircraft flying directly overhead at 7,000ft would, at its loudest point, be broadly comparable to the noise level in a busy general office (see paragraph 30 and Table 1), it can be inferred that the noise from aircraft overhead at 13,200ft, 16,500ft and heights above would be somewhat less.

Environmental effects - tranquillity and visual intrusion

33. The CAA's airspace change process (see Part A Ref 1) has no formal guidance on the measurement of tranquillity and visual intrusion.
34. For the purposes of this consultation document, NATS considers visual intrusion is taken to relate to an individual's ability to detect the presence of aircraft (this interpretation is intentionally broad and does not indicate the degree to which the presence of aircraft is intrusive or causes offence). The information presented in this part of the consultation document, which describes where and how high aircraft may be, is provided to help stakeholders assess the potential impact the proposal may have (given the absence of a formal definition or measurement for tranquillity or visual intrusion).
35. Under current arrangements aircraft are already potentially audible and visible from most locations beneath the proposed airspace. This includes aircraft that are already flying within the proposed areas of new/lowered controlled airspace, and aircraft operating below these levels (see Figures 3-5); including low flying military jets. The existing airspace usage seen in the area below the proposed airspace will not be affected by the proposal. However, paragraphs 18 to 24 describe how the proposal would mean more flights above FL195 (19,500ft) on (U)Y124 and occasional additional flights between FL145 and FL185 (14,500ft-18,500ft) on L6. Stakeholders may

⁴ This analysis used the ANCON noise model to analyse a Stansted departure.

wish to consider the consequences of such changes on tranquillity and visual intrusion in their area.

Local Air Quality

36. Due to atmospheric mixing, aircraft emissions at heights above 3,000ft above ground level do not have any impact on the air quality at ground level. The heights of the changes proposed are all above 3,000ft. Hence no assessment of local air quality has been performed for this proposed change.

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