Swanwick Airspace Improvement Programme Airspace Deployment 6, (SAIP AD6) ACP-2018-65

Proposed changes to

London Luton Airport Arrivals

Airspace Consultation Document

Abridged Version

Refer to the Master Version for full details and context

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Abridged Version

Unclassified

Action	Role	Date
Produced	Airspace Change Specialist NATS Airspace and Future Operations	13/11/20
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Issue	Month/Year	Changes this issue – Explanation of this document
1.0	11/2020	During the first few weeks of the consultation, some stakeholders were concerned that the full consultation document was very long. Changing a significant volume of airspace such as this is a complex undertaking, and the full unabridged information is necessarily lengthy in order to be accurate and thorough. This abridged version allows the reader to explore the proposal's basic information and associated context, removing some detail and data. Should the reader wish to explore further, the full document (Ref 0 below) remains the master source of data, details and context. Questions have also been submitted via email and via webinar sessions, these have been turned into FAQs and will be uploaded to the Virtual Exhibition periodically. This document is evidence that NATS-LLA has responded to stakeholder concerns.

Ref No	Reference Material Description		Hyperlinks
0	Full Consultation Document – **Master Version** (122 pages).		Link to document
1	SAIP AD6 CAA web page – progress through CAP1616		Link to portal
2	Stage 1 Statement of Need		Link to document
4	Stage 1 Assessment Meeting Minutes		Link to document
5	Stage 1 Design Principles		Link to document
6	Stage 2 Design Options		Link to document
7	Stage 2 Design Principle Evaluation		Link to document
8	Stage 2 Initial Options Appraisal and Safety Assessment		Link to document
10	Stage 3 Consultation Strategy		Link to portal, please navigate to Step 3b
11	Stage 3 Full Options Appraisal		Link to portal, please navigate to Step 3b
12	Airspace change: Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information	CAP1616	Link to document
13	Environmental requirements technical annex	CAP1616a	Link to document
14	Definition of Overflight	CAP1498	Link to document
15	Airspace Modernisation Strategy AMS	CAP1711	Link to document
16	UK Government Department for Transport's 2017 Guidance to the CAA on its environmental objectives when carrying out its air navigation functions, and to the CAA and wider industry on airspace and noise management (abbreviated to ANG2017)		Link to document

Contents

About this abridged document

During the first few weeks of the consultation, some stakeholders were concerned that the full consultation document was very long. Changing a significant volume of airspace such as this is a complex undertaking, and the full unabridged information is necessarily lengthy in order to be accurate and thorough.

This abridged version allows the reader to explore the proposal's basic information and associated context, removing some detail and data. Should the reader wish to explore further, the full document (Ref 0 in the table above) remains the master source of data, details and context.

Questions have also been submitted via email and via webinar sessions, these have been turned into FAQs and will be uploaded to the Virtual Exhibition (link) periodically – link to FAQ area.

This document is evidence that NATS-LLA has responded to stakeholder concerns.

This document has been abridged from the original full consultation document (link to full document).

Paragraph numbers and other numbered items may not match the full version, though efforts have been made to keep the diagram numbers consistent.

Refer to the master consultation document for full details and context.

1. Executive Summary

1.1 This consultation is about a proposed change to the flightpaths of aircraft arriving at London Luton Airport (LLA).

1.2 It is sponsored jointly by NATS and LLA. NATS provides air traffic services at the airport itself and for the wider air route network across the country and LLA is responsible for the lower level arrival routes.

1.3 Air traffic control in the London region is complex, especially for aircraft arriving at LLA and London Stansted Airport because they are geographically close to each other. The current airspace design has been fundamentally unchanged in decades, since before the low-fare carrier expansion at both airports and their associated subsequent growth. It forces LLA and Stansted, which are two of the five busiest airports in the UK, to share the same arrival flows, in a relatively small region north of London (if combined, the figures for LLA and Stansted would make it the second busiest in the UK).

1.4 The more complex the airspace, the greater the need for the airborne holding of arrivals when it gets busy, delaying and disrupting the travelling public.

1.5 Controllers take each aircraft from the shared flows towards the destination airport, descending them safely to their respective runways. This can be an intense task and is unique in the UK; arrival flows to most busy airports are separated, by airspace design, higher and further away.

1.6 LLA's and Stansted's arrival flows are shared until aircraft descend through c.8,000ft (around 25 miles from the airport), which is comparatively close and leaves little room for controllers to operate. Any arrival delay or disruption at one airport causes unnecessary arrival delay to the other, because the flows are so closely shared.

1.7 During periods where the workload of our air traffic controllers is predicted to become too intense, safety dictates that we apply temporary limits (known as flow restrictions) to the numbers of aircraft that a controller can manage, before safe limits are exceeded. This causes delay to the travelling public (at both LLA and Stansted), and is a short-term, temporary solution to the underlying problem.

1.8 We have identified that, unless we do something now, the intensity of air traffic control workload may become unsustainable for air traffic controllers in the longer term. This would make arrival delays and airborne holding more common, creating increased environmental impacts - including the aviation fuel burnt and greenhouse gases, such as CO_2.

1.9 The amount of air traffic has been impacted by the 2020 coronavirus pandemic, but the need to change the design of this airspace remains. We must ensure it is fit for purpose when traffic recovers to pre-pandemic levels, and we must allow for future growth.

1.10 We propose to reduce this complexity by moving LLA's arrival flightpaths, leaving Stansted's arrival flows unchanged. This would reduce air traffic controller workload because the arrival flows to each airport would be separated further out and higher up, assuring a safe and efficient operation for the future.

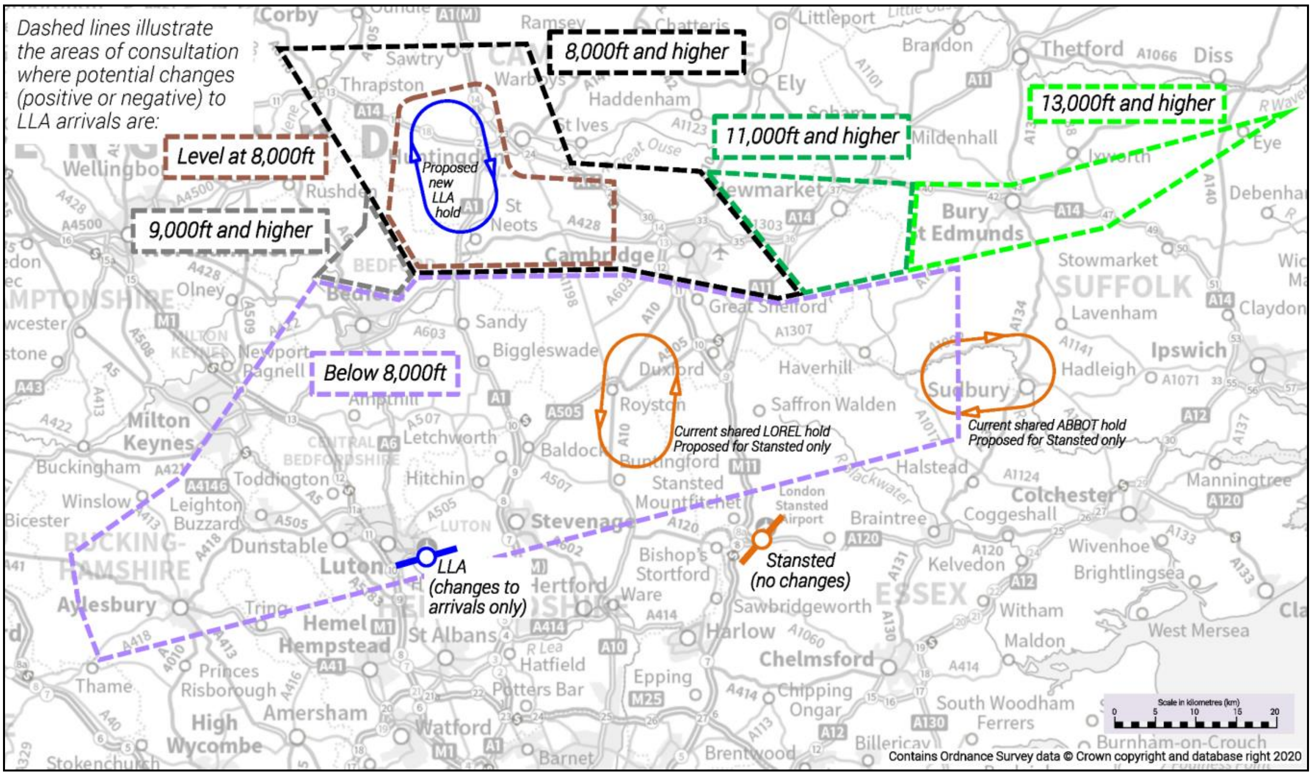
1.11 We are not proposing any change to the way aircraft depart from LLA, nor would there be changes to the way Stansted arrivals and departures fly under this proposal.

1.12 Within this consultation we have described the impacts of no-change, and two options for airspace change to address the complexity issue.

1.13 The **first option** seeks to establish a new airborne hold, or stack, for LLA arrivals, with associated airspace and air routes, above approximately 8,000ft. From that new hold, the method air traffic controllers use to bring arrivals from 8,000ft to the runway would be similar to today – providing each aircraft with heading, descent and speed instructions, manually managing each flight (known as vectoring). This reduces complexity and minimises the change from today's flightpaths at lower altitudes.

1.14 The **second option** also seeks to establish a new airborne hold, or stack, for LLA arrivals, with associated airspace and air routes, at 8,000ft and above. From that new hold, air traffic controllers would still use the vectoring method described in the first option, to descend aircraft to the runway. However, there would also be a number of predetermined arrival flightpaths which aircraft could fly automatically and without intervention by controllers. These predetermined arrival flightpaths would reduce air traffic complexity even more than the first option, making this our preferred option.

1.15 The areas for consultation are shown below:



1.16 If we were to do nothing, the current situation can be managed safely in the short term, however this would not be sustainable once traffic grows beyond pre-pandemic levels. There is the potential for a reduction in safety as a result of increased arrival delay if we were to do nothing. We must be prepared for those levels of traffic, and airspace changes such as this take time to progress.

1.17 We have described the no-change option solely as a baseline for comparison, between the proposed options and what happens today, so that you can determine if you will experience any change.

1.18 Consultation is an essential part of the airspace change process. It allows us to explain our proposal in a fair, transparent and effective way, and gather information to understand views about the impact of the options presented. It allows stakeholders to provide relevant and timely feedback to us, which we can then use to inform our final proposal.

1.19 This consultation started at 0001 Monday 19th October 2020 and closes at 2359 Friday 5th February 2021, a period of 15 weeks and 5 days.

1.20 We expect to submit a formal Airspace Change Proposal (ACP) to the Civil Aviation Authority (CAA) in June 2021.

1.21 If approved by the CAA (the regulator), we plan to implement the change no earlier than February 2022.

2. Introduction section (abridged)

About LLA and Stansted Airport's airspace relationship

2.1 Currently, LLA and Stansted Airport - two of the five busiest airports in the UK in terms of air traffic movements - share exactly the same arrival flows to the same holds[1].

2.2 This is a unique situation – other airports sometimes share arrival routes, but one always has a much bigger proportion of movements (for example, London Heathrow and RAF Northolt, or London City and Biggin Hill). Splitting arrival flows is sustainable for those airports because only a small number of aircraft need to be redirected to the less-busy airport. LLA and Stansted are both major airports and all the arrival flows need splitting all the time. The interdependency between these two airports creates an especially complex situation for air traffic controllers to manage.

Why must this change happen now?

2.3 Where complex air traffic flows cross each other within UK airspace, restrictions are used to separate aircraft by 1,000ft vertically and/or by a minimum lateral distance of either 3 or 5 nautical miles (nm)[2] depending on the rules applicable to the particular airspace. This places a significant workload on the controller because they issue heading and altitude instructions to many aircraft simultaneously, ensuring they are all kept safely separated.

2.4 The LLA and Stansted region is especially complex due to the number of crossing traffic flows[3], and the amount of air traffic has grown faster than expected over the last few years, increasing the workload of air traffic controllers. Safety is always the first priority. We have identified that, unless something is done now, the intensity of the air traffic control workload may become unsustainable for controllers. This would lead to more holding, in order to manage the workload safely, and therefore delay. While the amount of air traffic has been reduced as a result of the coronavirus pandemic, the need to change the design of this airspace remains. We must ensure it is fit for purpose when traffic recovers to pre-pandemic levels and we must allow for safe potential future growth.

2.5 During periods when the workload of air traffic controllers is predicted to become too intense, safety dictates that temporary limits (known as flow restrictions) are applied to the numbers of aircraft that a controller can manage before safe limits are exceeded. This causes delay to the travelling public (at both LLA and Stansted), and is a short-term temporary solution to the underlying latent problem. Over a day, temporary limits increase the amount of delay and may cause flights to be delayed into the night-time noise period[4] which is detrimental to local communities. These delays can also result in increases in fuel burn and associated CO_2 emissions. The sponsors acknowledge the likely temporary impacts of the Covid-19 coronavirus on aviation, but are clear that this air traffic complexity issue must be resolved. Doing nothing would increase the potential for a reduction in safety as a result of increased arrival delay. It is assumed that air traffic will return to the pre-pandemic levels and the analysis forecasts remain valid, albeit delayed by a year[5]. During that recovery period, temporary limits to the numbers of aircraft may not be required as often as previously, minimising the impacts on the travelling public until this change is delivered.

2.6 All proposals to change airspace are regulated by the Civil Aviation Authority (CAA). The sponsor(s) of an airspace change must follow the process set out in the CAA's guidance for the regulatory process for changing airspace design CAP1616 (ref 12). This document forms part of the document set required for the CAP1616 Airspace Change process's Stage 3 (Consult).

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[1] When aircraft hold, they usually fly a racetrack shaped pattern at different heights, so they can all be contained in a stack and brought on to land when the air traffic controller decides it is best. These are known as holds, holding patterns or stacks and mean the same thing.
[2] A nautical mile is a unit of measurement used in both air and marine navigation. Historically, it was defined as one minute (1/60th of a degree) of latitude along any line of longitude. Today the international nautical mile is defined as exactly 1,852 metres (about 1.15 statute miles).
[3] Traffic flows are explained in Section 6 on p.25 .
[4] Regulating the amount of traffic within a sector is a human-centric process. An airspace design which significantly reduces the need for flow regulation also reduces the number of processes needed to manage the airspace, thus improving safety.
[5] For information on forecasts, assumptions, and the impact on aviation of the coronavirus pandemic see the Master consultation document Annex C (Ref 0).

2.7 Its purpose is to present clear information about the airspace options we are consulting upon, the potential impact the proposed changes may have on you.

3. Key Technical Details section (abridged)

How loud might aircraft be? What are the noise impacts, and how might that change?

3.1 These paragraphs describe some technical data about noise. Section 6 on p.25 is provided to describe how to interpret the diagrams, maps and tables so you can decide how noise impacts may affect you.

3.2 Table 1 illustrates the typical noise in decibels (LA_{max} dB[6]) that an observer on the ground might expect to experience from an arriving aircraft, and is colour banded to highlight these three priorities based on altitude:

Aircraft at altitude…	Government guidance on environmental priorities	Additional points of note extracted from government guidance
Below 4,000ft	Limit and, where possible, reduce the total adverse effects on people; and Where similar numbers of people are affected, prefer the option most consistent with existing arrangements	Where practicable, it is desirable that airspace routes below 7,000ft should seek to avoid flying over Areas of Outstanding Natural Beauty (AONB); All changes below 7,000ft should take into account local circumstances in the development of the airspace design; Consultation with environmental stakeholders will usually only be necessary where the proposed changes concern controlled airspace below an altitude of 7,000 feet
4,000ft, to below 7,000ft	Minimise the impact of aviation noise in a manner consistent with the government's overall policy on aviation noise, unless… disproportionately increases CO_2 emissions	
7,000ft and above	Prioritise the reduction of aircraft CO_2 emissions and the minimising of noise is no longer the priority	Changes at or above 7,000 feet will usually not have a noticeable impact.

Height (ft)	Turboprop	50 seat regional jet	70-90 seat regional jet	125-180 seat single-aisle 2-eng jet	250 seat twin-aisle 2-eng jet	300-350 seat twin-aisle jet
1,000-2,000	79-70	73-63	77-67	77-69	84-74	83-73
2,000-3,000	70-66	63-56	67-61	69-64	74-68	73-67
3,000-4,000	66-64	56-55	61-57	64-61	68-64	67-63
4,000-5,000	64-62		57-56	61-59	64-60	63-60
5,000-6,000	62-61		56-55	59-57	60-58	60-57
6,000-7,000	61-59			57-56	58-56	57-56
7,000-8,000	59-57			56-55	56-55	56-56
8,000-9,000	57-57					56-55
9,000-10,000	57-56					
10,000-11,000	56-55					

Table 1 Arrival noise information and LA_{max} dB by aircraft grouping

3.3 In this CAA-sourced table, measurements stop at 55dB – below that level, the accuracy of individual aircraft noise readings is difficult to maintain and is masked by background noise. However, aircraft noise can be less distinguishable at altitudes higher than 7,000ft depending on local circumstances.

Government guidance states that, at 7,000ft and above, the minimising of noise is no longer a priority, and this has been considered as part of this proposal.

[6] LA_{max} dB is the maximum noise experienced during a single noise event (i.e. one aircraft overflying the observer).

3.4 Most aircraft that operate at LLA fall into the category of '125-180 seat single-aisle 2-engined jet' which comprise similar types with similar noise such as Airbus A320 and Boeing 737 versions, with the A320 family being the most common. The proportions of arrivals at LLA in each noise category are detailed in Table 2, for 2019. We expect these proportions to continue, and we do not predict that this proposal would cause a change in the proportions of aircraft types using LLA.

Noise category	Count	Proportion
Turboprop* (inc all sizes of corporate aircraft, both turboprop and jet)	12,196	17.4%
50 seat regional jet	1,109	1.58%
70-90 seat regional jet	54	0.08%
125-180 seat single-aisle 2-eng jet	55,224	78.6%
250 seat twin-aisle 2-eng jet	1,585	2.26%
300-350 seat twin aisle jet	98	0.14%
Other	8	0.01%
Total arrivals 2019	70,274	

Table 2 Proportions of arrivals at London Luton Airport by noise category (full year 2019)

*Note that corporate and business travel occurs in a range of aircraft types, from small single turboprop aircraft up to larger business jets and there is no CAA-defined noise category. For consistency, all these types have been placed in the turboprop category.

3.5 To help you understand what these numbers mean in practice, we have provided typical sounds and their approximate noise level using the same LA_{max} dB measurements:

Typical sound	Approximate noise level LA_{max} dB
Pneumatic Drill 7 metres away	95
Heavy diesel lorry at 40kmh or 25mph, 7 metres away	85
Vacuum cleaner 3 metres away	70
Busy general office	60
Quiet office	50
Quiet bedroom, library	35

Table 3 Table of comparison sounds

4. What happens today – the baseline – Option 0 (abridged, density maps removed)

4.1 The airspace in this region is some of the most congested and complex in the UK with the integration of traffic from LLA, London Stansted, London Heathrow, and London City Airports and other airspace users in the region, such as military aircraft.

4.2 Each holding pattern contains a mix of traffic, for example two LLA arrivals may be held above a Stansted arrival at LOREL, with the opposite at ABBOT, or any other combination. Together with the wider operations within the airspace, this results in a very complex air traffic situation.

4.3 Once within the holding stacks at LOREL and ABBOT, air traffic controllers then separate the shared arrivals using vectoring. This requires intense and complex air traffic control interactions to be solved within the congested airspace, mostly at lower altitudes from 8-7,000ft and below.

High level arrivals

4.4 In the map at Figure 4 (p.9), areas north of the grey airspace boundary are not currently overflown by LLA arrivals. This includes Bury St Edmunds, Newmarket, most of Cambridge, Huntingdon and St Neots.

4.5 The following pages present these full-page operational diagram maps from c.8,000ft and below:

- Figure 6 (p.10 for Runway 07) and Figure 7 (p.11 for Runway 25) illustrates how high these arrivals are, how they tend to flow, and where they tend to be most concentrated.

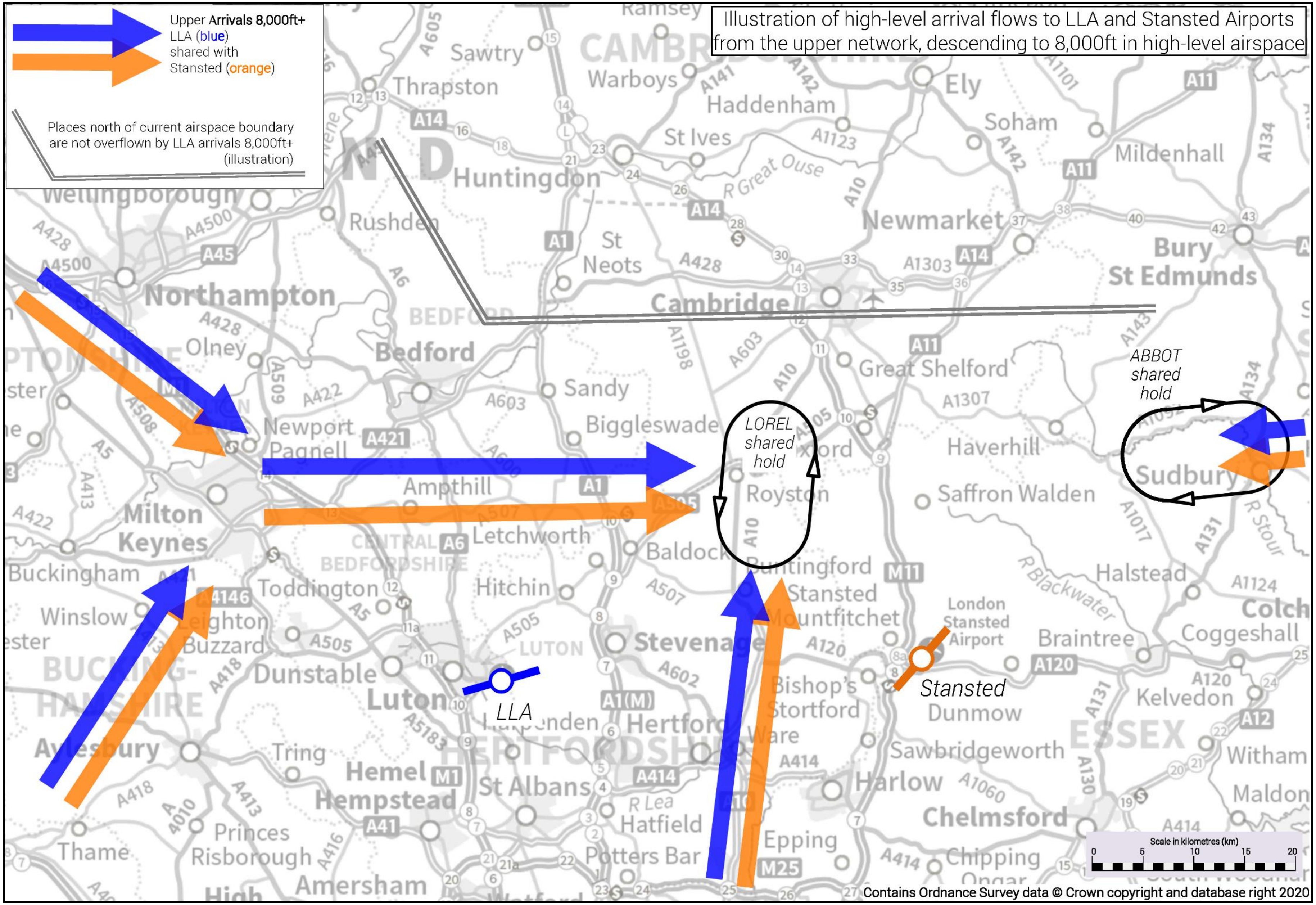

Figure 4 LLA and Stansted shared arrival flows at high level

Refer to the master version for full details and context
This abridged version removes some detail and data in favour of relative brevity

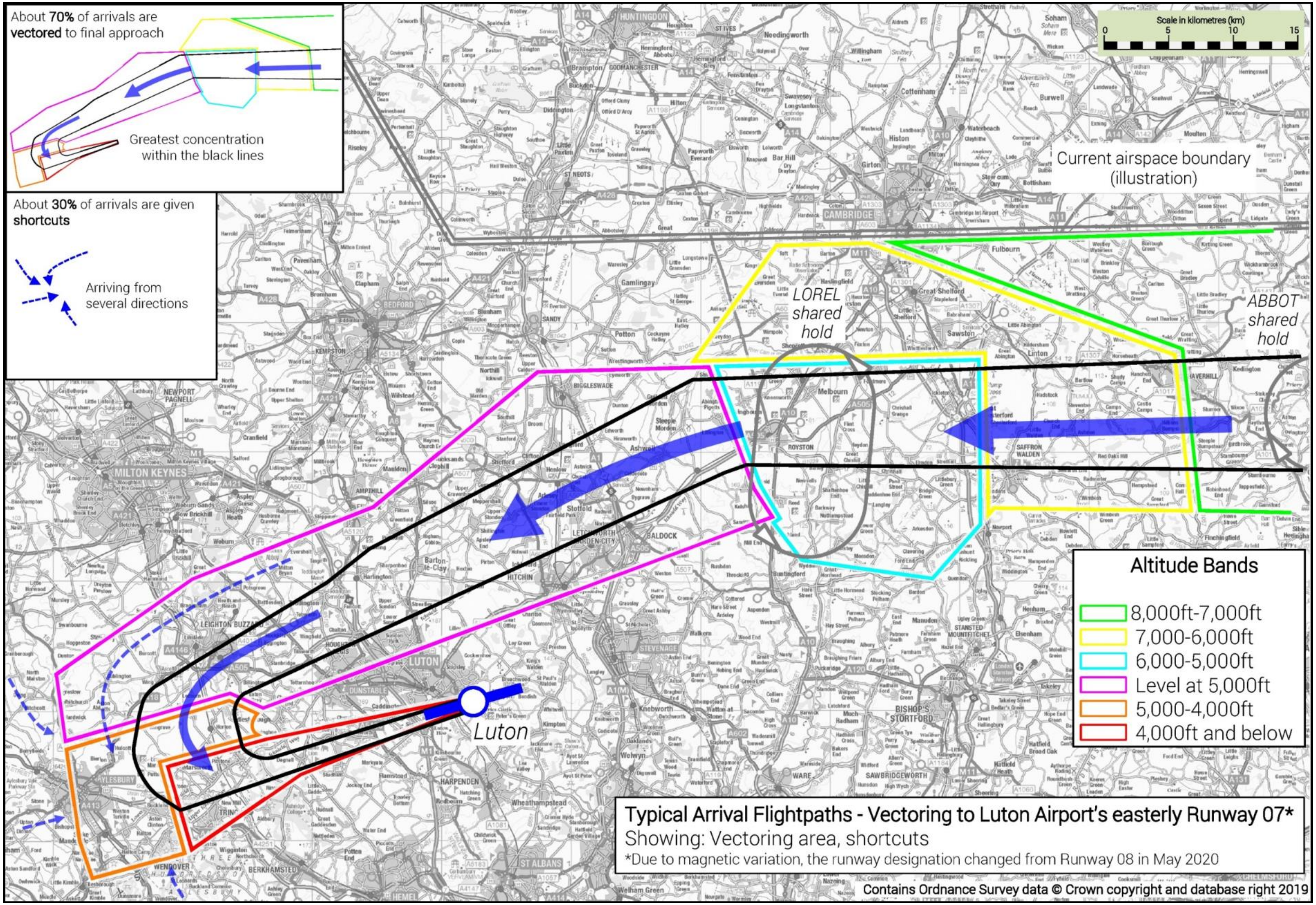

Figure 6 Diagram summarising altitudes, flows and greatest concentration of LLA arrivals from 8,000ft to easterly Runway 07

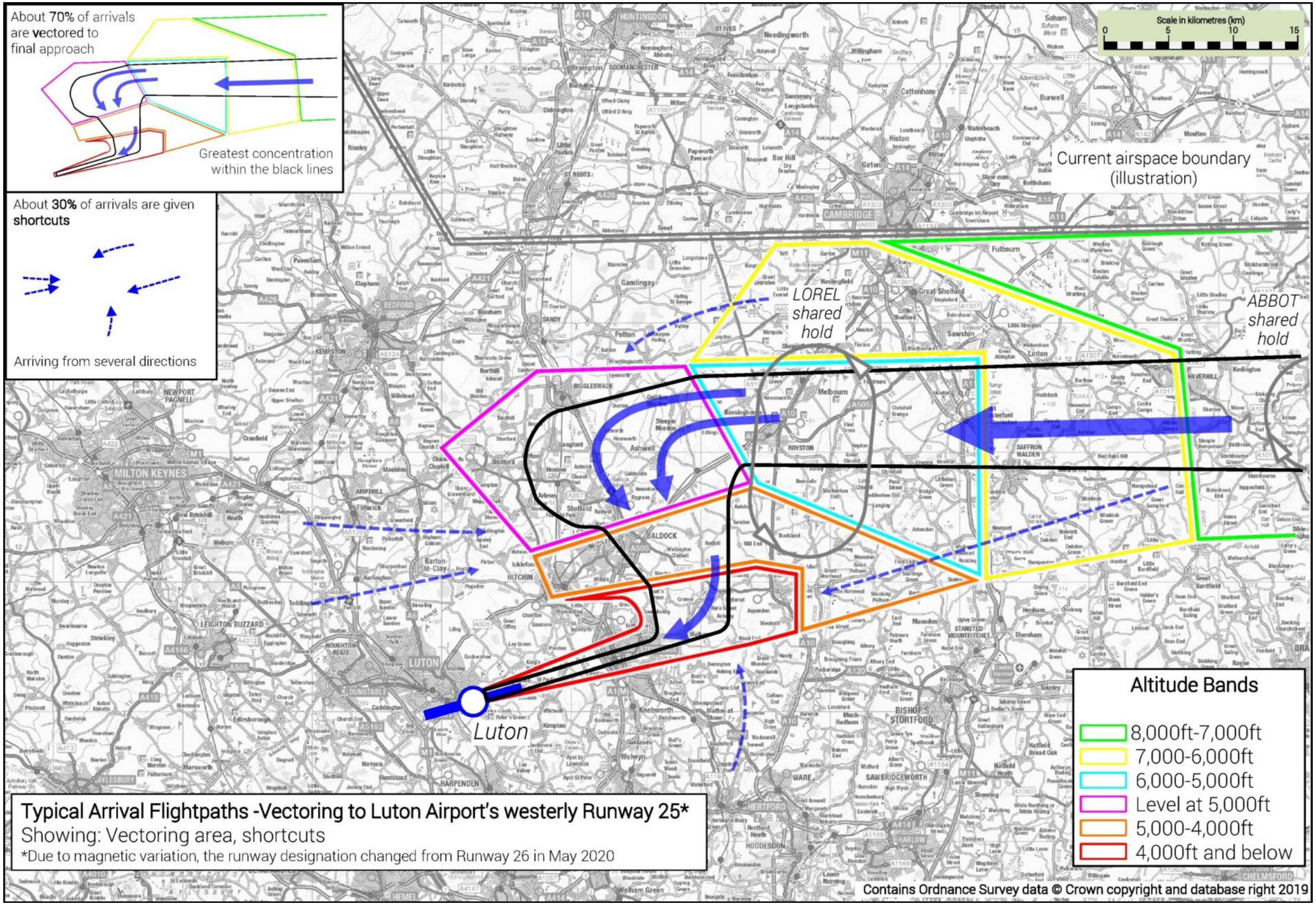

Figure 8 Diagram summarising altitudes, flows and greatest concentration of LLA arrivals from 8,000ft to the westerly Runway 25

Why isn't 'do nothing' an option? Is it safe?

4.6 If we were to do nothing, the current situation can be managed safely, however it would not be sustainable once traffic grows beyond pre-pandemic levels.

4.7 There is the potential for a reduction in safety as a result of increased delay if we were to do nothing.

4.8 The region's airspace has evolved over time to cope with an increase in air traffic, and that evolution has gone as far as it can go.

4.9 The way air traffic controllers have to split up LLA and Stansted's joint arrival flows is not safely sustainable because of today's piecemeal airspace design.

4.10 For controllers to safely manage this situation, aircraft would need to be delayed which creates a backlog.

4.11 A backlog creates additional complexity because this region does not have room to hold aircraft without them getting in the way of more and more traffic flows, to and from other airports.

4.12 We must be prepared for those levels of traffic, and airspace changes such as this take time to progress. The baseline do-nothing option was therefore discounted during the design principle evaluation Stage 2A(ii) (Ref 7). We have described the current day operation solely as a means of comparison between the proposed options and what happens today so that you can determine if you will experience any change.

How many arrival flights? (Abridged extract from Master document Section 3)

4.13 Table 4 illustrates the average number of arrivals per hour of the day (from 0001 to 2359), for the year 2019.

Hour (local time)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2019	5	5	2	1	1	0	2	13	7	6	7	9	13	12	10	9	11	13	12	11	11	12	12	9

Table 4 Average number of arrivals per hour, local time, using 24hr clock

4.14 In 2019 there were between c.157-218 arrivals at LLA per day, based on average monthly arrival figures.

4.15 In July and September 2019 the average number of flights per day increased to 218 with June averaging 217, and the peak summer day (2nd June) was 248.

4.16 Busy periods can occur at any time of year – on 24th February there were also 248 arrivals, but the overall daily average for the month was considerably lower at 174.

4.17 From Table 4 we can see the peak hours of the day are the morning 7-8am, a lunchtime busy period from noon to 2pm, then a longer evening busy period from 5pm-11pm.

4.18 On 17th June, there were 24 arrivals in one hour, between noon and 1pm – this was the busiest hour of the year for arrivals.

4.19 We used Table 4, the current schedules and the experience of our air traffic control team to predict the number of flights you might expect to see per day, per hour, and when the busiest hours are likely to occur.

4.20 Not within scope of this consultation are future growth plans at London Luton Airport, including the Development Consent Order (DCO) application for 32 million passengers per year. The growth aspiration to 32 million passengers per year is a separate project being conducted by London Luton Airport Limited (LLAL), the owners of the airport. This Airspace Change Proposal is co-sponsored by London Luton Airport Operations Limited (LLAOL) who are the current operators of the airport. Even though the DCO is separate from this consultation, its forecast impacts for increased air traffic have been analysed and are provided as part of this consultation. Thus our analyses provide data on without-DCO and with-DCO traffic levels to ensure the potential impacts are described whether or not LLAL's separate DCO progresses. To find out more about LLAL's separate DCO please visit www.futureluton.llal.org.uk

5. Airspace Design Options for Consultation: Option 1 and Option 2 (abridged)

Some parts of the airspace design are common to both Options

5.1 The upper airspace design, upper arrival route design, and holding pattern (all c.8,000ft & above) are common.

5.2 The proposed new hold would be located over Grafham Water, close to the junction of the A1 and the A14 west of Huntingdon as shown in Figure 9 (p.15).

5.3 New routes called Standard Arrival Routes (STARs) would be introduced exclusively for LLA arrivals, to connect the existing route network to the proposed hold.

5.4 The proposed new LLA STARs are illustrated by the blue arrows in Figure 9 (p.15). The amber arrows depict today's STARs and holds that are currently shared between both airports, and which would become dedicated to aircraft arriving at Stansted[7].

5.5 The aircraft on these new blue STARs would descend from the cruise phase of flight to a minimum altitude of c.8,000ft, which is the lowest an aircraft can descend to in this region. If there is no requirement for an aircraft to use the hold, then air traffic controllers can bypass the hold and route them to the runway as described for the lower options later in this section.

5.6 We generally expect aircraft to bypass the hold because the proposed upper airspace system is less likely to require holding – but some holding would still be necessary. As described above, this upper airspace design and holding pattern is the only one that progressed to this stage of the process.

High level arrivals descending to c.8,000ft

5.7 In Figure 9 it is clear that areas within the new grey airspace boundary would be newly overflown at higher altitudes by LLA arrivals. This includes Bury St Edmunds (13,000ft and above), Newmarket (11,000ft and above), most of Cambridge (typically above 8,000ft), Huntingdon and St Neots (8,000ft).

5.8 Our descriptions of the options over the following pages focus on the impact aviation noise would have on local communities, because Government guidance states that this is the highest priority at altitudes below 7,000ft.

5.9 Both lower design options start at approximately 8,000ft descending to the runway, and both are fully compatible with this upper design. At and above 7,000ft for this upper design option, the Government's priority is the reduction of aircraft CO_2 emissions.

5.10 Arrivals to LLA are currently vectored or given shortcuts all the time, are naturally dispersed to a certain extent, and do not tend to follow precisely the same track.

Arrivals descending from 8,000ft to both easterly Runway 07 and westerly Runway 25.

5.11 For both Options, most arrivals would start from the new upper design, further north than today's flows there would be significant flightpath changes from c.8,000ft-6,000ft. Between 6,000ft-5,000ft this option starts to become similar to the current flightpath.

5.12 For Option 1, from 5,000ft and below, the flightpath becomes even more similar to the current flightpath, with similar dispersion/concentration.

5.13 For Option 2, the same areas would be overflown as Option 1 with different concentrations due to the availability of predictable automatically flown routes.

5.14 For both Options, some shortcuts miss out the upper design entirely (in the same way some current flights miss out today's shared upper design), and we expect this to continue.

How many aircraft might there be, what proportion of aircraft would use each method?

5.15 We estimated the greatest number of overflights per hour you might see, and how they are likely to behave. (Noting that the coronavirus pandemic has temporarily reduced the numbers of flights in the UK and across Europe.) The data we provide illustrates the expected pattern of busiest hours and most

[7] Arrivals to Cambridge Airport also follow the arrival routes for Stansted. This arrangement would continue unchanged under this proposal.

likely proportions of vectored traffic vs shortcut traffic (Option 1) and PBN route/vectored/shortcut (Option 2) as volumes recover, and grow beyond, pre-pandemic levels.
Note that the DCO is outside the scope of this consultation, however for consistency we present data for scenarios with and without.

Summer Flights	2022		2032 No DCO		2032 With DCO	
Daily range (Min-Max)	192-249		192-249		246 - 319	
Daily average	219		219		280	
Average Per Hour	9		9		12	
Expected Peak Per Hour	24		24		31	
Split between shortcuts and vectoring	Shortcut approx. 7	Vectors approx. 17	Shortcut approx. 7	Vectors approx. 17	Shortcut approx. 9	Vectors approx. 22
Likely Busiest hours	0700-0800, 1200-1300, 1800-1900, 2200-2300		0700-0800, 1200-1300, 1800-1900, 2200-2300		0700-0800, 1800-1900, 1900-2000, 2200-2300	

Table 5 Option 1 - Estimated number of LLA arrival flights per day, and peak flights per hour split into shortcuts and vectoring

Summer Flights	2022			2032 No DCO			2032 With DCO		
Daily range (Min-Max)	192-249			192-249			246 - 319		
Daily average	219			219			280		
Average Per Hour	9			9			12		
Expected Peak Per Hour	24			24			31		
Split between shortcuts, PBN, vectoring	Shortcut approx. 7	PBN approx. 12	Vectors approx. 5	Shortcut approx. 7	PBN approx. 12	Vectors approx. 5	Shortcut approx. 9	PBN approx. 15	Vectors approx. 7
Likely Busiest hours	0700-0800, 1200-1300, 1800-1900, 2200-2300			0700-0800, 1200-1300, 1800-1900, 2200-2300			0700-0800, 1800-1900, 1900-2000, 2200-2300		

Table 6 Option 2 - Estimated number of flights per day, and peak flights per hour split into shortcuts, PBN route and vectoring

5.16 Note that, for both options, these are **indicative** figures for the **peak hour** (whichever runway is in use). This gives an indication of the greatest number of flights we expect to be experienced in an hour ('worst case' for overflight). Should air traffic recover from the effects of the coronavirus pandemic more slowly, then these numbers per day and per hour would be lower and the impacts would be lesser.

5.17 Option 2 is our preferred option. It has many similarities to Option 1, and covers the same region at the same altitudes, but crucially has differences in concentration of overflight. It is important that you understand Option 1 because we will highlight where Option 2 is similar to, and where it is different from, Option 1.

Why couldn't all Option 2 arrivals use the PBN routes, all the time?

5.18 It is not yet possible, for safety, efficiency and available technology reasons, for all aircraft to follow PBN routes to final approach at LLA all of the time. For the most efficient arrival sequence, the spacing between a leading and following aircraft is regularly adjusted throughout the flight – the spacing between two aircraft near the start of the route, where airspeeds are higher, always needs to be larger than the required spacing at the end of the route near the runway where speeds are slower. This means that some degree of tactical control – vectoring – will be needed for the near to medium term future. The establishment of PBN routes would enable the development of future technology, where more precise arrival times and spacing could be managed effectively a long way from landing at LLA, but this technology is not yet in place.

Refer to the master version for full details and context
This abridged version removes some detail and data in favour of relative brevity

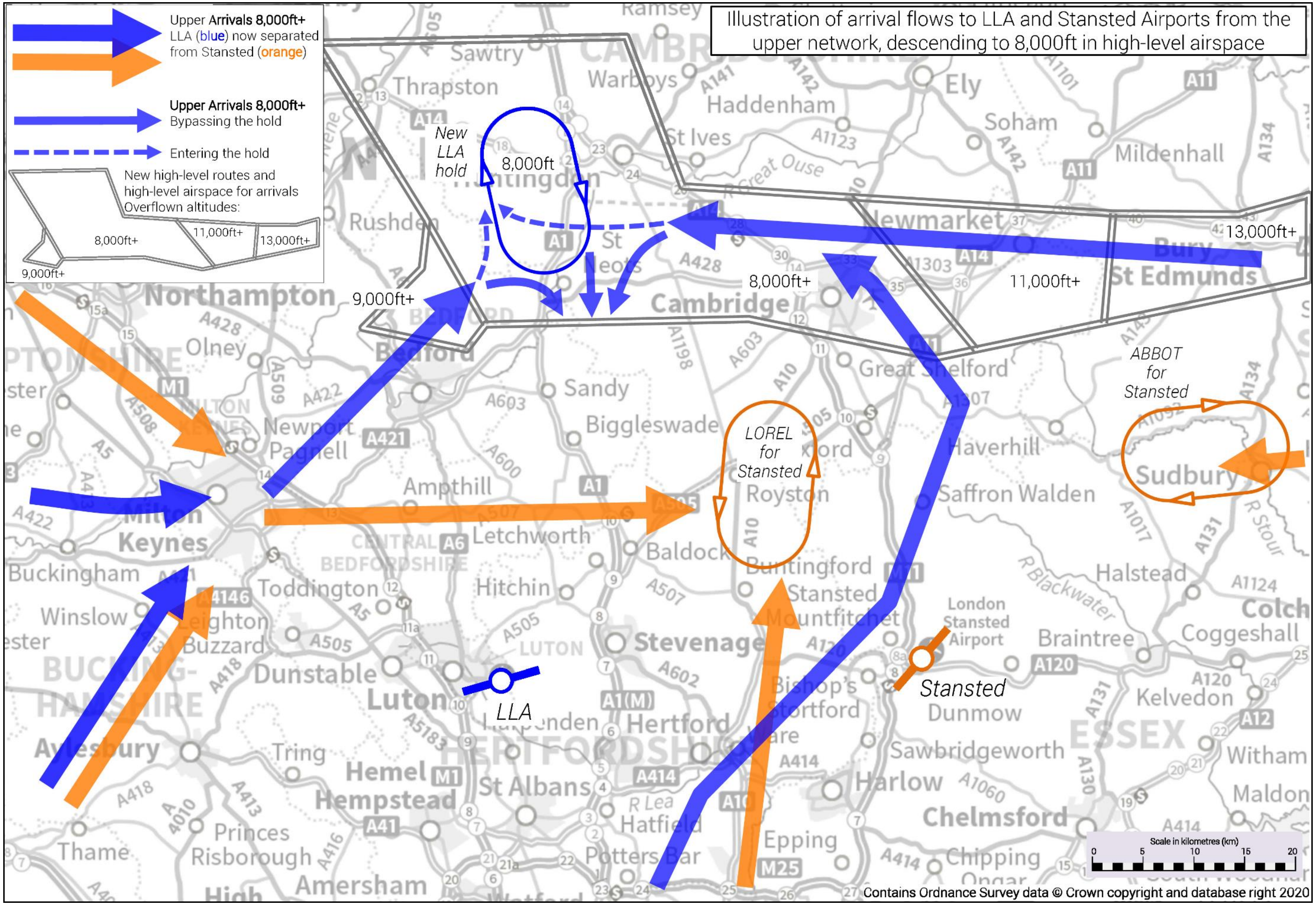

Figure 9 BOTH OPTIONS Illustrating how we propose to separate LLA arrivals from Stansted arrivals at a high level in the upper network, descending to 8,000ft.

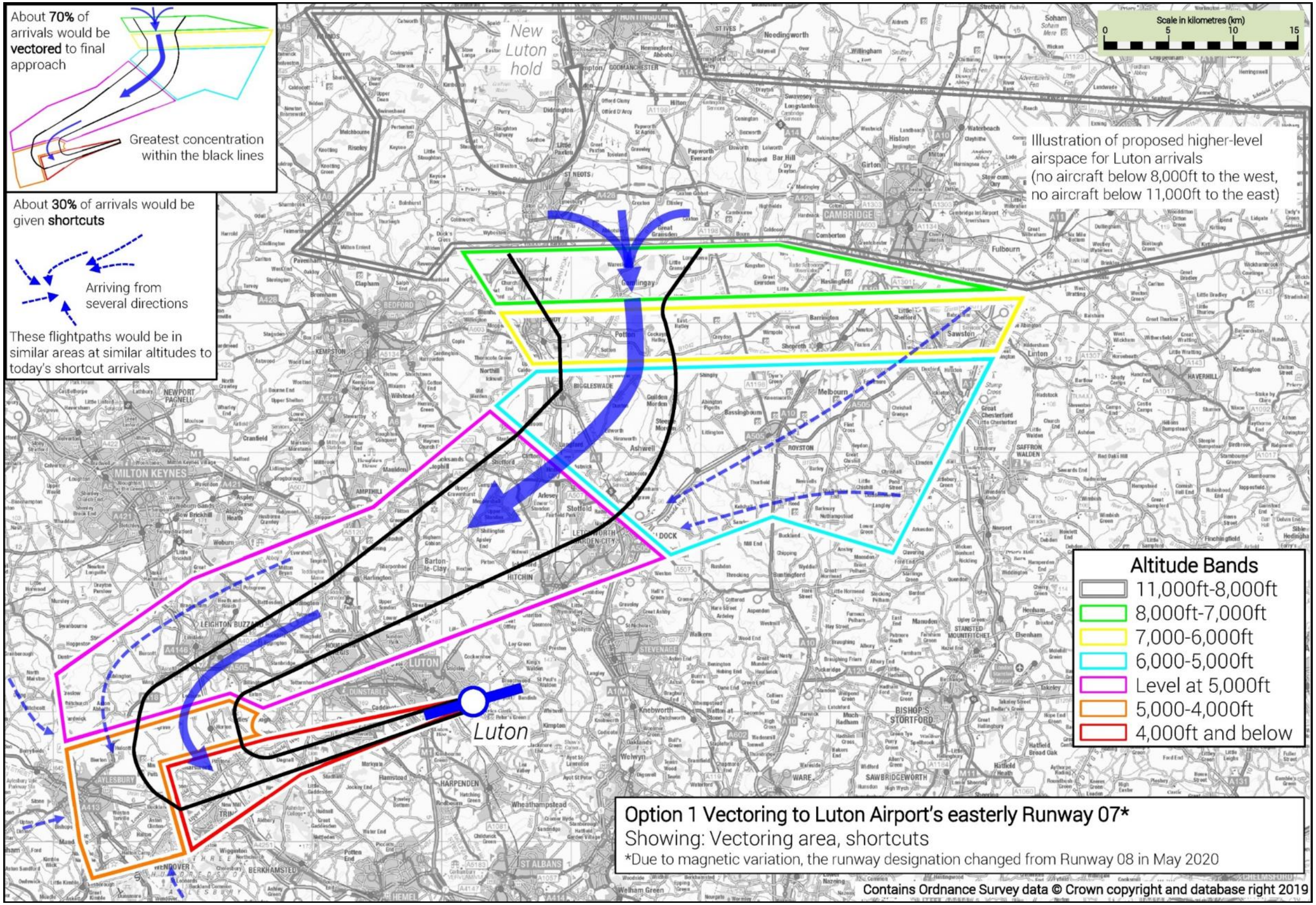

Figure 10 Option 1 for Easterly Runway 07 – Vectoring and Shortcuts

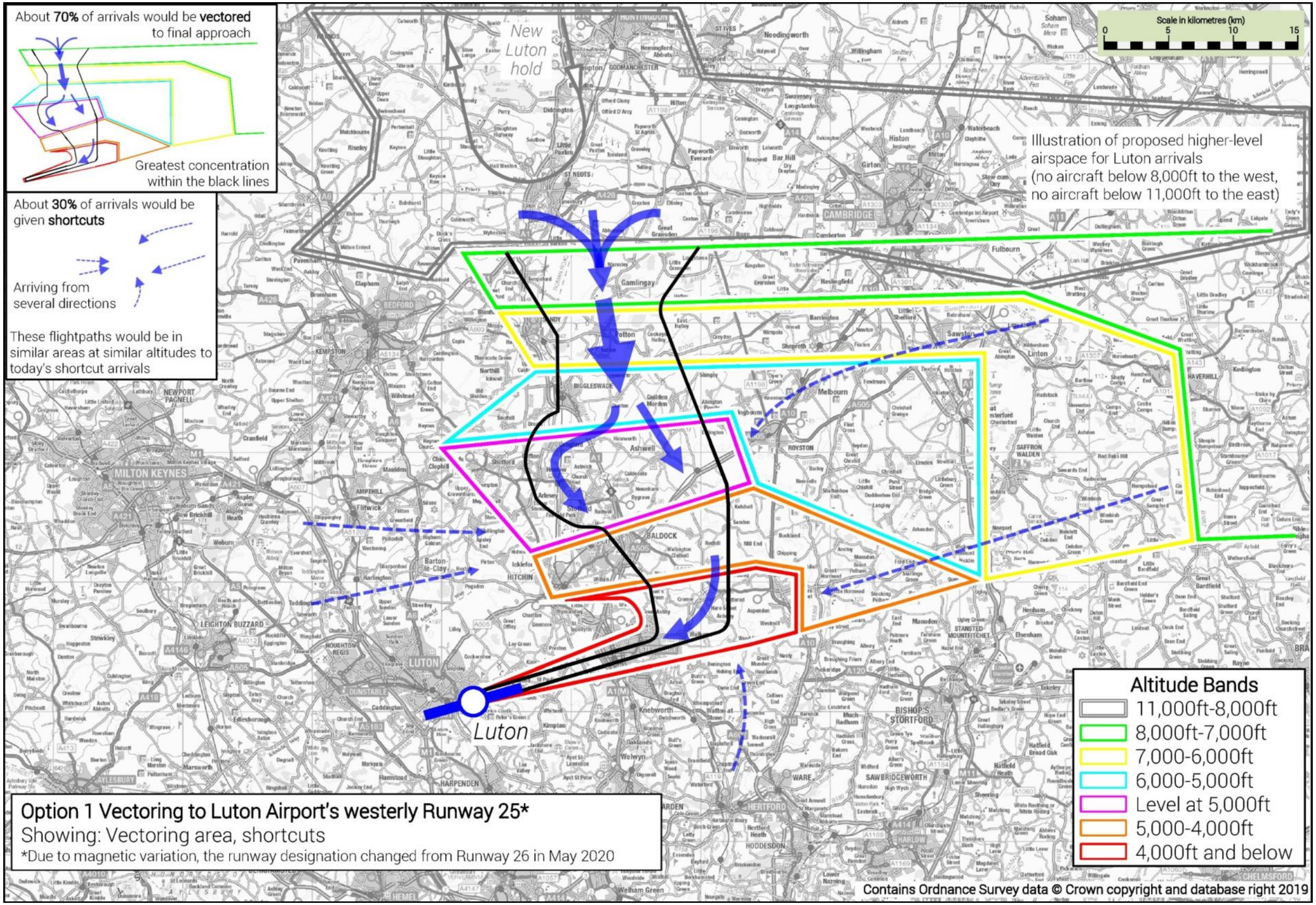

Figure 11 Option 1 for Westerly Runway 25 – Vectoring and Shortcuts

Under Option 2, how would the PBN routes be managed?

5.19 It is important to understand that we cannot predetermine which runway would be in use, so we cannot consult on this. The runway in use is predominantly determined by the wind direction – departing and arriving aircraft usually face into the wind. This enables aircraft to reduce speed over the ground just before landing and to maximise efficiency during take-off. Prevailing winds in the UK suggest that the westerly runway would be in use for approximately 70% of the time.

5.20 This option proposes introducing two PBN routes to each runway, with their availability managed to offer equitable noise distribution for local communities. These routes have been designed to minimise overflight of population centres wherever possible, whilst being as far apart as technically possible to maximise the opportunity for equitable traffic distribution. Where possible we have avoided a design which results in the same communities being overflown by multiple routes, and we have taken into account other airports' routes below 7,000ft. It is also important to note that there are international technical design requirements with which we must comply. These restrict the distances between turns, which can limit the choice of exactly where routes from the hold to the runways could be positioned. These restrictions ensure that aircraft are able to safely follow the turns. It is also important to note that, if the controller decides to vector or shortcut any particular flight or flights, those flights would behave in a similar way to Option 1.

5.21 We have set out questions to gain your feedback on the scheduling of alternation between the two PBN routes from the hold to Runway 25, for instance at what time of the day the switch from one route to the other should be made. There are some operational factors that must be considered before a final decision, if this option is progressed; for example, how busy the airspace is at specific times as it becomes more complicated to make a change to the arrival process during busy periods. Table 6 p.14 shows the expected number of aircraft arriving at LLA each hour, so from this information we have concluded that the most appropriate time to change between PBN routes would be around midnight, in the early morning or mid-morning.

5.22 It is also important to note that, due to the way we propose to manage the additional controlled airspace (CAS) needed for the PBN route north of Leighton Buzzard, there is an additional restriction. Whenever the runway direction changes from Runway 25 to Runway 07, safety dictates that the rotation pattern must always start on PBN Route 1 which goes south of Leighton Buzzard. This allows us to work with other airspace users to ensure that the newly proposed volume of CAS in the vicinity is made available to protect LLA arrivals. This means it would not be feasible to produce a schedule for Runway 07, but for periods of sustained use it would be possible to switch between the route passing south of Leighton Buzzard and the route passing north.

Maps and diagrams illustrating Option 2 follow:

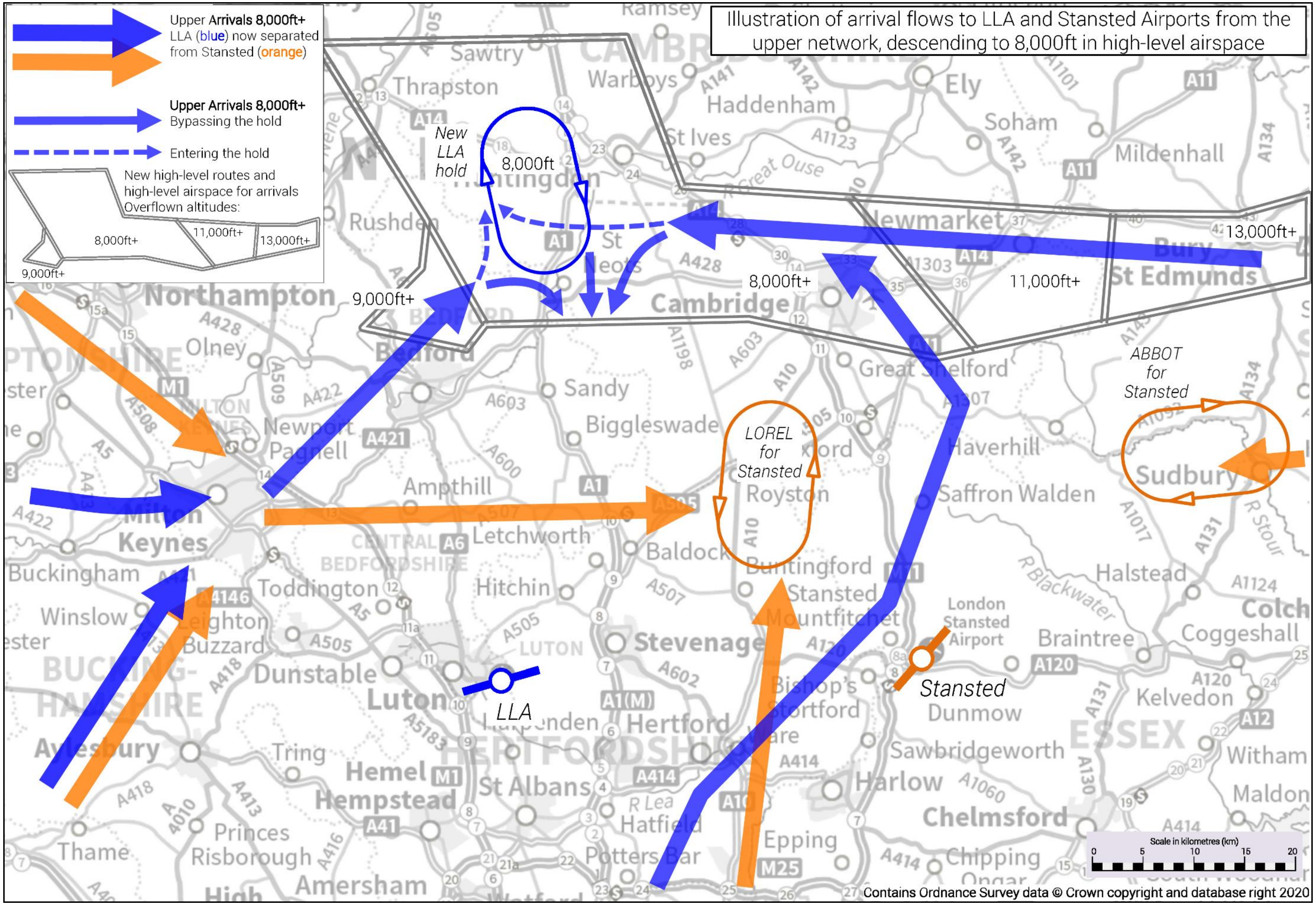

Figure 9 (duplicated) BOTH OPTIONS proposed separation of LLA arrivals from Stansted arrivals at a high level in the upper network, descending to 8,000ft.

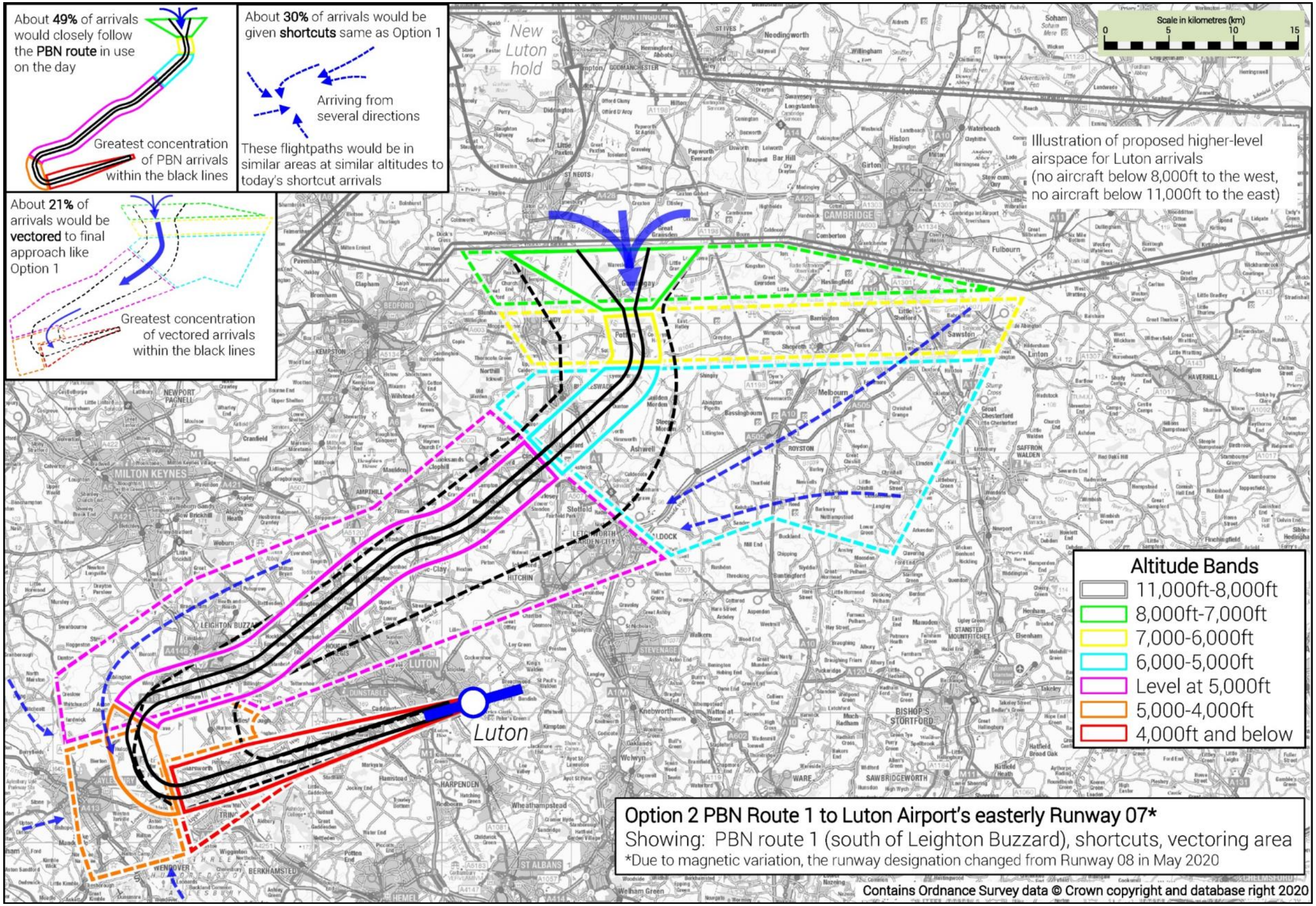

Figure 12 Option 2, PBN Route 1 (south of Leighton Buzzard) for Easterly Runway 07 – Proportions using PBN route, shortcuts, and vectoring

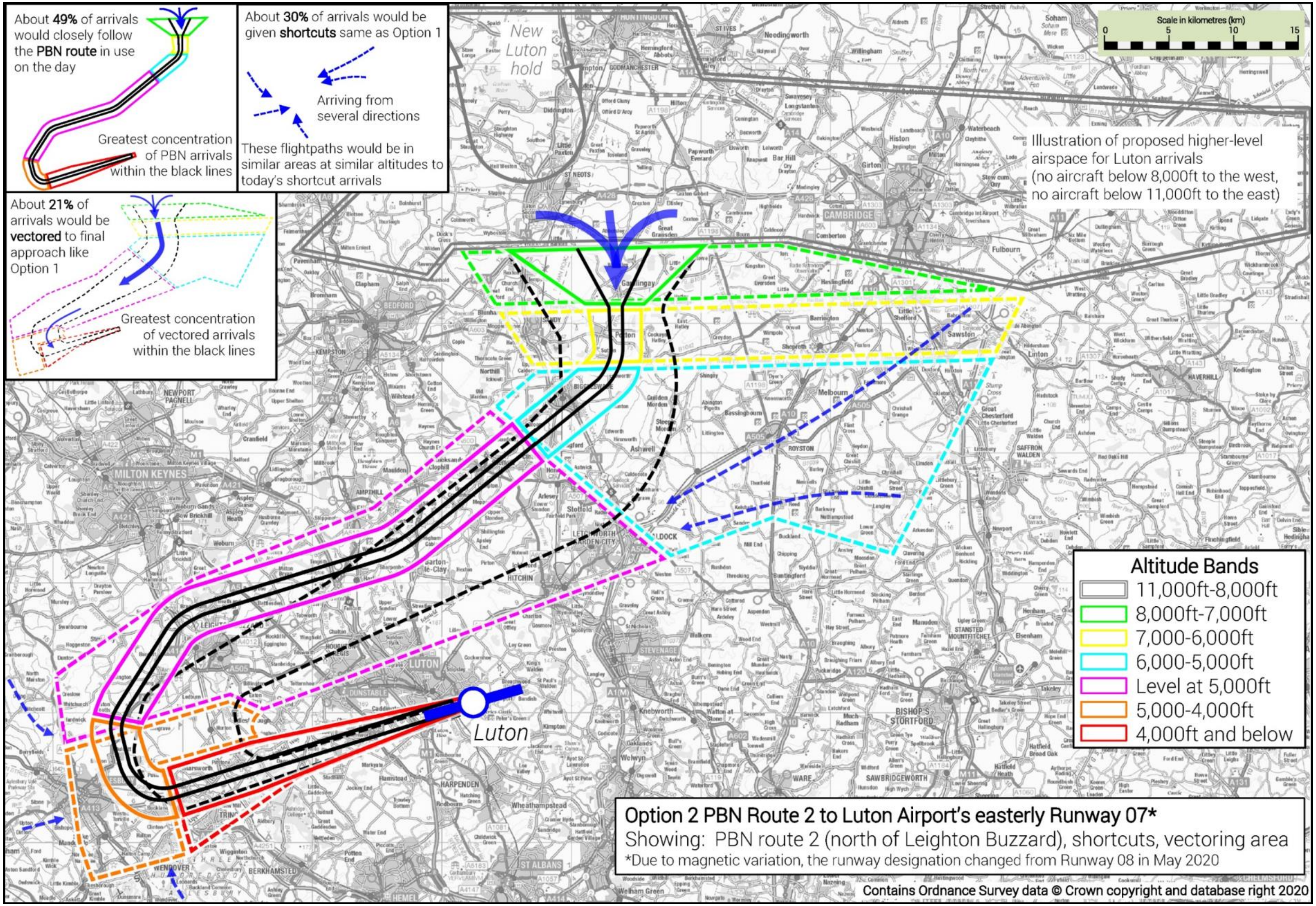

Figure 13 Option 2, PBN Route 2 (north of Leighton Buzzard) for Easterly Runway 07 – Proportions using PBN route, shortcuts, and vectoring

Refer to the master version for full details and context
This abridged version removes some detail and data in favour of relative brevity

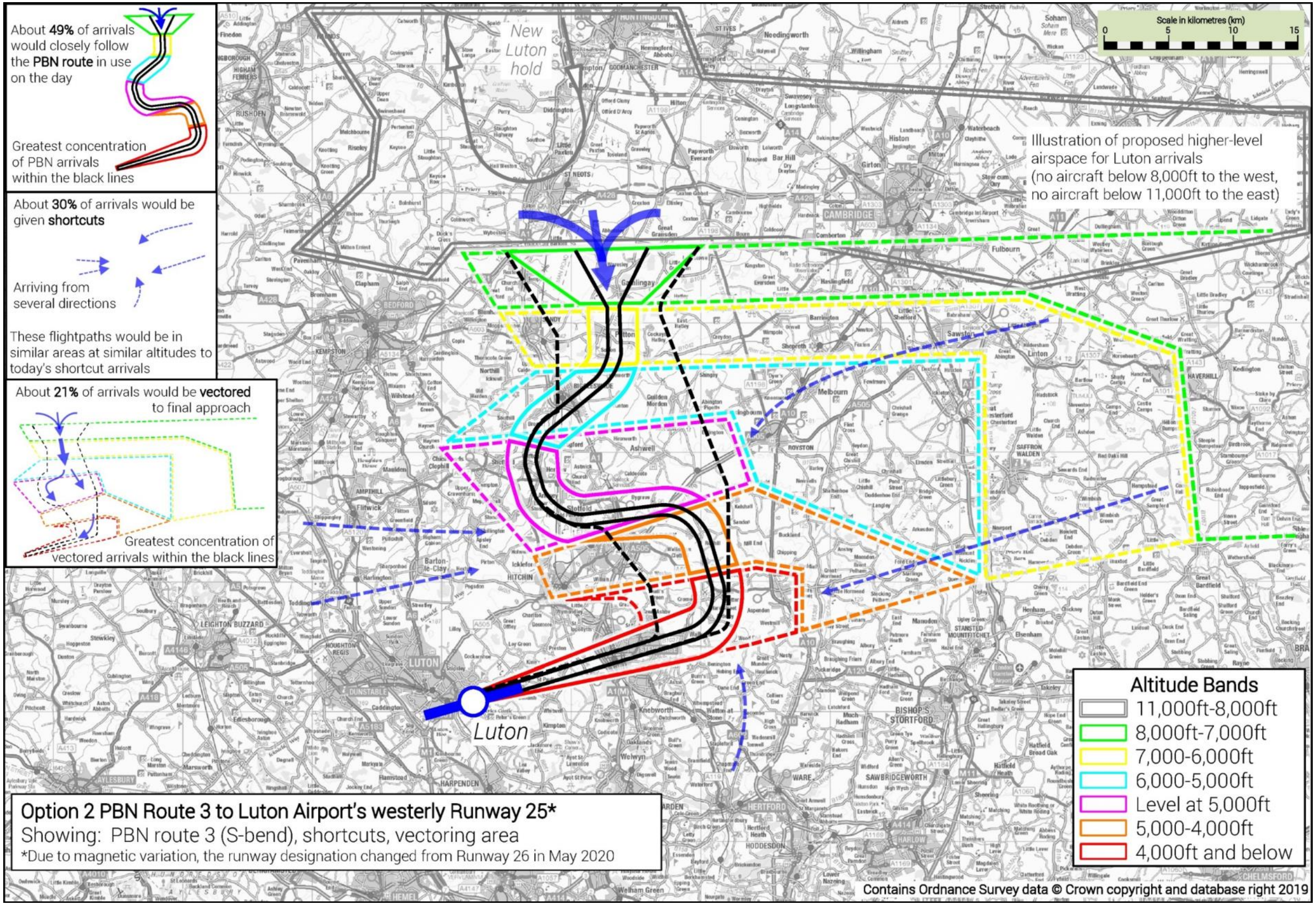

Figure 14 Option 2, PBN Route 3 (S-bend) for Westerly Runway 25 – Proportions using PBN route, shortcuts, and vectoring

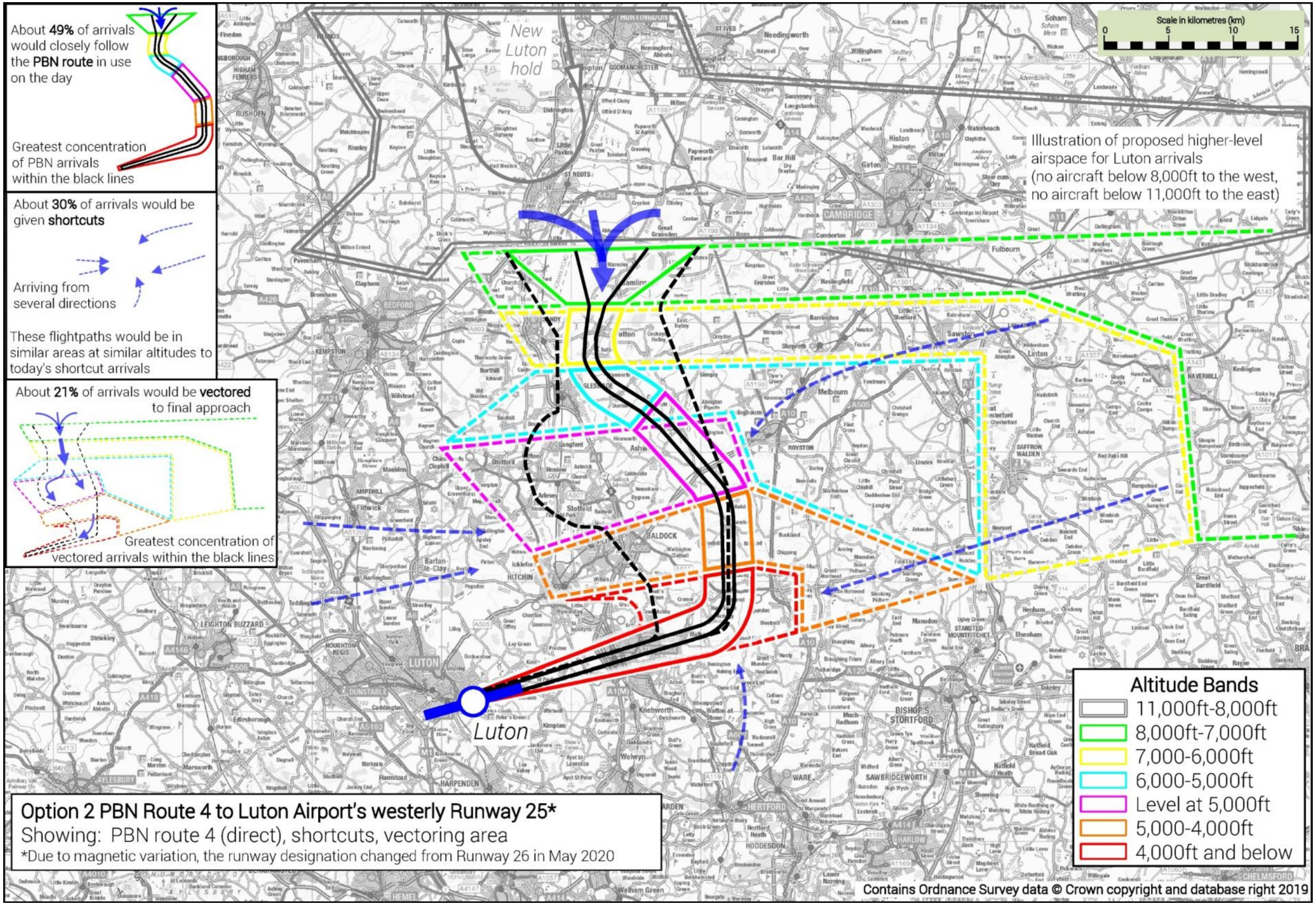

Figure 15 Option 2, PBN Route 4 (direct) for Westerly Runway 25 – Proportions using PBN route, shortcuts, and vectoring

Aviation fuel and CO_2 greenhouse gas emissions comparison

5.23 At Stage 2 Initial Options Appraisal (ref 8) we stated that most arrivals to LLA would need to travel further, and provided simplified estimated averages on the differences in fuel cost per flight based on those additional distances. These simplified estimates did not account for aircraft staying higher longer, the lower likelihood of holding (including less holding for Stansted arrivals), and the provision of shortcuts similar to today.

5.24 An updated analysis accounting for those items has been undertaken using a combination of the NATS fuel analysis simulator and appropriate scaling of traffic levels. From a fuel analysis point of view, vectoring (Option 1) and PBN routes with vectoring (Option 2) has no impact because the aircraft are still flying the equivalent distances; the type of route they follow is immaterial. Also, the DCO is outside the scope of this consultation, however for consistency we present data for scenarios with and without.

5.25 Like all fossil fuels, aviation fuel burns to emit mainly CO_2, and other greenhouse gases. A change in fuel burn can be converted to CO_2 equivalent, also known as CO_2e.

5.26 The average LLA arrival in 2022 is expected to increase fuel use by c.89kg, emitting c.285kg more CO_2e.

5.27 The average LLA arrival in 2032 without the DCO is expected to increase fuel use by c.89kg, emitting c.285kg more CO_2e, because there would be no predicted increase in flights without the DCO.

5.28 The average LLA arrival in 2032 with the DCO is expected to increase fuel use by c.80kg, emitting c.254kg more CO_2e. There would be more flights with the DCO, but relatively, there would be a smaller increase in holding due to the arrival flow separation from Stansted at upper altitudes, compared with the baseline where the flows are not separated.

5.29 The average Stansted arrival in 2022 is expected to decrease fuel use by c.5kg, i.e. c.15kg less CO_2e.

5.30 The average Stansted arrival in 2032 is expected to decrease fuel use by c.11kg, emitting c.35kg less CO_2e. Stansted arrivals are forecast to grow slightly, and this would not be affected by LLAL's DCO because the arrival flows would be pre-separated and far less dependent on each other.

	Fuel per year, tonnes, negative is disbenefit		
Scenario	2022	2032 No DCO	2032 With DCO
Do Nothing	Baseline	Baseline	Baseline
Option 1	-5,841	-5,219	-6,191
Option 2	-5,841	-5,219	-6,191
	CO_2 equivalent (3.18 conversion)		
Do Nothing	Baseline	Baseline	Baseline
Option 1	-18,574	-16,596	-19,687
Option 2	-18,574	-16,596	-19,687
Scenario	Overall Fuel cost (at £356.76/tonne) IATA jet fuel cost USD457.38, USD to GBP 0.78 Rates dated 28 Feb 2020		
Do Nothing	Baseline	Baseline	Baseline
Option 1	-£2,084,000	-£1,862,000	-£2,209,000
Option 2	-£2,084,000	-£1,862,000	-£2,209,000

	Average change in fuel cost per flight (LLA Arrivals)		
Scenario	2022	2032 No DCO	2032 With DCO
Num flights	70,740	70,740	91,500
t fuel total	-6,330	-6,330	-7,302
t fuel per flight	-0.089	-0.089	-0.080
t CO2e per flight	-0.285	-0.285	-0.254
£/flt Opt 1	-£31.92	-£31.92	-£28.47
£/flt Opt 2	-£31.92	-£31.92	-£28.47
	Average change in fuel cost per flight (Stansted Arrivals)		
Num flights	101,719	102,410	102,410
t fuel total	489	1,111	1,111
t fuel per flight	0.005	0.011	0.011
t CO2e per flight	0.015	0.034	0.034
£/flt Opt 1	£1.72	£3.87	£3.87
£/flt Opt 2	£1.72	£3.87	£3.87

Table 7 Fuel and CO_2e greenhouse gas summary

Option Preference Statement

5.31 Both options have the same fuel and greenhouse gas disbenefit, there is no preference via that metric.

5.32 Option 2, a new hold to the north of LLA with a mix of PBN routes, shortcuts and vectoring to the runway, is the preferred option.

5.33 Option 2 gives air traffic controllers additional tools to manage and reduce the complexity of their workload. It is likely to lead to periods of flightpath concentration, split equitably where possible, for about half the arrivals to LLA (see Table 6 on p.14). About half of the arrivals would have some natural dispersion as described in Option 1. This option also aligns more closely with the Government's Airspace Modernisation Strategy.

6. How to understand changing noise impacts below 7,000ft

6.1 To fully understand the potential noise impacts of this proposal, we ask you to invest time in understanding the data and maps presented here. This section explains how you can use the information to compare your current experience of overflight with that of the proposed design options so that you can provide feedback on those proposed designs.

Things to remember when considering noise impacts:

6.2 This airspace change is designed only to change LLA arrivals – there are no proposed changes to LLA departures, nor to routes to or from other airports.

6.3 The current airspace and flightpath arrangements are not suitable for a return to traffic levels exceeding 2019's summer period, even though there has been a temporary decline due to the coronavirus pandemic. Doing nothing is not an option, and it would be preferable that the change happens as soon as possible.

6.4 The forecast numbers of aircraft provided here are based on recovery from the decline due to the pandemic. This means that 'worst case' data is presented, illustrating the greatest potential noise impacts this proposal could have. If traffic numbers are less, the cumulative noise impact will be proportionately less, and the noise contours/swathes/data would be smaller.

6.5 Over the long term (averaged over months and years), westerly runway 25 is used c.70% of the time, easterly runway 07 c.30% of the time in line with prevailing wind conditions. But in the shorter term, (usually days, sometimes hours, occasionally weeks) 100% of arrivals will land on whichever runway is defined by the wind direction until the wind changes. This cannot be defined in advance, and there may be extended periods where either runway is used consistently.

6.6 Applications to grow the airport's passenger numbers are separate projects outside this proposal – this proposal is driven by the underlying safety need to reduce the airspace complexity.

6.7 Option 2 is the preferred option, but the results of this consultation – the feedback you give – will influence the final design put forward for consideration by the regulator, the CAA.

6.8 You may wish to consider any or all of the data provided, to help you understand the differences and similarities between these airspace design options, and to inform your feedback to this consultation.

6.9 Regretfully, requests for analysis of specific locations cannot be answered. Only you can understand your own arrival noise experience under the current airspace arrangement vs. the proposed arrangements. The method below will help you interpret the maps and tables. The Virtual Exhibition for this proposal contains a postcode lookup tool which can help you understand the changes.

Current airspace – Consider the most recent busy period of air traffic arrivals at LLA (summer 2019)

Method (abridged):

6.10 Find the place you want to study, such as your home, place of work or where you spend leisure time, using the maps in Section 4. Remember there is one set of maps for each runway – check if your location gets overflown by arrivals to just one runway, or to both.

6.11 Use the information table and text in paragraphs 4.13-4.19 on p.12 to understand how many arrivals LLA had per average summer day, and which hours (using the 24hr clock) were typically the busiest, in 2019.

6.12 Use the operational diagrams, showing altitude-band flightpath maps (easterly runway Figure 6 p.10, westerly runway Figure 7 p.11) to understand how high those flights were, where they were most likely to be concentrated, and where some aircraft got 'shortcuts' or alternate flightpaths.

- You now understand the general arrival flow patterns, how many arriving flights there were per hour, the typical spread of overflights in the most recent busy summer period, and how high you were overflown.

6.13 Use Table 1 (p.7) to find out the typical noise levels produced by different categories of aircraft at different altitudes.

6.14 Use Table 2 (p.8) to understand the proportions of each aircraft category that arrived at LLA in 2019. The vast majority (79%) were 125 -180 seat single aisle twin-jet aircraft such as versions of the Airbus A320 and Boeing 737.

6.15 Use Table 3 (p.8) to compare the typical noise levels of arriving aircraft with other sounds and noises

- You are now familiar with the maps and tables, and how they combine to illustrate the current noise impacts of arriving aircraft at your location.
- You can now think about your actual experience of aircraft noise in relation to these illustrations, interpreting the data in this section to compare with what you hear in real life.
- You will be able to interpret how your current experience might change, given an explanation of the proposed airspace design options.

Now consider the proposals for changing the arrival flows.

6.16 The upper option determines the location of the 'funnel' where the upper arrival flow prepares to leave c.8,000ft and descend to lower altitudes. That upper design is common to both Options, and the diagram illustrating how the upper arrivals work is shown in Figure 9 (p. 15). The funnel shape is visible in the upper design diagram, and also visible to the north of the lower-altitude design diagrams.

Things to remember when considering noise impacts:

6.17 There are two design options, both with maps for each runway – check if your location is overflown by arrivals to just one runway, or to both.

6.18 The overall areas covered by Option 1 and Option 2 are the same, but with different predicted concentrations of overflight. Your location may be affected similarly by both options, or differently depending on the concentrations.

6.19 Areas outside the coloured polygons would experience similar levels of overflight as today, at similar altitudes and directions, therefore there would be no change in impact.

Option 1, where all arrivals are vectored (manually directed by air traffic controllers), with some given shortcuts similar to today

Method:

6.20 Find the place you want to study, such as your home, place of work or where you spend leisure time, using the maps in Section 5 which show the arrivals' predicted location, altitude, concentration, shortcuts and alternate flightpaths.
For vectored/shortcut arrivals to easterly runway 07, see Figure 10 (p.16)
For vectored/shortcut arrivals to westerly runway 25, see Figure 11 (p.17)

6.21 Use Table 5 (p.14) to understand the estimated frequency of flights during summer busy periods. This table provides an average of how many flights are estimated per day and per hour, the peak number of arrivals per hour, which hours are likely to be busiest, and the proportion being given shortcuts. Information is given for the planned year of implementation 2022, for ten years after implementation without the airport's DCO planning application, and ten years after implementation assuming the DCO planning application does progress.

- You now understand the proposed arrival flow patterns including shortcuts and alternate flightpaths, how many arriving flights there could be per hour on the busiest summer days (with and without the future planning application), the typical spread of overflights, and how high you could be overflown.

6.22 Use Table 1 (p.7) to find out the typical noise levels produced by different categories of aircraft at different altitudes.

6.23 Use Table 2 (p.8) to understand the proportions of each category of aircraft expected to arrive at LLA. The vast majority (79%) are expected to continue to be 125 -180 seat single aisle twin-jet aircraft such as versions of the Airbus A320 and Boeing 737. This proposal is not predicted to cause a change in the proportions of aircraft types using LLA and versions of these two aircraft types are expected to continue to be the most common, as accounted for in the noise analysis.

6.24 Use Table 3 (p.8) to compare the typical noise levels of arriving aircraft with other sounds and noises

- You are now familiar with the maps and tables, and how they combine to illustrate the proposed noise impacts of arriving aircraft at your location.
- You can now compare this proposed design option with your recent (pre-pandemic), actual experience of aircraft noise from the previous exercise.
- You can draw conclusions on whether there would be a change, and how significant those changes may be for your location.

Option 2, where about half of the arrivals use predetermined automatically-flown PBN routes and the rest are given shortcuts and vectored as per Option 1

6.25 This option **requires** an understanding of Option 1.

6.26 Option 2 is the preferred option. It would further reduce overall complexity and workload for the controller compared with Option 1, reducing the likelihood of delay and increasing resilience, while paving the way for the future.

Things to remember when considering noise impacts, for Option 2 only:

6.27 There are two routes available for each runway, which would be alternated to offer more equitable noise distribution for local communities where possible – although there are restrictions on how this can work in practice (see paragraphs 5.19-5.22 on p.18 for a description on how the PBN routes could be managed).

6.28 There would be a published schedule defining which of the two PBN routes to westerly Runway 25 would be allocated on any given day. This runway is generally in use c.70% of the time, but either runway could be used constantly for extended periods according to the wind direction.

6.29 As part of your feedback to this consultation, provide your thoughts on how often, and when, this scheduled alternation should occur, bearing in mind the possibilities and limitations.

6.30 If this option is progressed, there would tend to be a concentration of flights following the route in use on the day (or close to that route), and there would still be some distribution of flights over the rest of the region (via shortcuts and vectoring) as per the maps.

Method:

6.31 Find the place you want to study, such as your home, place of work or where you spend leisure time, using the maps in Section 5 which show the arrivals' predicted location, altitude, concentration, shortcuts and alternate flightpaths.
For arrivals to easterly Runway 07 with PBN Route 1 available, see Figure 12 (p.20)
For arrivals to easterly Runway 07 with PBN Route 2 available, see Figure 13 (p.21)
For arrivals to westerly Runway 25 with PBN Route 3 available, see Figure 14 (p.22)
For arrivals to westerly Runway 25 with PBN Route 4 available, see Figure 15 (p.23)

6.32 Use Table 6 (p.14) to understand the estimated frequency of flights during summer busy periods. This table provides an average of how many flights estimated per day and per hour, the peak number of arrivals per hour, which hours are likely to be busiest, and also the proportion being given shortcuts. Information is given for the planned year of implementation 2022, for ten years after implementation without the airport's DCO planning application, and ten years after implementation with the DCO.

- You now understand the proposed arrival flow patterns including shortcuts and alternate flightpaths, how many arriving flights there could be per hour on the busiest summer days, the typical spread of overflights, and how high you could be overflown.

6.33 Use Table 1 (p.7) to find out the typical noise levels produced by different categories of aircraft at different altitudes.

6.34 Use Table 2 (p.8) to understand the proportions of each category of aircraft expected to arrive at LLA. The vast majority (79%) are expected to continue to be 125 -180 seat single aisle twin-jet aircraft such as versions of the Airbus A320 and Boeing 737. This proposal is not predicted to cause a change in the proportions of aircraft types using LLA.

6.35 Use Table 3 (p.8) to compare the typical noise levels of arriving aircraft with other sounds and noises

- You are now familiar with the maps and tables, and how they combine to illustrate the proposed noise impacts of arriving aircraft at your location.
- You can now compare this proposed design option with your recent (pre-pandemic), actual experience of aircraft noise from the first exercise, and with your understanding of the other design option in the second exercise.
- You can draw conclusions on whether there would be a change, and how significant those changes may be for your location.

When you have completed the three exercises (current flightpaths, Option 1 and Option 2)

6.36 Consider your thoughts and conclusions in relation to the questions asked in the printable survey form (link) and prepare your feedback. These are the same questions asked in the online survey (link). When you have prepared your feedback please complete the online survey.

Noise impacts above 7,000ft

6.37 As stated previously in paragraph 3.3 on p.7, aircraft noise can be less distinguishable at altitudes higher than 7,000ft, depending on local circumstances.

6.38 This section targets those stakeholders potentially affected by flightpath changes below 7,000ft; which is where noise impacts are considered a priority. Government guidance (Ref 16) is prioritised in accordance with the altitude of the change, and its impacts on key noise metrics.

6.39 This Government guidance for airspace changes can be generally summarised as:

- The minimising of noise impacts up to 7,000ft is the greatest priority; and
- In the airspace above 7,000ft the minimising of noise is no longer a priority, and airspace efficiency is promoted.

6.40 Nevertheless, feedback is welcomed from everyone potentially affected by these proposed flightpath changes, whether they occur below, at, or above 7,000ft over their location of interest.

7. (Aviation technical section removed for brevity)

8. The Consultation Process and Next Steps

8.1 Consultation is a formal process seeking input into a proposal, undertaken in line with the Gunning Principles[8] and Government guidance. Consultation is an essential part of the airspace change process. It allows us to explain our proposal in a fair, transparent and effective way, and gather information to understand views about the impact of the options presented. It allows stakeholders to provide relevant and timely feedback to us, which we can then use to inform our final proposal.

How are we consulting on this Airspace Change?

8.2 The requirements of the Airspace Change Process mean that the formal consultation must be undertaken through the CAA Airspace Change Portal, where you will be able to find all the information on this proposal. We recognise that this may not suit all stakeholders, so we have produced a comprehensive consultation strategy that will enable us to capture views from the broadest possible audience.

8.3 There is a wide audience for this consultation, including local authorities, airlines, private pilots, businesses, environmental and community organisations, and the general public. The Consultation

[8] The Gunning Principles are a set of rules for public consultation that were proposed in 1985 by Stephen Sedley QC, and accepted by the Judge in the Gunning v LB of Brent case. They consist of four rules, which if followed, are designed to make consultation fair and a worthwhile exercise:

- that consultation must be at a time when proposals are still at a formative stage;
- that the proposer must give sufficient reasons for any proposal to permit of intelligent consideration and response;
- that adequate time is given for consideration and response; and
- that the product of consultation is conscientiously taken into account when finalising the decision.

Strategy (ref 10) explains how we analysed our audience and identified categories which will help us seek feedback from stakeholders who may be both positively and negatively affected by this proposal.

8.4 This consultation commences at 0001 on the morning of Monday 19th October 2020 and closes at 2359 on the evening of Friday 5th February 2021, a period of 15 weeks and 5 days

How to respond

8.5 Part of the CAP1616 process requires all responses to Airspace Change consultations to be uploaded to the CAA Airspace Change Portal. All of the information regarding this airspace change, including this consultation document, Full Options Appraisal, and consultation strategy will be published on the CAA's Airspace Change Portal.

8.6 We invite all stakeholders to respond to the consultation on the portal here:
https://consultations.airspacechange.co.uk/london-luton-airport/ad6_luton_arrivals
Or use this direct link to the online survey form

8.7 We recognise that not all stakeholders may have access to the internet.

8.8 Responses can be sent by post using the feedback form (available at this link) to:

Airspace Change
Flight Operations
London Luton Airport
Percival House, Percival Way
Luton
LU2 9NU

8.9 For transparency, all responses will be collated and published on the CAA's Airspace Change Portal. We will upload postal responses to the portal on behalf of respondents. All stakeholders have the option to redact personal information, such as name, address, and position from publication; please select your preference when submitting your feedback[9]. The CAA will moderate consultation responses to remove material not appropriate for publication.

Can I speak to you about the proposal?

8.10 Due to the ongoing impact of COVID-19 it is clear that the primary method for providing information, engaging with stakeholders, and gathering feedback during this consultation will be online. We do not plan to hold face-to-face events given the current social distancing requirements relating to public gatherings which are likely to remain in place for the foreseeable future.

8.11 This has changed our approach to consultation. We will provide a variety of methods and materials to engage stakeholders. The Consultation Strategy document (ref 10) details those methods and materials, summarised as:

- The consultation website, including downloadable documents and the online survey where feedback can be submitted;
- A virtual exhibition hall, a more interactive way to access the material;
- Video conferencing, a series of online video meetings to give stakeholders the opportunity to engage as directly as possible;
- Social media platforms, to promote awareness of the consultation in a targeted way; and
- Traditional media to raise awareness using local newspapers and broadcast interviews.

[9] NATS-LLA, our subcontractors and the CAA will see your personal information if you select this option, however it will not be visible on the CAA portal when your response gets published after moderation by the CAA.

8.12 There are several groups which should be considered as 'digitally excluded' or 'seldom heard' audiences, where the internet is less widely used. We will take extra steps to communicate with these groups, see the Consultation Strategy document (Ref 10).

How we will use your feedback from this consultation

8.13 All feedback from this consultation will be collated and published on the CAA's Airspace Change Portal. The portal will maintain a transparent and complete record of online consultation responses, and of any paper responses which we will upload on behalf of the respondent. Within the portal we will monitor all feedback and produce frequently asked questions.

8.14 Alongside this review of responses, we will collate and categorise all responses as shown below; following the process outlined in CAP1616:

Category	Responses which may impact the final proposal		Responses which do not impact the final proposal
Subcategory	Responses which have impacted the final proposal	Responses which have not impacted the final proposal	

Table 8 Response categorisation method as per airspace change process

What happens next?

8.15 During Stage 4 of the airspace change process, Update and Submit, we will produce a report showing the consultation responses and how these have shaped the final airspace change proposal. This report will be produced alongside a final options appraisal, and the final design. In the event that the final options appraisal shows that impacts have changed substantially, we will undertake a second consultation before progressing to Stage 4b submission of the airspace change proposal. As is the case with all stages of the airspace change process, all reports and outcomes from each stage will be published on the CAA Airspace Change portal.

8.16 We expect the formal airspace change submission to be completed in June 2021, the Stage 5 Decide gateway is expected to be completed in October 2021 and implementation is targeted for 24th February 2022 (in aviation terms this is AIRAC 02/2022).

9. (Reversion statement section removed)

End of abridged document

This document has been abridged from the original full consultation document (link to full document).

Paragraph numbers and other numbered items may not match the full version, though efforts have been made to keep the diagram numbers consistent.

Refer to the master consultation document for full details and context.