



# Manston Airport Air Freight Hub

*Reviving strategic transport infrastructure to  
maximise Global Britain's trading potential*

## Applicant's commissioned International Bureau of Aviation Report

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# AIR CARGO ANALYSIS MANSTON AIRPORT

**Prepared by IBA for:**

RiverOak Operations Limited

30 Orange Street

London, WC2H 7HF

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## Authors

### **Geoff van Klaveren** - Managing Director of Advisory

Geoff has over 20 years of experience in aviation and joined IBA in 2021 from Capgemini Invent where he was the UK lead for aviation. He was Director of Strategy (reporting to the CEO) at British Airways until 2018 where his responsibilities included passenger demand & supply forecasting. Prior to this he was a leading aviation analyst at BNP Paribas then Deutsche Bank. He has an MBA from Edinburgh university, studied finance at London Business School, holds a commercial pilot licence and has completed the CAA's 'Accountable Manager' course.

### **Mike Yeomans** - Director of Valuations & Consultancy

Mike joined IBA in 2011 and is responsible for the Valuations team. Mike has extensive knowledge of the values and dynamics of the commercial aircraft market, and has a background in aircraft maintenance & mechanical engineering. Recently Mike has delivered a number of commercial and technical due diligence assignments, appraisals in support of numerous ABS (Asset Backed Securitisation) transactions and advised new clients entering the aircraft leasing market. Furthermore, Mike conducts large portfolio appraisals on behalf of major lessors. He holds a degree in Aircraft Engineering and is a Senior ISTAT Certified Appraiser.

### **Jonathon McDonald** - Head Analyst for Commercial & Aging aircraft

Jonathan joined IBA in 1999. He is responsible for IBA's business jet appraisals as well as those for distressed assets, older aircraft, freighters and part out scenarios. With over 17 years' experience of consultancy in many aspects of commercial aviation, Jonathan is a regular speaker and moderator at industry conferences. For a brief spell during 2006 and 2007 Jonathan worked at Republic Financial Corporation as an analyst supporting the origination team, before returning to IBA. Jonathan holds a Business Administration Degree from Northumbria University, Newcastle Upon Tyne, and is a Senior ISTAT Appraiser.

### **Marlon Tull** - Senior Analyst for Airlines

Marlon Tull joined IBA in 2015 as an Aviation Analyst on the Advisory team. He has graduated from the University of Salford with a BSc in Aviation Technology with Pilot Studies. Prior to joining IBA, Marlon has completed an ICAO Aeronautical Information Service Officer certificate with Distinction. At IBA, Marlon has worked on a number of advisory projects across a broad number of sectors: supporting start-up airlines, developing IBA's operator risk index and operator risk assessments, commercial due diligences on buy side transactions and market studies. Marlon also has some experience in helicopter valuations.

## EXECUTIVE SUMMARY

### THE SITUATION

RiverOak Strategic Partners Ltd proposes to reopen and develop Manston airport into a dedicated air freight facility able to handle at least 10,000 cargo air transport movements per year whilst also offering passenger, executive and aircraft engineering services.

An application for the proposed redevelopment was made on 17 July 2018 but the Examining Authority (ExA) made a recommendation to the Secretary of State for Transport, on 18 October 2019, that the proposal should not be approved. The Secretary of State, considering the national strategic importance of additional cargo capacity, nevertheless decided to approve the application on 9 July 2020. An appeal to the High Court was then lodged by a local resident and as a result the decision by the Secretary of State to grant the application for the proposed development was quashed. The application must now be re-determined.

RiverOak Strategic Partners has appointed the International Bureau of Aviation (IBA), a leading aviation consultancy, to undertake an independent and updated assessment on whether additional air cargo capacity is required in the south-east of England.

### COMPLICATING FACTORS

A key reason as to why the Examining Authority did not recommend the proposed development was because it did not believe there was sufficient evidence of a shortage of cargo capacity in SE England. We note that the ExA seemed to rely heavily on a 3<sup>rd</sup> runway being built at Heathrow and sufficient capacity still being available at Stansted.

Other factors which complicate the picture include the UK's departure from the EU which has increased friction at the border (Dover in particular) and the COVID-19 pandemic which has accelerated e-commerce and demand for express delivery generally delivered by integrators using full freighter aircraft. The pandemic has also accelerated the trend of low-cost carriers (LCCs) dominating short-haul air travel (at Gatwick, Stansted, Luton) with network airlines such as British Airways shrinking in size and retreating from Gatwick to concentrate operations at Heathrow. The LCC business model does not carry belly capacity and both Ryanair and easyJet, Europe's largest LCCs, have bases at Stansted and Gatwick respectively and are planning major growth in future years potentially affecting spare capacity at those airports.

### KEY QUESTIONS TO ANSWER

The key questions that need to be examined in order to reach a conclusion are as follows:

1. Has a lack of air cargo capacity in the UK over the past few years caused cargo to be landed in continental Europe and then trucked into the UK?
2. Does the UK have sufficient air cargo airport capacity to meet future demand?
3. Is Heathrow capable of meeting future air cargo needs considering recent fleet changes by the major operators at this airport?
4. How has the air cargo market changed as a result of the UK departure from the EU and the pandemic?
5. Separate to air cargo, what other factors should be considered such as local employment, general aviation and net zero commitments.

## CONCLUSIONS

### 1. UK is heavily dependent on Heathrow for air cargo

The UK is heavily dependent on just three airports for air cargo with 84% of all international air freight (by weight) coming through either Heathrow, East Midlands or Stansted in 2019. Heathrow has become even more dominant over the past few years with 65% share in 2019 compared to 59% in the year 2000. We see this concentration as negative for consumers because, not only does it make the UK vulnerable to any problems at Heathrow (or the surrounding roads) but ultimately a lack of a competitive market could translate into higher transport costs for consumers if shippers have no choice but to transport via Heathrow which is one of the most expensive airports in the world. With Heathrow operating at 99% capacity (during normal times) there is no room for new entrants into the market.

### 2. Lack of full freighter capacity in SE England

London and the south-east of England have a combined population of 18.2 million and yet the region is poorly served from an air cargo capacity perspective. The lack of full freighter capacity has caused some shippers to use airports in continental Europe and truck goods to the UK. Given the increased friction at ports such as Dover since the UK's departure from the EU, this raises issues of resilience for the UK. Overall in the UK, the proportion of freight shipped by full freighter aircraft has remained broadly stable at around 30% over the last twenty years but at Heathrow only 5% was moved by full freighter in 2019 (down from 8% in the year 2000). This has been caused by a strategic decision by Heathrow and IAG (the largest operator at Heathrow) to focus on the more profitable passenger segment. Whilst Heathrow's shift away from full freighter to belly cargo serves the freight forwarder business model, it is a problem for the integrators who tend to use full freighter aircraft and who cannot access Heathrow due a lack of slots. Consequently, full freighters mostly use Stansted and East Midlands.

### 3. Capacity at London airports to become even more constrained

Heathrow operates at 99% capacity year-round and Gatwick operates at 100% capacity during the summer during normal times (pre-pandemic). Stansted and Luton do currently have some spare capacity, but we believe this will be used up by 2030 due to aggressive growth plans by Ryanair (largest airline at Stansted) and Wizz Air (largest airline at Luton). The playbook has already been demonstrated by Gatwick, which in the year 2000, accounted for 14% of the UK's air freight and is now down to 5% as easyJet and other low-cost carriers (LCC) have grown their operations.

In terms of Heathrow, IBA's view is that there is a high probability that a 3<sup>rd</sup> runway is never built or is further delayed due to planning and environmental concerns, and even if it is eventually built it will provide more belly capacity but will not address the issue of a lack of full freighter capacity. East Midlands does have spare runway capacity but we note that the new SEGRO logistics park is already 75% full so it is not clear where the land will come from for further expansion.

### 4. E-commerce driving rise in full freighter demand

The reason why a lack of full-freighter capacity could become an issue in future is that the UK's e-commerce revenue as a proportion of total retail sales has grown from 8.3% in 2011 to 19.2% in 2019 and then 28.1% in 2020 due to the pandemic. It is clear that this shift is permanent rather than temporary and will keep on growing. Speedy delivery is such a key driver of purchase in e-commerce that e-tailers are increasingly bringing elements of their supply chain and logistics inhouse. Amazon, for example, now has a fleet of 73 dedicated freighters and we estimate that this fleet will rise to 200 aircraft worldwide by 2028.

Based on the 5-year historical UK air cargo growth rate (in tonnage) our scenario analysis shows that the extra movements required by full freighter aircraft by 2030 is likely to be between 13,000 and 35,000 (against 57,000 full freighter movements in 2019). This assumes a rise in the mix of cargo carried in full freighter aircraft from 30.4% currently to 35% in our mid case. With Heathrow full and Stansted only having 6,000 spare cargo ATMs, we do see a real risk of a lack of air cargo capacity by 2030, especially in the London area.

#### **5. No conflict with UK's net zero target**

The UK has committed to be 'net zero' in terms of carbon emissions by 2050. Aviation is a relatively small contributor to global emissions (2.5%) and the industry has a plan to be net zero by 2050. Developing Manston would not conflict with this net zero target because the effect on the global environment of an aircraft landing at Heathrow, Brussels or Manston is broadly the same. If anything Manston could help reduce overall Transport emissions through reduced trucking across the channel and less time for aircraft in the Heathrow holding pattern.

#### **6. Manston could provide much needed commercial pilot training**

Manston would also provide much needed instrument training for commercial pilot training. Just as we have seen the knock-on effects of a shortage of HGV drivers, we risk having a future shortage of pilots in the UK as the sector recovers. Due to the fact that most larger airports do not accept training flights and due to the lack of RNP approaches at smaller airfields, there is a shortage of available instrument approaches in SE England. Given the UK's departure from EASA it is imperative that the UK is able to train enough pilots for the industry's needs.

In answer to the questions we posed at the start, our analysis finds that the lack of air cargo capacity in the UK has resulted in cargo being landed in continental Europe and trucked into the UK. It is also evident that capacity for landing full freighters will become even more constrained at London airports by 2030 with Heathrow slot constrained and LCCs taking spare capacity at other airports. However, we do not believe fleet changes by Heathrow airlines will have a major impact on belly capacity. In terms of the fourth question, the departure of the UK from the EU has increased friction at the border which means that the reliance on trucking goods from Europe poses future risks for the supply chain. We also see that the pandemic has accelerated the e-commerce trend which in turn is driving a rise in full freighter aircraft from integrators such as Amazon. Lastly, there are secondary benefits from developing Manston in terms of providing local employment, commercial pilot training and a reduction in road emissions if less freight is trucked from continental Europe.

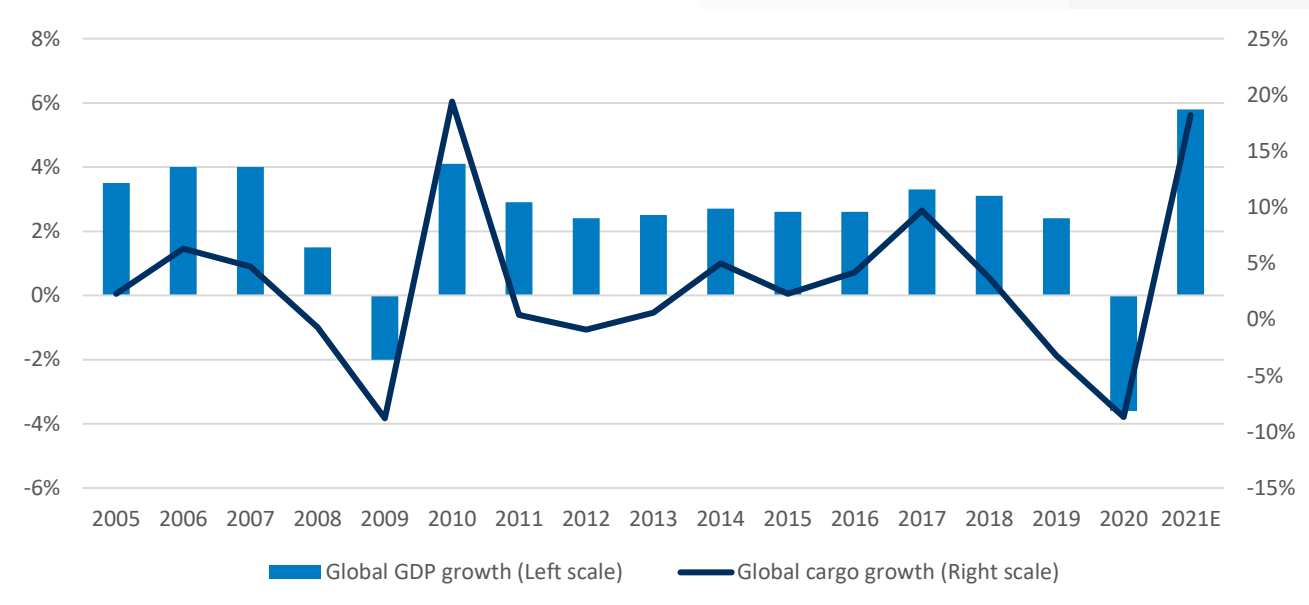
**In conclusion, given airport capacity constraints in SE England and the significant difficulties of gaining planning approval for future runway capacity, IBA does not believe it would be prudent for the UK to close an existing airport (with a 2,700m runway) that could help ease the increasing supply chain pressures in the UK.**

## 1. UK AIR CARGO CAPACITY

### 1.1. GDP AND AIR CARGO VOLUMES ARE CORRELATED

Air cargo is essential to global economic prosperity with around 35% of world trade by value carried by air. Figure 1 shows that there is a strong correlation between economic growth and air cargo volume growth. The COVID-19 pandemic has accelerated the growth in e-commerce and this in turn has driven increased demand for time-sensitive shipping and in response some integrators such as Amazon are growing their fleet of dedicated cargo aircraft in order to have more control over the end-to-end process. To facilitate economic growth in the UK, it is essential that there is sufficient air cargo airport capacity.

Figure 1: Global GDP growth and global cargo volume growth



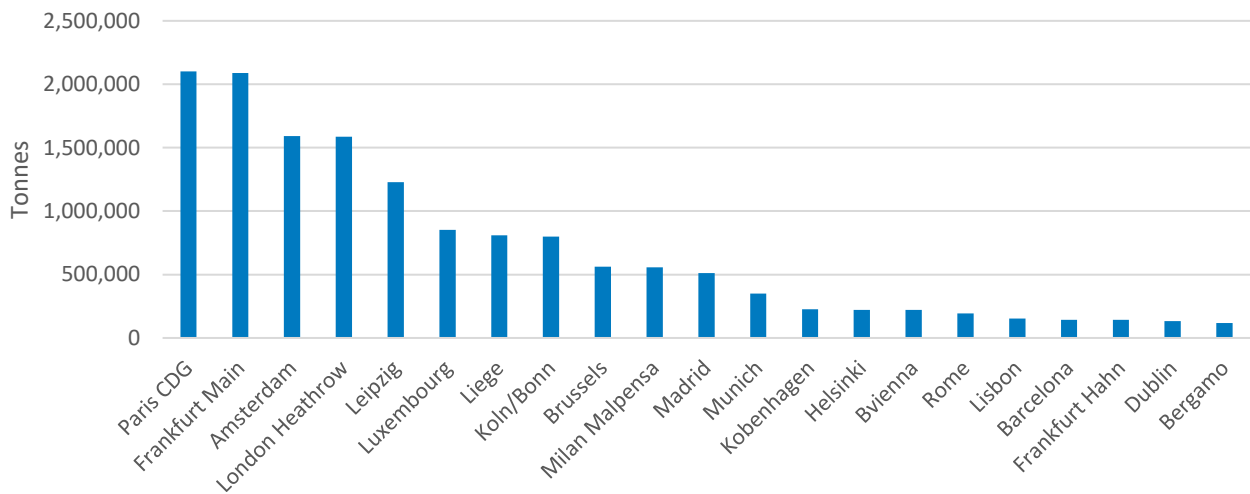
### 1.2. LARGEST AIR CARGO AIRPORTS ARE IN CONTINENTAL EUROPE

The largest air cargo airports in Europe are illustrated by Figure 2 which show a concentration in north-western Europe where there are the largest population centres, higher levels of wealth and availability of air cargo capacity. Paris CDG, Frankfurt Main and Amsterdam are the largest three air cargo airports. These airports have multiple runways, spare capacity and are bases for airlines with wide global route networks. Heathrow is only the 4<sup>th</sup> largest despite the UK having a larger economy than France or the Netherlands and IBA believes this reflects a lack of spare capacity at Heathrow which has just two runways compared to Paris CDG with four and Amsterdam with six runways.

Leipzig, Luxemboug and Liege are the fifth, sixth and seventh largest air cargo airports respectively despite not having any major airlines being based at these locations. These airports specialise in air cargo and several integrators have major operations at one or more of these airports including DHL, Fedex and Cargolux.



Figure 2: Largest air cargo airports in Europe by tonnage (2019)

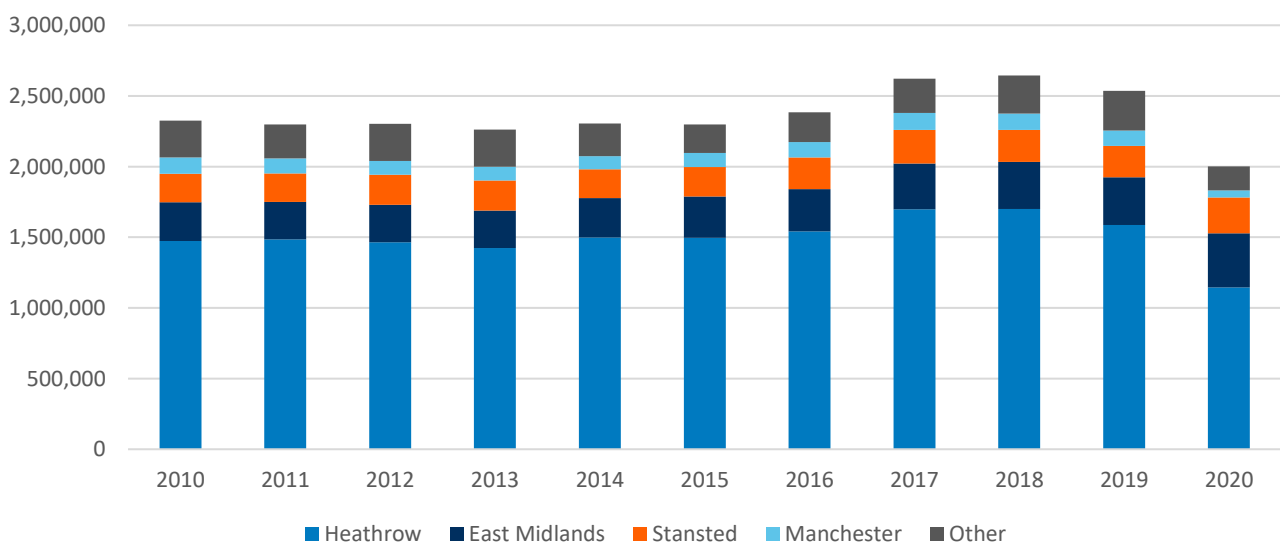


Source: Eurostat, CAA

### 1.3 RISING DEMAND FOR FULL FREIGHTER SLOTS

Air freight (by tonnage) handled by UK airports either by full freighter or in the belly hold totalled 2.5 million tonnes in 2019 (Figure 3) which represents a growth rate of 1% over 10 years (CAGR) or 1.9% over 5 years (CAGR) which might reflect the rise of e-commerce discussed later in this report. In 2020 air cargo volumes fell sharply due to the pandemic when lockdowns caused the economy to go into a deep recession.

Figure 3: Air cargo handled by UK airports (tonnes)



Source: CAA, IBA

IBA believes that the historical air freight movements in the UK may have been constrained by airport capacity because it is clear that a significant amount of air freight that lands in continental Europe is then transported in

customs-bonded trucks to the UK usually to one of the distribution centres around Heathrow. CAA data shows that Heathrow air freight (by tonnage) to and from the EU fell by 46% between the year 2000 and 2019.

This is clearly inefficient and adds many road vehicles to the motorways between Dover and Heathrow. In a report by Steer for Airlines UK (October 2018 page 11) one importer of consumer electronics stated that it only flies around 20% of its total imports directly to the UK, with the remaining 80% being flown to mainland Europe and trucked to the UK. The importer stated that most of its imports are flown in freighter aircraft but few UK airlines operate these aircraft and he also cited an issue with the quality of the infrastructure.

In forecasting the future requirement for cargo capacity in UK airports, what is key is the number of extra air transport movements (ATMs) that will be required by dedicated cargo aircraft. Figure 4 shows three possible scenarios for the future requirement of cargo ATMs. We have used the 2019 as the base year, because of the disruption from the pandemic, when UK air cargo volume was 2.5 million tonnes of which 70% was carried by passenger aircraft and 30% by dedicated full freighter aircraft.

Figure 4: IBA forecast for additional air cargo ATMs required by 2030

	2019	2030		
		Low case	Mid case	High case
<b>Freight by aircraft type (tonnes)</b>				
Passenger aircraft mix	69.6%	69.6%	65.0%	60.0%
Full freighter aircraft mix	30.4%	30.4%	35.0%	40.0%
Passenger aircraft (tonnes)	1,763,776	2,169,499	2,027,122	1,871,189
Full freighter aircraft (tonnes)	771,647	949,150	1,091,527	1,247,459
Total (tonnes)	2,535,423	3,118,649	3,118,649	3,118,649
<b>Movements by aircraft type</b>				
Passenger aircraft mix	97.4%	97.4%	96.9%	96.2%
Full freighter aircraft mix	2.6%	2.6%	3.1%	3.8%
Passenger aircraft (ATM)	2,196,680	2,701,984	2,524,662	2,330,457
Full freighter aircraft (ATM)	57,535	70,770	81,386	93,012
Total ATM	2,254,215	2,772,754	2,606,047	2,423,469
<b>Tonnes per ATM</b>				
Passenger aircraft	0.8	0.8	0.8	0.8
Full freighter aircraft	13.4	13.4	13.4	13.4
Blended average	1.1	1.1	1.1	1.1
<b>Additional Cargo ATMs</b>		<b>13,235</b>	<b>23,851</b>	<b>35,477</b>

Source: CAA, IBA forecasts

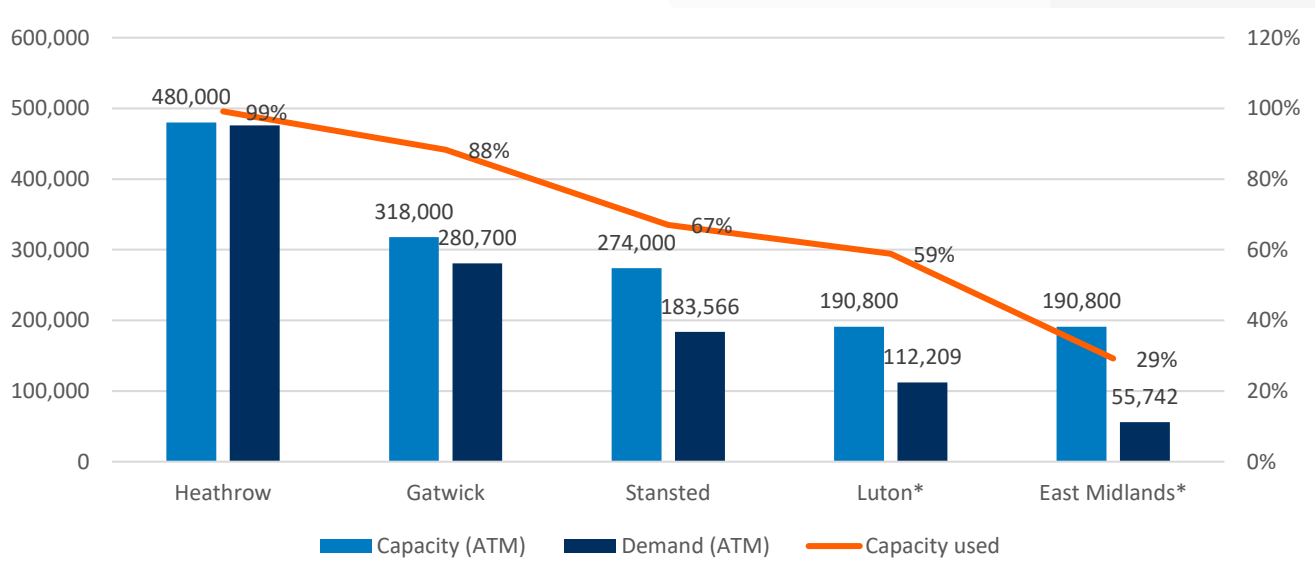
Based on the UK 5-year historical cargo growth (by tonnage) of 1.9% we assume cargo demand will rise to 3.1 million tonnes by 2030 and then apply three scenarios. The low case assumes no change in mix between full freighter and passenger aircraft, the mid case assumes that 35% is moved by full freighter (as opposed to 30%) and the high case assumes 40% moved by full freighter with the rationale being that e-commerce will drive integrators such as Amazon to grow their own fleet of dedicated aircraft in order to have more control over their supply chain. The scenario forecasting shows that the UK could see between 13,000 and 35,000 extra full

freighter movements per annum by 2030. Bearing in mind that Heathrow is full and Stansted only has 6,000 spare ATMs spare for cargo, it is clear that capacity could be a material issue by 2030.

### 1.4 LONDON AIRPORT CAPACITY IS CONSTRAINED

Figure 5 shows the available capacity at London’s four major airports and East Midlands against the actual demand in 2019 before the pandemic. Heathrow was operating at 99% of capacity with Gatwick at 88% although it should be noted that Gatwick is seasonal and operates at 100% of capacity in the summer season so effectively there is no spare capacity for year-round operations at present.

Figure 5: Air Transport movements (2019) compared to available capacity



Source: CAA. IBA runways capacity estimate\*

Stansted is seen as the primary alternative to East Midlands for handling full freighter aircraft in the future. Stansted’s current expansion plans will increase capacity to 274,000 ATMs (and 43 million passengers) of which 16,000 are designated for air cargo. However, it handled 10,406 cargo ATMs in 2020 (similar to 2019) which leaves less than 6,000 ATMs spare for expansion. In theory more runway capacity could be allocated to cargo (the airport operated at just 67% capacity in 2019) but we think this is unlikely because we believe spare slots will be used by Ryanair and Jet2 by 2030. There is no official ATM capacity limit for either Luton or East Midlands but we have made a reasonable assumption given the declared hourly ATMs. Based on these assumptions Luton operated at 59% of capacity in 2019 and East Midlands just 29%. The limitations of these two airports for cargo is more to do with infrastructure, facilities and for larger aircraft the runway length could be an issue at Luton.

## 2. HEATHROW AS AN AIR CARGO HUB

### 2.1. UK IS HEAVILY DEPENDENT ON HEATHROW FOR AIR CARGO

The UK is heavily dependent on Heathrow airport for air cargo with 64% of all international air freight using Heathrow in 2019, the last full year before the disruption of the pandemic. 20% of UK international air cargo comes to/from the EU with the majority destined outside of the EU. East Midlands and Stansted are the other two largest air cargo airports with 12% and 9% share of UK international air cargo respectively. 86% of the UK's international air cargo went through one of these three airports in 2019.

Figure 6: UK Intl. air cargo tonnes 2000

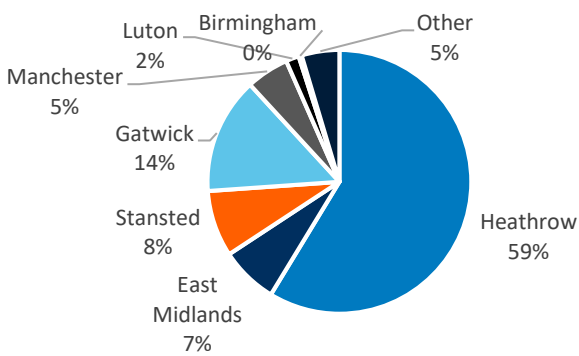
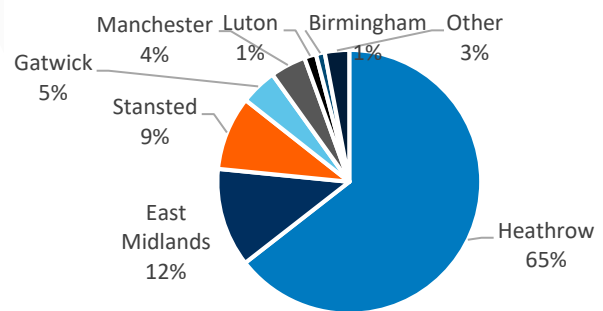


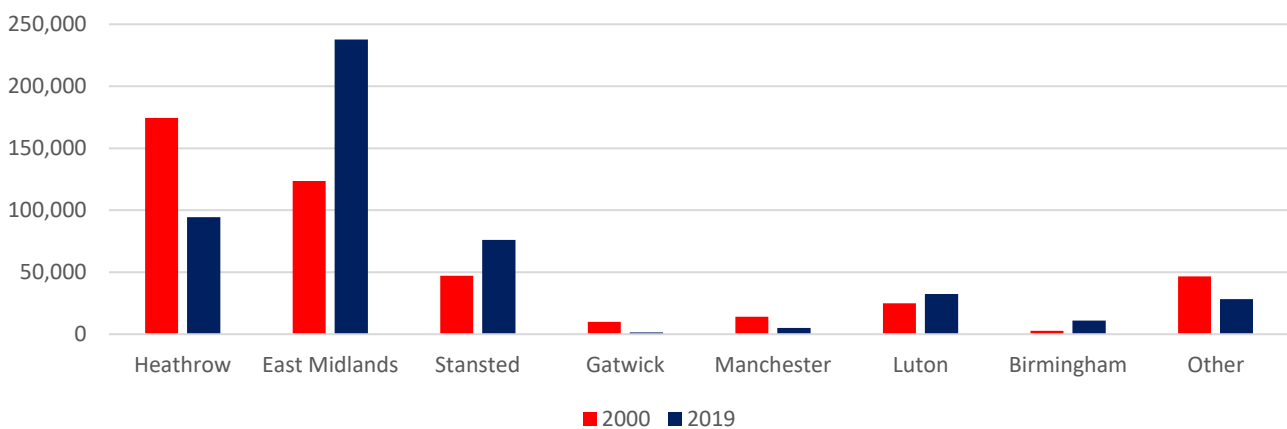
Figure 7: UK Intl. air cargo tonnes 2019



Source: CAA

The UK has become even more dependent on the three largest air cargo airports over the last 20 years ago with 86% share in 2019 versus 74% in the year 2000. Heathrow's cargo to/from EU has reduced by 46% over this period (Figure 8) whereas non-EU international cargo increased by 33%, a clear pivot towards long-haul away from short-haul. Some of the lost EU air cargo clearly went to East Midlands and Stansted but, with overall air cargo to/from EU only growing by 0.5% CAGR between 2000 and 2019, it is likely that a significant volume of air cargo shifted to road.

Figure 8: UK air cargo to/from the EU (tonnes)



Source: CAA

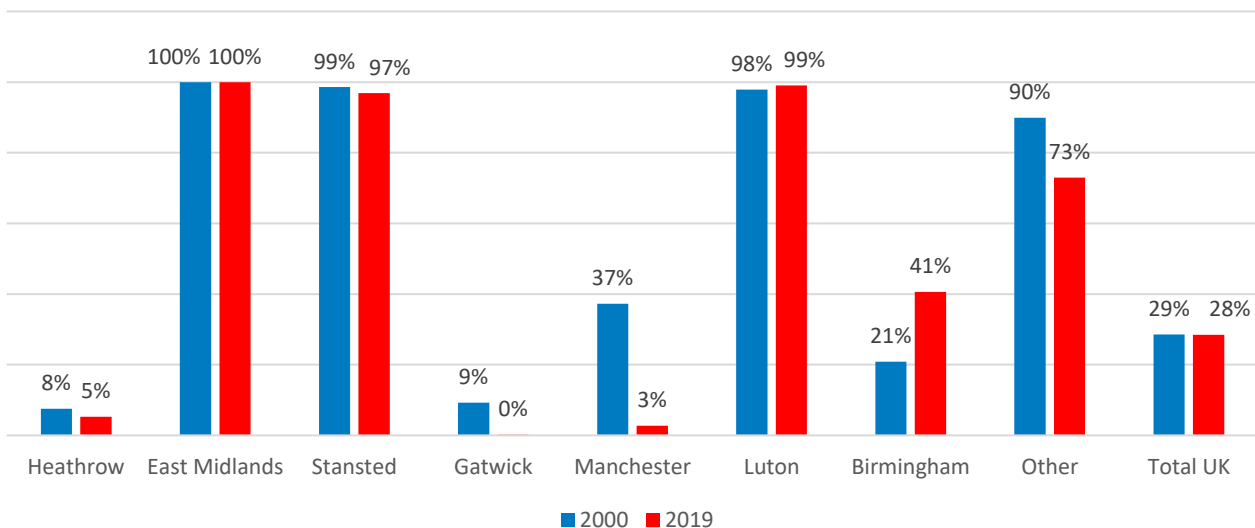
## 2.2 SHORTAGE OF FULL FREIGHTER CAPACITY AT HEATHROW

Heathrow has seen a clear shift away from full freighter aircraft over the past twenty years with 95% of Heathrow international air cargo carried in the belly of passenger aircraft in 2019 compared to 92% in the year 2000. This is in contrast to the UK as a whole with just 72% of international air cargo carried in passenger aircraft in 2019 compared to 71% in 2000. It reflects the strategy by Heathrow airport to focus on growing passenger numbers because this is the key driver of its revenue. In 2019, 81% of Heathrow’s revenue came from aeronautical revenues (mainly driven by a per passenger charge) or retail (airport shops, parking and catering). In addition, the airport’s landing fee structure heavily incentivises aircraft with higher passenger configurations so that it can maximise revenue in light of the slot constraints.

The reduction in full freighters at Heathrow also reflects the strategy by International Airlines Group (IAG), the major operator at Heathrow, to reduce its exposure to the air cargo market by grounding its full freighter aircraft and switching to higher yielding premium air cargo using the belly hold of its passenger aircraft. It should be noted that all aircraft are limited by their maximum take-off weight and, especially on longer-haul flights, there may be insufficient spare weight to carry cargo, despite some available volumetric capacity. IAG will always prioritise passengers over cargo.

The focus on belly cargo by Heathrow is fine for the freight forwarding business model because this generally uses space in airline cargo hold and Heathrow has one of the widest networks of any airport in the world with daily services to most of the world’s major destinations. However, **the lack of full freighter capacity and the lack of any spare slots at Heathrow, which runs at 99% capacity in normal times, means that the ‘Integrated Carriers’ who generally use full freighters such as DHL, Fedex, TNT, UPS, Amazon and Alibaba will not have sufficient capacity at Heathrow and will have to look for capacity elsewhere in the UK.**

Figure 9: Proportion of international air cargo tonnage moved by dedicated cargo aircraft



Source: CAA

### 2.3. THIRD RUNWAY SHOULD NOT BE RELIED UPON FOR EXTRA CAPACITY

The Examining Authority for the Manston airport application does not believe there will be a shortage of air cargo airport capacity and a key reason rests on a third runway at Heathrow. IBA believes that it would not be prudent to rely on Heathrow for additional cargo capacity for three reasons. The first is that **there remain serious doubts as to whether the runway will ever be built**. The 3<sup>rd</sup> runway was given government approval in 2018 but a court of appeal found that the government's approval of the runway was illegal because it had not considered the UK's commitments under the 2015 Paris climate accord. A Supreme Court overturned this judgement in December 2020 but it seems highly likely that the project will face further challenges on environmental grounds following the COP26 climate conference in Glasgow.

The second point is that, even if a 3<sup>rd</sup> runway goes ahead, it is unlikely to be open until 2030 and the extra capacity will be made available in stages over a few years to allow air traffic control to adjust to greater volumes of air traffic. **The spare slots will almost certainly be made available to passenger aircraft and not full freighter aircraft** because Heathrow's business model, as we have already highlighted, relies upon passenger footfall in the retail spaces.

The third point is that **it does not seem that Heathrow's shareholders are supportive of expansion** given the proposed price cap by the CAA for the H7 period. Ferrovial has made public that it will not support a 3<sup>rd</sup> runway any longer because the proposed price cap is in their view insufficient to pay for the required capex and earn a sufficient return for shareholders.

### 2.4. SHORT-TERM REDUCTION IN BELLY CAPACITY

95% of freight carried in and out of London Heathrow airport is in the bellies of passenger aircraft. Based on full operating schedules and a pre-pandemic 2019 scenario, where data is at its most representative, the most common family of aircraft type using Heathrow is the Airbus A320 narrow-body family in both its CEO and NEO iterations representing over 50% of the airport's movements. On a typical operating day (19<sup>TH</sup> October 2019), of the 1,306 air transport movements that day, 526 of those movements were widebody passenger aircraft, representing around 40% of the airport's movements. This equates to around 190,000 movements on an annual basis, providing a significant source of capacity for air freight.

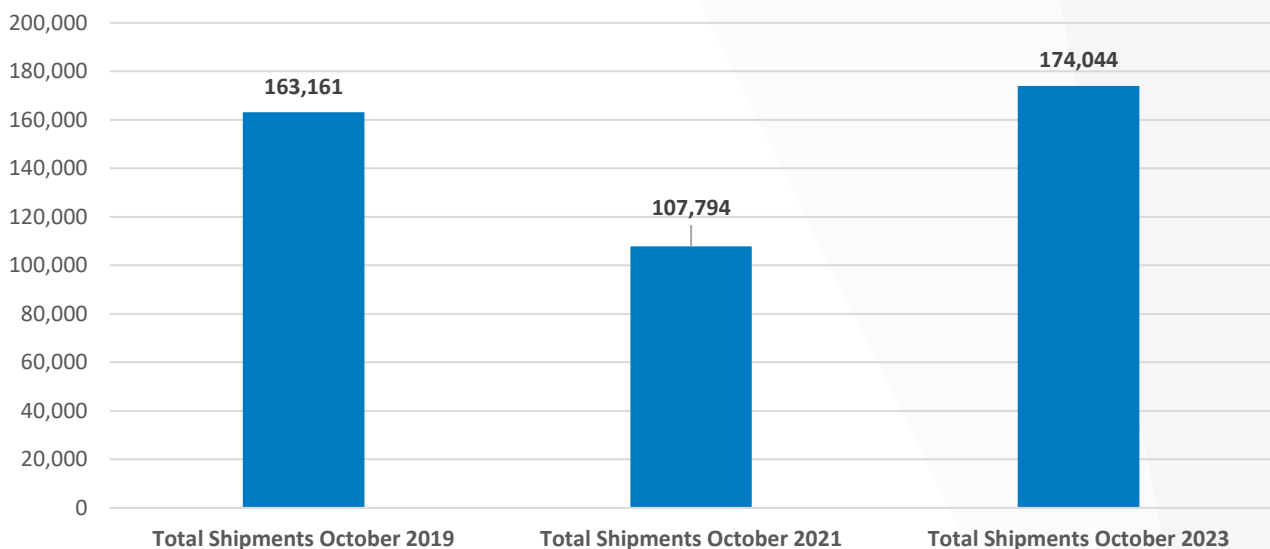
Since March 2020, the effects of the Covid-19 pandemic have had a devastating impact on passenger aircraft movements at Heathrow. By April 2020, the airport was only handling the equivalent of around 60,000 movements per year, approximately 13% of its schedules. A primary driver of this decline was the virtual inability to travel freely caused by global travel restrictions. Most flights to and from Heathrow at the time were either temporary freighters, also known as "preighters", or repatriation flights. British Airways (BA), the largest based carrier, was forced to make some immediate adjustments to its fleet composition. The first was the immediate withdrawal and retirement of its 31 Boeing 747-400 aircraft. Before the pandemic, BA had been very slowly phasing out its Boeing 747-400s as it once had operated nearly 60 examples. The phase out plan was for the remaining 31 to exit by early 2024, with a relatively linear yearly decline. Replacements were to come in the form of Boeing 777-300ERs, Airbus A350-1000s, Boeing 787-10s and eventually Boeing 777-9s.

The premature retirement of the Boeing 747 fleet was a necessary step for BA to take to ride out overcapacity and control costs due to pandemic induced depressed traffic levels. This also led to a reduction in the available belly capacity at Heathrow. To illustrate how available belly capacity and shipments have reduced at Heathrow, IBA has compared the number of flights by widebody operators at the airport in normal, pre-pandemic conditions (October 2019), current conditions (October 2021) and then forecast to October 2023 to analyse the impact on belly capacity levels. To make a fair, accurate and comparable assessment, IBA has used pallet capacity

(196/125) or PMC in the front belly; and the well-known industry standard LD3 (AKE) container in the rear belly. Weight capacity was not used as it is difficult to gauge the mix of passenger baggage / other general freight and pallets / LD3s. Cubic metres / feet were also not used for similar reasons.

Using IBA’s InsightIQ database; IBA considered all passenger carriers operating widebody aircraft into Heathrow at pre-pandemic levels (i.e. October 2019). While over half of Heathrow’s flights are narrow-bodies, due to the large A320 family preponderance, only widebodies have been considered as capacity is most prolific in widebodies due to their inherently larger belly space. The same exercise was performed for October 2021 (i.e. the present) to analyse how shipments in widebodies’ belly space at the airport has declined. We then forecast to October 2023 to measure how the landscape will likely change at Heathrow.

Figure 10: Total Wide Body Pax Pallet / LD3 capacity at Heathrow



Source: IBA InsightIQ

N.B. IBA has assumed that each flight has the full complement of pallet / LD3 carrying capability. The measure is taken as shipments / capacity per departure.

Capacity for October 2021 declined by almost 34% compared to October 2019, driven by ongoing Covid-induced travel restrictions. However, IBA forecasts that for October 2023 there will be an increase in total pallet / LD3 shipment capacity of around 6.7% compared to October 2019. IBA assumes that by 2023 the widebody operators into Heathrow will be operating to full schedules and British Airways will be operating a widebody fleet of a similar size to pre-pandemic. Whilst the Boeing 747-400s have exited, these will be replaced by deliveries of Airbus A350-1000 and Boeing 787-10 aircraft and the return to service of Airbus A380-800s. **The cargo capacity of the Airbus A350-1000 and 777-300ER are both greater than the retired Boeing 747-400 aircraft**, holding 8 pallets and 20 LD3s compared with 5 pallets and 14 LD3s in the 747. Heathrow operators including Thai, Air Canada and Virgin Atlantic are transitioning to the use of Airbus A350, Boeing 787 and Boeing 777 types which offer greater belly capacity compared with earlier Airbus A340, A330 and A380 models and Boeing 767 models.

IBA therefore concludes that by October 2023, the fleet changes by the major operators at Heathrow will not cause the availability of belly capacity to be materially lower than before the pandemic.

### 3. CARGO CAPACITY AT OTHER AIRPORTS

#### 3.1 HEATHROW HAS BECOME MORE DOMINANT IN RECENT YEARS

The SE of England and London have a combined population of 18.2 million, larger than the population of the Netherlands. There are four main airports in the London region and Figure 11 & Figure 12 show that Heathrow has become even more dominant over the last two decades reflecting growth in belly capacity at Heathrow as average aircraft size got larger and a reduction in air cargo at Gatwick reflecting the growing market share of easyJet and other LCCs who do not carry air cargo. This concentration of the air cargo market at Heathrow could potentially be detrimental to consumers if capacity constraints start to bid up the price of transportation.

Figure 11: London airports air cargo share 2000

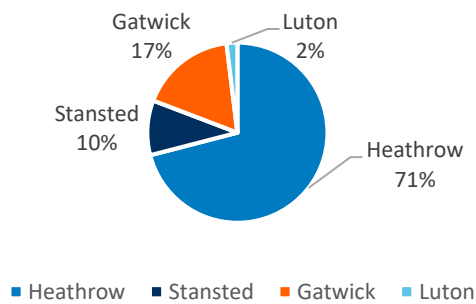
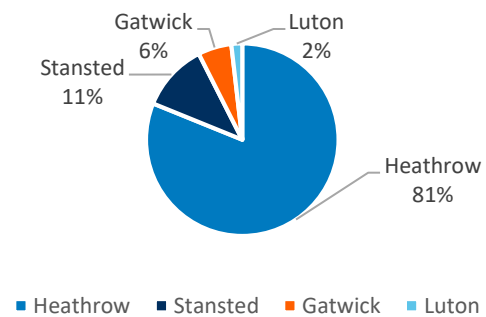


Figure 12: London air cargo share 2019

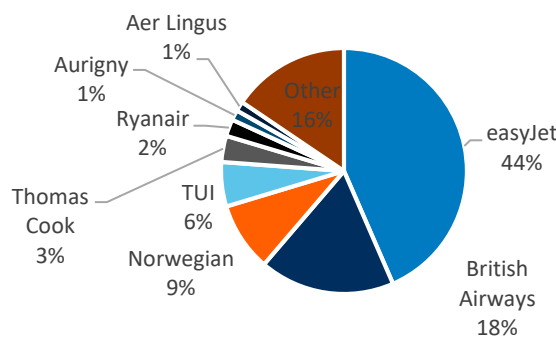


Source: CAA

#### 3.2 GATWICK HAS LITTLE SPARE CAPACITY

In the summer of 2019 (pre-pandemic) easyJet had 44% of the slots at Gatwick with British Airways 18% and Norwegian 9% as illustrated by Figure 13. Gatwick has always been more leisure focussed initially with charter airlines and latterly low-cost airlines. In our view easyJet will continue to gain market share as we emerge from the pandemic especially given the uncertainty over British Airways’ future at Gatwick.

Figure 13: Gatwick airport share of slots Summer 2019

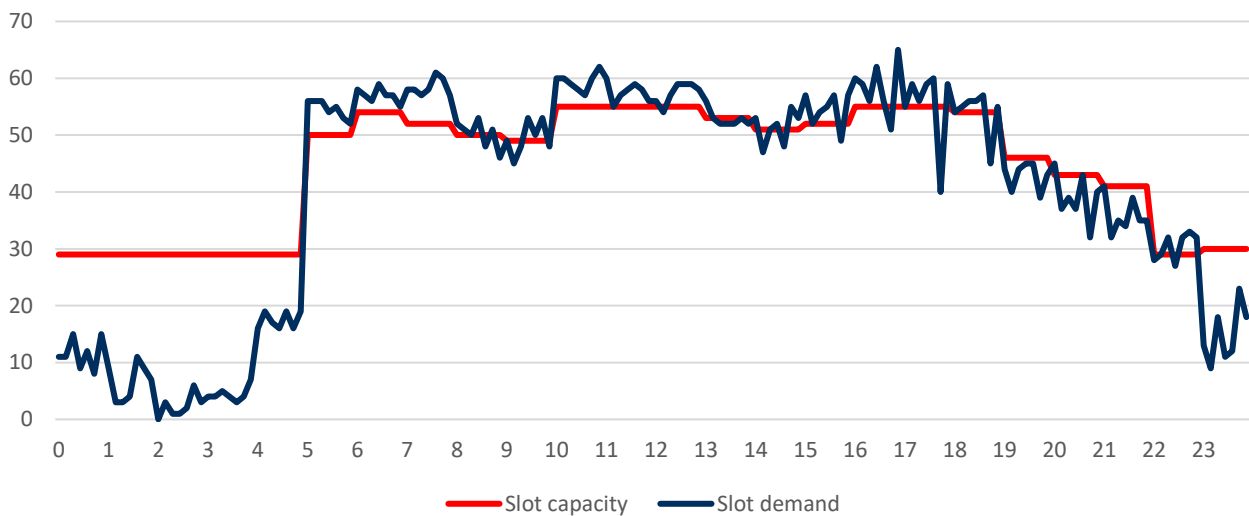


Source: IBA data



Figure 14 shows the Gatwick slot capacity against demand in the summer 2019 season before the pandemic. Demand exceeded supply in the peak week and note that night flights are limited by quota. In 2019 easyJet paid £36m for 20 Gatwick slot pairs (and 6 at Bristol) following the collapse of Thomas Cook and in 2013 paid £20m for 25 slots pairs acquired from Flybe. These examples of slot trading are a clear indication of capacity constraint. In our view, the effect of the pandemic is very short-term and IBA expects the airport to be back at capacity (certainly in the summer season) within two to three years. IBA also believes that the airport will retain its leisure focus and therefore we do not see a larger role for air cargo at this airport.

Figure 14: Gatwick airport slot capacity and slot demand by time of day (peak week)

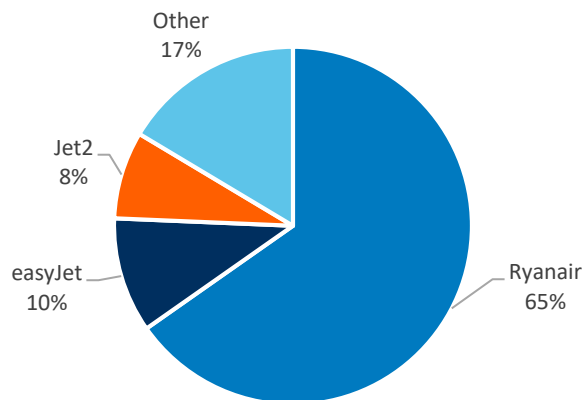


Source: IBA data

### 3.3 STANSTED CAPACITY FORECAST TO BE LIMITED BY 2030

Stansted is also dominated by low-cost airlines with Ryanair having 65% of the slots, easyJet 10% and Jet2 8% as illustrated by Figure 15.

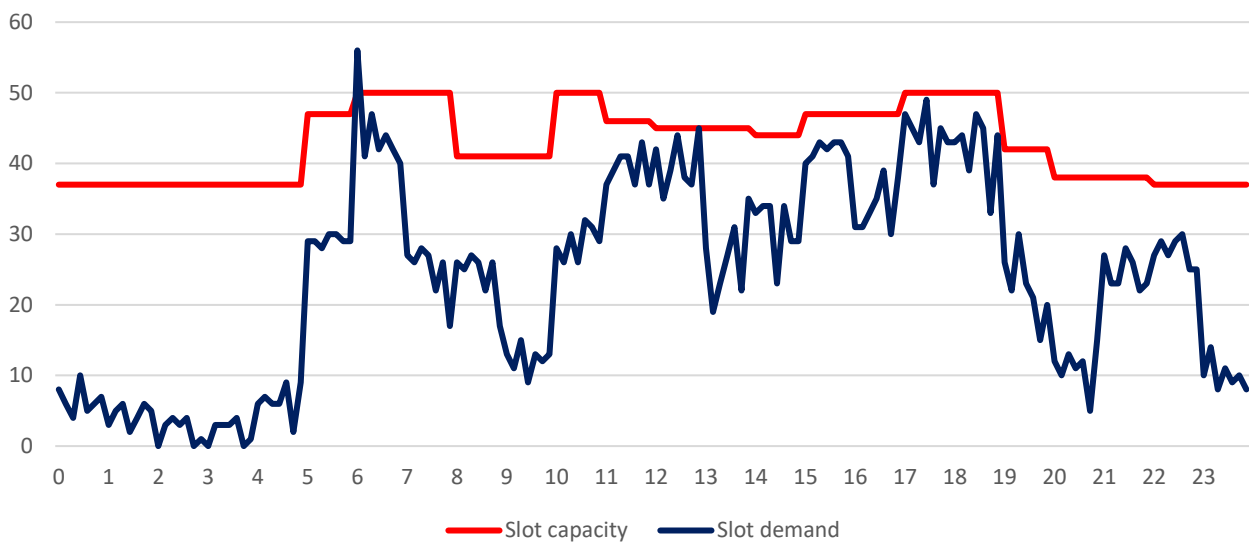
Figure 15: Stansted slots Summer 2019



Source: IBA data

Figure 16 shows slot supply and demand for the summer season at Stansted in 2019 before the pandemic and there is clearly spare capacity at certain times of the day. Ryanair operates a wave pattern with aircraft departing early in the morning returning at midday, departing again before returning at the end of the day.

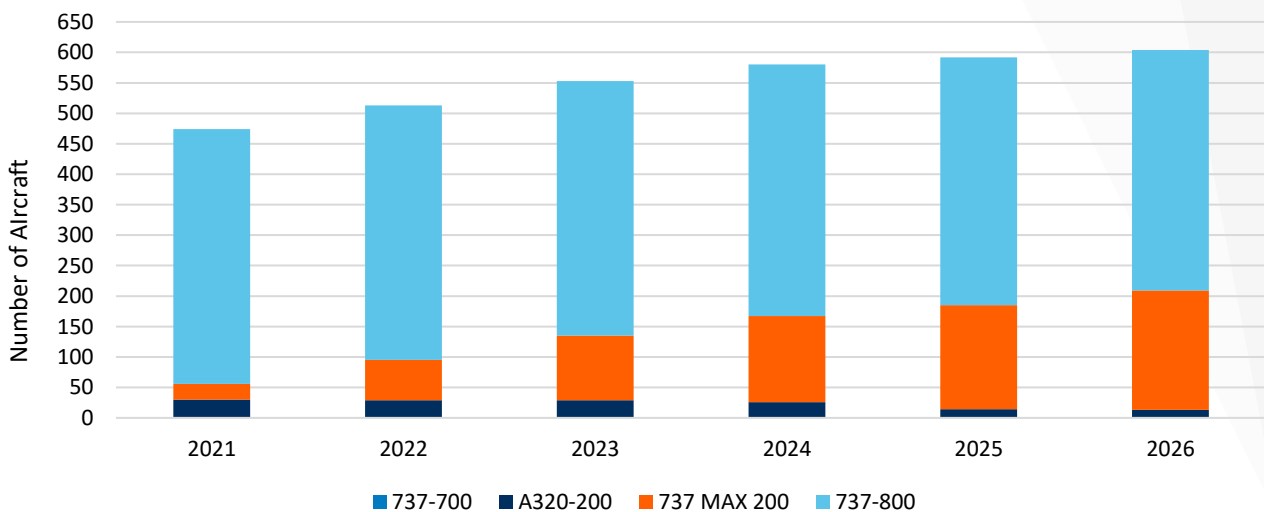
Figure 16: Stansted airport slot capacity and slot demand by time of day (peak week)



Source: IBA data

**IBA’s expectation is that the spare capacity will be filled by 2030 or before for three reasons.** First, Heathrow and Gatwick (in summer) are effectively full and therefore Stansted is the only airport for overseas airlines that want to fly to London. Second, Ryanair is Europe’s largest airline group with 149 million passengers in their financial year ending March 2020 and a business plan to grow to 225 million by 2026 with a fleet of more than 600 aircraft as illustrated by Figure 17.

Figure 17: Ryanair Current and Future Fleet Evolution (Includes sub-leased aircraft, based on current order book)

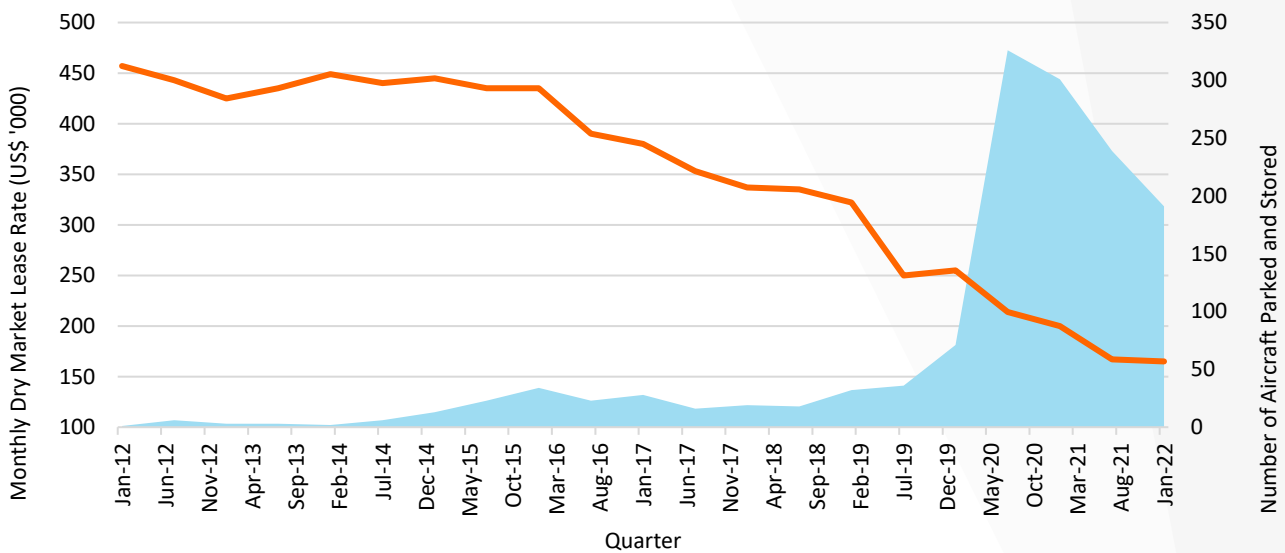


Source: IBA data

This will make Ryanair by far the largest airline group in Europe and compares to British Airways for example which flew 48 million passengers in 2019. Given London is the largest air travel market in Europe, it seems highly probably that some of the planned fleet growth (Figure 17) will feature Stansted.

Third, we believe that new Long-Haul Low-Cost (LCLH) entrants will enter the market due to very cheap lease rates available following the pandemic. The airport strategy is to fill the troughs created by Ryanair’s wave system by attracting long-haul operators. Long-haul low cost was growing fast before the pandemic with Norwegian growing from Gatwick. Norwegian has exited the market in its current guise but we believe that, given the availability of cheap aircraft leases available at present, there will be a number of start-ups in the coming years. IBA notes how surplus capacity and oversupply have driven down lease rates of widebody aircraft in recent years. Figure 18 shows the Airbus A330-300 as an example. Lease rates for a typical 12-year-old aircraft have declined by around 64% since 2012, making the aircraft an attractive, low-cost solution for start-up carriers.

Figure 18: Airbus A330-300 12yo Lease Rate Evolution

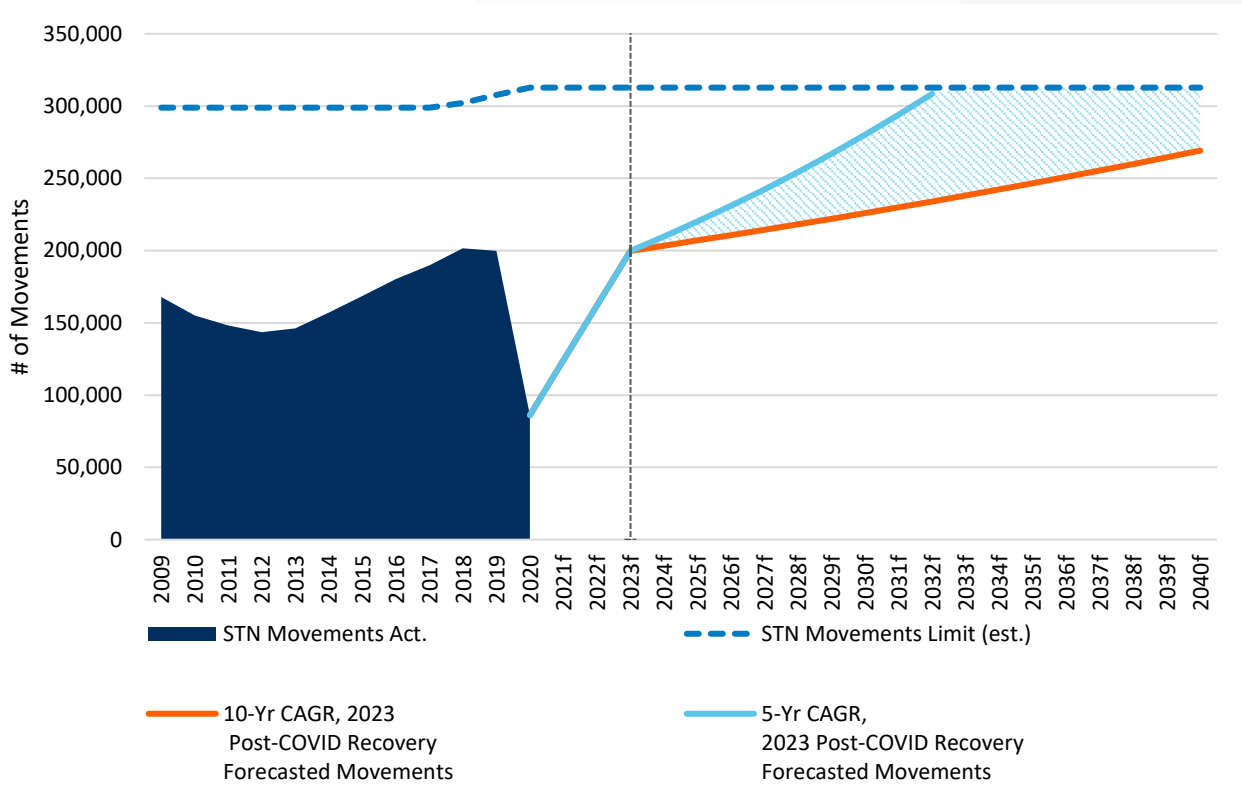


Source: IBA data

Figure 19 shows that Stansted was achieving around 200,000 movements in 2019 before the pandemic and the airport’s expansion plans will allow for 274,000 movements of which 16,000 are designated for air cargo. Even if we optimistically assume Stansted will be allowed to increase movements to 313,000 (we note that Gatwick is targeting 318,000) then this capacity could be used up by 2030 assuming that movements recover to 2019 levels by 2023 and then apply the compound annual growth rate in the 5 years to 2019.

We have detailed how we believe that there may be a need for between 13,000 and 25,000 extra ATMs for full freighter aircraft and, given only 6,000 spare ATMs at Stansted for air cargo and our projected passenger growth, it is not clear that Stansted will have the capacity for these cargo ATMs in the future.

Figure 19: Stansted movements, IBA forecast



Source: CAA, IBA forecasts

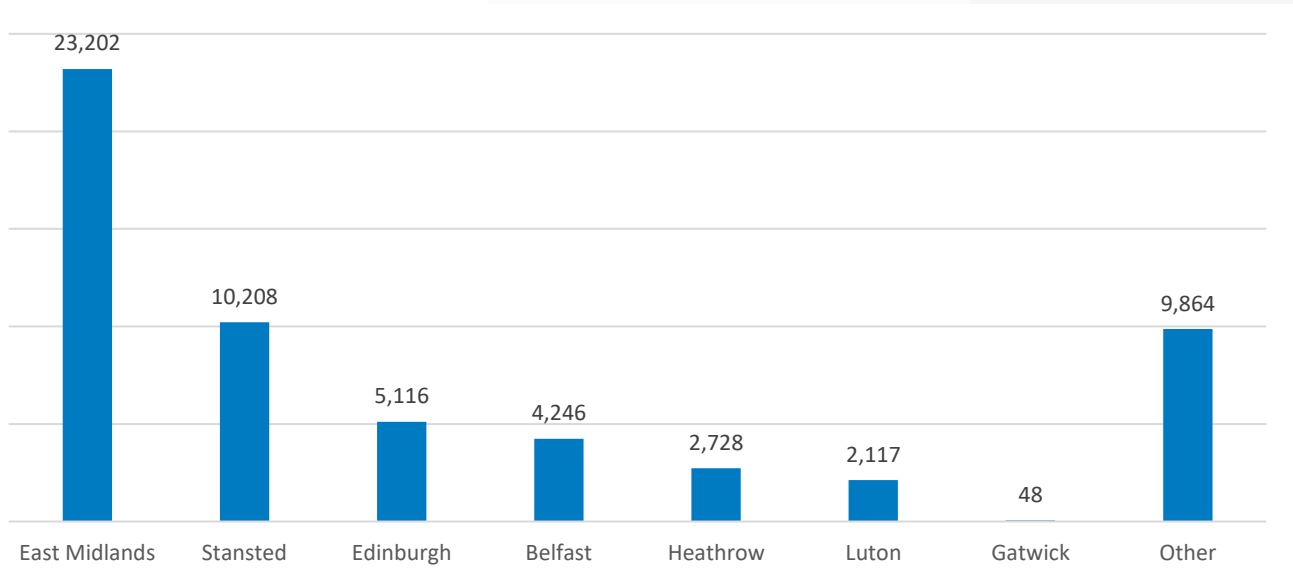
### 3.4 EAST MIDLANDS GATEWAY LOGISTICS PARK ALREADY 75% FULL

East Midlands Airport (part of Manchester Airport Group) is located at the heart of England and around a three-hour drive from London. The airport had 23,200 air cargo movements (with full freighters) in 2019 which was more than twice as much as its nearest rival Stansted (also owned by MAG) as shown by Figure 20. In 2020 East Midlands handled 25,932 cargo movements and Heathrow 24,717 but this was due to the grounding of most passenger aircraft and we don't expect Heathrow to be a large freighter hub once airline schedules return to normal.

East Midlands has plenty spare runway capacity (we estimate it operates at 29% of capacity) and so the focus is more on whether it has the facilities required. The airport's development plan (produce by MAG group) states that by 2040 it could handle 42,600 cargo movements because it notes the growth of the integrated carriers. DHL is the major operator at East Midlands airport but it also a hub for UPS, Fedex and Royal Mail.

The SEGRO logistics park East Midlands Gateway opened in March 2020 and is a 700-acre development with planning consent for up to 6 million square feet of logistics accommodation adjacent to the airport. The development includes a 50-acre Strategic Rail Freight Interchange (SRFI) with a freight terminal. Amazon, Kuehne + Nagel and XPO Logistics are all located at the new logistics park. However, the new park is already 75% full and so it is unclear where the land will come from for logistics development beyond 2030.

Figure 20: UK Airport full freighter movements 2019 (ATM)



Source: CAA

## 4. FUTURE TRENDS IN AIR CARGO

### 4.1 THE UK E-COMMERCE MARKET

In June 2021, IBA reported that e-commerce accounted for around 15.5% of the retail market. According to a recent statista.com report, international e-retail sales accounted for US\$ 4.28 trillion in 2020. **The UK is a major market for e-commerce and ranks third in the world when online sales are compared to GDP.** According to ONS (Office for National Statistics) data, the UK's e-commerce revenue as a percentage of total retail sales has grown consistently and has risen from 8.3% in 2011 to 19.2% in 2019, with an extraordinary increase in 2020 to 28.1% due to the coronavirus pandemic.

Cross-border trade is a strong aspect of the UK's e-commerce market, with UK sites attracting demand for international online shoppers, many of which are outside of traditional markets. This is a key factor as the UK looks to build its strength in global markets. A recent survey "The Global Voices 2021: Cross-Border Shopper Insights", reported by Internet Retailing in March 2021, showed 20% of non-UK buyers bought from UK retail sites in the prior 12 months. IBA sees cross-border e-commerce as a market with substantial growth opportunity.

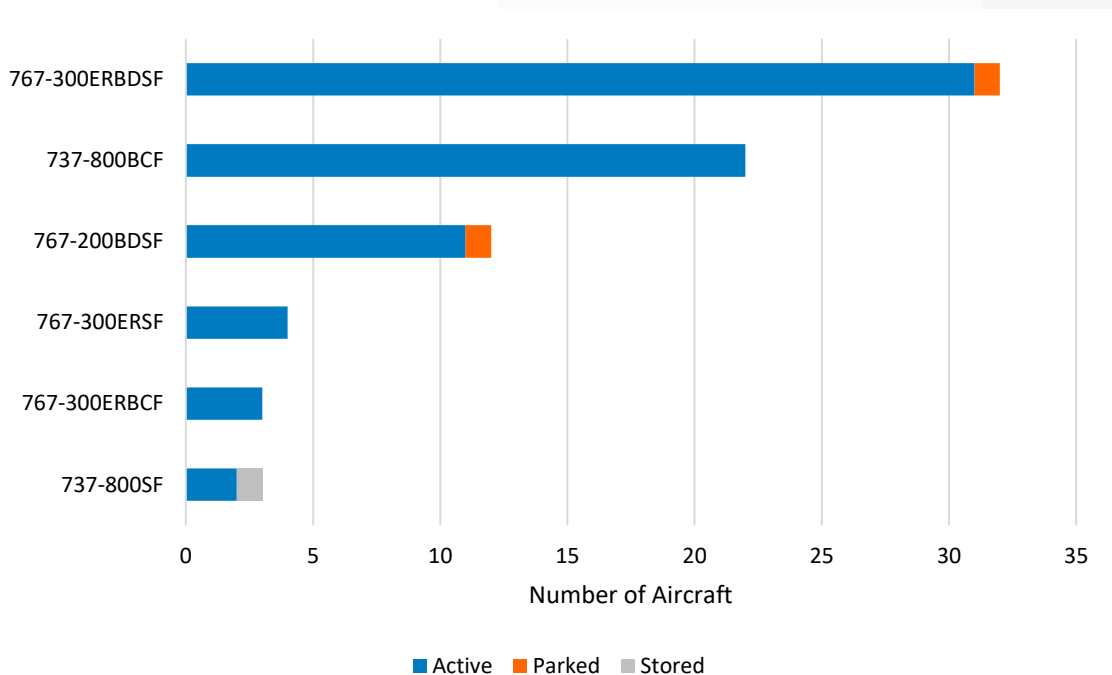
A recent survey of 1,000 shoppers conducted by BOXpoll, highlighted customers in Australia, Canada, China, France and South Korea would increase online spending with UK retailers post-pandemic, and 18% of Chinese customers and 12% of US customers were already buying from UK retailers at least once per month. Delivery expectations are becoming an increasingly important consideration for online buyers. Research conducted by UPS revealed that the delivery partner was top decision factor for 85% of consumers, who are becoming increasingly demanding around key considerations such as the timing, reliability, convenience, and sustainability of the delivery of products purchased online.

High shipping costs and slow delivery times are regularly cited reasons for online shopping cart abandonment. Of the US shoppers surveyed by BOXpoll, 69% had tendencies to abandon their purchases frequently or occasionally if costs were too high and 62% abandoned at a similar frequency if delivery times were too long. Given the time sensitive nature of the e-commerce industry, 80% of total cross-border volumes are transported by air. **Control of costs and delivery timelines has been a key driver for e-tailers to bring elements of their supply chain and logistics requirements in-house.**

### 4.2 E-TAILER FREIGHTER FLEET GROWTH

Strong growth in cross-border e-commerce has led **e-tailers to grow their own dedicated freighter aircraft fleets.** Amazon pioneered this trend, with its air cargo arm Prime Air, which has since been re-branded to Amazon Air. The airline currently operates exclusively on behalf of Amazon to transport its packages. The Amazon Air fleet has grown significantly since its trial in 2015, operating five Boeing 767 aircraft from its Ohio base. As of November 2021, **Amazon Air has a fleet of 73 active aircraft** according to IBA's InsightIQ database, comprising primarily Boeing 767 and 737 aircraft types as shown in Figure 21.

Figure 21: Amazon Air in-fleet service fleet by aircraft type



Source: IBA’s InsightIQ, Amazon.com

Earlier this year, the airline acquired 11 Boeing 767 aircraft from US airlines WestJet and Delta Air Lines, which were retired from passenger operations early as they were surplus to requirements due to the pandemic. Nine of these Boeing 767 aircraft are currently awaiting conversion and a further five ATR72-500F turboprop aircraft are awaiting conversion and entry into service with Amazon.

Amazon Air’s aircraft are typically operated on an ACMI (Aircraft, Crew, Maintenance and Insurance) or CMI (Crew, Maintenance and Insurance) basis through its air cargo airline partners, including ABX Air, Air Transport International and Southern Air.

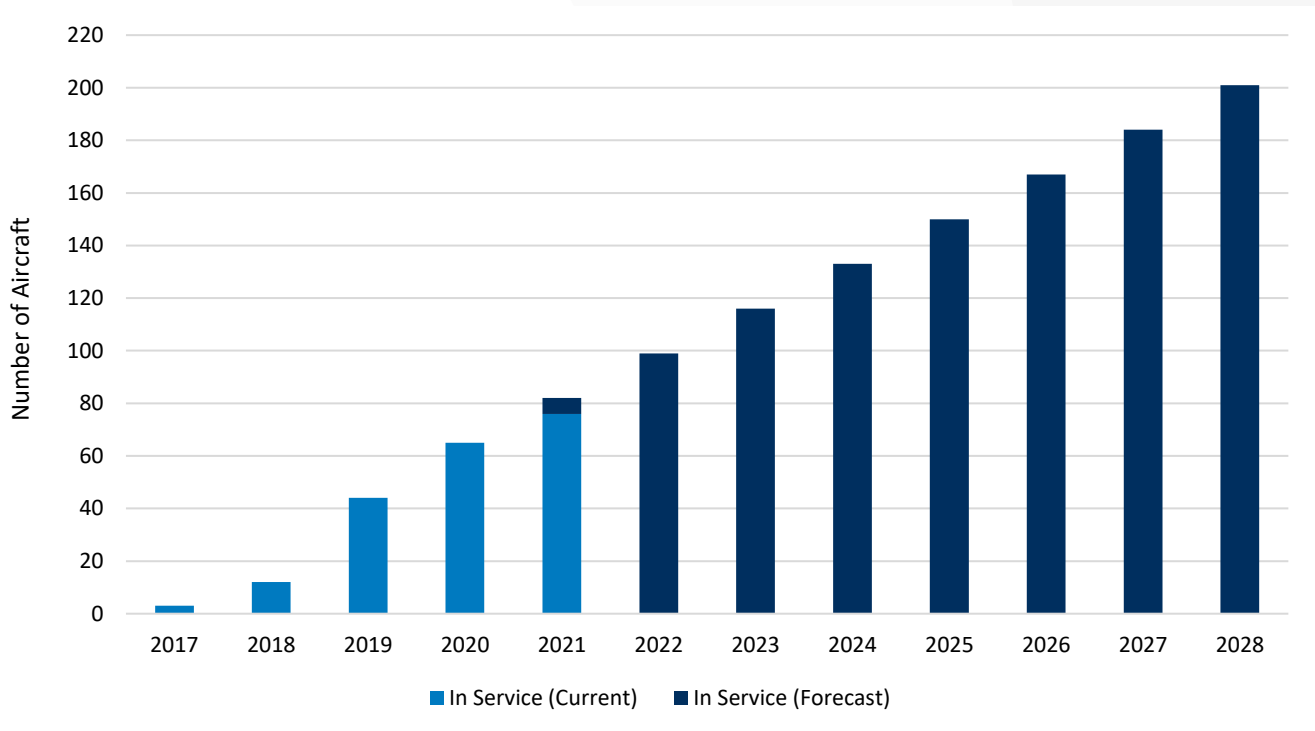
IBA understands that Amazon Air is hiring in key positions such as maintenance engineering, which suggest the company will further establish its presence as a true air cargo operator, bringing more of its operation in-house. It is thought that air freight capacity may soon be offered to third parties.

Amazon’s expansion into international markets and supply chain bottlenecks has catalysed a search for longer-range air freighters to quickly transport goods to the US from the APAC region. A recent Bloomberg report cites that the carrier is looking to converted Airbus A330-300s and used Boeing 777-300ER aircraft to perform this role. The Boeing 777-300ERSF Passenger to Freighter (P2F) program from IAI (Israel Aerospace Industries), launched in partnership with leading aircraft lessor, GECAS, would seem a natural fit given its high volumetric capacity. This is a strong feature for e-commerce cargo loads as freighters tend to reach their volumetric capacity before they reach their weight limit.

In August this year, Amazon opened its central air hub in Cincinnati, a 600-acre site located next to Cincinnati/Northern Kentucky International Airport and continues to expand its network of more than 40 US locations. Reports suggest the site has capacity for 100 aircraft.

Research performed at DePaul University Chaddick Institute for Metropolitan Development, suggests that **Amazon’s feet could grow to 200 aircraft by 2028**. This estimate is supported by IBA’s analysis and Amazon’s historical fleet growth trends to date.

Figure 22: Amazon Air fleet forecast from DePaul University Chaddick



Source: IBA’s InsightIQ, Amazon.com, Depaul University

Amazon is not alone in its evolution from e-tailer to air cargo and logistics operator. Chinese e-commerce company, JD.com also sees the benefits of an in-house air freight operation to support burgeoning cross-border e-commerce demand. According to IBA’s InsightIQ database, JD.com has inducted its first Boeing 737-300 freighter aircraft operated by Loong Air and has demand for a fleet of more than 100 aircraft by 2030 according to a recent Bloomberg report. IBA also notes that JD.com recently joined forces with AeroTransCargo, to operate thrice-weekly flights to London Heathrow using a Boeing 747-400F aircraft.

Competing Chinese e-commerce giant, Alibaba, is taking a slightly different approach with its logistics tracking arm. Cainiao, has recently taken a 20% stake in Air China cargo and has launched a network of distribution centres across Europe to be served from its Belgian e-hub in Liege. The parcel tracking platform has reportedly partnered with numerous cargo operators to expand connections to Latin America and Europe.

Base on the trends observed to date, the high-demand for cross-border e-commerce goods and the time-sensitive nature of this market segment is set to drive significant growth in the number of dedicated freighter aircraft in the next decade.



## 5. OTHER FACTORS TO CONSIDER

### 5.1 COMMERCIAL PILOT TRAINING & GENERAL AVIATION

The All-Parliamentary Group on General Aviation (APPG) has the objective of making the UK the best country in the world for General Aviation (GA) and to stimulate interest in the sector. The APPG recognises that GA creates high-tech jobs and growth and Manston would support this objective with the provision of some 23,235 direct and indirect jobs created by year 20 in Thanet which was ranked as the 28<sup>th</sup> most deprived local authority (out of 326) in England in 2015.

Manston would also provide much needed instrument training for commercial pilot training. Just as we have seen the knock-on effects of a shortage of HGV drivers, we risk having a shortage of future pilots in the UK as the sector recovers. The UK is no longer part of EASA (European Aviation Safety Agency) which means that EASA licences are not accepted in the UK and pilots wishing to fly for a UK based commercial operator must hold a UK CAA licence.

The problem is that there are very few airfields in the SE of England (or indeed the UK) that accept pilots for instrument training approaches. Larger airports such as Heathrow, Gatwick, Luton, Stansted, London City, Southampton either forbid training approaches or make the costs prohibitively expensive. Smaller airfields have been affected by the failure of the CAA to approve RNP (GPS) approaches in a timely manner. This means that currently the only instrument training approaches in SE England are Cranfield, Bournemouth, Lydd and Oxford and Shoreham which is insufficient for the needs of the industry. Manston which is free of controlled airspace and approaches free from built up areas would provide much needed training capacity for the commercial pilot training industry.

### 5.2 UK NET ZERO COMMITMENT

The UK and indeed most nations have committed to be carbon neutral by 2050 following the Conference of the Parties 26<sup>th</sup> meeting (COP26) in Glasgow recently. In line with this policy the airline industry, led by the International Air Transport Association (IATA), has also committed to net zero by this date. Aviation is a relatively small contributor to global emissions (at 2.5% of the total) but has a plan to become carbon neutral through a combination of more efficient aircraft, sustainable aviation fuels (SAF) and new technology such as electric aircraft (on shorter sectors) and hydrogen aircraft. Some offsetting will also be required to meet the target.

In our view the impact of developing Manston airport will be neutral on this net zero target because, whether an aircraft lands at Heathrow, Brussels or Manston, the impact on the global environment is the same. There may be some environmental benefits of reduced road transport if goods are flown directly into the UK as opposed to being flown in to the EU and transported to the UK via road haulage networks. We do not therefore see any rationale for discounting Manston on grounds of carbon emissions. Road transport is the main contributor to Transport emissions (74% of the total) and, in this respect, Manston is better located than East Midlands to serve the large consumer market on SE England. Manston airport is only 56 miles from the M25 London Orbital motorway which contrasts with East Midlands which is around 100 miles from the M25 near Watford.

## ABOUT US

### 30+ years of aviation expertise



#### Award Winning Valuations

Independent Asset Appraisal:  
"Appraiser of the Year 2021"



#### Advisory

Strategic project support across the aviation value chain



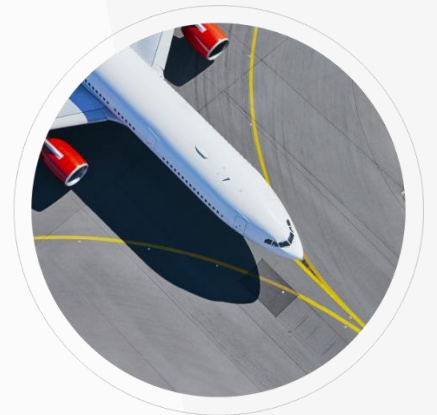
#### Asset Management and Technical Services

Hands-on technical and management support for lease and asset partners



#### Market Leading Data Platform

Combining IBA's extensive values and fleet data to create a comprehensive data platform for real time analysis



### Selection of IBA clients

ICBC	Jet2.com	QATAR	Kenya Airways	السعودية SAUDIA	AIR CANADA	CHINA AIRLINES	JACKSON SQUARE AVIATION	GE CAS	easyJet
AIR LEASE CORPORATION	AIRFRANCEKLM GROUP	Santander	kfw	sanad	Bravia Capital	EVA AIR	SMIC SUNGROW METAL BUILDING CORPORATION	Goldman Sachs	Alitalia
AVOLON	AIRBUS	NAC Nordic Aviation Capital	Luxair	SkyWest AIRLINES	AEROFLOT	sojitz	SIRIUS AVIATION CAPITAL INVESTMENTS LTD.	BARCLAYS	AlbaStar.es
Avianca	cfm	Mitsubishi	NTI FINANCE	SMBC	Commonwealth Bank	Deutsche Bank	VALLAIR	DBB	IndiGo
CALC	CASTLELAKE	MITSUBISHI	NORD/LB	Pratt & Whitney	BNP PARIBAS	cargolux	Tokyo Century	MACQUARIE	ETLK EUROPE
BOCAVIATION	KDB Bank	ORIX	MERITZ Securities	AEGEAN	ET Engineering	TURKISH AIRLINES	Standard Chartered	OMERS	DVB
ALDUS	EXIM	INTREPID	البنك الاردني ROYAL JORDANIAN	SF SF AIRLINES 顺丰航空	BBAM	HNA 海航集团	BOEING	HSBC	ACCIPITER
GE Capital	FALCO	National Australia Bank	Rolls-Royce	SIEMENS Siemens Financial Services	Bank of America Merrill Lynch	VIRAVAR ELIHYDI 阿比多	EMBRAER	TAP PORTUGAL	
flybe	JAPAN AIRLINES	J.P.Morgan	RYANAIR	SINGAPORE AIRLINES	citigroup	الخطوط الجوية GULF AIR	Engine Lease Finance	UK Export Finance	
fly leasing	MITSUBISHI	Investec	SAS	DORIC	CITYJET	EGYPTAIR	CREDIT AGRICOLE	virgin atlantic	

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