A20. RBP UPDATE 2

December 2021

1 INTRODUCTION

1.1 Purpose and structure of this document

1.1.1 The purpose of this document is to update our H7 building block forecasts to reflect new market data and evidence that has become available since the publication of our RBP Update 1 in June 2021. It also accounts for wider policy developments and the views set out by the CAA in its Initial Proposals (CAP2265), published in October 2021.

1.1.2 This document is submitted alongside and aligned with our Initial Proposals response, which sets out the detail of our response to the CAA's Initial Proposals across all of the regulatory building blocks, regulatory policy and framework

1.1.3 This update is intended to, in conjunction with our Initial Proposals policy response, provide the CAA with the most up-to date and relevant information as it progresses its thinking around Heathrow's H7 settlement in advance of publishing its Final Proposals.

1.1.4 This document is divided into the following three sections:

- **Developments since RBP Update 1:** The Covid-19 pandemic continues to have a significant impact on Heathrow, and the situation remains dynamic, fast-moving and unpredictable. This section sets out a summary of key developments of significance to Heathrow since the publication of our RBP Update 1 in June 2021.

- **Updates to our consumer insights:** We place consumers at the heart of our plans and have ensured that the golden thread of consumer insights continues to inform our plans for H7. Whilst no significant new consumer research packages have been undertaken since publication of RBP Update 1, we provide updated evidence from ongoing research packages in this section.

- **Updates to our building block forecasts:** We provide specific updates for the following H7 building blocks, which we have updated following the policy guidance in the CAA's Initial Proposals and with the latest market data now available:

    - Passenger forecast

    - Operating costs forecast

    - Commercial revenue forecast

1.1.5 We consider how changes to the building blocks flow through to the passenger charge and financeability. This is summarised in this document and outlined in full in the Price Control Model.

1.2 Approach to RBP Update 2

Summary of our RBP Update 2 single case

1.2.1 This RBP Update 2 considers a single case, as opposed to the two RAB adjustment centred cases considered as part of RBP Update 1 in June 2021. This transition to a

single case reflects the maturing of our thinking and the fact that we start delivering our H7 plans only two weeks after the submission of this document. The table below summaries the core assumptions of our RBP Update 2 case and compares them to the assumptions that underpinned out RBP Update 1 cases.

Table 1: Summary RBP Update 1 and 2

Assumptions	RBP Update 1 Cases		RBP Update 2 Case
	Full RAB Adjustment	Low RAB Adjustment	
Passenger Forecast	317.7m	305.8m	317.1m
Passenger shock factor	-1.46%	-5.16%	-0.87%
Opex (£m, 2018p)	£5,575	£5,569	£5,593
Commercial revenues (£m, 2018p)	£[✂]	£[✂]	£[✂]
ORC revenues (£m, 2018p)	£[✂]	£[✂]	£[✂]
Asymmetric risk adjustment (£m, 2018p)	£0	£0	£108
Cargo revenues (£m, 2018p)	£[✂]	£[✂]	£[✂]
Capital Plan	£4.2bn	£2.5bn	£4.1bn
WACC	8.50%	10.40%	8.5%
RAB Adjustment (2018p)	£2.5bn	£300m	£2.5bn
Depreciation Profiling (2018p)	£635m p.a.	£0	£0
Average H7 unprofiled charge (2018p)	**£31.96**	**£42.69**	**£41.946**

Governance

1.2.2 In producing this RBP Update 2, we have followed a similar governance process to those taken for our IBP, Building Block Update, RBP and RBP Update 1. The IBP set out the governance framework that operates at Heathrow, and this remains unchanged.

1.2.3 This document has been scrutinised by both the Board and management, who have engaged extensively throughout its development to understand consumer views and ensure affordability and financeability.

1.2.4 The ongoing situation with regards to the Covid-19 pandemic continues to generate a significant amount of unavoidable uncertainty for Heathrow and the wider aviation sector. However, as with our previous submissions to the CAA, we have made every effort to ensure that we are using the most robust and up-to-date data possible as the basis for this update. We are confident that the assurance undertaken in

producing this RBP update 2 means that it is appropriate to be considered by the CAA as part of its ongoing work to determine the H7 settlement.

Confidentiality

1.2.5 This is a redacted version of our original RBP Update 2 submission to the CAA. Commercially sensitive and other confidential information has been redacted from this version for public release.

1.3 Developments since RBP Update 1

Initial signs of traffic recovery gathering pace, but with continued underperformance against our 2021 forecast and consequential impact on our revenues

1.3.1 The easing and simplifying of travel restrictions by the UK Government for vaccinated travellers since the publication of our RBP Update 1 in June 2021 provided a much-needed boost for the UK aviation sector. However, the risk of travel restrictions being increased again in response to a heightened Covid-19 threat still remains – as has been seen with the emergence of the Omicron Covid-19 variant in November/December 2021 and a retightening of travel restrictions, including additional testing and the reactivation of the UK Government 'red list'.

1.3.2 The previous Red/Amber/Green traffic light system was dropped in early October and replaced with a single list of 'red' countries. At that point, vaccinated travellers were able to enter the UK from any country not on the red list without having to quarantine, and only had to take a single day two lateral flow test post-arrival. All countries remaining on the red list were removed from the start of November, meaning that vaccinated travellers could enter the UK from any country without the need to quarantine.

1.3.3 Non-vaccinated travellers from non-red list countries were still required to quarantine upon arrival in the UK. They were required to take a day two PCR test, and a day eight test if their first test came back positive.

1.3.4 Travellers arriving from any red list countries, regardless of vaccination status, remained required to enter hotel quarantine for a period of ten days and take day two and day eight PCR tests.

1.3.5 The UK Government made it clear that the red list was being kept under constant review and that countries could be added to the red list at any time, most likely in a situation where a new Covid-19 Variant of Concern emerged.

Table 2: Summary of travel restrictions- October - November 2021

	Vaccinated	Unvaccinated
Non-red list	No quarantine requirement Day 2 lateral flow test	10 day quarantine (Test to Release option) Day 2 PCR test Day 8 PCR test (if day two positive)
Red list	10 day hotel quarantine Day 2 and day 8 PCR tests	

Source: UK Government

1.3.6 The Omicron variant has triggered concern and a resulting tightening of travel restrictions and requirements. This is largely due to the transmissibility, severity and ability of the variant to evade vaccines being relatively unknown. The UK Government has urged citizens to get their vaccines and boosters to provide "some measure" of protection against it, with the latest indication being that three vaccine doses is the best way to protect against serious illness. In addition, rules around face masks in public places have been tightened up and those who are able to work from home have been encouraged to do so.

1.3.7 The emergence of the new variant has once again changed travel restrictions. All new arrivals must have taken a pre-departure rest within 48 hours of travelling to the UK, and must now self-isolate and take a PCR test by the second day in the country. They will have to keep isolating until they get a negative test result. We have no certainty of when these new measures might end, but they are subject to three-week reviews.

Table 3: Summary of travel restrictions post-Omicron (current)

	Vaccinated	Unvaccinated
Non-red list	All travellers must take a PCR test within two days of arriving in the UK, and must quarantine until they have received a negative test result.	
Red list	10 day hotel quarantine Day 2 and day 8 PCR tests	

Source: UK Government

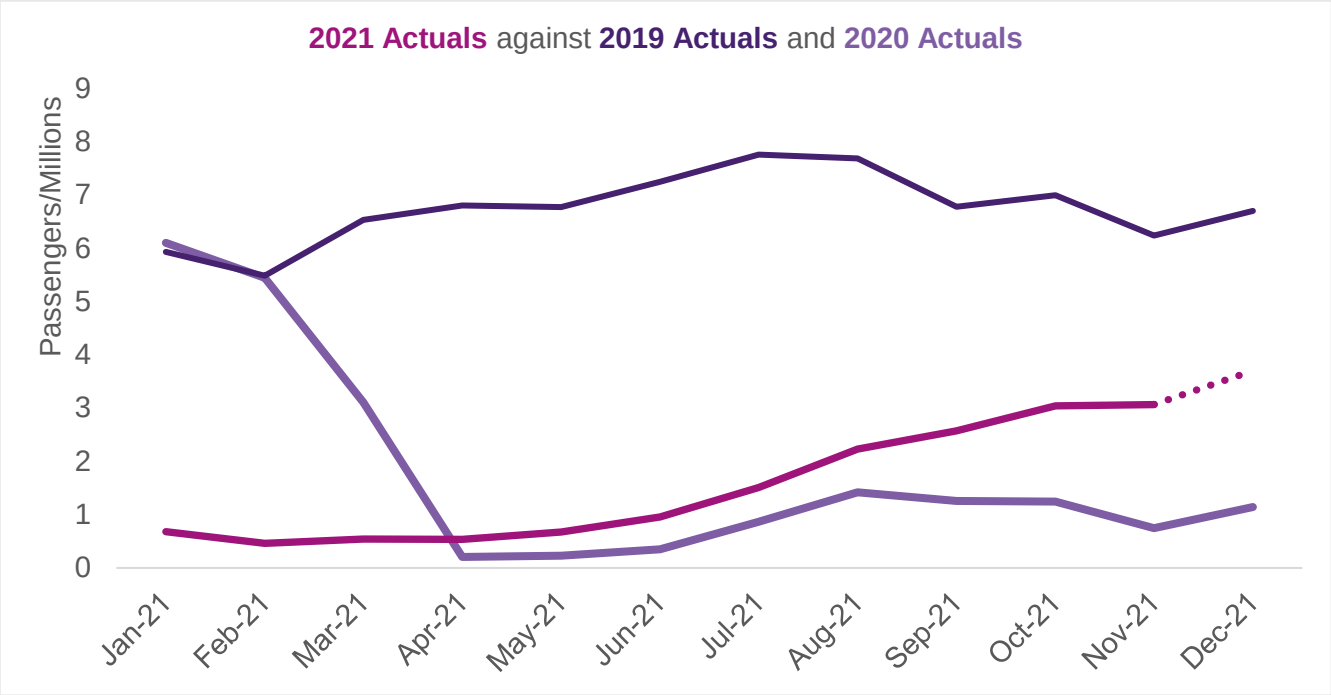
1.3.8 The emergence of Omicron and the re-imposing of tighter travel restrictions/requirements has come as a setback after a period of growing optimism across the travel sector. We had seen the re-opening of key markets helping to boost recovery - in particular the re-opening of the US after twenty months of borders being closed to UK citizens. Other markets that had been entirely closed off, such as Australia, have also started to open up.

1.3.9 We had started to see the positive impact of eased restrictions coming through in monthly traffic figures. We have seen eight months of absolute passenger growth between April and November 2021, and Q3 2021 saw passenger numbers increase

78% on the same period in 2020. However, despite this growth passenger numbers in Q3 2021 remained 72% down compared to Q3 2019.

1.3.10 With the emergence of Omicron and the resulting change to the UK Government's (as well as international governments') policy around travel being a very recent development, the exact extent and duration of the impacts of this on passenger traffic are uncertain – but they will undoubtedly be negative.

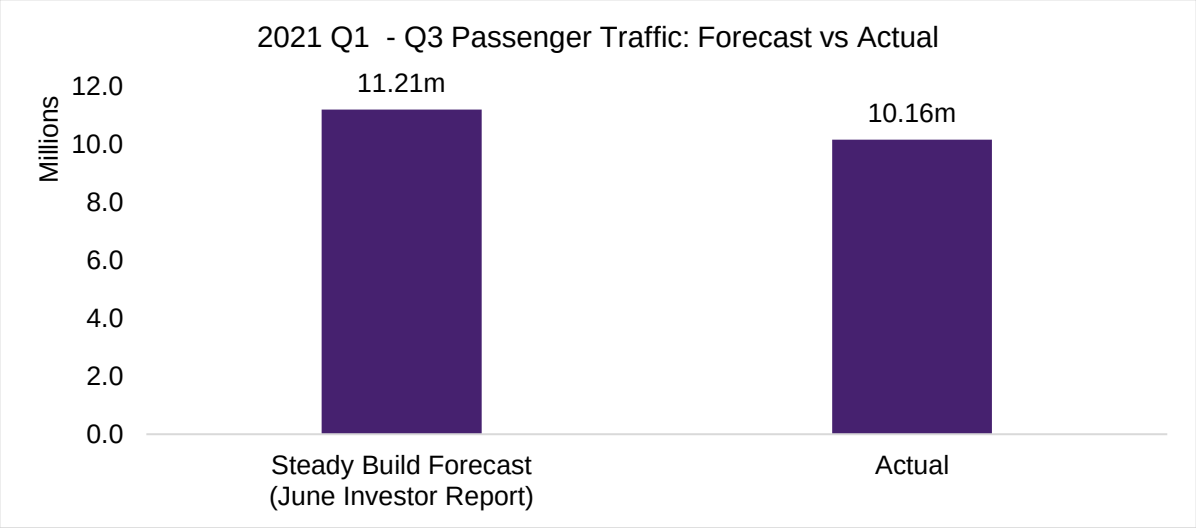
Figure 1: Monthly Heathrow Passenger numbers 2019, 2020, 2021



Source: Heathrow traffic data

1.3.11 Despite there being an overall sense of relative optimism around the recovery of international air travel, Omicron notwithstanding, we have continued to underperform against our 2021 forecast. Our RBP Update 1 in June 2021 set out a mid-case "Steady Build" forecast of 21.5 million passengers in 2021, with 11.2 million of these travelling between Q1 and Q3. In reality, the outturn of Q1 to Q3 2021 was 10.2 million passengers, 9% less than forecast.

Figure 2: 2021 Passenger volumes, Q1-Q3. Forecast vs. actual



Source: Heathrow

1.3.12 Our latest passenger forecast included as part of this update, and aligned with our December 2021 Investor Report, now predicts total passenger numbers to be 20.0m for 2021, 7% lower than our RBP Update 1 forecast and 46% lower than our December 2020 RBP mid-case forecast.

1.3.13 We are seeing increasing convergence of future forecasts. Where external forecasts through 2020 and early 2021 were considerably more optimistic than our internal forecasts, we have seen these forecasts decrease. Most notably, the latest IATA traffic forecast has been revised down from previous iterations and is now closely aligned with our forecast.

1.3.14 As passenger numbers slowly recover, we are continuing to incur significant financial losses as a result of low revenues driven by passenger volumes that remain far below 2019 levels. Our Q3 2021 results showed cumulative losses since the start of the pandemic have grown to £3.4 billion.

1.3.15 Our current daily losses are circa £3 million per day. Whilst this represents a decrease from the peak over £5 million per day seen earlier in the pandemic, it nonetheless remains an unsustainable position for our business. We are continuing to tightly control our outgoings in order to mitigate losses, although the requirement to ramp up operations inevitably leads to increased operating costs.

A slower recovery compared to our European competitor hubs

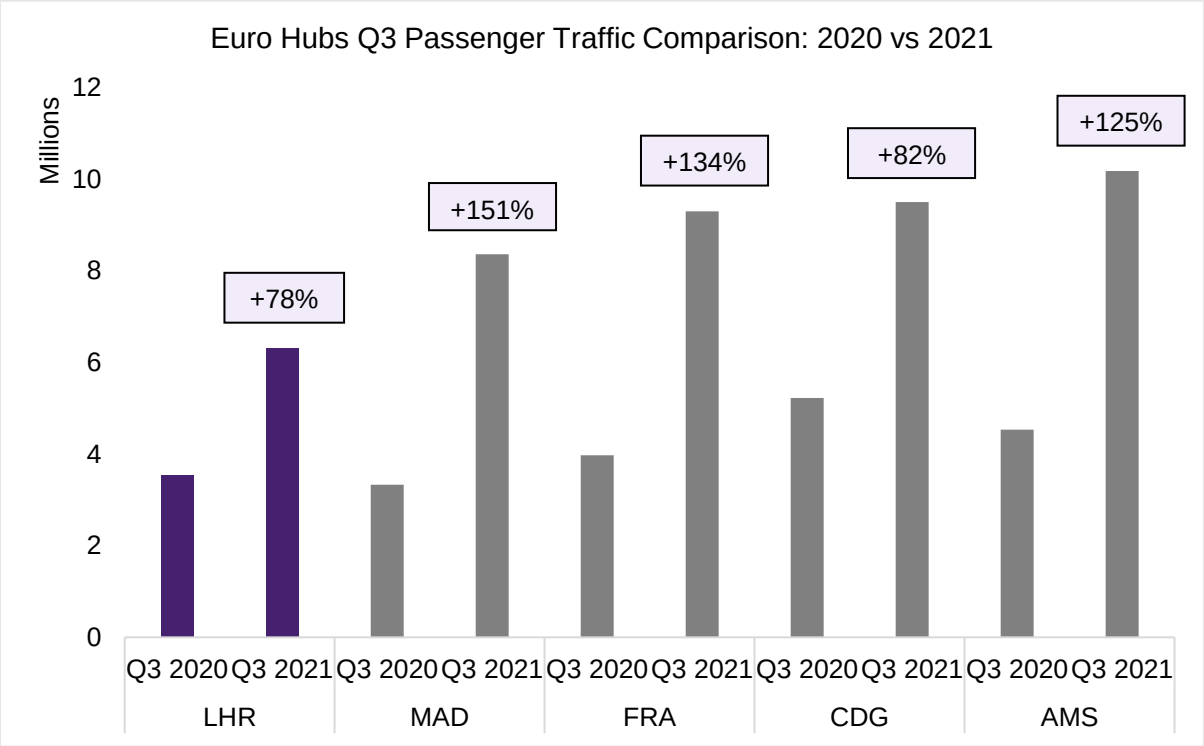
1.3.16 European governments were generally quicker than the UK to ease international travel restrictions from Q2 2021 onwards, resulting in a faster recovery of passenger traffic in continental Europe compared to the UK over the crucial summer season.

1.3.17 Ryanair and easyJet have both noted the faster recovery of their networks in continental Europe versus the UK. Entering into Q3 2021, easyJet was planning 60% of its schedule to be intra-EU and for only 40% to enter the UK. In July 2021, two thirds of easyJet bookings were coming from continental Europe, when their business is normally evenly split between the UK and the rest of Europe.

1.3.18 The UK's slower opening up of international travel is evident in the relative recovery of passenger numbers at Heathrow compared to major airports in continental Europe in Q3 2021. Heathrow's Q3 2021 passenger volumes were 78% higher than in the same period in 2020.

1.3.19 Although this is a significant increase, it was the lowest increase across the five major European hubs. Madrid (+151%), Frankfurt (+134%) and Amsterdam (+125%) all experienced triple digit growth vs 2020 over the same period, and growth at Charles de Gaulle outperformed Heathrow by four percentage points.

Figure 3: Q3 2020 vs Q3 2021 passenger traffic at European hubs



Source: Airport traffic statistics

Continued uncertainty around the trajectory of recovery

1.3.20 Vaccination programmes in the UK and key international markets have continued to progress throughout 2021, and this acted as the key enabler for the reduction of travel restrictions in the lead up to the emergence of Omicron. Whilst this has been an enormous achievement and a positive development for the international travel sector, uncertainty remains as to whether this progress will be sustained, which have been somewhat validated by the international response to the emergence of Omicron.

1.3.21 Even before the emergence of Omicron, concern had been raised around vaccine efficacy reducing with time and the threat of another wave of infections and hospitalisations in the UK. This resulted in the rollout of a booster Covid-19 vaccination programme across the UK, with the hope of avoiding the need for the reintroduction of draconian restrictions including further lockdowns. We have already seen some countries, such as Austria and the Netherlands, reintroducing lockdown restrictions on account of high Covid-19 infection rates associated with the Delta variant, in spite of having a large proportion of their populations vaccinated.

1.3.22 There is also the risk of countries opting to reintroduce travel restrictions on international travel, whether as a result of the emergence of new Covid-19 variants or other Covid-19 related concerns. For example, in October, Morocco reintroduced a travel ban on UK citizens entering on account of high Covid-19 infection rates in the UK. Whilst Morocco is a relatively small market for Heathrow, the risk of other countries, and particularly those that are larger markets for Heathrow, taking the same action in the future has not disappeared.

Re-opening of Terminal 3, and re-opening of Terminal 4 for Red List arrivals

1.3.23 In RBP Update 1 we set out a change in our assumptions for the re-opening of Terminal 3 and Terminal 4, driven by the following significant developments:

- Introduction of new restrictions and processes increasing transaction times at key pinch points on the passenger journey, particularly check-in and immigration.
- The UK Government's request for a separate red list arrivals facility.
- Passengers continuing to desire and practice social distancing – meaning slower transaction times and flows, and the need to provide more space to ensure passengers feel "comfortable and secure".

1.3.24 RBP Update 1 set out our assumption that Terminal 3 would be open from the start of H7, with Terminal 4 open only as a red list arrivals facility until mid-2023. We also set out that this change to reopening assumptions led to a significantly reduced number of passengers using more terminal infrastructure versus our December 2020 RBP, with a resulting increase in per passenger operating costs.

1.3.25 We opened a dedicated red list arrivals facility in Terminal 3 from 1st June 2021, which then transferred to Terminal 4 from 29th June. As there was a temporary period with no red list countries in the autumn, the Terminal 4 arrivals facility was closed. However, it reopened on 1st December to accommodate the UK Government's changing travel restrictions, with eleven countries being added to the red list. On the 14th December it was then announced that all these countries would be removed from the red list, leading to the Terminal 4 red list arrivals facility closing once again after only two weeks in operation.

1.3.26 In order to provide additional capacity, Terminal 3 fully reopened for departing and arriving passengers from 15th July, with Terminal 3 airlines relocating back to the terminal in phases. In addition, some Terminal 4 carriers have also temporarily relocated to Terminal 3 – including Air France and KLM.

1.3.27 Since publishing our RBP Update 1, we have been challenged by the Airline Community to reopen Terminal 4 in early 2022. Based on our H7 mid case forecast of 45.5m for 2022, we do not believe this is necessary. However, we recognise that the challenge of dealing with ever changing global governmental requirements has materially increased check in transaction times. The limited data made available to us suggests that our airlines and handlers are currently able to operate at only c.50% of pre-Covid capacity. When this is coupled with the current marked peakiness in the schedule, we cannot yet be certain that we will have sufficient capacity to accommodate all demand in T2, T3, and T5.

1.3.28 We are also aware of issues with resourcing across the airport and Team Heathrow. As a community, we will be both more resilient and more efficient if we operate across

three terminals rather than four, and therefore we should work together to stay within three terminals for as long as capacity allows.

1.3.29 We remain exposed to Government changes regarding red arrivals processes – as one of only two entry ports in the UK able to accommodate red list arrivals, we have a Government-driven obligation to keep the facility operationally available. Concurrently operating Terminal 4 for red list arrivals in addition to regular departures and arrivals could potentially drive further inefficiencies. The Omicron variant of concern is a current example of this uncertainty, with the potential to affect government restrictions in the UK and globally, and consequently both demand and airport processing capacity.

1.3.30 We have decided to initiate operational activities and progress the infrastructure and maintenance initiatives to prepare T4 for remobilisation in the summer of 2022. As the capex and opex impacts of remobilising T4 are material we have made allowances for these activities in our MBP, RBP and Investor Report to reflect the fact we are committed to these costs. This is not a final decision to reopen Terminal 4 in 2022, but a decision to retain the capability to do so.

1.3.31 We will make the decision on whether to reopen Terminal 4 for Summer 2022 in early 2022 when we have further clarity on slot rules, demand and capacity for Summer 2022. For the purposes of RBP Update 2, it is assumed that Terminal 4 reopens in July 2022 for all passengers and will be a red-list arrival facility only until the full reopen.

1.3.32 Regardless of whether or not T4 is remobilised in 2022, it is in all parties' interests to maximise operational efficiencies through common processes and adopting best practice. We'll continue to work closely with the airlines to realise these opportunities.

Evolving operational challenges through ramp up

1.3.33 In RBP Update 1, we flagged significant operational challenges as a result of increasing requirements imposed by the UK Government, such as mandatory travel forms increasing transaction times at check-in and immigration by as much as 60%. We also flagged the challenges that had been faced at the Border.

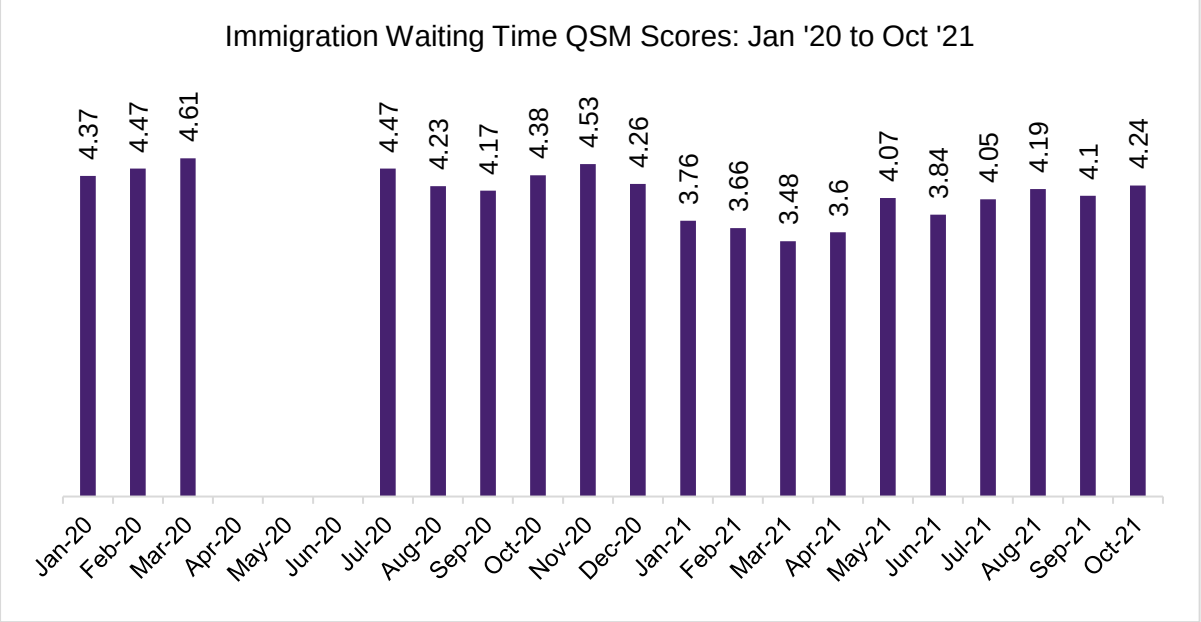
1.3.34 With increasing passenger volumes, we have now started to see new operational challenges emerging. In particular, the peakiness of demand throughout the day – with some concentrated periods of demand on specific days approaching levels last seen in 2019 – has created significant challenges. Operational resourcing has been carefully managed through proactive tactical forecasting and dynamic resource planning to minimise disruption. We have also made extensive use of our voluntary Here to Help programme, which enables non-operational colleagues to support our passengers across our terminals.

1.3.35 Resourcing challenges have been compounded by Covid-19 related absences, either as a result of colleagues contracting Covid-19 or being required to self-isolate having been contacted by NHS Test and Trace. Furthermore, the winter season has seen the traditional cyclical rise in flu cases. We have maintained stringent measures to mitigate this risk, including compulsory mask wearing across all areas of the airport, regular colleague testing regimes and ongoing enhanced cleaning regimes. Nonetheless, we have experienced challenges where large numbers of frontline colleagues have been unable to work in recent months. This manifested itself on one

day in early August, where 'quarter mile long queues in departures'[1] were being reported by the press as a result of the 'pingdemic' preventing colleagues from coming into work.

1.3.36 Whilst challenges remain at the Border, we have seen the situation improve since publication of RBP Update 1. This has been reflected in improving QSM scores for immigration waiting times, although they remain well below last year's levels. We will continue to work with Border Force to ensure that waiting times at the Border are kept to a minimum for our arriving passengers

Figure 4: Immigration waiting time QSM scores

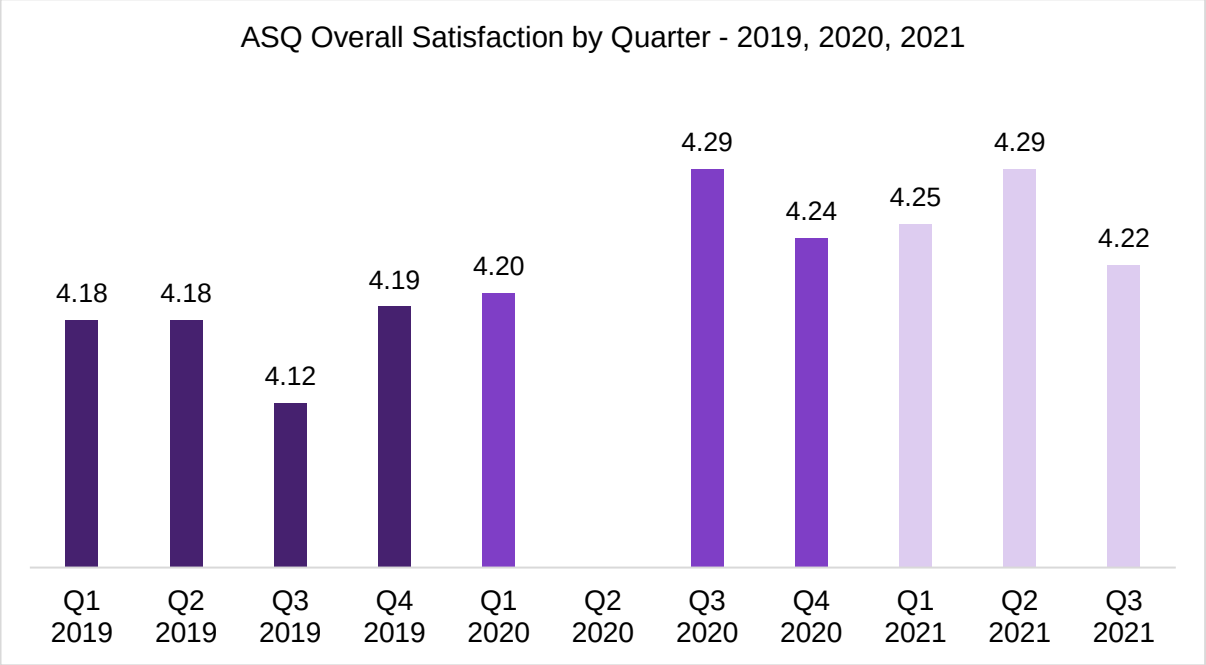


Source: Heathrow

1.3.37 Despite these ongoing and evolving operational challenges, we have continued to deliver excellent service for the increasing volumes of passengers. This has been reflected in the results of ACI's ASQ survey on passenger satisfaction, with ASQ overall satisfaction scores throughout 2020 and 2021 remaining higher than during any quarter in 2019 (shown below). In addition to continuing to provide excellent service, we have also ensured that passengers and colleagues remain safe and secure at all times.

[1] Huge quarter-mile queues at Heathrow after 'Covid outbreak and system failures' | Metro News

Figure 5: ASQ Overall Satisfaction by quarter, 2019-2021



Source: ACI

Changes in government support and policy

1.3.38 In RBP Update 1, we highlighted the lack of dedicated and wide-ranging financial support for the aviation sector from the UK Government, particularly for airports. With the worst stages of the Covid-19 hopefully behind us, the Government has wound down the majority of the exceptional support packages used to protect UK businesses.

1.3.39 No further support for the aviation sector was announced by the Government post – publication of our RBP Update 1. This means that the sum total of support provided to Heathrow by the UK Government in the context of our £3.4 billion total losses to date is £64m - this has been provided through the Airport and Ground Operators Support Scheme (£8m) and the Furlough Scheme (£56m). It is currently unclear what support packages would be in place to support the economy if there was a considerable resurgence of Covid-19.

1.3.40 VAT refunds for overseas visitors in British shops was removed by the UK Government from January 2021. This was despite lobbying and a legal challenge from UK retailers on the basis of the significant detrimental impact it would have on the UK retail, hospitality and tourism sectors - this policy decision has not been reversed.

1.3.41 Lower domestic Airport Passenger Duty (APD) but higher Ultra Long Haul APD was announced in the November budget.

1.3.42 We support the recent HM Treasury policy on a new domestic banding. The value of this tax cut is that it corrects an inefficiency and removes the historic ‘double counting’ for domestic passengers travelling within the UK. Together with our own domestic discount, it will support the recovery of UK regional airports, maintain routes connecting into the Heathrow hub, and secure lifeline routes throughout the country.

1.3.43 Together with our airline partners, we are assessing the impact of the ultra-long haul increase in APD, but it is vital that any recalculating of APD bands/ levels does not impact on UK connectivity to new trading destinations around the world that are vital for delivering global Britain.

1.3.44 Overall, Heathrow believes APD receipts should be used and spent on ways and means to get to net zero – particularly Sustainable Aviation Fuels (SAFs). It is vital that alongside Government support for a SAF mandate in the UK, that there is also a price mechanism in place to incentivise SAF take up – with APD being the clear, obvious and industry-specific outlet which could be designed to support net zero objectives.

We have continued to take action to protect the business, our colleagues and passengers

1.3.45 We have continued to be a leader on Covid-19 colleague testing and have been continuously reviewing our testing processes for our colleagues to ensure maximum levels of safety for both colleagues and passengers, while also mitigating the impact of colleague absence on our operation.

1.3.46 Safety of our colleagues and passengers remains our absolute priority, and for this reason we have continued to require all Heathrow and Team Heathrow colleagues and passengers to wear masks across all areas of our campus. From a colleague perspective, this measure has helped to keep colleagues safe, whilst also protecting resilience by minimising the risk of colleagues contracting Covid-19 and being unable to come into work.

1.3.47 We have also maintained our enhanced cleaning regimes across our terminals and office spaces. This additional cost is forecast to be required throughout H7. Our continued commitment to providing a clean, safe environment for our colleagues and passengers was reflected in our Skytrax four-star Covid-19 airport safety rating in May 2021 (an upgrade from the three-star rating we received in 2020).

1.3.48 As outlined in our December Investor report, we have made a concerted effort to protect and strengthen our liquidity. Our prudent financing action means we had £4bn of cash and committed facilities as of 30 November 2021, sufficient to meet all obligations into 2025 under our current base case traffic forecast or until October 2022 in the extreme no revenue scenario. This action is to ensure we can remain open to serve our passengers and cargo customers who rely on us for connectivity.

1.3.49 Due to management actions to protect the business, monthly average cash burn has reduced by c.50% during the first nine months of this year to £88m, down from £170m in the same period in 2020. Many of the savings we have been able to deliver are temporary, and costs will build back again as we recover - some savings are volume-related and others can be made in the short term but are not sustainable, such as maintenance, training and surface access.

2 CONSUMER INSIGHTS UPDATES

2.1 Introduction

2.1.1 The purpose of this chapter is to set out our latest consumer insights since the publication of our RBP Update in June 2021. The chapter is set out in three sections:

- A summary update of our high-level consumer needs.
- A review of the on-going impact of Covid-19 on consumer behaviour and attitudes.
- A detailed view of new consumer insights into service degradation.

2.1.2 The key conclusions are:

- Our high-level consumer outcomes included in our December 2020 RBP, and accepted in the CAA's Initial Proposals, remain unchanged based on the additional consumer engagement we have undertaken in 2021; the same broad expectations of a passenger's end to end journey were found prior to the pandemic and in our subsequent engagement.
- Measures to mitigate Covid-19 at airports are now a consideration for passengers, but our long-standing top influencers of airport choice (price of flight, time of flight, ease of getting to/from the airport, and availability of destination) remain in spite of the pandemic.
- Passengers remain nervous to travel, despite an easing of travel restrictions and high vaccination rates. Providing information and support to assuage fears would help to encourage passengers back to travel where appropriate. Returning to air travel does appear to help to dissipate nervousness. In terms of future intentions, much of the UK public remain optimistic about their plans for air travel within the next year.
- We are starting to see a reduction in consumer expectations around some Covid-19 measures. One example is the ability to social distance, with the reduced expectation largely driven by the requirement to social distance being removed in wider society.
- Our current passenger satisfaction levels remain high compared to pre-Covid-19 levels, but increasing passenger numbers is resulting in signs of a return to normal (pre-pandemic) levels in some areas. This is generally being observed in the areas of the passenger journey that take the most strain as more passengers return. Pinch-points such as check in, security and immigration may require additional focus and investment to maintain ease of experience for our passengers.
- Even with higher satisfaction levels since Covid-19, service gaps (connections, security, immigration) remain against other European competitor and comparator airports.
- Satisfaction levels of Passengers Requiring Support travelling through Heathrow have remained significantly lower than other passengers and should remain a focus for investment and improvement in H7.

- Consumers continue to want and expect their airport journey to become contactless and automated in the future, in line with the experiences they are having away from travel locations.

- Our service degradation research indicates that flight punctuality is essential to providing a positive experience for passengers, along with travelling with bags, wayfinding and security queues of less than 10 minutes. These should continue to be a focus to support maintaining high levels of overall passenger satisfaction.

- The targeted passenger priorities for improvement identified as part of our RBP and RBP Update 1 remain the right ones for focus in H7.

2.2 Consumer Insights in RBP / Update 1

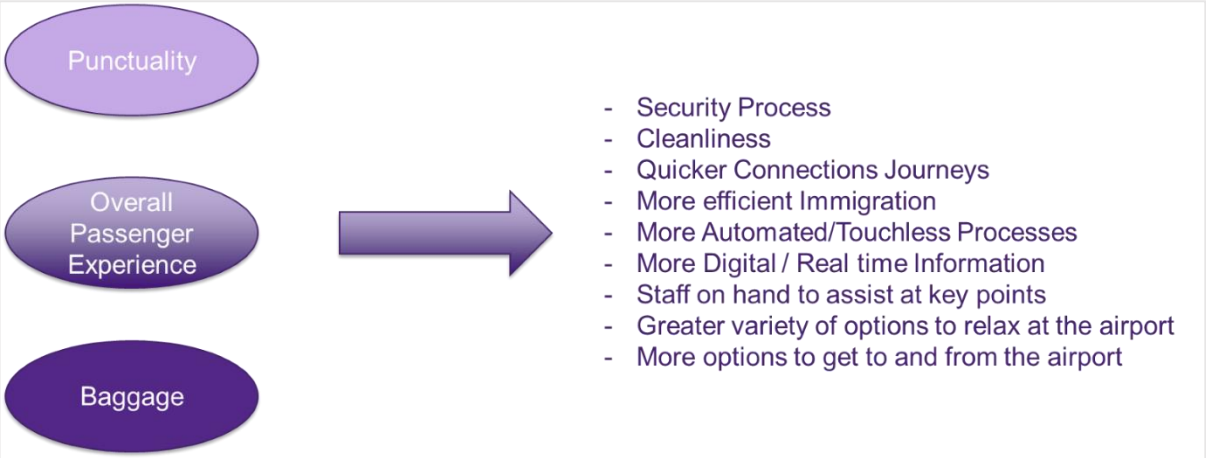
2.2.1 Our extensive body of consumer understanding has underpinned our plans for H7, and shows that consumers end to end expectations for their airport journey can be summarised into six high level outcomes:

Figure 6: Our H7 Consumer Outcomes

Source: Heathrow

2.2.2 We have evaluated consumers' perception of Heathrow's current service levels against these outcomes, and where they would most value improvements being made. This allowed us to identify a set of targeted priority areas for our plans for H7 to be built around, creating a clear golden thread between the wants and needs of our consumers and our plans for the future:

Figure 7: Passenger Priorities for Improvements in H7



Source: Heathrow

2.3 Consumers' high-level needs and passenger priorities

2.3.1 Our passenger needs have been largely consistent since pre-Covid, through to our December 2020 RBP, RBP Update 1 earlier this year and now this second RBP Update.

2.3.2 Recent results from November 2021 research indicate that our core six outcomes (Figure 6) and priority improvements areas (Figure 7) continue to reflect what matters most to our current and potential passengers and remain consistent across our key demographic groups and key international markets. [2, 3]

2.3.3 Within the detail of our six consumer outcomes, this new research indicates some smaller shifts in needs related to the return of a greater number of people to air travel, and the mindset of people planning and engaging in travel. These tend to be focused on increased importance in ease of accessibility, reliability, and safety - with the latter now encompassing the added need for protection from Covid-19 through enhanced cleaning measures as passengers move through the airport. Passengers now expect these measures to be more seamlessly integrated into the journey as they have become more normalised. With this normalisation and the easing of restrictions making travel easier, there is also an indication that our passengers are looking to higher level needs, such as comfort, as expectations return for retail and dining options to be fully available.

[2] Insites Consulting, Passenger priorities post COVID 19, October 2021
[3] Savanta, Heathrow Travel Behaviours Survey, November 2021

Ongoing impact of Covid-19 on consumer attitudes and behaviour

2.3.4 While overarching consumer needs remain broadly unchanged, linked to the fact that reasons to travel have not changed, Covid-19 continues to have a significant impact on consumer attitudes and behaviours. This will likely continue, at least in the short-term, with some likely to persist for a number of years.

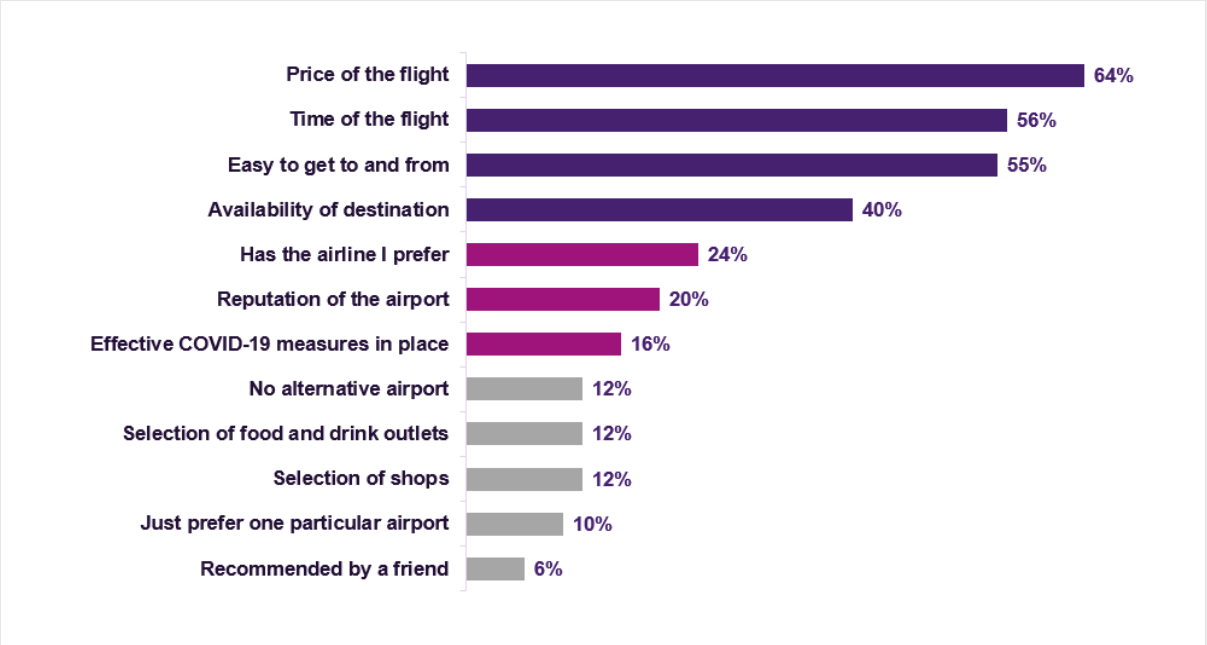
Impact on airport choice during booking

2.3.5 We have long-established factors that influence passengers' decision-making processes when deciding which airport to travel from; this predates Covid-19. The top-tier factors have consistently centred on the 'Big Four' of; price of flight, time of flight, ease of getting to/from the airport, and availability of destination[4].

2.3.6 Work carried out in November 2021 to re-test this showed is that the ranking of these factors has not changed since Covid-19 (see Figure 8 below).

2.3.7 However, while destination is still important to passengers, its importance has declined somewhat since the start of the pandemic. This aligns with the fact that destination availability has been severely restricted over the past 18 months. There is potential that, at least in the short-term, people have become more open to a few different destination options to 'hedge their bets', rather than having a fixed idea of destination and building plans around that. We would expect this to move back in line with previous trends as destination availability widens and stabilises.

Figure 8: Factors that influence decision-making on choice of airport – UK population



Source: Savanta, Heathrow Travel Behaviour Survey, November 2021

2.3.8 In addition, we wanted to understand how Covid-19 measures may have affected the factors around airport choice. This updated research has indicated that 'effective Covid-19 measures' has joined the 'second-tier' of factors, alongside airline

[4] Savanta, Heathrow Travel Behaviours Survey, November 2021

preference and airport reputation, surpassing 'third-tier' factors related to shopping and dining experiences.

2.3.9 Therefore, while Covid-19 measures are unlikely to be a main decision-making factor for most passengers, many are thinking about an airport's cleanliness and measures to mitigate against Covid-19 exposure in their planning. Our research has shown variance by age, with older passengers more likely to rank these measures as a more important 'second-tier' factor, with younger passengers more likely to prioritise enhancing their experience with factors such as retail and dining.

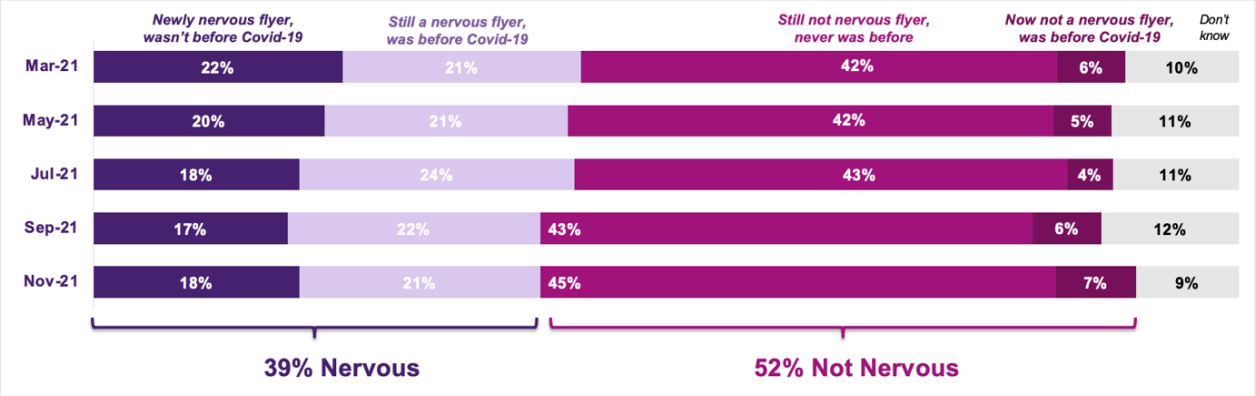
Impact on airport experience

2.3.10 Nervousness towards flying is higher than it ever was prior to Covid-19, with the pandemic having greatly increased the proportion of the public concerned about their health whilst travelling.

2.3.11 This nervousness has only modestly declined over the course of 2021 (-4% from Mar-21 to Nov-21[5]), but travellers in 2021 are significantly less likely to be nervous than those who have yet to fly since the Covid-19 pandemic started.

2.3.12 This indicates that the re-experiencing of airport travel for the first time since Covid-19 serves to mitigate nervousness amongst travellers. Furthermore, a higher proportion of vaccinated travellers may create a feeling of a safer environment than earlier in the pandemic.

Figure 9: Nervousness of flying



Source: Savanta, Heathrow Travel Behaviour Survey, November 2021

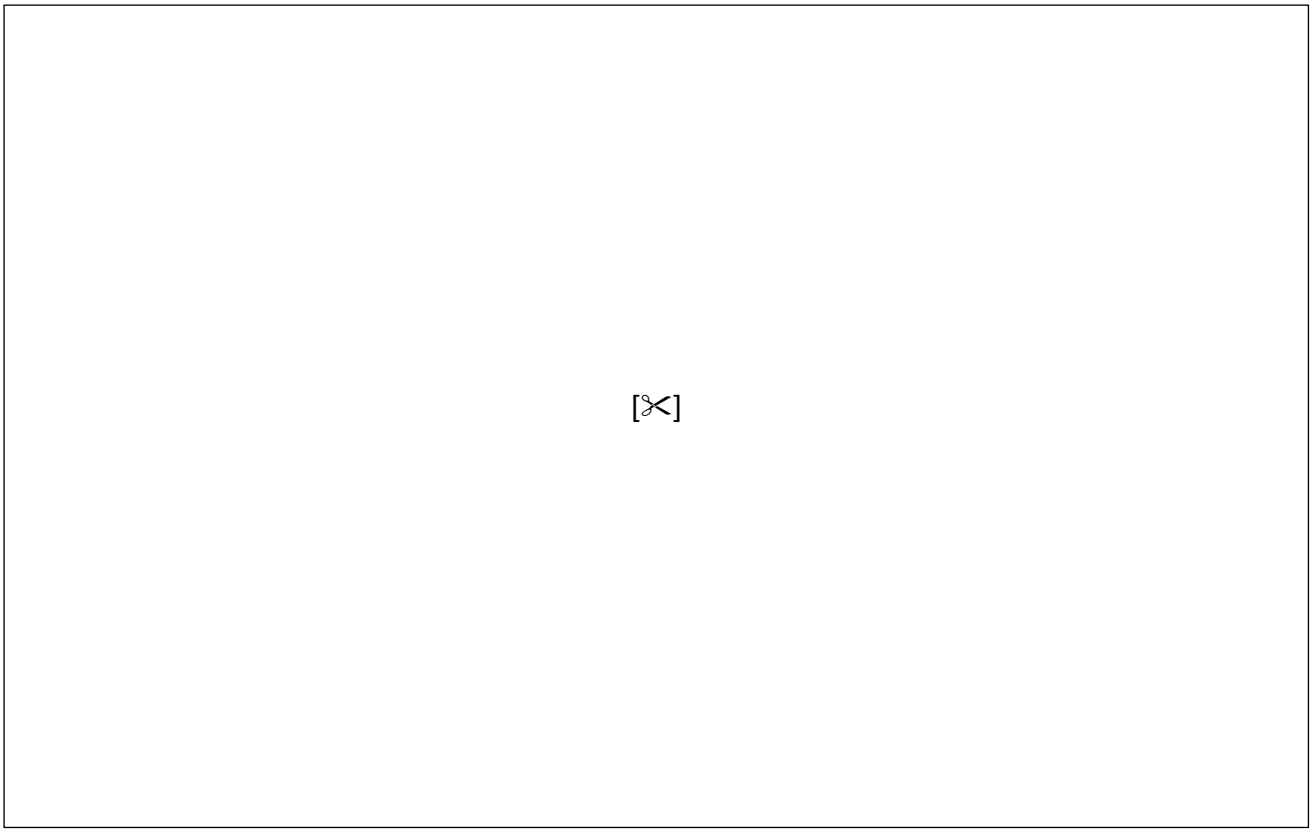
2.3.13 We recognise the need to ensure that we continue to assuage fears though providing travellers with the right levels of information, guidance and care. Indeed, two in every five members of the general public remain nervous to travel by air, either as a result of the Covid-19 pandemic, long-standing nervousness around flying, or a combination of both.

2.3.14 Even with record levels of passenger satisfaction at Heathrow, we continue to see the same elements of the passenger journey lag behind the experience levels passengers receive at our European competitor and comparator airport benchmarks. Targeted efforts should therefore be made to bring our performance at least in line with that of our benchmark airports across Connections, Immigration and Security (Figure 10). On top of these three areas, we have also seen perceptions of check-in queueing times fall slightly behind other European Airports for the first time, meaning

[5] Savanta, Heathrow Travel Behaviours Survey, November 2021

we must work collaboratively across Team Heathrow to reverse this decline in relative perception.

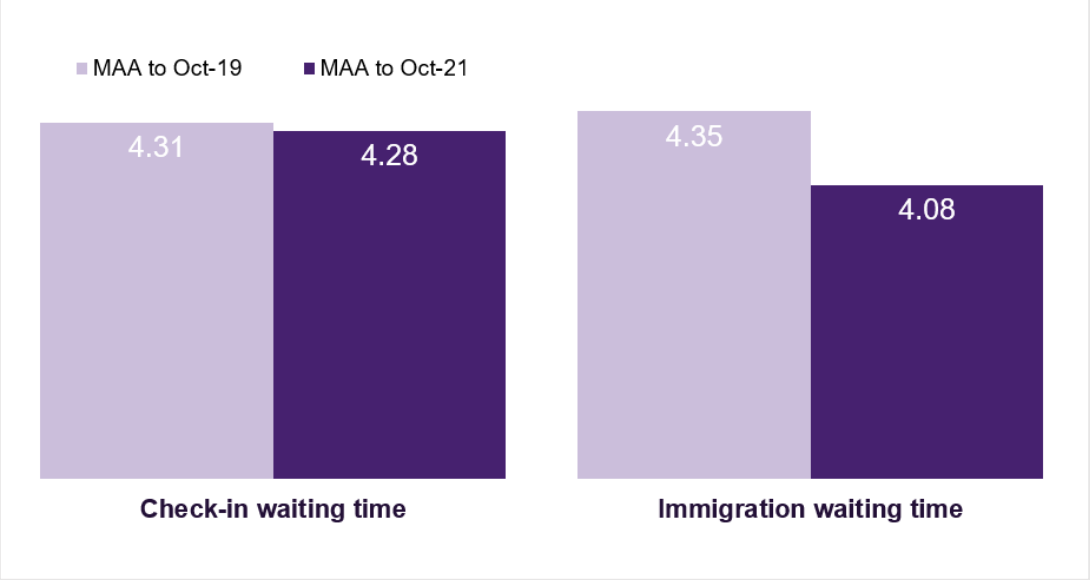
Figure 10: Heathrow Satisfaction Performance versus European Competitor and Comparator Airports: July 2020 - June 2021



2.3.15 Our primary objective in the shorter-term is stabilising and maintaining operational performance as our terminals become increasingly busy through recovery. This will ensure that we are able to deliver the same levels of satisfaction as seen prior to the pandemic.

2.3.16 As an early indicator of this potential challenge, we have seen some signs of strain in some areas of the passenger journey. Passenger perceptions of waiting times at our check-in and immigration halls have become less satisfactory (see Figure 11 below). This is as a result of the extra checks needed to satisfy Covid-19 measures, the absolute increase in passenger volumes, and challenges all organisations are facing to recruit sufficient resource.

Figure 11: QSM Check-in and Immigration Waiting Time Perception



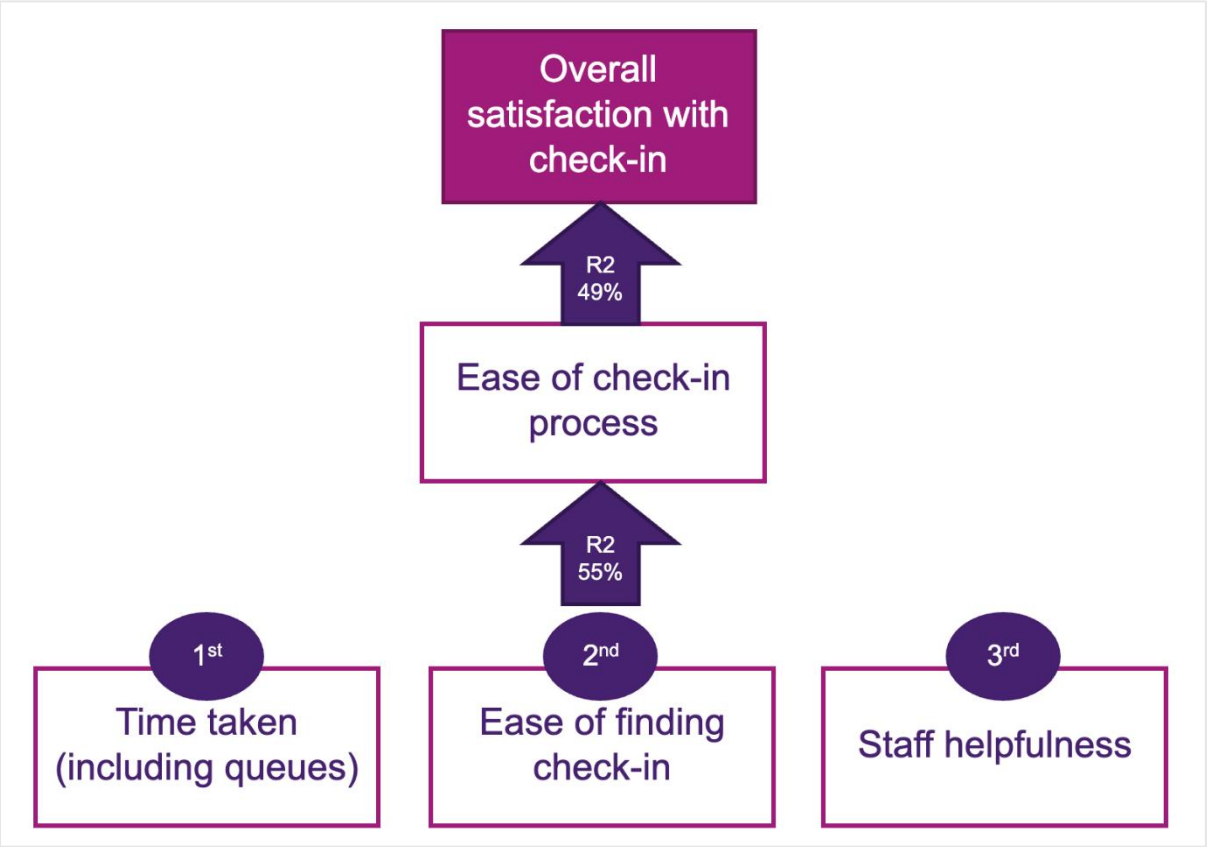
Source: Heathrow Departures and Arrivals QSM Survey

2.3.17 The global ASQ airport benchmarking survey has shown that, while we continue to be held in high regard by passengers through the pandemic in areas such as value for money of our restaurants and shopping (Top European Quartile, Q1-Q4 '19, Q3-Q2 '21[6]), we have seen a comparative decline in other areas.

2.3.18 Further modelling of in-airport satisfaction from our internal QSM data has shown that ease of process is the key driver of overall satisfaction at check-in (Figure 12). This in turn is driven by three components: time taken to check-in (incl. queueing), ease of finding check-in, and staff helpfulness. This is true whether the passenger opts for a self-service kiosk or a manned desk.

[6] ACI, ASQ Survey, 2021

Figure 12: Drivers of satisfaction with Heathrow check-in experience (from QSM)

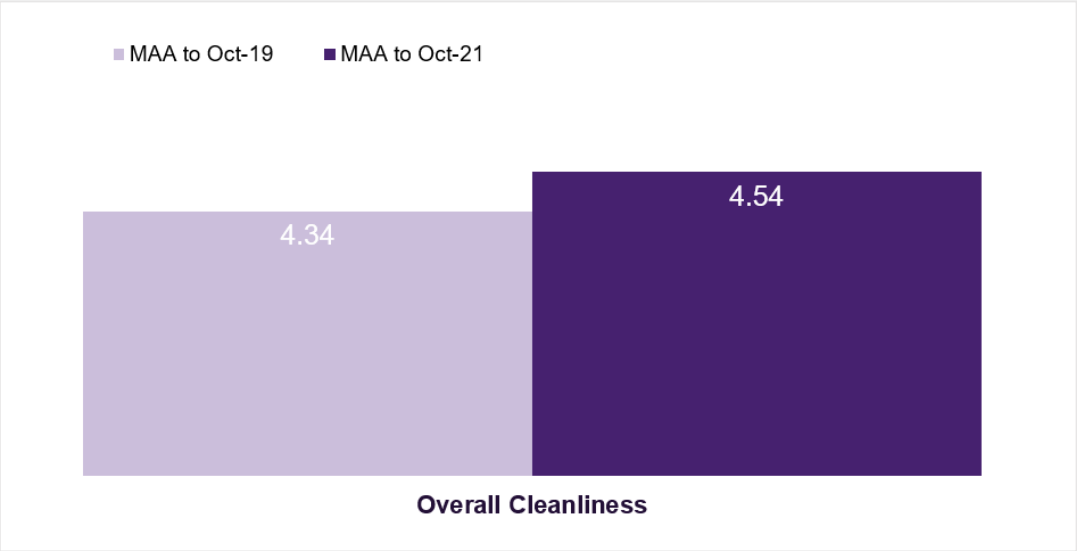


Source: Heathrow QSM Survey – Passenger Needs at Check-in

2.3.19 This insight underlines the importance of ensuring our queue times are as short as possible. It also emphasises the need for ensuring ease for passengers through secondary measures, such as wayfinding and staffing at these key pinch-points. The same approach would apply at other key pinch-points such as immigration and security.

2.3.20 A key driver of high passenger satisfaction during the pandemic has been our perceived level of cleanliness (4.54 moving annual average (MAA) in Oct-21 vs. 4.34 in Oct-19 – see Figure 13 below). This was boosted again in April/May 2021 (to a score high of 4.67), when UK travel restrictions were lifted.

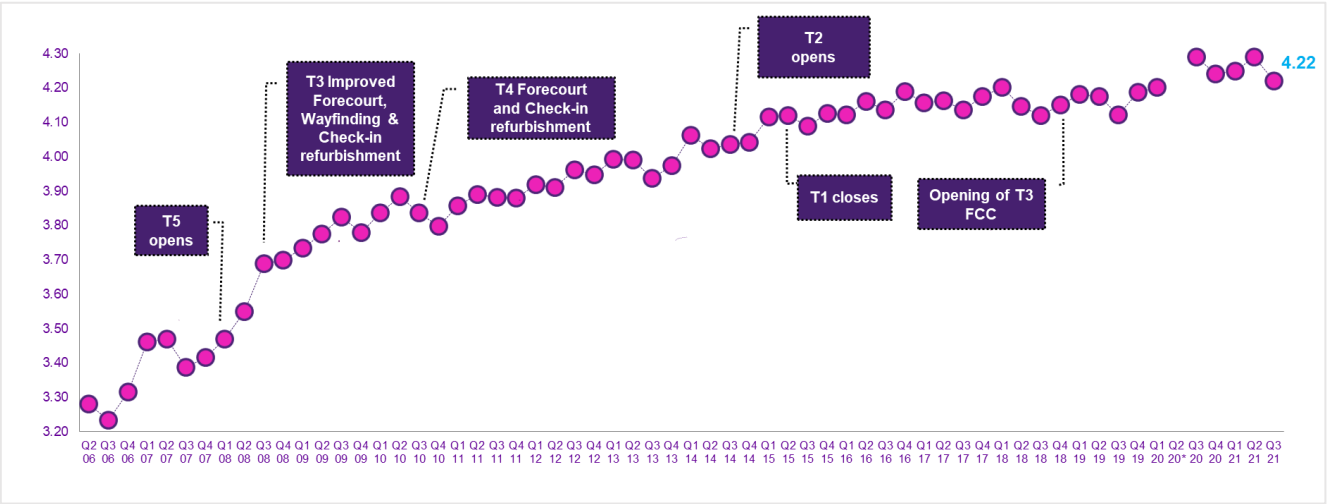
Figure 13: Departures QSM MAA to Oct -19 vs Oct-21



Source: Heathrow Departures QSM Survey

Reduced passenger numbers and our proactive reopening of terminals has also contributed to higher satisfaction (Figure 14), with only 19% of passengers perceiving the airport as crowded this past year (MAA Oct-21) vs. an average of 38% prior to the pandemic (MAA Oct-19). It has also meant passengers have been able to adhere to certain Covid-19 protocols more easily, such as social distancing, with over 3 in 4 (77%) agreeing they were able to socially-distance at Heathrow in Oct-21.

Figure 14: Overall Satisfaction Level with Heathrow Airport

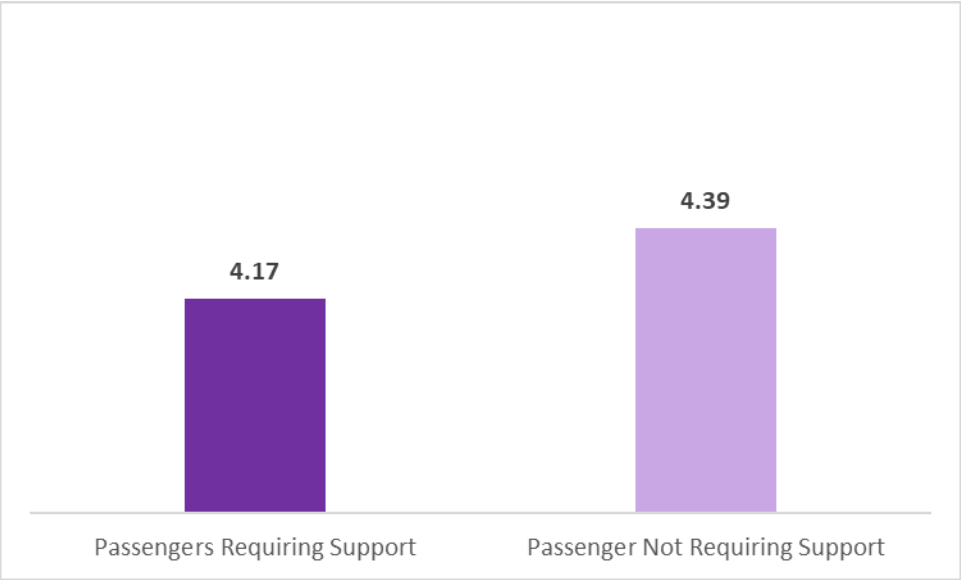


Source: ACI ASQ Survey 2006 – 2021

2.3.21 Through Covid-19 we have continued to see that our least satisfied passenger segment are the 39% of passengers who state they require additional support (PRS) while travelling through the airport (see Figure 15 below).

2.3.22 The difference in their satisfaction levels is particularly marked in areas of the passenger journey where assistance is not currently always readily available, such as wayfinding (particularly to gates), access to information and availability of seating.[7]

Figure 15: Mean Score Overall Satisfaction Levels with Departures Journey by segment



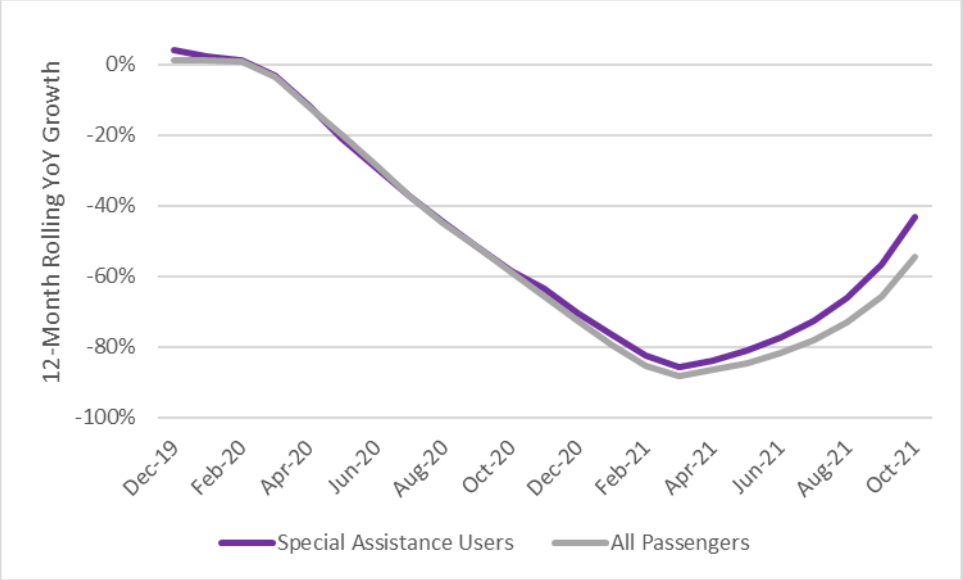
Source: Heathrow, New Departure QSM Pilot Survey – July/August 2021

2.3.23 IATA's recent 'Global Passenger survey' concluded that *'the industry could do better to meet special assistance needs'*[8], with 20% of Passengers Requiring Support stating that they did not believe that the current Special Assistance services provided were seamless. In addition, 16% felt better technology solutions could be deployed to better meet their needs[9].

2.3.24 Through 2021, we have seen a proportionately faster recovery in the number of passengers requiring the Special Assistance Service than other passengers (Figure 16). As we set out in RBP Update 1, in 2019 22% of Special Assistance users[10] at Heathrow rated their overall Airport Experience as being poor /extremely poor. Even though we have seen improvements since the start of the pandemic, this has been due to fewer users and less congestion in Special Assistance Areas. This suggests that, if the recovery rate continues, infrastructure changes will be required to avoid us returning to low levels satisfaction before our passenger volumes return to 2019 levels.

[7] Heathrow, New Departure QSM Pilot Survey – July/August 2021
[8] IATA, Global Passenger Survey, October 2021
[9] IATA, Global Passenger Survey, October 2021
[10] Heathrow, SPA QSM Survey, January – December 2019

Figure 16 – Year on Year MAA Passenger Volume Changes



Source: Heathrow, Assistance Users and Passenger Traffic Data, 2019-2021

2.3.25 While we continue to follow a suite of safety measures to ensure Covid-19 safety, recent data from our Travel Behaviours survey suggests that less than 2 in 3 passengers (64% UK, 65% Non-UK, Nov-21) wore a facemask while using an airport[11]. This suggests that enforcement and compliance is mixed across airports globally, and there are likely limits to the ability to enact some of these measures as the airport begins to fill up again with passengers. With passengers expecting a safe and seamless experience, lower levels of compliance with measures in the future may begin to impact on satisfaction more significantly. Conversely, should a decision be made to end any or all of these measures without significant passenger support, this could also negatively impact satisfaction in future.

2.3.26 Mask-wearing remains the measure the largest proportion of passengers expect to continue at the airport (64%)[12]. Consumer expectations around other Covid-19 measures, especially the need to social distance, have started to drop (Figure 17) as restrictions have been removed away from the airport[13]. This trend is also being seen away from the airport with the ONS reporting in November 2021 that only 39% of the UK population were now following social distancing advice.[14]

[11] Savanta, Heathrow Travel Behaviours Survey, November 2021
[12] Savanta, Heathrow Travel Behaviours Survey, November 2021
[13] Insites Consulting, Passenger Priorities Post Covid 19, October 2021
[14] ONS, Coronavirus and the social impacts on Great Britain, November 2021

Figure 17: Consumer Priorities for Basic Comforts Outcome

Avg. rank position out of 14	Oct '21
I feel safe	**4.5**
Clean facilities	**4.7**
I feel secure	**5.1**
Places to sit/rest/wait	5.6
My luggage is handled with care, kept safe and travels with me	5.8
Food and drink outlets	7.0
Ability to socially distance if I want to	7.2
Fresh air	7.4
Me and my travelling party are kept together	7.7
Ability to charge and connect my electronic devices to WiFi	7.8
Privacy (incl data)	7.8
Availability of ATMs & Foreign Exchange	11.0
Wheelchairs/buggies are available	11.8
Religious needs are considered	13.1
Places to smoke	13.5

Source: Insites Consulting, Passenger priorities post COVID-19, October 2021

2.3.27 The other major change in 2021 is the removal of VAT-free retail from UK airports. So far, this change hasn't been significantly understood by either the UK public at large (only 20% are aware[15][16]) or overseas travellers who have visited, or may visit, the UK in the future (18% aware[17]). The impact this could have on behaviours or intentions once passenger numbers increase and this understanding becomes more widespread is therefore unknown.

Expectations for future travel

2.3.28 Research amongst our Heathrow Horizon passenger community suggests that a significant portion have written off the prospect of leisure travel in what remains of 2021 due to lingering uncertainty and inconvenience of travelling. Whilst our UK national survey suggests that around 10% of the public planning to travel in the near future will fly somewhere over the Christmas period, the majority of future travellers are planning to delay air travel into 2022.

2.3.29 Intentions into 2022 look more positive due to the relaxing of restrictions by international governments, as well as high vaccination uptake, with 86% in November 2021 predicting they will travel abroad in the year ahead, up from 72% when asked in May 2021 (see Figure 18).

[15] Savanta, Heathrow Travel Behaviours Survey, November 2021
[16] Wayahead Research, Changing Retail Spend Research, October 2021
[17] Savanta, Heathrow Travel Behaviours Survey, November 2021

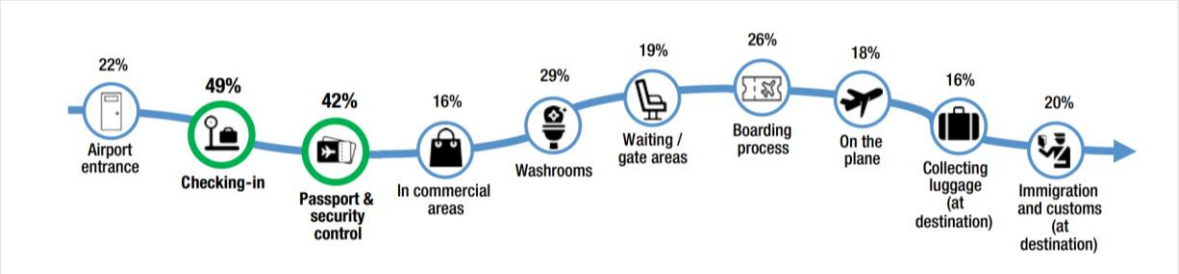
Figure 18: Intention to travel abroad in next 12 months – UK population

Source: Savanta, Heathrow Travel Behaviour Survey, Nov 2021

2.3.30 Europe continues to be a popular destination for consideration amongst UK travellers, with 31% considering Spain as their preferred destination for their next trip, followed by Greece (18%) and Italy (15%) and France (14%). The Anglosphere destinations of United States (14%) and Australia (12%) continue to be the most considered longer-haul destinations.

2.3.31 Recent consumer research studies by IATA[18] and ACI[19] continue to reinforce that consumers' future expectations of air travel revolve around a more touchless and connected experience at key points in their passenger journey, such as check-in, boarding and security/immigration (Figure 19) with the right safeguards in place. 73% of global travellers have said they would be interested in using biometric information instead of passports and boarding passes in the future[20].

Figure 19 – Stages of Airport Journey that would benefit most from contactless technologies



Source: ACI, Global Traveller Survey 2021, November 2021

New consumer insights on Service Degradation

2.3.32 In November 2021, we carried out research with both current and potential Heathrow passengers to understand how our airport service assets are viewed, how acceptable varying levels of service are, and how that interplays with the airport charge, referred to as the 'Passenger Service Charge' within the research for ease of understanding.

2.3.33 We undertook this in three steps:

[18] IATA, Global Passenger Survey 2021, October 2021
[19] ACI, Global Traveller Survey 2021, November 2021
[20] IATA, Global Passenger Survey 2021, October 2021

- Asked consumers about their expectations and attitudes to airport experiences in order to ascertain a base level of acceptability of service, and to understand how we compare to other airports.

- Asked consumers about the acceptability of service levels of our key service assets using a variety of scenarios, and by understanding satisfaction from two viewpoints – claimed importance (what passengers tell us is most important to their satisfaction) and derived impact (what modelling tells us has the biggest statistical impact on their decision-making).

- Ran a conjoint analysis to understand how acceptable variations of the airport charge were against these different service level scenarios.

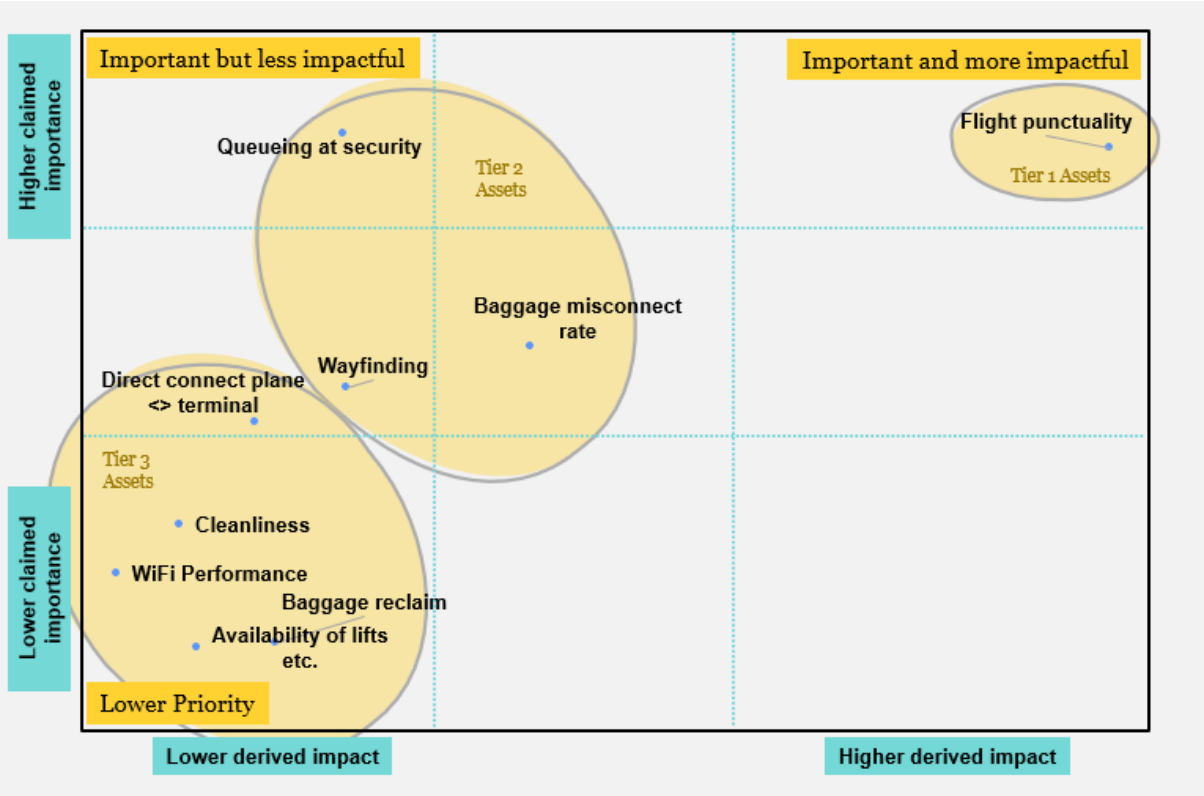
2.3.34 The key conclusions from this research are:

1 Passengers quite rightly expect both high quality and consistent service from an airport, but they do not expect perfection. However, certain groups tend to expect higher quality service. This includes current Heathrow users (compared to potential users), business passengers (compared to leisure passengers), First/Business class passengers and those flying with children.

2 Flight punctuality is the single biggest driver of satisfaction amongst our core service elements, followed by baggage misconnect, wayfinding and queuing at security (see Figure 20). Together, these are classified within the research as our 'Tier 1+2' assets.

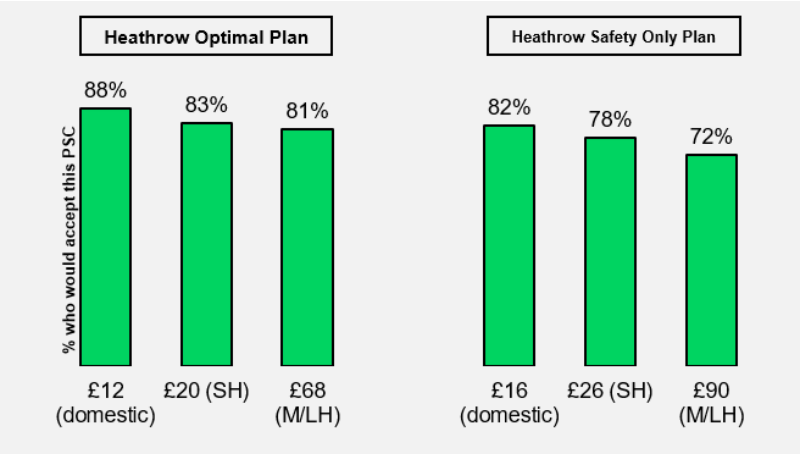
3 When modelling the service levels delivered by Heathrow's RBP Update 1 'Optimal Plan' against the proposed airport charge associated with that plan (see Figure 21), levels of acceptability are either the same or marginally higher than 2019 acceptability levels. The RBP Update 1 ''Safety Only Plan' sees a notable drop-off in acceptability with an additional 6-9% points of rejection depending on the flight length category.

Figure 20: Claimed importance and derived impact matric of airport service satisfaction



Source: Incite Service Degradation Research – Nov 2021

Figure 21: Conjoint simulation of acceptability of Heathrow's potential plans (vs. 2019 performance) accounting for associated service levels and PSC



Source: Incite Service Degradation Research – Nov 2021

2.3.35 This research further confirms that consumers are not willing to accept service level declines at Heathrow during H7. With consumers overwhelming preference for H7 for service levels at Heathrow to be maintained or improved in line with the proposed Capital and Operating Expenditure that was set out in Heathrow's Optimal Plan as part of our RBP update 1 with its resulting Airport Charge. Consumers are not willing to accept a decrease in service levels during the period.

3 PASSENGER DEMAND UPDATE

3.1 Introduction

Overview

3.1.1 This section provides the updated demand forecast used throughout the rest of RBP Update 2. Passenger demand is a big driver of the overall economics of the H7 plan. It is both a building block in the regulatory settlement itself and affects costs, revenues, and outcomes.

3.1.2 The impact of Covid-19 has made forecasting demand particularly uncertain. In our December 2020 RBP we provided a transparent methodology to create the best possible forecasts. We also engaged extensively at that point with airlines and others to develop our approach and have continued to do so since the RBP. We have gathered over six months more data since our RBP Update 1 in June 2021, on Heathrow traffic, pandemic trends, the impact of vaccines, government policies and industry developments. This update reflects the latest information from all these developments.

3.1.3 The resulting mid case forecast is for 317.1 million passengers over H7. Compared to RBP Update 1 the mid case has changed by less than 1% over the five years, as increases to 2022 are balanced by reductions in later years. Although reduced since RBP Update 1, the range in the forecast is still significant, clearly reflecting the uncertainty we face.

3.1.4 The forecast presented includes the shock factor, as established for Heathrow forecasts in Q6 and shown to increase forecast accuracy. The shock factor has been adjusted down to 0.87% to account for the adjustment mechanisms proposed in other building blocks.

3.1.5 The scenarios that form the basis for this forecast were developed before the discovery of the SARS-CoV-2 variant Omicron. However, at this stage we have not needed to make any adjustments because our methodology is designed to cope with the risk posed by new variants or any other scenario of reasonable likelihood. This reinforces the strength and resilience of our approach.

3.1.6 There is still a large amount of uncertainty around the impact of Omicron. Across our scenarios we reflect the potential scale of this impact. In this forecast we have erred on the side of optimism in terms of our weighting being towards a more minimal impact of Covid-19. This may prove to be overly optimistic and may need to be corrected for. We expect that there will be sufficient information for any update to the weightings to be made in the first quarter of 2022, once the impact of Omicron is better understood.

3.1.7 This chapter begins by providing context since the RBP Update 1. It then reviews the updates to key drivers for the travel restrictions model, the econometric and supply models. It concludes by presenting the latest results.

Context

3.1.8 At the point of publishing our RBP Update 1 in June 2021, we were emerging from almost five months of non-essential travel being illegal for Britons. During this period the airport handled c.2.5 million passengers over the course of 133 days. In 2019, Heathrow would regularly serve the same number of passengers in 11 days.

3.1.9 After the lifting of the ban on non-essential travel in mid-May, the summer getaway was slow to get started. Except for Portugal, which spent a few weeks on the Green list, all viable leisure destinations were designated at least Amber, meaning that four Covid-19 tests were required of travellers, along with a period of 10 days isolating at home. Through this period Heathrow's recovery grew to around 13% of June 2019 levels.

3.1.10 In the middle of July, it was announced that fully vaccinated Britons returning from Amber countries would no longer need to isolate at home. By the start of August, US and EU travellers with approved vaccines could also travel without needing to isolate on arrival. At this point, overall recovery was around a quarter of 2019 levels, but within this there were many differences, depending on UK and foreign restrictions and the purpose for travel.

Table 4: Market recovery as a proportion of 2019

Market	Recovery vs 2019 in w/c 02 Aug 2021
Greece	111%
Spain	60%
UK	43%
Ireland	24%
India	24%
The US	18%
Qatar	15%
UAE	8%
South Africa	2%
Australia	1%
China	0%

Source: Heathrow

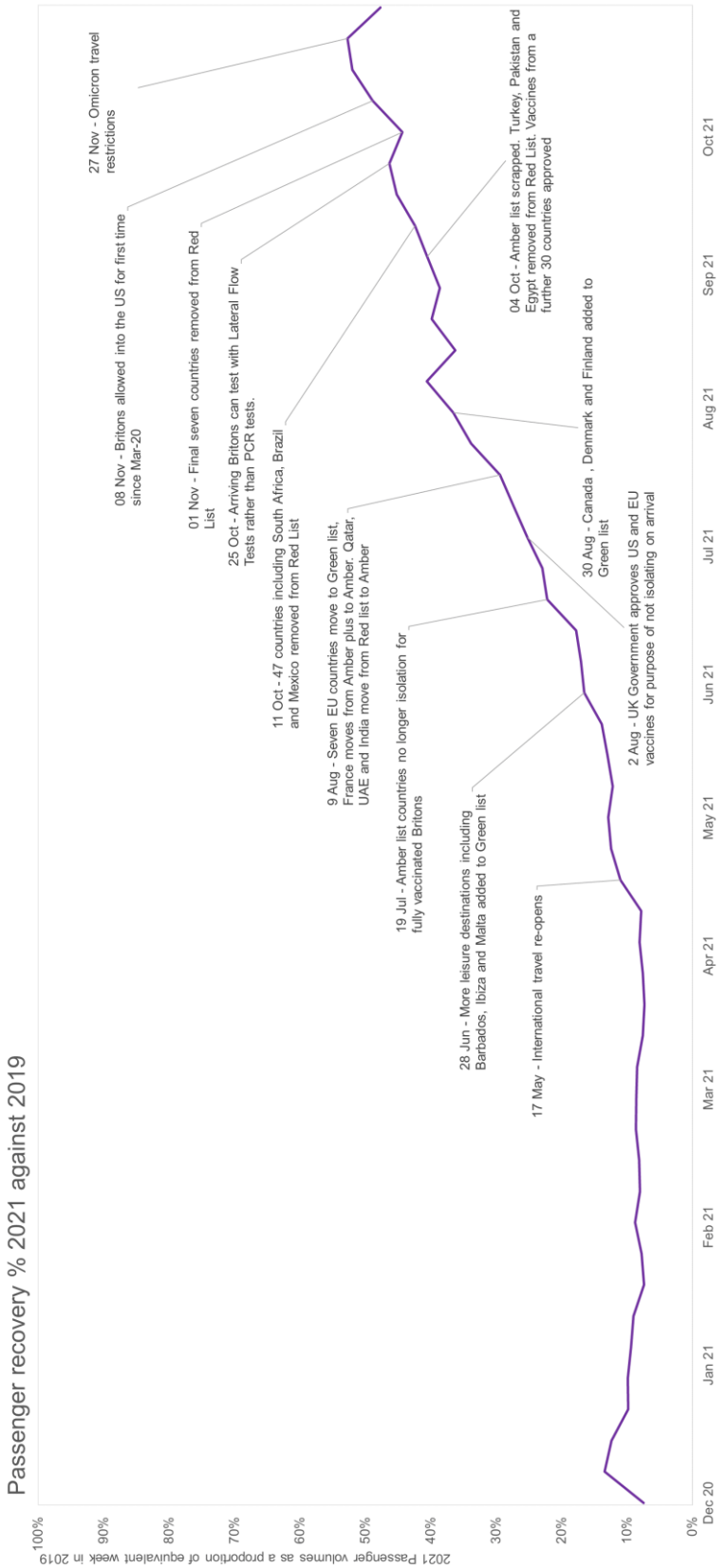
3.1.11 Throughout August, several countries, including India, Qatar and the UAE were removed from the Red List. France moved from the special designation of 'Amber Plus' back to Amber, and some countries moved from Green to the 'Green-Watchlist' or vice-versa. This is before any consideration is taken on what the restrictions were on arriving or leaving the non-UK end of the journey. At the end of August, Canada and a handful of EU countries were added to the Green List, and by this point the recovery had grown to 37%.

3.1.12 October saw positive changes in quick succession in time for the half-term holidays; the Amber List was scrapped, meaning fully vaccinated Britons or travellers from a growing number of countries could avoid quarantine. From 11th October, almost fifty countries were removed from the Red List, including South Africa and Brazil. At the end of the month there was a reduction in the cost and bureaucracy of travel as Rapid Flow Tests were permitted for arriving passengers rather than more expensive and

longer lead time Polymerase chain reaction (PCR) tests. This helped us to reach a 46% recovery figure for the October half-term week.

3.1.13 As November began, the Red List was scrapped entirely, and the US opened to UK and EU travellers from 8th November. However, this coincided with many leisure markets closing for the winter season and the recovery of many open markets plateaued due to the nature of the traffic; Ireland, Germany, Switzerland, and Norway never reached 50% of 2019 traffic despite vaccinated passengers needing no testing on arrival and only the cost of a Lateral Flow Test (c.£25 per person) to return to the UK.

Figure 22: Passenger recovery 2021 against 2019



3.1.14 We also saw countries such as Morocco, Qatar, Belgium, and Bulgaria reintroduce restrictions on arriving passengers, or even flight bans. Over seventy countries have barred entry to non-fully vaccinated Britons, meaning that c.20% of Britons cannot travel to these countries. In Europe, due to a surge in Covid-19 cases in October and November, restrictions were increased across the continent including partial or full lockdowns in The Netherlands, Germany Austria, and Latvia.

3.1.15 From the end of November, we have also seen that another Variant of Concern, Omicron, has been discovered and at the time of writing there is an emerging body of evidence that the variant's advantage over Delta is driven by immune escape. This means that, with waning immunity from second jabs in the summer – especially AstraZeneca, many are at risk of contracting the Omicron variant and introducing it to populations with less immunity. Scientists have been warning about the potential for a further variant with some form of immune escape mutation throughout the summer, so when designing our forecasts we included scenarios that anticipated this eventuality.

3.1.16 The emergence of the Omicron variant has once again changed travel restrictions. The Red list and pre-departure testing were reintroduced and all new arrivals to the UK must now self-isolate and take a PCR test by the second day in the country. They will have to keep isolating until they get a negative test. Although the 11 countries on the Red list have now been removed, we have no clarity on when these new testing and isolation requirements might end and foreign governments have started to impose additional restrictions on UK travellers.

3.1.17 At the time of writing the UK Government has also enacted a raft of 'Plan B' measures for December. These include mandating mask usage in public, use of Covid passports, advising working from home where possible and instructing the public that the risk level has gone up. There has also been a move to massively increase the booster programme in anticipation of a 'tidal wave' of Omicron cases in late December.[21]

3.1.18 While another winter of very high excess deaths like that of 2020/21 isn't expected due to the vaccine roll-out, there are several forces at play that could lead to restrictions to protect the country's National Health Service (NHS). The NHS is expecting a busy winter period with endemic respiratory illnesses such as Influenza having a greater impact than last year due to the lack of restrictions compared to 2020. While improved hospital treatments have reduced the infection fatality rate of Covid-19, the treatments often still require long hospital stays which further impacts hospital capacity.

3.1.19 While the UK is making progress on booster jabs, other countries are not rolling them out as quickly and as a result are seeing more cases, hospitalisations, and deaths again. Some in Eastern Europe are reporting record amounts for all three criteria as immunity post second jab starts to wane. As a result of waning immunity countries such as Croatia and Austria stipulated that second jabs are out of date after nine months and the person is no longer considered fully vaccinated as a result – Austria recently reduced that timeline down to six months. As a result, in the UK there are now almost 10m double vaccinated people who would not be considered by Austrian standards to be "fully vaccinated" any longer as their 2nd jab was over six months ago and they have yet not had a booster.

[21] https://www.bbc.co.uk/news/uk-59631570

3.1.20 As we approach 2022 there is no sign of China, Japan, and other East Asian markets collectively responsible for 10% of Heathrow's traffic in 2019, opening significantly. In early November they were collectively recovered by less than 10% against pre-pandemic levels. As a global hub, Heathrow is exposed to any part of the world where restrictions are still in place – the fact that the Asia/Pacific market remains almost completely closed is affecting no other London airport. Due to the high volumes of connecting traffic Heathrow would see in a typical year, markets such as Ireland, short-haul Europe and domestic volumes are negatively impacted as not all the world is open for travellers to connect to.

3.1.21 Vaccine rates in countries not served by Heathrow directly have an impact both through lack of connecting passengers transiting elsewhere to then reach Heathrow (or vice-versa) but also as many prominent scientists and leaders have said throughout 2020-*21 "No-one is safe until we are all safe"*[22] a further mutation beyond Omicron could easily occur in a country with a slower vaccine programme and set back the timeline by several more months.

3.1.22 Further setbacks will only be made more likely by the high volumes of Covid-19 cases in unvaccinated populations and breakthrough infections in vaccinated individuals. Worldwide there have been over 400k confirmed infections on a 7-day average basis since early July 2021 and the current trend is heading towards 600k a day.

3.1.23 Despite the presence of vaccines, the global official death count for 2021 is far higher than 2020 (3.21m vs 1.87m), even if accounting for the lack of testing at the start of the pandemic. England and Wales have excess death totals of c.48k for 2021 to date compared to 80k in 2020, surprisingly large considering the vaccine rollout began in Dec-20[23].

3.1.24 Media reports indicate that the UK Government's central case for how the pandemic ends, seen as the most likely, would see a steady state reached between 2023 and 2024, with Covid-19 adding to winter NHS pressures for the next two years. It would mean cases would still be high in some countries and new variants would be causing waves. The worst-case talks of waning immunity, new variants that evade vaccines completely and the need for emergency lockdowns through to 2026, with fresh waves encircling the globe and causing high prevalence.

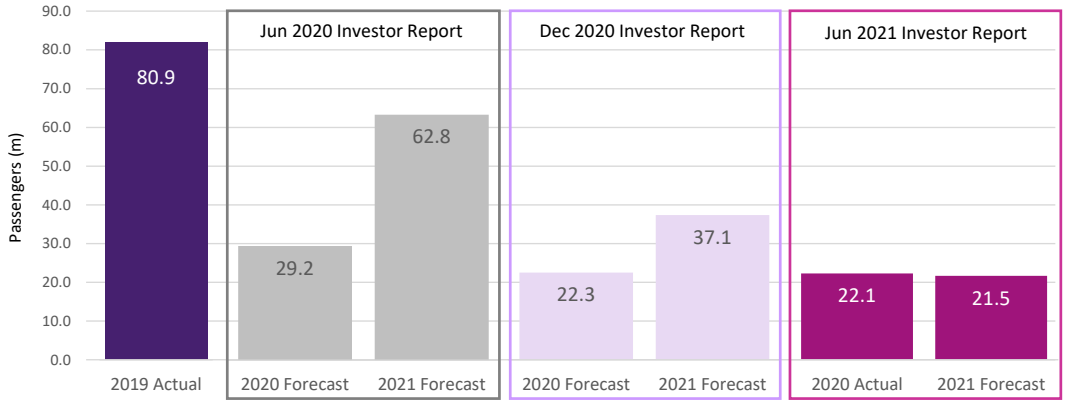
3.2 Performance against forecast

3.2.1 Throughout the pandemic our forecasting has been overly optimistic. In subsequent Investor Reports from June 2020 to December 2021 to June 2021 we have had to revise our forecast downwards.

[22] https://news.un.org/en/story/2020/05/1063132

[23] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredinenglandandwales

Figure 23: Downwards revisions to Heathrow's forecasts



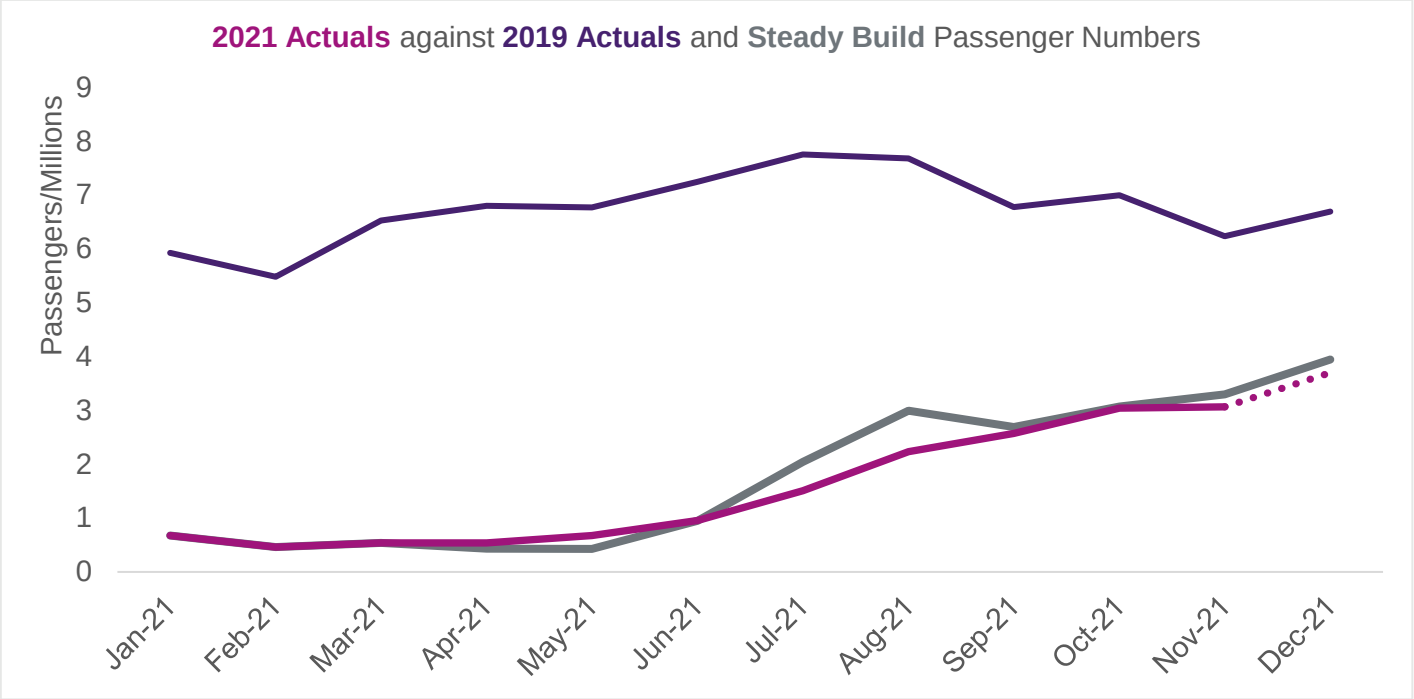
Source: Heathrow

3.2.2 At this point last year, we published our forecast of 37.1 million passengers for 2021. UK regulators had just granted authorisation for the Pfizer-BioNTech vaccine and the UK public were looking forward to a relaxation of restrictions in time to celebrate over the Christmas period. Just days later a first new Variant of Concern was found, Christmas plans were cancelled, and more than 40 countries had banned arrivals from the UK.

3.2.3 Looking back on that period there is a stark contrast between the elation of vaccine discovery and then only a short time later the despair of a rapidly spreading new variant. It serves as a reminder of not only how quickly the situation can change, but also stresses the importance of following the data and the evidence rather than being caught in the emotion.

3.2.4 Our forecast of 37.1 million passengers was quickly shown to be overly optimistic, and in June 2021 we revised it down to 21.5 million passengers. Despite over-estimating the size of the summer peak, the variance over the year is less than 8%, which is a significant achievement given the amount of uncertainty.

Figure 24: Performance against forecast for 2021



Source: Heathrow (note that '2021 Actuals' figure for Dec-21 is short-term forecast as at 13th Dec)

3.3 Market share

3.3.1 Heathrow has the largest passenger market share of the five major London airports (LON5) of Heathrow, Gatwick, Stansted, Luton, and London City. In 1996 Heathrow peaked with a 65% share of total passengers. Since then, our market share has been steadily declining, reaching 45% in 2019. The only exception was an increase in market share from 50% in 2008 to 53% in 2010, resulting from the impact of the Global Financial Crisis (GFC) on the aviation market.

3.3.2 The reason for our decline has been two-fold. Firstly, from 2000 to 2019 we had been effectively operating at our ATM capacity limit. Our annual growth rate was therefore not able to keep up with the growth of the market, resulting in a reducing market share.

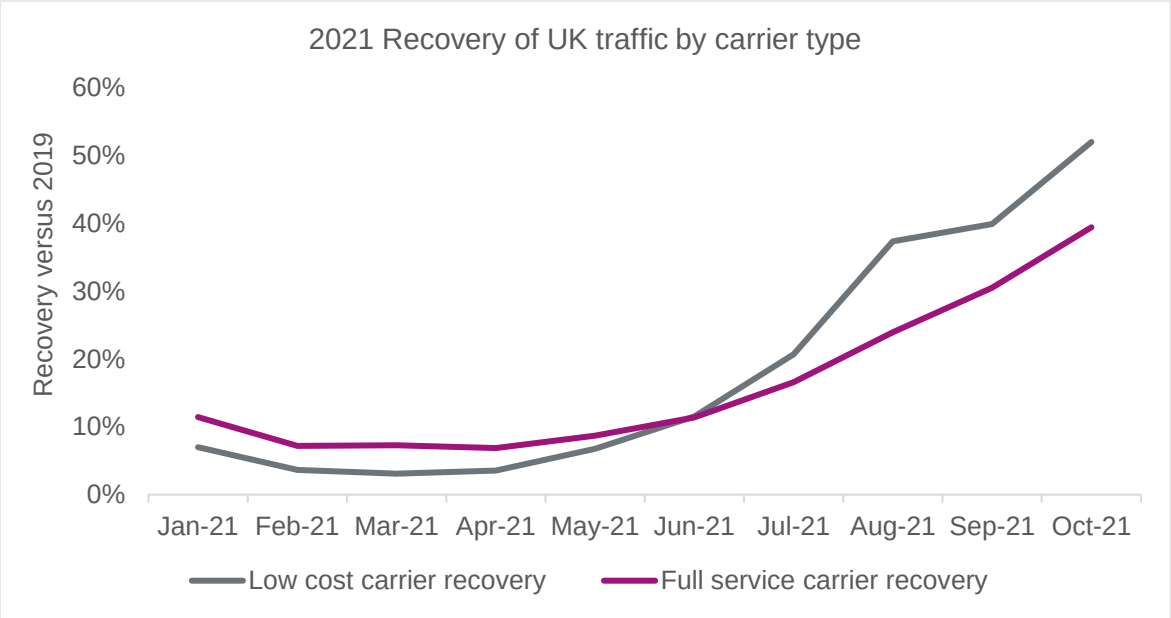
3.3.3 Secondly, aviation growth in the last decade has been predominantly driven by low-cost carriers. From 2011 to 2019, low-cost carriers grew 71% compared to just 5% for full-service carriers[24]. Whilst low-cost carriers have set up large bases at other London airports, most notably, Luton, Stansted, and Gatwick, a lack of available capacity has blocked their entry to Heathrow. Since the GFC, we have averaged +2.2% passenger growth compared to +6.2% for the other four London airports.

3.3.4 In previous aviation downturns, most notably the GFC, Heathrow's market share has benefitted from the consolidation of full-service carriers into Heathrow. This has provided Heathrow with an element of resilience in a downturn. During the Covid-19 crisis, we have continued to see this effect. However, we have also seen a competing dynamic at play: in the UK, low-cost carriers have been driving the passenger recovery. This is partly due to travel restrictions on short haul destinations being eased more quickly, and partly due to price-sensitive leisure passengers leading the

[24] OAG Analyser LCC versus FSC seat growth from 2011 to 2019

recovery over business traffic. The low-cost carriers are also in a stronger position financially compared to many of the full-service carriers that serve Heathrow.

Figure 25: 2020 Recovery of traffic by carrier type

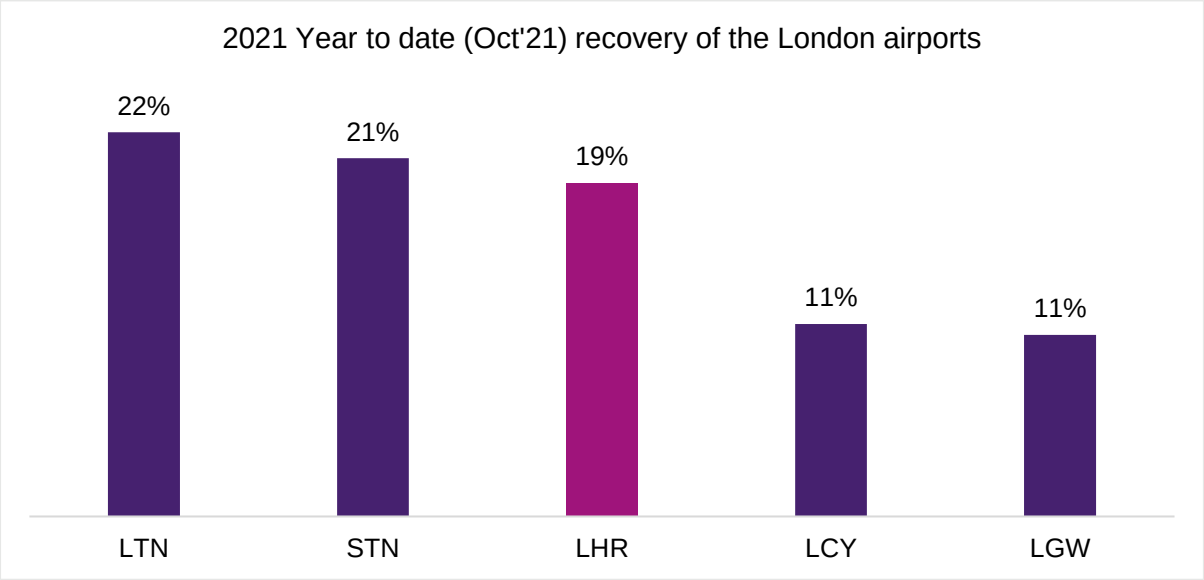


Source: AirportIS

3.3.5 Heathrow's role as a hub airport means we have a higher proportion of long-haul traffic. We also have much higher levels of business and premium traffic. This has offset temporary gains in Heathrow's market share resulting from consolidation of full-service carriers into Heathrow.

3.3.6 The quicker recovery of LCC traffic is evident when comparing our recovery to that of other London airports. Luton and Stansted have ramped up faster so far this year (22% and 21% respectively) compared to Heathrow (19%). Indeed, had BA not consolidated its short haul operation into Heathrow, Gatwick would likely have had a stronger recovery than us to date. In both pandemic summers, 2020 and 2021, over 10% of our traffic was on BA flights with Gatwick flight numbers. Now that BA has registered BA EuroFlyer, with operations planned to launch in March 2022, that consolidation will begin to reverse as flights move back to Gatwick.

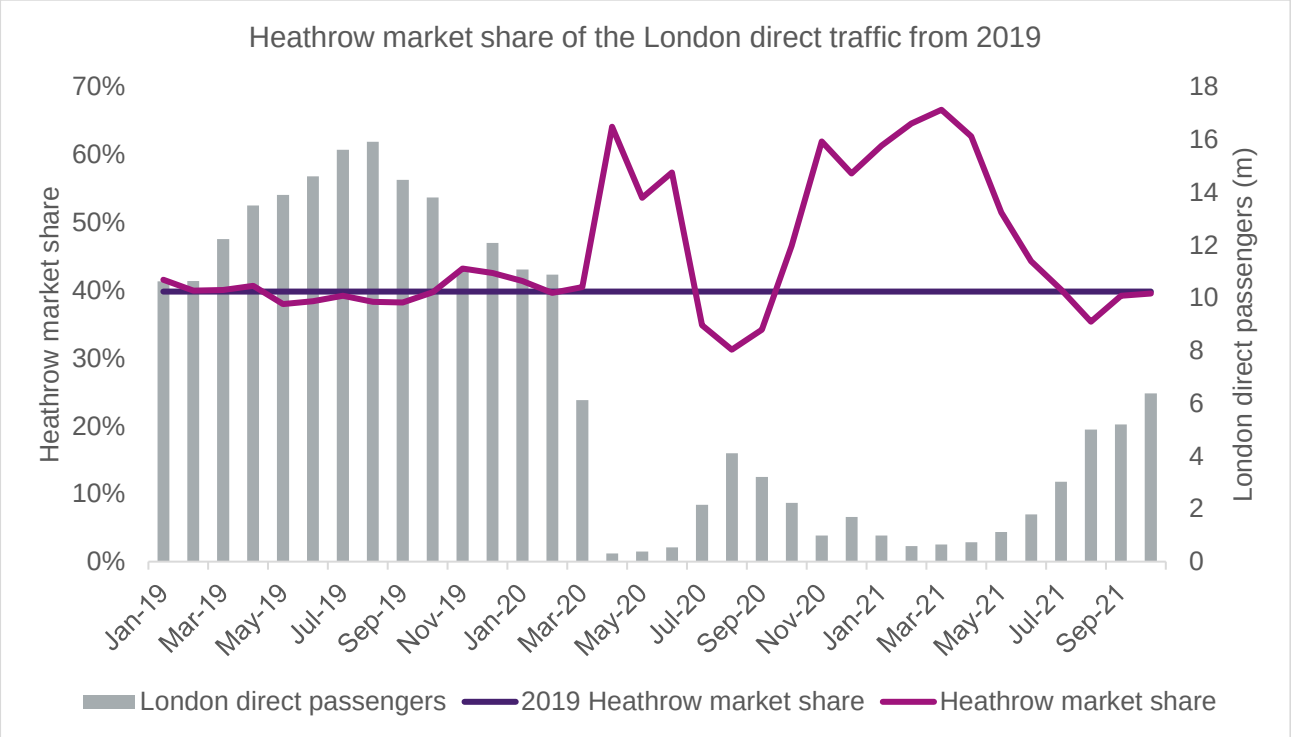
Figure 26: 2021 recovery of the 5 London airports



Source: CAA published airport data

3.3.7 The combination of the above factors meant that Heathrow's market share for 2020 was 41% compared to 40% in 2019. For 2021 year to date (to Oct'21), Heathrow's market share is slightly higher at 42%. As shown in Figure 27below, gains in market share above 2019 levels have only come during periods of lockdown or severe travel restrictions when traffic volumes have hit rock bottom. As soon as any significant amount of demand returns, our market share has dipped below 2019 levels and fallen as low as c.30%.

Figure 27: Heathrow's market share across the five major London airports

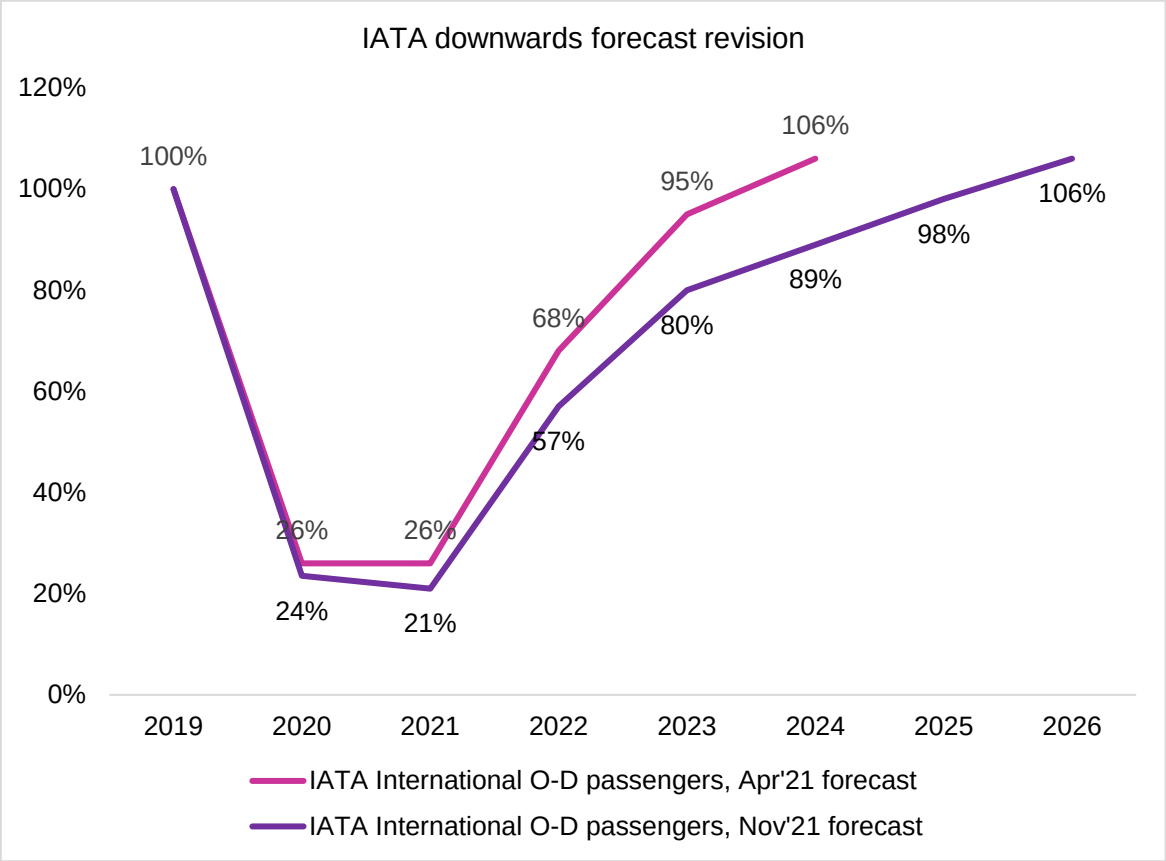


Source: AirportIS

3.4 External Forecasts

3.4.1 A notable update in external forecasts is the significant downgrade to IATA's forecast. Having previously taken a relatively optimistic view on recovery, IATA have now pushed back the expected full year of recovery for international traffic from 2024 to 2026. The recovery profile has also slowed down significantly, with 2022 now expected to be at 57% recovery compared to the previous forecast of 68%, closely aligned with our latest view.[25] [26]

Figure 28: IATA's downgrade to international passenger recovery



Source: IATA's April and November 2021 passenger forecast updates[25, 26]

3.4.2 IATA have cited continued high level of travel restrictions despite vaccine progress, an uneven balance of vaccine progress around the world and an update to the macroeconomic view as the reasons for such a large downgrade in the recovery outlook.

3.4.3 A summary review of recovery years in other industry forecasts is shown in Table 5. There is consensus on recovery expected to be in 2025/26.

[25] IATA & Tourism Economics: Air passenger forecast, April 2021
[26] IATA & Tourism Economics: Air passenger recovery to begin in earnest in 2022, November 2021

Table 5: First full year of recovery expectations from industry bodies

Source	Scope	Updated	FY Recovery
IATA[Error! Bookmark not defined.]	International	Nov-21	2026
IATA	Europe	Nov-21	2025
ACI[27]	Europe	Oct-21	2025
Eurocontrol[28]	UK ATMs	Oct-21	2025
ICF[29]	Europe	Apr-21	2025

3.4.4 There is also consensus that the balance of risk remains skewed to the downside. Oxford Economics provide three GDP scenarios that are more negative than the baseline with a combined weighting of 45%, compared to one scenario that is more positive than the baseline with a 20% weighting. IATA provides a 0.5% point increase to the European demand CAGR on the upside, compared to a 2.6% point CAGR decrease to the downside scenario.

3.4.5 As we have noted in previous iterations of the RBP, although they provide some useful context, comparisons to external forecasts must be considered with some caution. Individual governments have differing attitudes to travel restrictions and individual countries will likely recover at different rates to a market average. Further still, individual airports will have considerably different passenger and airline mixes. Differing mixes of premium and economy passengers, short and long-haul networks, domestic and international flights, low cost and full-service carriers will have significant impacts on an individual airport's recovery profile.

3.5 Changes since RBP Update 1

Overview

3.5.1 Given the context set out above, we have made several changes to the forecast we set out in RBP Update 1. Our approach remains grounded on a set of assumptions that we transparently update with each iteration. We have set out a summary of the changes here and then go into detail on each assumption later in this chapter.

3.5.2 We have not made any significant changes to our forecast methodology since that used for RBP Update 1. We welcome the comments from the CAA in their Initial Proposals that *"HAL's suite of models represents a reasonable approach to modelling in the difficult and uncertain circumstances of Covid-19[30]".*

3.5.3 We have adopted the CAA's proposal to exclude pandemic risk from the shock factor calculation, because of its more exceptional nature, and adjust for this in other building blocks. We have updated the calculation of the shock factor to include the data up to the end of 2019. This results in a shock factor of 0.87% being applied.

[27] ACI Europe Airports Traffic Forecast, October 2021
[28] EUROCONTROL/STATFOR 7-Year Forecast 2021-2027, October 2021
[29] ICF COVID-19 air passenger recovery phases and forecast, April 2021
[30] UK CAA, Economic regulation of Heathrow Airport Limited: H7 Initial proposals, October 2021

Scenarios

3.5.4 We have retained the four scenarios included as part of RBP Update 1 but have refreshed each one considering the latest evidence and data. An overview of the changes to the scenarios is given here, a detailed description of each scenario is set out in Section 3.6 and there are further details on the assumptions behind each scenario in Sections 3.7, 3.8 and 3.9.

3.5.5 The most significant changes are to the two outer scenarios (scenarios 1 and 4), which have been re-set to represent reasonable best-case and worst-case scenarios respectively.

3.5.6 In the case of scenario 1, the most significant change is to reduce the forecast for the earlier years of H7. This is done in response to the actual passenger numbers for 2021 being significantly below the forecasted number for this scenario. Hence the previous forecast for 2022 being overly optimistic as a progression from 2021, even for the most optimistic scenario.

3.5.7 In the case of scenario 4, we have made significant upwards revisions, particularly in the earlier years of the H7 period. This has been done to ensure that this scenario is not overly pessimistic and continues to represent a reasonable worst-case scenario based on the latest information. In its previous form, this scenario represented the risk of restrictions remaining in place for a protracted period as existing vaccines proved less effective against new and more transmissible coronavirus variants. This scenario was supported by the equivalent GDP scenario from Oxford Economics, called 'Limited vaccine effectiveness', which had a 15% weighting.

3.5.8 For RBP Update 2, we have revised the narrative for scenario 4 to reflect the risk of a new variant being discovered, which causes a delay to recovery, but not with the scale of impact that this scenario represented in RBP Update 1. Again, the narrative for this scenario is supported by an equivalent GDP scenario from Oxford Economics, called 'Long Covid', which has a 20% weighting.

3.5.9 With the resetting of those two outer scenarios, they retain their positions as reasonable 'bookends' for the possible outcomes. We therefore continue to allocate a 10% weighting to each of these scenarios.

3.5.10 We have made more minor adjustments to scenarios 2 and 3. For scenario 2 there is minimal change across the full H7 period as upwards revisions to 2022 based on short-term outlook are balanced by downwards revisions to later years based on the latest information on fleet replacements. This scenario retains a 50% weighting.

3.5.11 For scenario 3, the most significant change is an upwards revision to the forecast for the earlier years of H7. This mirrors the downwards revisions in scenario 1 in response to the actual passenger numbers in 2021.

3.5.12 Each scenario is still created in the same suite of models and combined using the same methodology set out in the RBP Update 1.

Travel restrictions and supply drivers

3.5.13 As explained in previous iterations of the RBP, the Travel Restrictions Model is built from actual data on the demand response to the changing restrictions over the last year. This fundamental approach remains the same, the only change is that we have updated the data on which the model is calibrated to make use of the additional actual

data since the model was used for RBP Update 1. There is more information on our assumptions on travel restrictions in Section 3.7.

3.5.14 At the point of writing RBP Update 1, we noted the lack of clarity on how long airport capacity would continue to be impacted by Covid-19. We therefore assumed that airport capacity would keep pace with airline supply and passenger demand. Our expectation was that we would be in a position to update our assumptions on airport capacity in RBP Update 2.

3.5.15 Since that point we have seen a steady ramp-up in numbers of passengers travelling through the airport and our understanding of capacity is developing further. However, the issues are complex and changeable and there is still a lack of clarity on total impact and any likely timeline for that impact to reduce.

3.5.16 Even with this increasing understanding of the problems and making focused efforts on solutions, there is not sufficient clarity to set an assumption on any airport capacity constraint. We therefore maintain the assumption from RBP Update 1 that airport capacity will keep pace with airline supply and passenger demand, although it should be noted that there are risks to this approach. At the current time we estimate that check-in is operating at only c.50% of pre-Covid capacity; without process improvements or changes to government requirements this could become a physical constraint requiring us to limit capacity for safety reasons.

3.5.17 As in our previous iterations of the forecast, we make two distinct assumptions on airline supply as part of this update. The first relates to the point at which airline supply, including aircraft and resource, will ramp-up to 2019 levels. The second is the long-term impact of the recent aircraft retirements and planned deliveries of new aircraft on the number of available seats. We set out the latest information on these assumptions in section 3.9.

Econometric drivers

3.5.18 For each forecast update we use the latest available GDP scenarios from Oxford Economics. For RBP Update 2 the GDP scenarios are from October 2021. These scenarios are described in Section 3.8.

3.5.19 We have maintained the assumptions from RBP Update 1 on the long-term impact to business travel.

3.5.20 We have updated our assumptions on the impact of the cost of carbon on fares. These assumptions reflect the latest forecast carbon values released by BEIS in October 2021. This new release shows significantly higher values than the 2017 DFT forecast used in RBP Update 1. The detail on these assumptions can be found in Section 3.8.

3.6 Scenarios

Scenario 1

3.6.1 Recovery back towards ‘normality’ continues throughout the winter and into 2022, with no further variants of concern or additions to the red list and no reversal in restrictions. We assume that the UK Government will remove the need for any testing with international travel for vaccinated passengers from early 2022. It assumes that no testing is needed for travel to Europe, North America, or the Middle East by the summer months and then for the vast majority of all countries by the beginning of Q4 2022.

3.6.2 This scenario adopts the most optimistic assumptions on long-term reduction in business travel (-10%) and impact on fares. Fares are assumed to rise based on our latest central assumption on carbon pricing. No other impacts on fares are assumed.

3.6.3 We assume that airlines will be able to ramp-up supply to meet demand, that fleet replacements won't impact on total number of seats and the densification of short-haul aircraft will resume once we reach recovery, leading to marginal increases in available seats in 2025 and 2026. We assume full recovery of ATMs by 2024 and full recovery of passengers at a point in 2024.

3.6.4 'Consumer boom' GDP scenario – consumers run down accumulated savings during the pandemic at a much faster pace than in the Baseline. Almost half of savings are spent within two years as households view excess funds as extra income rather than wealth. Business and investor sentiment improves as vaccination progress helps to reduce economic uncertainty. The level of global GDP is comparable to the level anticipated prior to the crisis and GDP rebounds higher than this level in the first year.

Scenario 2

3.6.5 Recovery back towards 'normality' continues, but some increasing hospitalisations over the winter cause concern because of periods of stress to the health service. Although this causes some consumer hesitancy it does not lead to any explicit increase to UK restrictions.

3.6.6 We assume that the UK Government will remove the need for any testing with international travel in time for the summer months of 2022. It assumes that European countries which currently allow travel without testing continue to do so, and the remaining European countries follow suit in time for the summer months. It assumes that cheaper/easier testing will be permitted for travel to North America by the summer months of 2022 and then no testing from Q4 2022 onwards. It assumes that East Asia gradually eases restrictions throughout 2022, to the point that travel with cheap/easy testing is permitted by Q4 2022.

3.6.7 This scenario assumes a long-term reduction in business travel of 20%. It assumes the central case assumption on carbon price as well as an additional 5% increase to fares because of the effects of the pandemic upon lower utilisation, increased operating costs, capacity constraints, loss in business passengers and shift to smaller aircraft.

3.6.8 We assume that airline supply will be a constraint until a point in 2023 and that fleet replacements will lead to an overall reduction of 1% of seats. ATMs recover in 2025 and passenger numbers recover to within a million of 2019 numbers in 2026, falling short due to seat reductions.

3.6.9 Baseline GDP scenario - rising vaccination rates are assumed to allow travel restrictions to ease. However, the speed and timing will vary among economies based on attitudes towards suppression and concerns of the continued spread of the Delta variant. As economies re-open, less supportive fiscal policies are assumed to be offset by a boost from lifting restrictions. Households are assumed to reduce saving their income and begin spending pandemic savings at a rate of 5% per annum. The current US administration provides a more stable backdrop to US-China trade tensions.

Scenario 3

3.6.10 Waning immunity and increasing hospitalisations means the UK Government enact their 'Plan B'. Although this doesn't require any explicit reversal of travel restrictions, the emphasis on non-pharmaceutical interventions to control the number of cases results in low consumer confidence in travel. The UK Government's requirement for a lateral flow test is kept throughout much of the year but then dropped from later in 2022. It assumes that tourism-dependent European countries allow test-free travel for the summer months of 2022. It assumes that testing is still required for travel to North America for much of the year and that East Asia remains under tight restrictions until well into the second half of the year.

3.6.11 This scenario also assumes a long-term reduction in business travel of 20%. It assumes the high case assumption on cost of carbon as well as an additional 5% increase to fares from the same pressures noted in scenario 2.

3.6.12 We assume that airline supply will be a constraint until a point in 2024 and that fleet replacements will lead to an overall reduction of 3% of seats that cannot be replaced because of our ATM cap. ATMs recover in 2026. Passenger numbers tend to 2019 levels in 2026 though remain lower because of seat reductions.

3.6.13 'Consumer hesitancy' GDP scenario – consumer caution, vaccine hesitancy and a sluggish reduction in voluntary social distancing delays the recovery by around six months. Investor sentiment deteriorates at the start of this scenario and a limited amount of additional monetary policy support is provided in advanced economies. In the longer term, however, confidence returns, and the global economy recovers, with only slightly greater damage to the economy than in the Baseline.

Scenario 4

3.6.14 A new variant is discovered which spreads more than Delta and escapes vaccines more than Beta/Gamma, to a degree that protection against serious disease wanes. Governments across the world, including the UK, respond by tightening travel restrictions, but the bigger impact comes from a loss of consumer confidence. This means demand during the summer months of 2022 is below that of summer 2021. Once vaccines are adapted and rolled out the ramp-up begins again, albeit with more caution, and recovery compared to scenario 3 is set back by at least 1 year.

3.6.15 This scenario has only a 10% weighting and needs to reflect a reasonable worst-case scenario in terms of the continuing risk associated with the Covid-19 pandemic. At the point of developing this scenario, prior to the discovery of the Omicron variant, there was already sufficient evidence to warrant the inclusion of a 'new-variant scenario'.

3.6.16 The minutes from recent meetings of the Scientific Advisory Group for Emergencies (SAGE) leave no doubt as to the continued risk posed by new variants, with the very first line of the summary giving the stark warning: "*There should be no complacency around the risk posed by further viral evolution. Emergence of a variant of Delta or a variant from a different lineage that becomes dominant globally is a very real possibility. Ensuring sufficient capacity to monitor for variants, and capability to characterise new variants and conduct predictive vaccinology, is crucial.*"[31]

[31] Ninety-sixth SAGE meeting on Covid-19, 14th October 2021

3.6.17 Now, with the discovery of Omicron, the continued need for inclusion of scenario 4, albeit with a lower weighting than other scenarios, is reinforced even further.

3.6.18 This scenario assumes a long-term reduction in business travel of 30%. Fares are impacted by the high cost of carbon assumption and a 10% increase in fares from the same pressures noted in scenario 2. Seats are assumed to have recovered to 75% of 2019 levels in 2026.

3.6.19 We have considered two of Oxford Economics' GDP scenarios. The first is well aligned on a narrative basis, called 'Long Covid'. It assumes that public health restrictions are tightened in the near term as the Delta variant spreads. After an initial easing, restrictions are then reimposed as new variants emerge and further challenge the effectiveness of existing vaccines. Economic scarring from the pandemic is greater than in the baseline forecast.

3.6.20 We also consider the 'Return of Inflation' GDP scenario, which has public health restrictions aligned to the Baseline scenario. However, financial markets and the real economy are roiled by a marked deterioration in the inflation outlook. Consumer prices surge due to higher commodity prices, higher inflation expectations and a disappointing recovery in labour market participation. Consumers struggle to maintain real incomes in the face of higher prices.

3.7 Key drivers – travel restrictions

Stages of travel restrictions

3.7.1 As outlined in the RBP and RBP Update 1, the basis for the Travel Restrictions Model is a timeline for the progress of each country through stages of travel restrictions, paired with forecasting the associated level of recovery for each country in each stage. The model considers the restrictions at both ends of the route and is calibrated based on actual data from the last two years.

3.7.2 The uncertainty over when restrictions will be relaxed in each country remains very high. Our scenario-based methodology allows consideration of the different possible timelines over which countries progress to stages of lower travel restrictions.

3.7.3 Figure 29 sets out the assumptions on when key markets will reach the point of 'free travel'. This is guided by the timeline for vaccine rollout in each country.

Figure 29: Market opening assumptions

Scenario 1 assumes that the UK Government will remove the need for any testing with international travel in early 2022. It assumes that no testing is needed for travel to Europe, North America, or the Middle East by the summer months and then for the vast majority of all countries by the beginning of Q4 2022.

Scenario 2 assumes that the UK Government will remove the need for any testing with international travel in time for the summer months of 2022. It assumes that European countries which currently allow travel without testing continue to do so, and the remaining European countries follow suit in time for the summer months. It assumes that cheaper/easier testing will be permitted for travel to North America by the summer months of 2022 and then no testing from Q4 2022 onwards. It assumes that East Asia gradually eases restrictions throughout 2022 to the point that travel with cheap/easy testing is permitted by Q4 2022.

Scenario 3 assumes that testing continues to be required by the UK Government throughout the majority of 2022. It assumes that tourism-dependent European countries allow test-free travel for the summer months of 2022. It assumes that testing is still required for travel to North America for much of the year and that East Asia remains under tight restrictions until well into the second half of the year.

In line with the epidemiological evidence that gives the basis for **Scenario 4**, there is no significant easing of travel restrictions until mid-way through 2023. The prevalence of a new variant causes significant impact to consumer confidence, which impacts the demand response compared to that seen over the recent recovery.

Source: Heathrow

3.8 Key drivers – econometric model

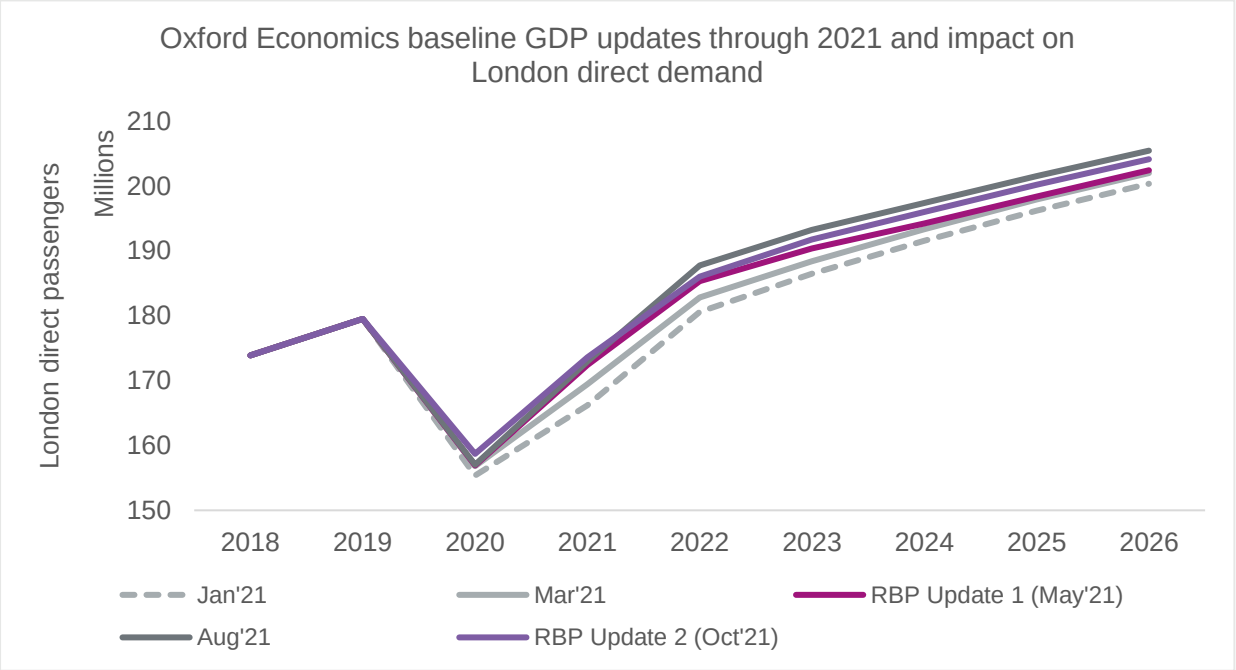
GDP forecast

3.8.1 The econometric model relates passenger volumes to changes in GDP and fares, allowing us to understand the relationship between economic growth and the likelihood of air travel. We consider five GDP scenarios in our modelling, developed by Oxford Economics[32]. The latest GDP forecasts available for RBP Update 2 were released in October 2021.

3.8.2 Since RBP Update 1, the long-term econometric outlook for GDP has continued to improve. Figure 30 shows the evolution of the GDP per capita impact on LON5 passenger volumes through 2021 for the H7 period. The latest baseline GDP impact on passenger demand would suggest a 0.8% increase in underlying passenger demand over the H7 period compared to May (RBP Update 1).

[32] Oxford Economics Global Scenarios Service Databank, October 2021

Figure 30: Oxford Economics Baseline GDP updates through 2021 and impact on LON5



Source: Oxford Economics Global Scenarios Service databank and Heathrow's demand model.

3.8.3 Note the downwards revision in October compared to August is driven by significant updates to the historical GDP approximations. As a result, forecasted passenger volumes decreased by 0.7% despite an increase in GDP. IATA and Tourism Economics cited this update to the historical GDP approximations as one of the key drivers to their downwards forecast revision in November.[33]

3.8.4 Oxford Economics have updated the scenarios and narratives considered for the economic recovery from Covid-19 since RBP Update 1. The balance of risk remains the same and is still skewed to the downside. Oxford Economics provides a 35% weighting to the baseline scenario, one optimistic scenario with a 20% weighting and three pessimistic scenarios with a combined 45% weighting. It therefore claims a risk-weighted average of the scenarios to be 0.4 percentage points below the Baseline scenario projection.

3.8.5 The paragraphs below set out a summary of the updated Oxford Economics GDP scenarios:

3.8.6 **Baseline** (weight = 35%): The latest update to the Baseline scenario represents a 0.8% increase to passenger volumes in the H7 period compared to RBP Update 1. Rising vaccination rates are assumed to allow travel restrictions to ease. However, the speed and timing will vary among economies based on attitudes towards suppression and concerns of the continued spread of the Delta variant. As economies re-open, less supportive fiscal policies are assumed to be offset by a boost from lifting restrictions. Households are assumed to reduce saving their income and begin spending pandemic savings at a rate of 5% per annum. The current US administration provides a more stable backdrop to US-China trade tensions.

[33] IATA & Tourism Economics: Air passenger recovery to begin in earnest in 2022, November 2021

3.8.7 **Consumer Boom** (20%): This scenario represents the upside to the Baseline scenario; however it has reduced passenger volumes by 0.8% compared to May's most positive scenario, Rapid Upturn. In this scenario, consumers run down accumulated savings during the pandemic at a much faster pace than in the Baseline. Almost half of savings are spent within two years as households view excess funds as extra income rather than wealth. Business and investor sentiment improves as vaccination progress helps to reduce economic uncertainty. The level of global GDP is comparable to the level anticipated prior to the crisis and GDP rebounds higher than this level in the first year.

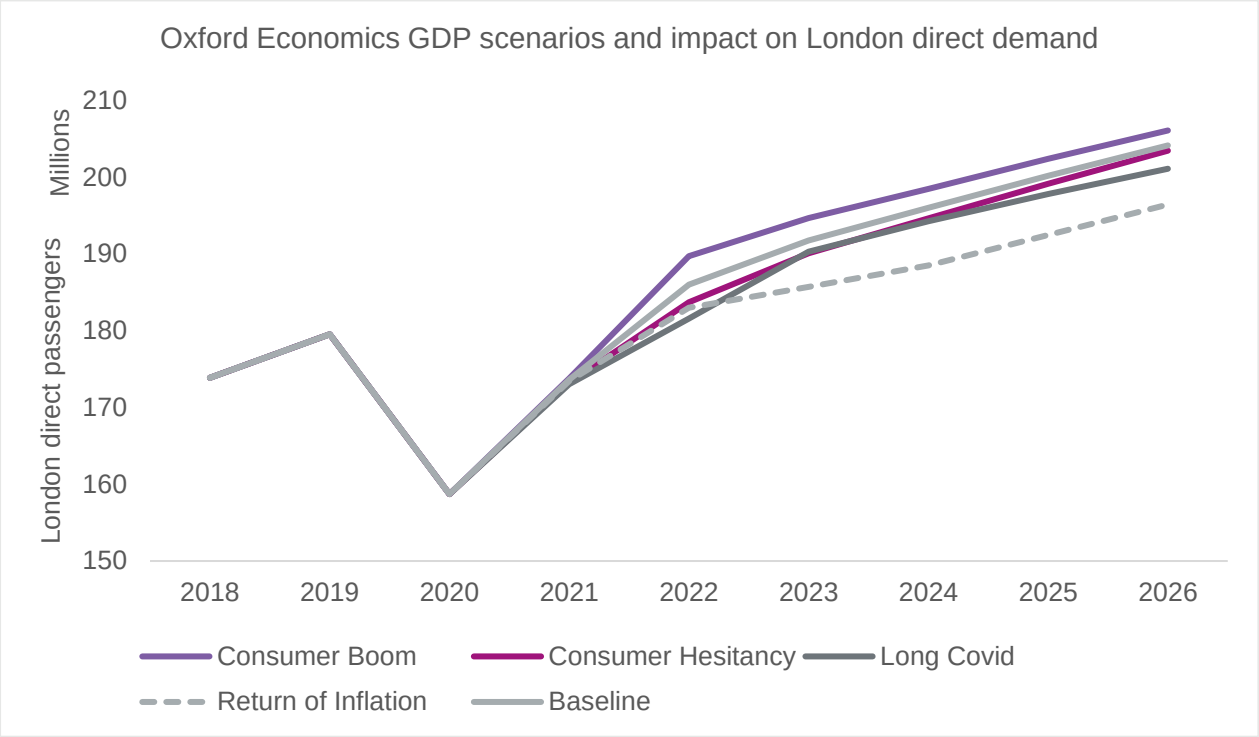
3.8.8 **Consumer Hesitancy** (15%): This is a new scenario and the most positive of the downside risks to the Baseline. Impact on World GDP doesn't peak until H1 2022. Consumer caution, vaccine hesitancy and a sluggish reduction in voluntary social distancing delays the recovery by around six months. Investor sentiment deteriorates at the start of this scenario and a limited amount of additional monetary policy support is provided in advanced economies. In the longer term however, confidence returns, and the global economy recovers, with only slightly greater damage to the economy than in the Baseline.

3.8.9 **Long Covid** (20%): This scenario represents a 0.7% increase on the previously named Slow Vaccine Rollout scenario. An initial spread of the Delta variant results in renewed restrictions. After an initial rebound, new virus variants emerge and challenge vaccine effectiveness resulting in further restrictions. Risk aversion remains elevated, and recovery is sluggish. Financial markets weaken, investor sentiment deteriorates and long-term economic scarring weighs on the global economy.

3.8.10 **Return of Inflation** (10%): The most pessimistic scenario has increased 0.9% on the same scenario from May's update. This scenario has public health restrictions aligned to the Baseline scenario, however, financial markets and the real economy are roiled by a marked deterioration in the inflation outlook. Consumer prices surge due to higher commodity prices, higher inflation expectations and a disappointing recovery in labour market participation. Consumers struggle to maintain real incomes in the face of higher prices.

3.8.11 Figure 31 shows the impact these GDP scenarios have on underlying passenger demand for the LON5 airports.

Figure 31: Comparison of the GDP scenarios impact on the LON5 passenger demand



Source: Oxford Economics Global Scenarios Service databank and Heathrow's demand model.

Business travel

3.8.12 Since we published RBP Update 1, there has been no new evidence to warrant a change to our assumptions on the long-term impact of Covid-19 on business travel. In the RBP Update 1, we set out our assumptions of a 10-30% long-term reduction to business travel, and this remains our view for this updated forecast.

3.8.13 We have now experienced over 18 months of working from home and videoconferencing. Businesses have made decisions to change their practices for the longer term and to continue with an increased amount of working from home even once Covid-19 restrictions are lifted. Hybrid remote working is becoming the normal setup for many.

3.8.14 There is also the ever-increasing awareness of the impact of aviation on the environment. What was already a trend pre-Covid is now being accelerated. Companies worldwide have been forced to operate with little to no business travel and that experience has broken down many of the perceived blockers to change. Companies have set targets to reduce their emissions from business travel, in the case of PWC by 33% per employee.

3.8.15 Uncertainty remains around the long-term impact on business traffic. However, as we have previously set out, a consensus is being reached across the industry including amongst the airline community. Notable additions to this growing consensus include the following statements from the Office for Budget Responsibility and McKinsey.

3.8.16 In October 2021, the Office for Budget Responsibility released its aviation forecast for APD purposes, in which they state, *"The profitable business travel area may be more persistently affected: in a May 2021 survey of large global businesses, 72 per cent expected to maintain limits on business travel after social distancing measures*

end". They also stated *"We assume a permanent reduction in business travel due to greater use of online meetings".*[34]

3.8.17 In April 2021, McKinsey stated: *"Business travel will take longer to recover, and even then, we estimate it will only likely recover to around 80 percent of pre-pandemic levels by 2024. Remote work and other flexible working arrangements are likely to remain in some form post-pandemic and people will take fewer corporate trips." And "…[business trips] …had not yet recovered to pre-financial-crisis levels when COVID-19 broke out in 2020."*[35]

3.8.18 Based on the evidence we have previously set out and supported by the consensus across the industry, we have maintained the assumptions as per RBP Update 1.

Figure 32: Assumptions on impact to business travel

Scenario 1 assumes a 10% long term reduction in business travel.

Scenario 2 and **Scenario 3** assume a 20% long term reduction in business travel.

Scenario 4 assumes a 30% long term reduction in business travel.

Source: Heathrow

Fares

3.8.19 In RBP Update 1 we separated our assumptions on fares into two parts. The first considered the rising cost of carbon and the ambition for the aviation sector to reach net-zero. The second related to pressures on fares as a direct result of pandemic related effects. In RBP Update 2 we continue to consider fares in these two parts.

3.8.20 RBP Update 1 used the DfT 2017 carbon valuation forecast to set our assumptions on the impact of carbon price on fares. At that point we were conscious that there was a growing understanding of carbon pricing and the impact of this on fares. We therefore noted our intention to look further at this topic for RBP Update 2. We set out the findings of that analysis here.

3.8.21 We remain confident that it is possible for aviation to grow and to reach net-zero emissions. In early 2020 the UK aviation sector set a target of net-zero emissions by 2050. It published its roadmap to get there, which enables the industry to grow by 70% and achieve net zero by that date. Europe followed suit and there is a growing global shift to net zero, including specific commitments from airlines and airline alliances, including IATA.

3.8.22 The cost of carbon is an increasingly important consideration in the overall cost of aviation. Historically carbon has been an under-valued externality, carbon pricing is increasingly incentivising investments in lower carbon technology.

3.8.23 These costs can arise directly through policy instruments (for example the inclusion of emissions from flights in Europe's Emissions Trading System) or through voluntary means (such as a brand building the cost of planting a tree for every customer into

[34] https://obr.uk/box/the-behavioural-legacy-of-the-pandemic/
[35] https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/back-to-the-future-airline-sector-poised-for-change-post-covid-19

its product price). In the voluntary and compliance markets the cost of carbon is increasing significantly.

3.8.24 Carbon costs can also arise indirectly, such as through the government considering the value of emissions in its appraisal of critical infrastructure development proposals.

3.8.25 There are three areas of carbon cost that are relevant to Heathrow:

- CORSIA - over 90% of airlines participate in CORSIA, which is signed up to at state level. The UK and all EEA and North American nations participate. CORSIA is designed to deliver carbon neutral growth from 2020, and airlines pay for CORSIA eligible carbon units to cover emissions on all air movements above their baseline. These carbon units can be acquired for under £10/tonne.

- In January 2021, following the UK's departure from the EU, the UK Government introduced the UK Emissions Trading Scheme (ETS), which is very closely modelled on the EU ETS. Tradable emissions allowances are issued to participating companies in line within a reducing cap. Trading at around EUR50/ tonne, this will be quite an impactful policy shift, however it only applies to intra-EEA flights. Prices are expected to climb to c. EUR90/tonne by 2030.

- In September 2021 BEIS updated their greenhouse gas emissions valuation to take into account the UK's net zero target.

3.8.26 The central case scenario from RBP Update 1 was based on figures used in the DfT's Aviation Model Central Scenario 2017. The current market price is tracking above the DFT's 2017 view and in line with the traded carbon values (based on ETS price). The current market price is, however, significantly lower than BEIS's September greenhouse gas emission valuation projections for 2020 and 2021.

3.8.27 We have therefore updated our central case assumption to use a trajectory from current traded carbon values, based on ETS prices, of 55 EUR or 46 GBP per tonne in 2020 to BEIS's latest central projection of 378 GBP per tonne in 2050[36].

3.8.28 We also consider a high carbon cost assumption, which utilises BEIS's latest central projection of carbon value out to 2050 but recognises that aviation market levers will not start to expose airlines to this cost until the mid-2020s. The high case therefore tracks our central scenario in the short term until 2024, and then transfers over to the BEIS central case in 2035, again using a linear trajectory.

3.8.29 The future carbon price trajectory is influenced by a number of factors in the medium and long term which we plan to assess in more detail. Therefore to date our focus for the application of carbon prices to demand forecasts is the H7 period only.

3.8.30 This leads to the following estimated increases in airfares as compared to 2019:

[36] BEIS Valuation of greenhouse gas emissions, September 2021

Table 6: Impact on fares compared to 2019 prices of the Heathrow carbon price forecast scenarios

	2022	2024	2026
Central	4.8%	6.7%	8.9%
High	4.8%	6.7%	11.0%

Source: Heathrow demand model and fares projection model

3.8.31 There is also a broader question around passenger propensity to fly in a net zero world. Consumers may choose to fly less unless the aviation sector is acting and being seen to act to cut emissions. Around a third of UK consumers claim to avoid flying where possible and 40% say they expect to avoid it in the next few years.[37] With the increased awareness and understanding of climate change and its impacts, consumers in a net zero world could have a lower propensity to fly. We have already started to see this culture develop in Scandinavia with the "flight shaming" movement.

3.8.32 There is no evidence to suggest a shift in consumer behaviour today and consumers also acknowledge there is currently a lack of alternatives to flying for many journeys. As a result, we do not consider the possibility of further reductions to propensity to fly and the increases in carbon prices are deemed a sufficient guide.

3.8.33 In the November presentation of their latest aviation forecast update, IATA and Tourism Economics stated a belief that the impact of rising carbon costs could have a significant impact on the industry. Currently, IATA only considers higher carbon costs in their downside risk scenario and not the central scenario in their forecast. The downside risk includes consumers not being able to afford travel due to higher fares and carbon taxes, but in their central scenario IATA still assumes a reduction in airfares due to technology advancements.

3.8.34 The second component of fares considered in our RBP Update 1 was the impact of pandemic related pressures on airfares. In particular, airline and airport capacity constraints which may limit supply, a loss in business passengers impacting on airline profitability resulting in an increase to economy fares, testing costs directly impacting the cost of travel and the need for airlines to recover costs and lost profit over the pandemic.

3.8.35 We now consider three scenarios for pandemic related impacts on airfares. The first is no impact at all. The second is a 5% increase on fares phased in from 2024. The third is a 10% increase in fares also phased in from 2024. Prior to 2024 it is assumed that downward pressures on fares from low fuel prices, excess capacity and weak demand will offset the upwards pressure on fares mentioned above.

3.8.36 IATA and Tourism Economics also expressed an expectation of rising fares in their latest forecast update, suggesting the requirement for airlines to repay debts and airports trying to recoup losses would lead to pressures on airfares in the next few years. Again, these assumptions are only considered in their downside scenario.

3.8.37 The resulting fare assumptions for each modelled scenario are as follows:

[37] Incite, Understanding the sustainability landscape in 2020 and future initiatives for Heathrow, September 2020

Figure 33: Carbon pricing impact on fares assumptions under the four scenarios

In **Scenario 1** the updated central case for carbon pricing is assumed with no other impact on fares considered.

In **Scenario 2** the updated central case for carbon pricing is assumed with an additional 5% increase in fares phased in from 2024.

In **Scenario 3** the updated high case for carbon pricing is assumed with an additional 5% increase in fares phased in from 2024.

In **Scenario 4** the updated high case for carbon pricing is assumed with an additional 10% increase in fares phased in from 2024.

Source: Heathrow demand model

3.9 Key drivers – supply model

Airport capacity

3.9.1 In the December 2020 RBP we shared a report from Eurocontrol[38], which found that *"airports already congested before the COVID crisis can expect to reach their maximum saturation capacity at just 60-75% of their peak 2019 traffic."*

3.9.2 During engagement sessions, the Airline Community expressed the view that the findings from Eurocontrol were outdated and needed to be refreshed. As the report was only published in September 2020, we disagree with the characterisation of outdated, but acknowledge that there are ongoing efforts across the aviation industry to reduce the impact of Covid-19 on capacity.

3.9.3 At the point of writing the June 2021 RBP Update 1 we noted the lack of clarity on how long this impact on capacity would persist, and what impact it may have on constraining demand. We therefore assumed that airport capacity would keep pace with airline supply and passenger demand. Our expectation was that we would then be able to update our assumptions on airport capacity in this RBP Update 2.

3.9.4 Since that point we have seen a steady ramp-up in numbers of passengers travelling through the airport. Our understanding of capacity is developing but the issues are complex and changeable and there is still a lack of clarity on total impact and any likely timeline for that impact to reduce.

3.9.5 By July 2021 our passenger numbers had reached 19% of those in July 2019 and Terminal 3 was needed to meet that demand. This is indicative of the capacity impact we face. The combined capacity of Terminals 2 and 5 represents c.65% of our pre-Covid total terminal capacity, yet they weren't sufficient to serve 19% of our demand.

3.9.6 A significant part of this impact is a result of the 'shape' of demand, rather than the overall total. We have a very 'peaky' operation, which is seen at both daily and hourly level. In July 2019 the peak day was just 4% busier than the average day for the month, in July 2020 it was 46% busier than the average and in July 2021 it was 38%. The demand for morning runway slots is already almost at capacity on peak days, yet that demand dwindles in the afternoon.

[38] Impact assessment of COVID-19 measures on airport performance, Eurocontrol, September 2020

3.9.7 Even with this increasing understanding of the problems and making focused efforts on solutions, there is not sufficient clarity to set an assumption on any airport capacity constraint. A good example of this is our emerging understanding of the capacity constraints in check-in outlined in Section 6.5.16. We therefore maintain the assumption from the RBP Update 1 that airport capacity would keep pace with airline supply and passenger demand.

3.9.8 What we can say is that this impact on capacity not only risks constraining our ability to service demand but poses a significant risk in terms of impact on passenger experience, as well as increasing the cost of operation and the requirement for investment in additional infrastructure.

Airline supply

3.9.9 As for the previous iterations of the forecast, we make two distinct assumptions on airline supply. The first relates to the point at which airline supply, including aircraft and resource, will ramp-up to 2019 levels. The second is the long-term impact of the recent retirements and planned deliveries of aircraft on the number of available seats.

3.9.10 In the previous RBP chapters we have set out a significant amount of evidence for our assumptions on why the ramp-up in airline supply will be impacted. This evidence ranges from IATA's statements on airlines' precarious financial positions[39,40,41], public statements by airlines on their resource cuts[42,43,44,45], the Airline Community's feedback that they *"do not have the cash reserves to invest in fleet and so will need to continue operating their existing fleet for an extended period until cash reserves are built up, likely to be significantly post H7"*[46], airlines' financial results showing retirement of aircraft and deferral of deliveries of new aircraft[47], explicit public statements from airlines talking of how the ramp-up in supply will be impacted[48,49], and analysis by industry experts on likely timeline for return of airline resource[50].

3.9.11 Since then we have seen issues with airline supply impacting on actual operations, including: severe shortages of ground handling skills and challenges in retaining and recruiting staff[51], Christmas flights to be hit by airline staff shortages[52], KLM pilots loading bags onto flights at Schiphol due to baggage staff shortages[53], job vacancies in the travel industry hitting the second highest level since February 2019[54], airlines cancelling thousands of flights across just a few days because of lack of resource[55].

[39] IATA - Deep Losses Continue Into 2021, 24th November 2020
[40] Outlook for Air Transport and the Airline Industry, IATA, 24th November
[41] Airline Community presentation to CAA and HAL, March 2021
[42] American Airlines Says Oct. 1 Job Losses Will Total 40,000, forbes.com, 25th August 2020
[43] IAG Q3 2020 Financial Results, 30th October 2020
[44] Coronavirus: Virgin Atlantic to cut 1,150 more jobs - BBC News, 4th September 2020
[45] Economic Performance of the Airline Industry, IATA, 24th November 2020
[46] Section 2, Annex 3.2 – Airline H7 RBP Feedback – Airline Fares Shocks Business Travel_Final
[47] IAG Q3 2020 Financial Results, October 2020
[48] Lufthansa fleet reductions, aerospace-technology.com, March 2021
[49] Reduced Losses but Continued Pain in 2021, IATA, April 2021
[50] British Airways pilot deal, what does it tell us? Gridpoint Consulting, July 2020
[51] IATA - Ground Handling Priorities Post Pandemic: Tackling Labor Shortages, Safety, Modernization
[52] Christmas flights could be hit by staff shortages (msn.com)
[53] KLM asks pilots to help with baggage chaos: Telegraaf - DutchNews.nl
[54] Travel job placements 'hit highest level in 19 months' | Travel Weekly
[55] Ouch: American Airlines Cancels 2,200+ Flights - One Mile at a Time

3.9.12 As demand in the US has returned, carriers have struggled to keep up. American Airlines had to cancel hundreds of flights at the end of October citing both adverse weather and staffing – similar issues were also evident in summer. Southwest Airlines suffered what Reuters called an "operational meltdown" as 2,000 flights were cancelled, and Spirit cancelled 2,800 in August.[56] The tight labour market has driven up Southwest's minimum wages to $15 an hour and they are offering referral bonuses – yet they are still struggling to find applicants.

3.9.13 U.S. air transportation employment in September was more than 12% below its pre-pandemic peak. By contrast, employment at restaurants and bars, struck equally hard by pandemic lockdowns, is just 7.6% below its peak before the Covid-19 pandemic.[57] At Heathrow we have seen a similar trend across the airport community; pre-Covid c.75,000 people worked directly at Heathrow and a total of c.95,000 ID passes were issued. The workforce across all organisations is now at least 25,000 below pre-pandemic levels. This ties with general tends post-pandemic – rather than the millions of layoffs that were seen in 2020, The US and UK have seen millions of resignations, in what some analysts have called 'The Great Resignation'.[58]

3.9.14 In the previous RBP iterations, we also set out a significant amount of evidence for our assumptions on long-term impact of fleet replacement on available seats. We also made the point that much of that evidence does not require any forecasting or scenario planning, as the changes have already been made; BA and Virgin have already retired their entire 747 fleets. The quotes we included on the uncertain future of the A380 come directly from the most senior members of the Airline Community[59,60,61,62,63,64,65].

3.9.15 We have updated our assumptions on long-term impact of fleet replacement on available seats based on the latest information from airlines. As noted in previous RBP documents, it is at the request of the Airline Community that we base these assumptions on information that is available in the public domain, rather than anything supplied to us directly.

3.9.16 On A380s, our central assumption is that British Airways[66] and Qantas[67] continue to fly their A380 fleets. We assume that Emirates continue to fly A380s in the medium term but then replace part of their fleet with the 777X[68]. Our central assumption is that Etihad[69], Singapore Airlines[70] and Qatar Airways[71] replace their A380s, but we

[56] Spirit Airlines says operational meltdown cost it about $50 million, cuts third-quarter schedule (cnbc.com)
[57] U.S. airline disruptions cast a pall over holiday travel | Reuters
[58] Who Is Driving the Great Resignation? (hbr.org)
[59] Qantas Retires 747, Won't Fly A380 For Years, One Mile at a Time, June 2020
[60] Qatar Airways Will Retire Half Of Its A380 Fleet, One Mile at a Time, Jan 2021
[61] Sad: Etihad "Very Likely" To Retire A380 Fleet, One Mile at a Time, June 2021
[62] Singapore Airlines Retiring 26 Planes, Including A380s, One Mile at a Time, Nov 2020
[63] Thai Airways Selling Boeing 747, Airbus A380 Fleet, One Mile at a Time, Dec 2020
[64] Lufthansa Retiring Entire A380 & A340-600 Fleet, One Mile at a Time, Sept 2020
[65] Air France Becomes First Airline To Retire All A380s, One Mile at a Time, May 2020
[66] British Airways airbus a380 return plans, Simple Flying
[67] Qantas bring back airbus A380s, Airline Ratings
[68] Emirates 777x delivery 2025, Simple Flying
[69] Etihad airbus A380 return doubt, Simple Flying
[70] Singapore Airlines boosts Boeing 777-9 order as A380 replacement, Executive Traveller
[71] Qatar Airways to reactivate A380s, Business Travel

consider a high case in which they are retained. We assume that Korean Air[72] and Thai Airways[73] replace their A380s.

3.9.17 On B747s, our central assumption is that Korean Air[74] retain these aircraft throughout the H7 period, but we consider a downside in which they are replaced. We assume that El Al replace their B747s[75]. On British Airways' retirement of B747s, we consider a range of replacements based on their existing fleet and planned deliveries. This ranges from a high case of no reduction in seats to a low case of a 5% reduction.

Figure 34: Scenario assumptions on airline supply

In **Scenario 1** we assume that airlines will be able to ramp up supply to meet demand, that fleet replacements won't impact on total number of seats and the densification of short-haul aircraft will resume once we reach recovery leading to marginal increases in available seats in 2025 and 2026.

In **Scenario 2** we assume that airline supply will be a constraint until a point in 2023 and that fleet replacements will lead to an overall reduction of 1% of seats.

In **Scenario 3** we assume that airline supply will be a constraint until a point in 2024 and that fleet replacements will lead to an overall reduction of 3% of seats.

In **Scenario 4** we assume that seats will have recovered to 75% of 2019 levels in 2026.

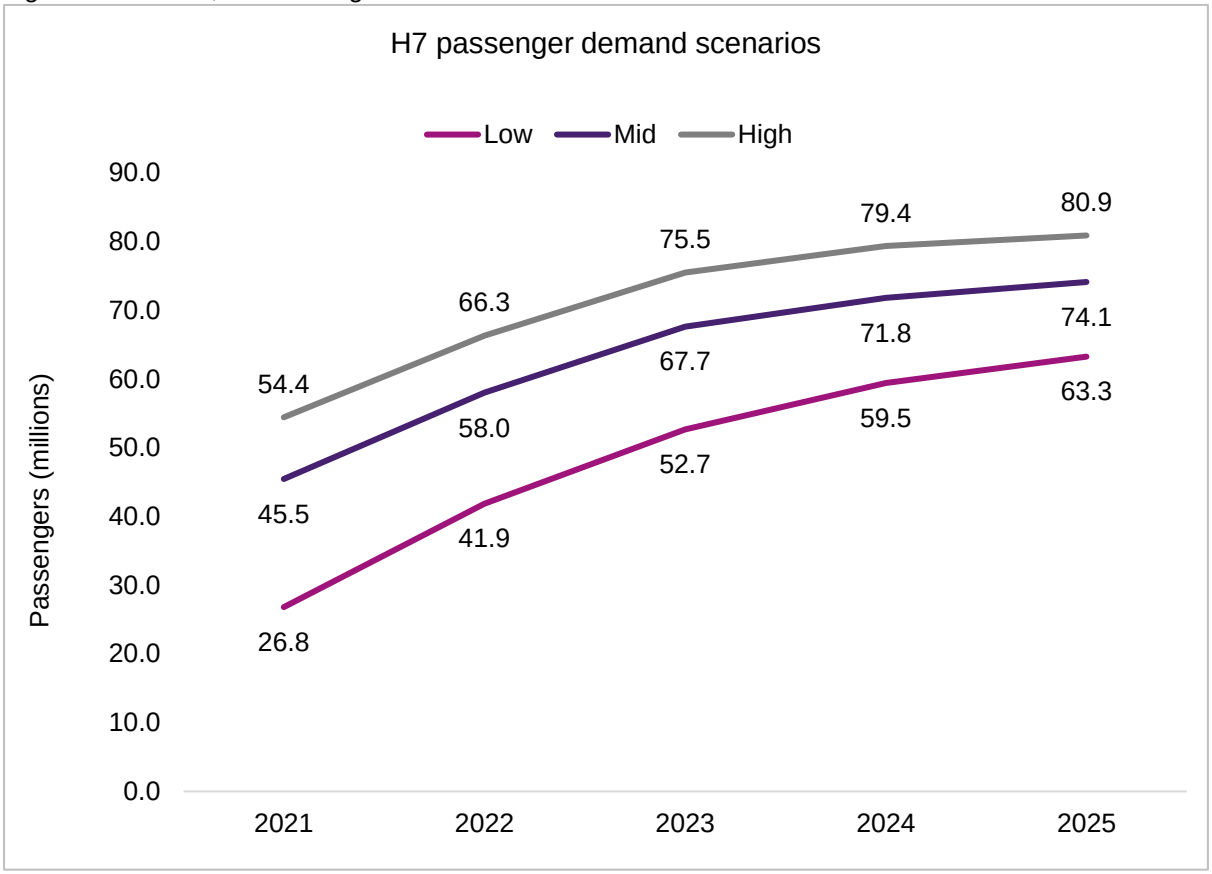
[72] Korean Air to replace its10 airbus A380s, Aviation24
[73] Thai Airways to retire A330s A380s and B747s, Business Traveller
[74] Korean Air to replace its 10 Boeing 747 in 10 years, Aviation 24
[75] El Al final transatlantic 747, Simple Flying

3.10 Results

H7 low, mid, and high cases

3.10.1 The resulting low, mid, and high cases for the H7 passenger forecast, with shock factor applied, are shown in Figure 35 and Table 7.

Figure 35: H7 low, mid and high cases - chart



Source: Heathrow

Table 7: H7 low, mid and high cases – table

	2022	2023	2024	2025	2026	TOTAL
Low (P10)	26.8m	41.9m	52.7m	59.5m	63.3m	244.1m
Mid (P50)	45.5m	58.0m	67.7m	71.8m	74.1m	317.1m
High (P90)	54.4m	66.3m	75.5m	79.4m	80.9m	356.6m

Source: Heathrow

3.10.2 Compared to RBP Update 1 the mid case has changed by less than 1% over the five years, as increases to 2022 are balanced by reductions in later years.

3.10.3 The most significant change is to the low case, which has increased by 12% over the five years, with most of the difference being in the first two years. The most significant driver of this increase is the change to scenario 4 outlined in Section 3.5.

3.10.4 Although reduced since RBP Update 1, the range in the forecast is still significant, clearly representing the uncertainty we face.

Weighting

3.10.5 We maintain the approach of assigning a weighting to each scenario, reflecting that each one is not equally as likely as another. The weightings are used to guide the combination of the four input scenarios to generate the output low, mid, and high cases. Each input scenario is run through Monte Carlo simulation, then the number of runs proportional to the weighting are combined to give the probabilistic distribution that the P10, P50 and P90 are taken from. We use 10,000 runs so a 50% scenario weighting would mean that 5,000 of the runs are taken from that scenario.

3.10.6 We have assigned the following weightings:

Table 8: Input scenario weightings

Scenario	Weighting
Scenario 1	10%
Scenario 2	50%
Scenario 3	30%
Scenario 4	10%

3.10.7 This is the same split of weightings that we applied to the scenarios in the RBP and the RBP Update 1. As with those forecasts, the two outer scenarios are calibrated as reasonable best- and worst-case scenarios at the point of forecasting. Each of these scenarios is therefore assigned a 10% weighting.

3.10.8 Of the remaining 80% weighting, based on the latest information we take the view that the assumptions set out in scenario 2 are more likely than those in scenario 3. We therefore assign a 50% weighting to scenario 2 and 30% to scenario 3.

3.10.9 As outlined in the context section at the beginning of this chapter, the forecasts we set out here were developed before the discovery of the SARS-CoV-2 variant Omicron. Our methodology is designed to cope with the risk posed by new variants or any other scenario of reasonable likelihood, and we have therefore not needed to make any last-minute updates to our forecast before publishing. This reinforces the strength and resilience of our approach.

3.10.10 We have also decided to maintain the weighting of 10%, 50%, 30%, 10% as in the RBP Update 1. There is still a large amount of uncertainty around the impact of Omicron, there is the potential for the impact to range from minimal, as per Scenario 2, or highly significant, as per Scenario 4. Until there is more information and actual data about the scale of this impact, we have maintained a weighting of 50% towards minimal impact (Scenario 2), 30% towards median impact (Scenario 3) and 10% towards highly significant impact (Scenario 4).

3.10.11 We anticipate that there may be sufficient information for any update to the weightings to be made in the first quarter of 2022, once the impact of Omicron is better understood.

3.10.12 We also recognise that there is still the potential for further new variants to emerge, which warrants the continued inclusion of Scenario 4.

3.10.13 In Table 9 we set out a comparison of the weighting of Oxford Economics' GDP scenarios compared to our input scenarios. To give visibility we have calculated the resulting mid case passenger numbers if we were to directly adopt the GDP scenario weightings. That would reduce the forecast by 3 million passengers, which is a 1% difference.

Table 9: Weightings of GDP scenarios compared to forecast scenarios

	GDP scenarios	Forecast scenarios
Most optimistic	20%	10%
↓	35%	50%
	15%	30%
Most conservative	20%	10%
	10%	

Source: Heathrow, Oxford Economics

3.10.14 External forecasters continue to comment and forecast a greater downside risk than upside risk, which aligns with the balance of our weighting (see section 3.4).

3.10.15 Ultimately the weightings give the flexibility to respond to changes in the outlook much more quickly than we could update the input scenarios. At a time where forecasting is more uncertain than it has ever been and the outlook changes rapidly, the flexibility and speed of response of this methodology is invaluable.

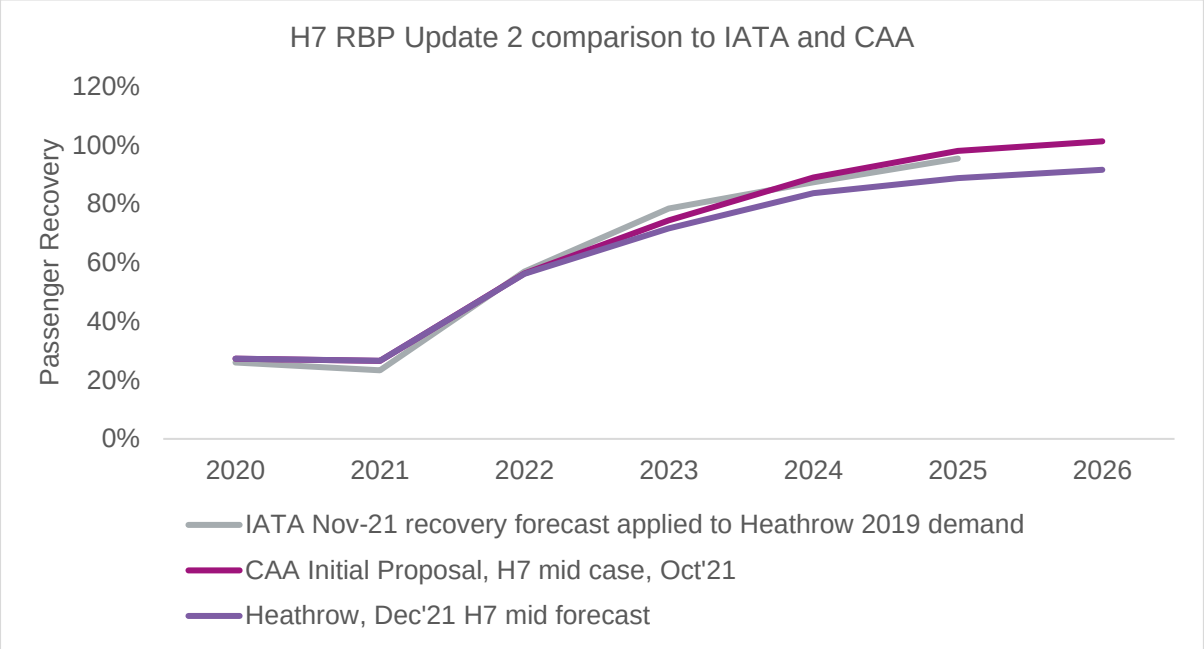
Shock factor

3.10.16 We have adopted the CAA's proposal to exclude pandemic risk from the shock factor calculation, because of its more exceptional nature, and adjust for this in other building blocks. We have updated the calculation of the shock factor to include the data up to the end of 2019. This results in a reduced shock factor of 0.87% being applied.

Comparison to external forecasts

3.10.17 The below chart shows Heathrow's mid-case forecast compared to a weighted combination of IATA's individual market recoveries as a proxy for Heathrow's recovery. Note that this compares the single scenario forecast from IATA with the risk-based, fair-bet forecast that is represented by the Heathrow mid case. This isn't an ideal comparison because of the different natures of these forecasts but serves as a useful high-level comparator.

Figure 36: H7 Mid Case (RBP Update 2) comparison



Source: Heathrow, IATA, CAA

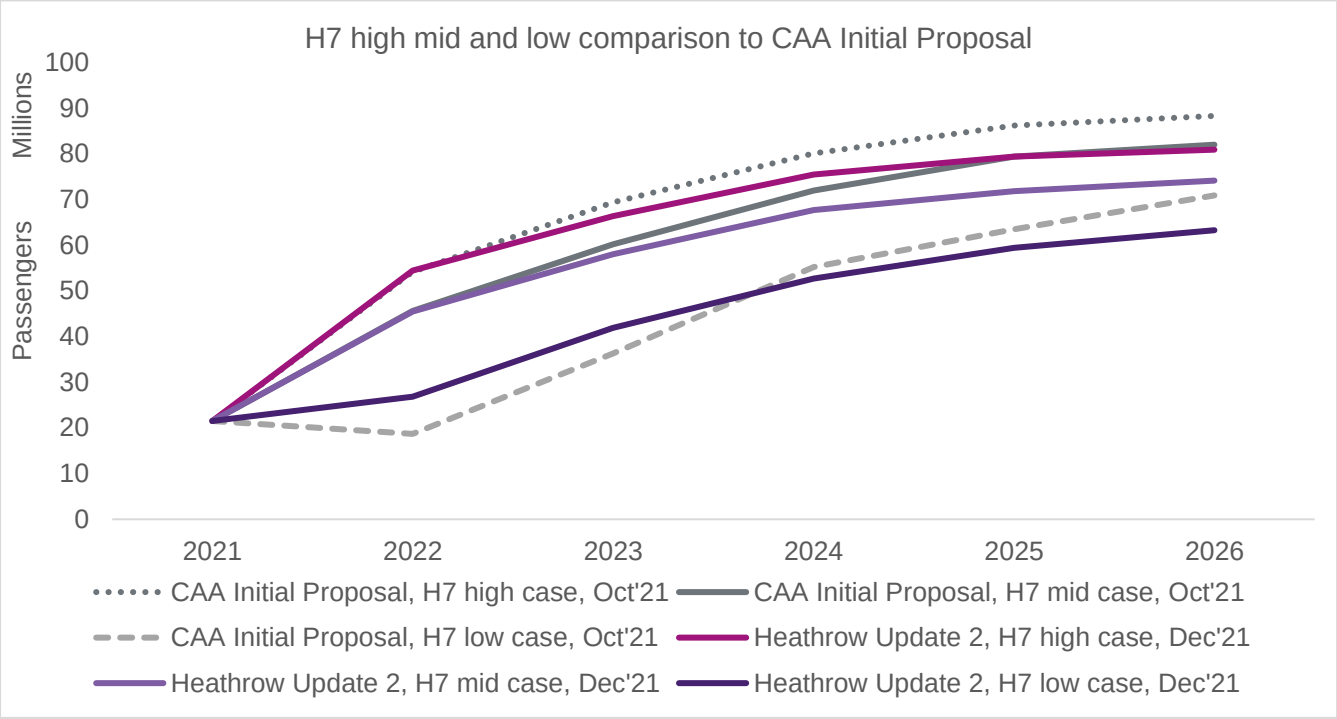
3.10.18 This comparison shows a much closer alignment between IATA's forecast and Heathrow's than we have seen previously, in large part due to the recent downwards revisions from IATA. Although IATA's forecast is slightly above our own from 2024, it is below the CAA's passenger forecast from the initial proposals.

3.10.19 It is also worth noting IATA's central forecast currently does not assume any increases to fares resulting from rising carbon costs. IATA and Tourism Economics stated a belief that the impact of rising carbon costs could have a significant impact on the industry however these assumptions are reserved for their downside scenario at present - a scenario which considers some passengers unable to afford the increased cost of flying. Their central scenario still assumes a reduction in airfares due to technology advancements.

3.10.20 Given the updated, and significantly higher, view of carbon price projections released this year by BEIS, this would suggest the current IATA forecast is still over optimistic. IATA intend to consider increasing fares but are waiting for more information on how the additional cost of net-zero flying will be handled in the industry. Our central case forecast does include rising costs of carbon and a transition to the BEIS forecast, we also intend to evolve our assumptions as more information is available on the impact of about the journey to net zero.

3.10.21 Figure 37 shows the Heathrow forecast in comparison to the CAA's Initial Proposals. Heathrow and the CAA remain well aligned on 2022, however the CAA's view starts to diverge from 2023. By 2025 and 2026 the CAA's mid case remains in line with Heathrow's high case. We set out our detailed review of the CAA's forecast in our response to the Initial Proposals.

Figure 37: Low, mid, and high cases



Source: Heathrow, CAA

3.10.22 As we set out in section 3.4, the majority of external forecasters are expecting 2025-26 as the first full year of recovery. Heathrow is closely aligned with the market on this assumption. We have modelled a range in recovery scenarios from a point in 2024 to beyond the H7 period. Scenario 2, which has the most weighting of any of our scenarios, expects to reach 96% recovery in 2025, as shown in Table 10.

Table 10: External recovery assumptions

Source	Scope	Update	2025 Recovery
IATA[76]	International	November	98%
IATA[77]	Europe	November	102%
ACI[78]	Europe	October	101%
Eurocontrol[79]	UK ATMs	October	100%
ICF[80]	Europe	April	101%
Heathrow	Heathrow Scenario #2, Dec'21	November	96%
Heathrow	Heathrow, Dec'21 H7 mid forecast	November	90%

[76] IATA & Tourism Economics: Air passenger recovery to begin in earnest in 2022, November 2021
[77] IATA & Tourism Economics: Air passenger recovery to begin in earnest in 2022, November 2021
[78] ACI Europe Airports Traffic Forecast, October 2021
[79] EUROCONTROL/STATFOR 7-Year Forecast 2021-2027, October 2021
[80] ICF COVID-19 air passenger recovery phases and forecast, April 2021

3.10.23 As explained in previous sections and iterations of the RBP, our methodology uses a weighted combination of scenarios to reflect the uncertainty we face. When considering recovery years, it is more appropriate to do so based on the narrative input scenarios, hence the comparison of scenario 2 against the external forecasts. Our mid case reflects the overall amount of risk and captures the greater downside risk present in the recovery. We have included the mid case recovery in 2025 here for completeness.

Risks and opportunities

3.10.24 There remains a high level of uncertainty and so a correspondingly large amount of both risk and opportunity.

3.10.25 The CAA has recognised this uncertainty and has confirmed its intention to apply a traffic risk sharing mechanism for H7. We agree with the CAA's view that risk sharing is required, but do not fully agree with the CAA's proposed risk sharing mechanism. Chapter 1 of our response to the CAA's Initial Proposals sets out our proposed calibration mechanism.

3.10.26 We note the following risks and opportunities:

3.10.27 **Failure to control Covid-19** - the key risk in the immediate term relates to any potential need for further lockdowns and travel restrictions. Covid-19 will need to be kept under control until vaccines and prior infection provide sufficient levels of immunity for the virus to become endemic. We must acknowledge the potential for further impacts of this scale until vaccine roll-out is achieved in all our core markets.

3.10.28 **Testing and quarantine requirements** - there are very few countries around the world that allow travel free of restrictions. Even with the progress on reducing restrictions in the UK prior to the emergence of the Omicron variant there was still the requirement to take a lateral flow test and fill out a Passenger Locator Form on arrival. To return to 'normality' these requirements must be removed.

3.10.29 **New variants** - there is clear advice from the scientific community that the risk of new variants emerging remains a very real possibility. We do not know yet if the Omicron variant is going to have the same impact as Alpha did in early 2021 but the potential for it or future variants to do so is very much live.

3.10.30 **Carbon pricing** - the key climate risks facing Heathrow are that the market for air travel does not grow as much as we currently forecast for a combination of three reasons:

- Government concludes that it is not possible to sufficiently decarbonise flying in line with the UK's net-zero targets and additional measures are needed to limit demand for aviation, including raising the cost of air travel (which may link to point 2) or by limiting airport capacity;
- Policies to price carbon at a UK, European or international level, through taxation or carbon trading schemes, translate to increased ticket prices, above those assumed in our scenarios, and therefore lower demand for aviation.
- Consumer sentiment towards flying becomes more negative and consumers prefer to fly less, negatively impacting the propensity to fly.

This phenomenon has already been experienced in Scandinavia in the form of ‘flygskam’ (Flight Shaming).

4 OPERATING COSTS UPDATE

4.1 Introduction

4.1.1 The purpose of this chapter is to update our H7 operating cost forecast to reflect our updated passenger forecast, new market data and additional evidence that has become available since RBP Update 1.

4.1.2 This document is submitted alongside and aligned with our Initial Proposals response on operating costs. In our Initial Proposals response, we set our response to the CAA's Initial Proposals for operating costs and the supporting consultant report by CEPA and Taylor Airey.

4.1.3 Table 11 below presents our updated operating cost forecast.

Table 11: H7 operating cost forecasts – RBP Update 1 vs Update 2

Total operating costs (£m, 2018p)	RBP Update 1	RBP Update 2
People	[✂]	[✂]
Operational costs excl. insurance	[✂]	[✂]
Insurance	[✂]	[✂]
Facilities and maintenance costs	[✂]	[✂]
Rates	[✂]	[✂]
Utility costs excl. distribution contract	[✂]	[✂]
Distribution contract	[✂]	[✂]
General expenses	[✂]	[✂]
Total Core Operating Costs	**5,334**	**5,363**
Covid-19 costs	[✂]	[✂]
Terminal drop-off Charge costs	[✂]	[✂]
Surface access strategy costs	[✂]	[✂]
Enhanced service costs	[✂]	[✂]
Security Transformation costs	[✂]	[✂]
Terminal 4 ramp-up costs*	-	[✂]
Terminal 4 red list costs*	-	[✂]
Total Operating Costs	**5,575**	**5,593**

**Note: In RBP Update 1, Terminal 4 ramp-up and red-list costs were included at a category level in core operating costs. For clarity we have separated out these costs in RBP Update 2.*

4.1.4 The structure of this chapter is to provide an overview of all the key operating cost assumptions, setting out the updates we have made, or confirming where our assumptions remain unchanged.

4.2 2019 Baseline

4.2.1 In our December 2020 RBP we presented a range of evidence to demonstrate that 2019 represents an efficient baseline for our H7 operating costs forecast. Since RBP Update 1, we have commissioned KPMG to update the detailed econometric benchmarking analysis of our operating costs they previously carried out in 2019, to now include 2019 data[81]. The updated analysis confirms that no catch-up efficiency adjustment is required. Full details of the updated analysis are included in our response to the CAA's Initial Proposals.

4.2.2 As previously stated in the RBP and RBP Update 1, we have removed £1.8m (nominal) of Expansion costs from the 2019 baseline costs. This aligns to our Cat B submission for 2019. Since RBP Update 1, we have provided the CAA with a reconciliation of our 2019 regulatory and statutory accounts at a cost category level and had a follow up session with them to ensure there is clarity over the treatment of capitalised staff costs.

4.2.3 In the RBP and RBP Update 1, we removed a one-off credit of £1.9m (nominal) from people costs in the 2019 baseline. However, we have now deemed the adjustment not sufficiently material and are no longer including it in RBP Update 2.

4.2.4 In the RBP and RBP Update 1, we made an adjustment to the 2019 baseline to reflect the cost increase of the commitment that all our suppliers would be paying the London Living Wage from 2022 onwards. Since RBP Update 1, we have carried out further reviews of our major contracts, including the timings for implementing the London Living Wage and the associated cost impact. The details of this review are set out in our Initial Proposals Response Appendix A10 - Additional analysis to support operating cost assumptions. By April 2022 all of our contracts will be aligned to the London Living Wage, the full year impact of this is an increase of [✂] compared with the 2019 baseline.

4.2.5 Table 12 below summarises the required adjustments to the 2019 baseline to ensure it is a representative starting point for the H7 forecast.

Table 12 : Adjustment to 2019 baseline – RBP Update 1 vs Update 2

Adjustment to 2019 baseline (£m, 2018p)	RBP Update 1	RBP Update 2
Expansion	[✂]	[✂]
People cost credit removal	[✂]	[✂]
London Living Wage	[✂]	[✂]

Source: Heathrow

[81] KPMG, Airport Operating Cost Efficiency Benchmarking, December 2021

4.3 Ongoing savings from actions since 2019

4.3.1 As in RBP Update 1, we have included the permanent savings associated with the Cost of Change program and the renewal of the baggage contract. The ongoing savings are presented in the table below.

Table 13: Ongoing savings – RBP Update 1 vs Update 2

Ongoing Savings (£m, 2018p)		2022	2023	2024	2025	2026	H7 Total
RBP Update 1	Cost of Change	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Baggage	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	Cost of Change	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Baggage	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

Driver-based model assumptions

4.4 Operating cost elasticity assumptions

4.4.1 Our driver-based model uses elasticities with respect to passenger volume or utilised terminal space to forecast our operating costs. Since RBP Update 1, we have updated the elasticity we use for people costs with respect to passenger volumes.

4.4.2 Validation of our model outputs against our bottom-up outturn estimates for people costs in 2021 and 2022, has highlighted that using an elasticity of [✂] is overestimating the ability of an efficient airport to make people savings when faced with sudden changes in passenger demand. This is primarily due to two key factors, with a full discussion of the issues included in our Initial Proposals response:

1) The operational reality of aligning security resourcing to the current passenger demand environment, with shift pattern constraints which are bound by terms and conditions. A consequence of Covid-19 safety measures and the current reduced levels of demand on our security resourcing levels is the negative impact to security flow rates and resource coverage efficiency. Using our People Model, we estimate this impact to be a requirement for an additional 273 FTEs. This is compared to modelling the expected 2022 passenger volumes in line with the monthly seasonality seen in 2019 and the 2019 flow rates and coverage efficiency, reflecting the removal of any Covid-19 restrictions and measures, and the shape of the demand being less peaky and more in line with 2019. Similarly, the impact in 2021 was a requirement for 304 additional people in operations. Using average salary rates by role, we have reflected the cost impact of this additional resource requirement using an additional overlay for People costs for 2021 (£[✂]) and 2022 (£[✂]). Full details are of the analysis are included in our Initial Proposals response.

2) The practical reality of ramping-up or down the total colleague population for changes in passenger demand. Due to union negotiations and legal consultation periods, there is a time lag from a fall in passenger volumes to the practical ability to implement cost reductions. When ramping-up resource, due to recruitment and training lead-in times, it is necessary to bring back resource before demand. As the forecast outturn for people costs in 2021 reflects the cost implications of these practical challenges, we have adjusted the people costs elasticity in the RBP Update 2 model to align to the 2021 costs (after adjustment for furlough, which is not available in 2022). This results in the people costs elasticity being reduced from [✂]to [✂]. Full details are of the analysis are included in our Initial Proposals response.

4.4.3 Table 14 below presents a summary of the operating cost elasticity assumptions for RBP Update 2.

Table 14: Operating cost elasticity assumptions – RBP Update 1 vs Update 2

Cost Category	Driver	RBP Update 1	RBP Update 2
People	Passenger Volumes	[✂]	[✂]
Operational costs excl. insurance	Passenger Volumes	[✂]	[✂]
Insurance	Annual growth assumption	[✂]	[✂]
Facilities and maintenance costs	Utilised terminal floorspace	[✂]	[✂]
Rates	Assumed to remain constant in real terms		
Utility costs excl. distribution contract	Passenger Volumes	[✂]	[✂]
Distribution contract	Based on contract		
General expenses	Passenger Volumes	[✂]	[✂]

Source: Heathrow

4.5 Cost impacts of changes in terminal use

4.5.1 We also capture the step changes in costs when terminals open or close. In RBP Update 1, we assumed that in the high and mid passenger forecast scenarios Terminal 4 would reopen for all passengers in June 2023. In the low passenger forecast scenario, Terminal 4 would not be required until June 2025. Due to the processing constraints introduced by Covid-19, for the purposes of RBP Update 2 we are now assuming an opening date of July 2022 for Terminal 4. See Section 1.3 for further information on the assumption to open Terminal 4.

4.5.2 In RBP Update 1, we also assumed that Terminal 4 would be open as a red-list arrival facility until it opened to all passengers in June 2023. Although Terminal 4 was briefly closed when the government removed all countries from the red list, in response to the Omicron variant and countries returning to the red-list, we have re-opened Terminal 4 as a red-list arrival facility. We again assume that it remains as a red list facility until it fully reopens, now assumed to be July 2022. However, unlike in RBP Update 1, there is no agreement in place with the UK Government to recover the associated costs of red-list operation.

4.5.3 Since RBP Update 1, we now have details of the actual incremental costs incurred from red-list opening. We have included £[✂] of incremental costs associated with operating the red-list facility from January to the full reopening of Terminal 4 at the beginning of July 2022. These costs are based on the incremental costs occurred in September 2021, as this represents efficient spend where we were neither ramping up or down the operation, further details are included in our Initial Proposals response.

4.5.4 As we are now using the direct costs for red-list operation, for this update it is only necessary to apply assumptions in the model for changes in utilised terminal space for all passengers.

4.5.5 Since RBP Update 1, we have revised our approach to estimating the step changes in people costs when terminals open or close. For the purposes of budgeting, we have developed a detailed People Model to forecast resource requirements in the short term. We have used this model to compare the resource impact of opening an additional terminal whilst assuming the same passenger demand assumption, e.g. the number of additional FTEs required to serve the same number of passengers spread across four rather than three terminals. We have then used average salary by role to calculate the cost impact. Full details of this analysis and the People Model are included in our Initial Proposals response.

4.5.6 We have also refined our assumptions for the ramp-up of people costs, to reflect the training requirements of the additional roles required for reopening. Some of the additional roles, such as technicians, have to be recruited as far as 6-9 months in advance in order to complete the required training. However, the majority of the roles are security officers who have a training requirement of 6 weeks. Therefore, we have assumed a ramp-up of [✂]of costs from 6 months before opening, increasing to [✂]in the 2 months prior to opening.

4.5.7 Table 15 below presents a summary of the assumptions used in RBP Update 2.

Table 15: Cost impacts of changes in terminal use – RBP Update 1 vs Update 2

Cost impact (£/m2, 2018p)		RBP Update 1	RBP Update 2
People	Cost impact	£[✂] (£[✂] for red list terminal use)	Updated based on people model analysis
	Cost build-up	3 months prior to re-opening: [✂], [✂], [✂]	Ramp-up determined by training requirements: [✂] 6-3 months prior to opening, increasing to [✂] from 2 months prior to opening
Operational	Cost impact	£[✂]	£[✂]
	Cost build-up pre-opening	3 months prior to re-opening: [✂], [✂], [✂]	3 months prior to re-opening: [✂], [✂], [✂]
Utilities	Cost impact	£[✂] (£[✂] for red list terminal use)	£[✂]
	Cost build-up	3 months prior to re-opening: [✂], [✂], [✂]	3 months prior to re-opening: [✂], [✂], [✂]
Facilities and Maintenance	Elasticity	[✂] ([✂] for red list terminal use)	[✂]

Source: Heathrow

4.6 Cost Overlays

4.6.1 The Covid-19 pandemic has led to a material increase in the cost of delivering the service levels required to meet consumer expectations and government requirements. Where our driver-based methodology cannot capture these material changes in our cost base we continue to use cost overlays. As in the RBP and RBP Update 1, we apply a materiality threshold of £5m per annum or 1% of total operating costs to assess if an overlay should be included. To be clear - this is for cost increases and decreases.

4.7 Covid-19 Cost Overlay

4.7.1 In RBP Update 1, we included a breakdown of costs from February 2020 to April 2021. These were the basis of our cost estimate for H7 with proportional increases when we expected to open Terminals 3 and 4. Since RBP Update 1, we have been able to refine our approach to delivering the Safe To Fly program and have optimised our costs. Our forecast costs for next year are £[✂]. Details of the breakdown of this estimate and are included in our IP Response Appendix A10 - Additional analysis to support operating cost assumptions. As in RBP Update 1, we included a proportional increase to the costs when we reopen Terminal 4 in July 2022.

4.7.2 Table 16 below presents our updated Covid-19 cost overlay for H7.

Table 16: Covid-19 cost overlay – RBP Update 1 vs Update 2

Covid-19 Cost Overlay (£m, 2018p)	2022	2023	2024	2025	2026	H7 Total
RBP Update 1	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

4.8 Enhanced Service Overlay

4.8.1 In the RBP Update 1, we included an Enhanced Service cost overlay to address identified service gaps in the following areas:

- Passengers Requiring Support - £[✂] p.a. to provide a dedicated in-terminal team to support Passengers Requiring Support.
- Resilience - £1[✂] p.a. additional spend due to the capital under-investment to support asset resilience in 2020 and 2021.
- Digital Service - £[✂] p.a. to enable passengers to get support when they require it during their journey.
- Touchless / Automated journeys - £[✂] p.a. to support the on-going maintenance and roll-out of new touchless and automated parts of the passenger journey.

4.8.2 Since RBP Update 1, we have reviewed and refined the phasing of the cost requirements of the Passengers Requiring Support and Resilience elements of the Enhance Service overlay. Full details are included in our Initial Proposals response.

4.8.3 For RBP Update 2, we have also reviewed the Digital Service and Touchless/Automated Journey elements of the Enhanced Service Overlay. Although this spend is clearly additional and required to address current service gaps, we have deemed in not sufficiently material to include in the forecast.

4.8.4 The updated enhanced service cost overlay is shown below:

Table 17: Enhanced service cost overlay – RBP Update 1 vs Update 2

Enhanced Service Overlay (£m, 2018p)		2022	2023	2024	2025	2026	H7 Total
RBP Update 1	PRS	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Resilience	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Digital Service	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Automated Journeys	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	PRS	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Resilience	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Digital Service	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Automated Journeys	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

4.9 Surface Access Cost Overlay

4.9.1 In the RBP and RBP Update 1, we included a cost overlay to reflect the costs associated with delivering our surface access strategy. The costs consisted of two elements, those associated with the Terminal Drop-off Charge and those related to sustainable travel initiatives.

4.9.2 The Terminal Drop-off Charge was introduced on the 1st November 2021. The costs associated with administering the Terminal Drop-off Charge are entirely additional and there is no overlap with the current operation.

4.9.3 In RBP Update 1, we based the costs on the business case, where it was assumed they were [✂] of revenues based on 2019 passenger volumes. For this update, we have revised our cost estimate basing it on assumptions on the fixed administration costs and costs per transaction. The assumed percentages decrease from [✂] in 2022 to [✂] in 2026, as passenger volumes grow.

4.9.4 We have reviewed the other surface access strategy costs and whilst they are essential for delivering our surface access targets, we have deemed that they do not pass our materiality threshold. Therefore, in RBP Update 2 we will no longer include these costs in the surface access overlay. The updated surface access strategy cost overlay is shown below:

Table 18: Surface access cost overlay – RBP Update 1 vs Update 2

Surface Access Overlay (£m, 2018p)		2022	2023	2024	2025	2026	H7 Total
RBP Update 1	Terminal Drop-off Charge Costs	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Other SAS Costs	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	Terminal Drop-off Charge Costs	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	Other SAS Costs	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

4.10 Input Price Inflation

4.10.1 In the RBP and RBP Update 1, our approach to input price inflation was based on the work by First Economics[82] to determine appropriate input price adjustments to be applied to H7 operating costs, reflecting the rate at which prices for labour and materials changes over time. First Economics recommends using forecasts prepared by the Office for Budget Responsibility (OBR) and other appropriate Government departments. In RBP Update 1, we updated the forecasts to reflect the latest available data. We also provided full details of how the forecasts had been weighted together in accordance with the share that each input type has within the H7 operating cost categories.

4.10.2 For RBP Update 1, we used the BEIS retail electricity price forecast published in October 2020.[83] This forecast is now significantly out of date and BEIS have not published an update. As a result, we have commissioned EIC to develop electricity and gas price forecasts based on the latest available data[84].

4.10.3 Since RBP Update 1, we have also commissioned Frontier Economics to review our approach to input price inflation[85]. A full discussion of the Frontier Economics recommendations is included in our Initial Proposals response. Table 19 presents a summary of how we have reflected them in RBP Update 2 at a cost category level.

[82] First Economics, Frontier shift, input price inflation and productivity growth, August 2019
[83] BEIS, Updated energy and emissions projections 2019, October 2020.
[84] EIC, Delivered Electricity Price Forecast, November 2021.
[85] Frontier Economics, H7 IP Opex Review, December 2021.

Table 19: Frontier Economics input price inflation recommendations

	RBP Update 1	RBP Update 2
People	OBR March 2021 Average Earnings forecast	OBR October 2021 wages forecast
Operational costs excl. insurance	55% labour using OBR Average Earnings 30% materials using First Economics materials price estimate 15% RPI	Based on a review of our contracts 25% labour using OBR October 2021 wages forecast 50% CPI and 25% RPI using OBR October 2021 forecasts
Insurance	RPI	No indexation, assumption of [✂] price rise per annum is nominal forecast
Facilities and maintenance costs	60% labour using OBR Average Earnings 40% materials using First Economics materials price estimate	Based on a review of our contracts 15% labour using OBR October 2021 wages forecast 45% CPI and 40% RPI using OBR October 2021 forecasts
Rates	RPI	CPI
Utility costs excl. distribution contract	BEIS October 2020 industrial retail electricity price forecast	EIC forecasts for electricity and gas prices CPI for water, waste and telecoms
Distribution contract	RPI	Contract is linked to RPI
General Expenses	50% labour using OBR Average Earnings 50% RPI	50% labour using OBR October 2021 wages forecast 50% CPI

4.10.4 Based on the recommendation of Frontier Economics, and the latest available forecasts, the table below shows our updated nominal input price inflation forecasts.

Table 20: Nominal input price inflation forecasts

	2020	2021	2022	2023	2024	2025	2026
Wages	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Power	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
RPI	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
CPI	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Sources: Frontier Economics, H7 IP Opex Review, December 2021; OBR Historical official forecasts database, October 2021; EIC, Delivered Electricity Price Forecast, November 2021.

4.10.5 It should be noted that in our RBP Update 2 model the source for RPI forecasts is Oxford Economics[86], rather than the OBR. This is because Oxford Economics update their forecasts more frequently than the OBR (quarterly vs biannually). As a result, we have applied the nominal cost category input price assumptions as the wedge vs the OBR RPI forecast combined with the Oxford Economics RPI forecast (e.g. nominal input price = nominal input price – OBR RPI + Oxford Economics RPI). Full details of our input price assumptions are included in Initial Proposals Response Appendix A10 - Additional analysis to support operating cost assumptions.

4.11 Ongoing Efficiency Assumptions

4.11.1 In the RBP and RBP Update 1, we based our ongoing efficiency target on two elements, frontier shift and the level of capital investment in H7.

4.11.2 In RBP Update 1, we based our estimate of 0.1% frontier shift on the Bank of England's total factor productivity (TFP) forecast from January 2020[87] and their view in their May 2021 Monetary Policy Report[88] on the scarring effects from Covid-19 on productivity.

4.11.3 Since RBP Update 1, we have commissioned Frontier Economics to review our approach to setting an ongoing efficiency target[89]. Based on the evidence they have presented on post-financial crisis productivity and the potential impact of Covid-19 on productivity during H7, we have retained our frontier shift estimate of 0.1%.

4.11.4 Since RBP Update 1, we have refined our approach to estimating a capital substitution effect for operating cost efficiency, reflecting the impact of a lagging effect between capital spend and operating cost savings. We have included a 1-year lag in our calculation and incorporated the specific phasing of investment included in the updated capital plan. The updated calculations are shown in the table below.

[86] Oxford Economics RPI forecast, October 2021.
[87] Bank of England, Monetary Policy Report, January 2020
[88] Bank of England, Monetary Policy Report, May 2021
[89] Frontier Economics, H7 IP opex review, December 2021

Table 21: Capital substitution effect % estimates

Capital substitution % estimate		£4.1bn plan
RAB (exc. investment properties) (£bn)	A	[✂]
Critical Capex (£bn, p.a.)	B	[✂]
Enhancement Capex (£bn, p.a.)	C	[✂]
Total Capex (£bn, p.a.)	D = B + C	[✂]
Growth in capex	E = D / A	[✂]
Operational Costs (£bn, p.a.)	F	[✂]
Capex % of Total Costs	G = D / (D + F)	[✂]
Enhancement Capex % of Total Capex	H = C / D	[✂]
Capital substitution % p.a.	I = E * G * H	[✂]

Source: Heathrow

4.11.5 The total year-on-year efficiency assumed in our RBP Update 2 is 1% (capital efficiency 0.9% + frontier shift 0.1%).

Other modelling updates

4.12 Model adjustments to 2020 and 2021 costs

4.12.1 As in RBP Update 1, we have applied one-off adjustments to the model for 2020 and 2021 to ensure the RBP and actuals/expected outturn are fully aligned. Overall, there is a close alignment between the RBP forecast and expected outturns. At a total level they are within £[✂] and £[✂] respectively for 2020 and 2021. The variance in 2021 is primarily driven by the level of savings from deferred consultants and marketing activity which was a management decision and goes beyond what would be expected when considering the reduction in passenger volumes alone.

4.13 Insurance

4.13.1 In the December 2020 RBP we updated our approach for forecasting our insurance costs, basing our estimates on market conditions. There have been significant rate increases in the insurance markets since 2019. In RBP Update 1, as a result of the rate increases in 2021, we used 2021 as the base year for the forecast rather than 2019. We reviewed the latest insurance market data and confirmed that an estimate of a [✂] per annum increase in insurance costs for H7 remained a conservative estimate.

4.13.2 Since RBP Update 1, we have again reviewed the latest market data (full details are included in our Initial Proposals response) and confirmed that a forecast increase in costs of [✂] per annum for H7 remains a conservative estimate.

4.14 Business Rates

4.14.1 We are expecting a revaluation of our business rates bill to come into force in 2023. The outcome of this review is still uncertain and we are continuing to engage

with the Valuation Office Agency on both the methodology for the valuation and this size of the resultant rates bill. However, under the current timeline we expect to have an outcome from this process by mid-2022.

4.14.2 Given the current uncertainty, for the purpose of this update we are maintaining our forecasting approach from the RBP, where we assume rates are constant in real terms. However, we are now using CPI rather than RPI as the inflation measure reflecting government policy.

4.15 Pensions

4.15.1 The triennial valuation date is 30 September 2021 and it must be concluded by 31 December 2022. At this time, an estimate of the outcome of the deficit repair is not known, as the covenant review to establish the “strength” of the sponsoring employer (Heathrow), is yet to take place.

4.15.2 This will commence in February 2022, once 2021 financial results are published, and the outcome will be known in April 2022. After this point, taking into consideration the covenant review and initial valuation outcomes, it will be possible to establish an initial estimate of the new deficit repair and future service contributions, which will inform the wider pensions strategy development. The pensions strategy will be presented for a decision in principle in June 2022, pending the final valuation outcome, which will not be known until September 2022 at the earliest.

5 COMMERCIAL REVENUE UPDATE

5.1.1 The purpose of this chapter is to update our H7 commercial revenues forecast to reflect our updated passenger forecast, new market data and additional evidence that has become available since RBP Update 1.

5.1.2 This document is submitted alongside and aligned with our Initial Proposals response on commercial revenues. In our Initial Proposals response, we set our response to the CAA's Initial Proposals for commercial revenues and the supporting consultant report by CEPA.

5.1.3 Table 22 below presents our updated commercial revenues forecast

Table 22: Heathrow Commercial Revenues Forecast (Mid-Case)

Commercial revenue forecast [£m, 2018p]	Q6		H7				
	2019		2022	2023	2024	2025	2026
Retail Revenue	469		[✂]	[✂]	[✂]	[✂]	[✂]
Bureaux Revenue	39		[✂]	[✂]	[✂]	[✂]	[✂]
Car Parking / Car Rental Revenue	143		[✂]	[✂]	[✂]	[✂]	[✂]
Service Revenue	53		[✂]	[✂]	[✂]	[✂]	[✂]
Property Revenue	130		[✂]	[✂]	[✂]	[✂]	[✂]
Rail Revenue	136		[✂]	[✂]	[✂]	[✂]	[✂]
Other Revenue	1		[✂]	[✂]	[✂]	[✂]	[✂]
Total Core Revenues	**972**		[✂]	[✂]	[✂]	[✂]	[✂]
Forecourt Access Charge	-		[✂]	[✂]	[✂]	[✂]	[✂]
Total excl. ORCs	**972**		[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.1.4 This chapter provides an overview of all the key commercial revenue assumptions, setting out the updates we have made or confirming where our assumptions remain unchanged.

5.2 2019 Baseline

5.2.1 We maintain 2019 as an efficient baseline for commercial revenues. This is a view previously supported by KPMG[90] and Pragma[91] through studies commissioned by Heathrow.

5.2.2 We have accounted for a bridge between 2019 – the base year for the model – and the quantifiable changes that have taken place since to concession fees and store closures. We propose this as a new retail overlay

[90] KPMG (2019) Airport Commercial Revenue Efficiency Benchmarking Report for Heathrow Airport Limited
[91] Pragma (2019) Heathrow Airport Limited: Commercial Benchmarking 2019

Table 23: 2019-2022 Retail Revenues Bridge

	2022	2023	2024	2025	2026
Q6 → H7 Bridge	[✂]	-	-	-	-

Driver-based model assumptions

5.3 Retail Revenues

5.3.1 For retail revenues we continue to assume an elasticity of [✂] to total passenger numbers.

5.4 Rail

5.4.1 For rail revenues we continue to assume an elasticity of [✂] to Heathrow Express passengers.

5.5 Surface Access

5.5.1 For surface access revenues we continue to assume an elasticity of [✂] to total parking and car hire passengers.

5.6 Property

5.6.1 For property revenues we have moved away from an elasticity-based approach as Heathrow has come to an agreement with its tenants to hold rents at 2019 levels until aviation demand recovers. We now only include a floorspace overlay to account for the ongoing closure of Terminal 4.

5.7 Service Revenue

5.7.1 Previously we had assumed an elasticity of 1.00 of service revenues to passenger numbers. Having re-assessed the components of this revenue line we have now revised the elasticity to [✂]. In 2019, service revenue was £54m, with approximately [✂] of this revenue coming from Telecoms, which operate fixed contracts. The remainder of this revenue line relates to income from VIP, Fast Track and Other Travel Services which are sensitive to passenger numbers.

5.8 Cargo Revenue

5.8.1 We have now moved away from a drivers-based forecast for cargo revenues and use a bottom-up based approach instead. Further details about this are available in the Initial Proposals Response - Commercial Revenue Chapter.

Commercial Revenue Overlays

5.9 VAT Impact

5.9.1 We continue to believe a bottom-up approach to be more appropriate in capturing the complexity of VAT changes and the numerous consequential impacts it will have across our revenue lines.

- It is more intellectually robust to consider the full potential range of impacts and these impacts are already observable in real world data just nine months on from the policy change. We outline the commercial impacts we already observe in 2021 that we expect to continue into H7.

- It is clear these impacts will evolve and magnify in effect over H7 as awareness of the price change – and our position with respect to our emerging competitors – becomes more common knowledge among our passengers. We outline research from Pragma, Red Route and McKinsey that informs our approach as to how some commercial impacts will evolve and worsen in H7.

5.9.2 This approach suggests an evolving impact over H7, peaking with a [✂] impact in 2026.

A bottom-up model is more intellectually robust and supported by emerging data

5.9.3 It is indisputable that a significant change to Heathrow's price point on its highest yielding product lines will have impacts beyond just passenger behaviour:

- Primary: Passengers will spend less on VAT-impacted product lines – increasingly so as awareness of the changes increases. Stores offering VAT Res services will – and have – closed.

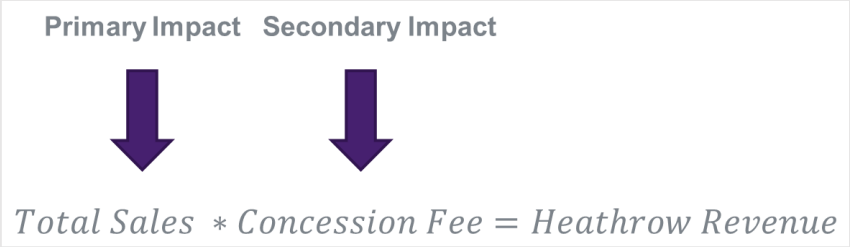
- Secondary: Stores offering VAT-impacted product lines will exit, consolidate and/or renegotiate terms. Lower margins lead to lower income for Heathrow. Any exit and reorganisation will see lower-yielding stores replace them, with likely periods of friction when stores are closed.

5.9.4 It is also reasonable to conclude that each of these effects are discrete, and any model can isolate the different effects to an individual commercial driver, so we can be confident each modelled impact is additional rather than duplicative:

- Primary effects, such as changed passenger behaviour in response to higher prices, will impact total revenue.

- Secondary effects, such as retailers securing lower concession fees or lower yielding stores replacing retailer exits, will impact Heathrow margins.

Equation 1 Bottom-up model drivers relative to Heathrow revenue



5.9.5 We can therefore be confident each impact is additional. We can already observe these impacts in real world data just nine months on from the change in policy and prove they are material.

5.9.6 **Primary** – of current data we can see, and will continue to assume:

- the [✂]pts deterioration in conversion for luxury (worth [✂]decline in LFL Sales).
- the [✂] deterioration of participation in WDF beauty, watch and jewellery.
- the [✂] reduction in Average Transaction Value from Asian passengers.
- the [✂] uplift in participation in WDF tobacco and liquor.

5.9.7 **Secondary** - VAT-impacted retailers are already renegotiating terms. The average margin across Luxury stores has reduced from [✂] in 2019 to [✂]. Combined with reduced sales, it is not in Heathrow's economic interests to reduce margins further as it then becomes rational to accept another store category:

Table 24: Heathrow income/sqm (2019), comparing VAT impacted retail to other categories

	Heathrow Income/sqm (2019)	Effective Margin
Luxury	[✂]	[✂]
Luxury adjusted for VAT	[✂]	[✂]
Affordable Luxury	[✂]	[✂]
Pharmacy	[✂]	[✂]
Tech/Music	[✂]	[✂]
High St. Gifting	[✂]	[✂]

Source: Heathrow

5.9.8 As such we can expect:

- All VAT-impacted retailers to renegotiate and secure lower margins, in line with those already secured (average change from [✂] to [✂]).
- Some luxury retailers to exit, even after the margin change, because the level of margin change required to restore store economics is irrational for Heathrow to give.

To estimate the latter, we assume they will take place at expiry of current contracts ([✂] of current contracts have 2023 as an exit year without penalty) or after one full year of VAT operations, whichever is sooner.

5.9.9 To project total exits we can make an estimate of store profitability by retailer after assuming the average margin change outlined above and a forecast reduction in total sales in line with the passenger behaviour trends. Table 25 below outlines this outcome and confirms a reduction of 20 luxury shops relative to 2019.

Table 25: Retail Unit forecast by category by year

Category	2019		2021	2022	2023	2024	2025	2026
High Street	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Affordable Luxury	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Luxury	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Gift	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
WDF (Excise/ Non-Excise)	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Essentials	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Technology	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Food and Beverage	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Entertainment and Services	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Luggage	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Experiences	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Pop-Up Space	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Empty Space			[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Total	[✂]		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

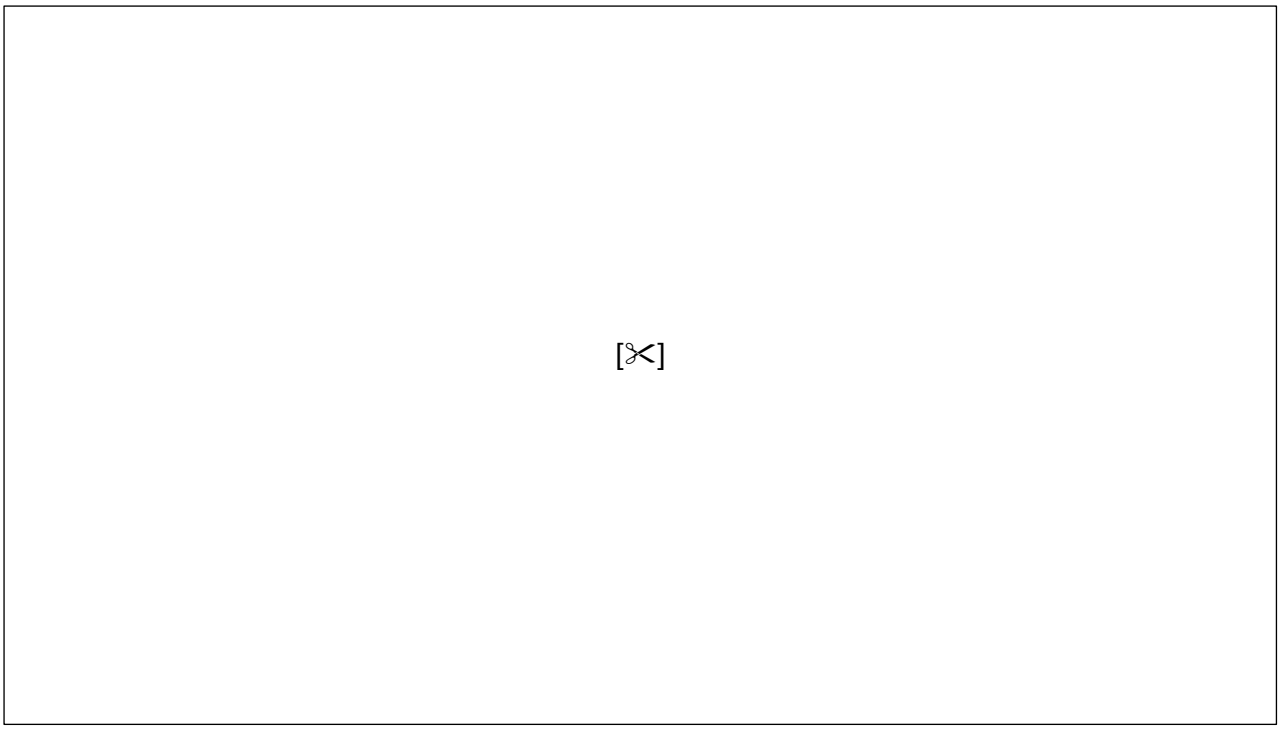
Source: Heathrow

5.9.10 The annualised impact of exits of some VAT-impacted retailers and lower margins for those that remain is equivalent to £[✂] p.a. relative to 2019 retail income. They are additional, material and can be evidenced and forecast.

5.9.11 We have validated the above with Pragma, who confirm:

- There is a [✂] income reduction from Luxury shops by 2026 driven by:
  - ATV and Conversion Impact (“Primary Impacts”)
  - Margin reduction and Mix Impact (“Secondary Impact”)

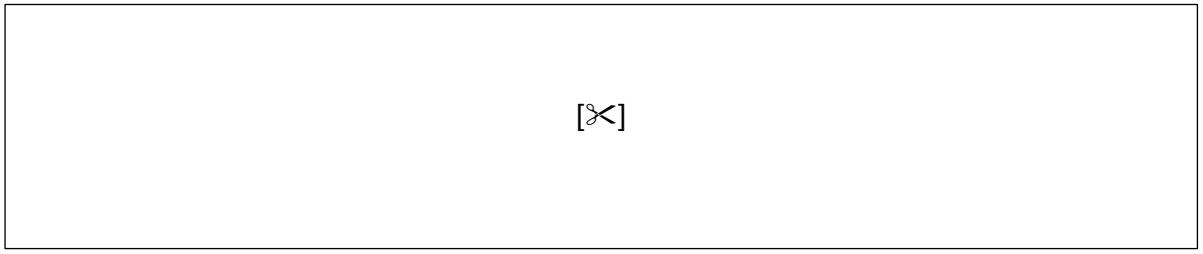
Figure 38: 2019 to 2026 bridge for Heathrow Luxury Income



- The difference in revenue assumption between Pragma and us is with regards to the consideration of external factors (e.g. the impact of Hainan and other European countries with lower price points than Heathrow).

- Considering this lower forecast sales, they forecast a reduction of 19 Luxury Stores at Heathrow, which compares favourably to our forecast of 20.[92]

Figure 39: Luxury Store requirement 2026, Pragma Analysis



To estimate the latter, we assume they will take place at expiry of current contracts ([✂] of current contracts have 2023 as an exit year without penalty) or after one full year of VAT operations, whichever is sooner.

[92] Pragma: "*Although Pragma have taken a different approach on calculating the space impact, we would agree with Heathrow's assessment on the loss of c.20 units, particularly as the initial passenger mix and volume impacts in the forecast period on the overall profitability of luxury retailers has not been taken into account*"

These impacts will magnify over H7, and our model needs to reflect this

5.9.12 While the observed data is the basis of our assumptions in H7, it is reasonable to assume the impact of the VAT change will be markedly different from before.

5.9.13 Travel restrictions and continued bias towards short haul flying mean that the highest spending and yielding passengers in VAT affected retail have not yet returned to flying. In 2019, Chinese resident passengers made up 1% of all departing passengers from Heathrow but [✂] of all sales in VAT-impacted product lines. In the first three quarters of 2021 they accounted for just 0.4% of our passenger base.

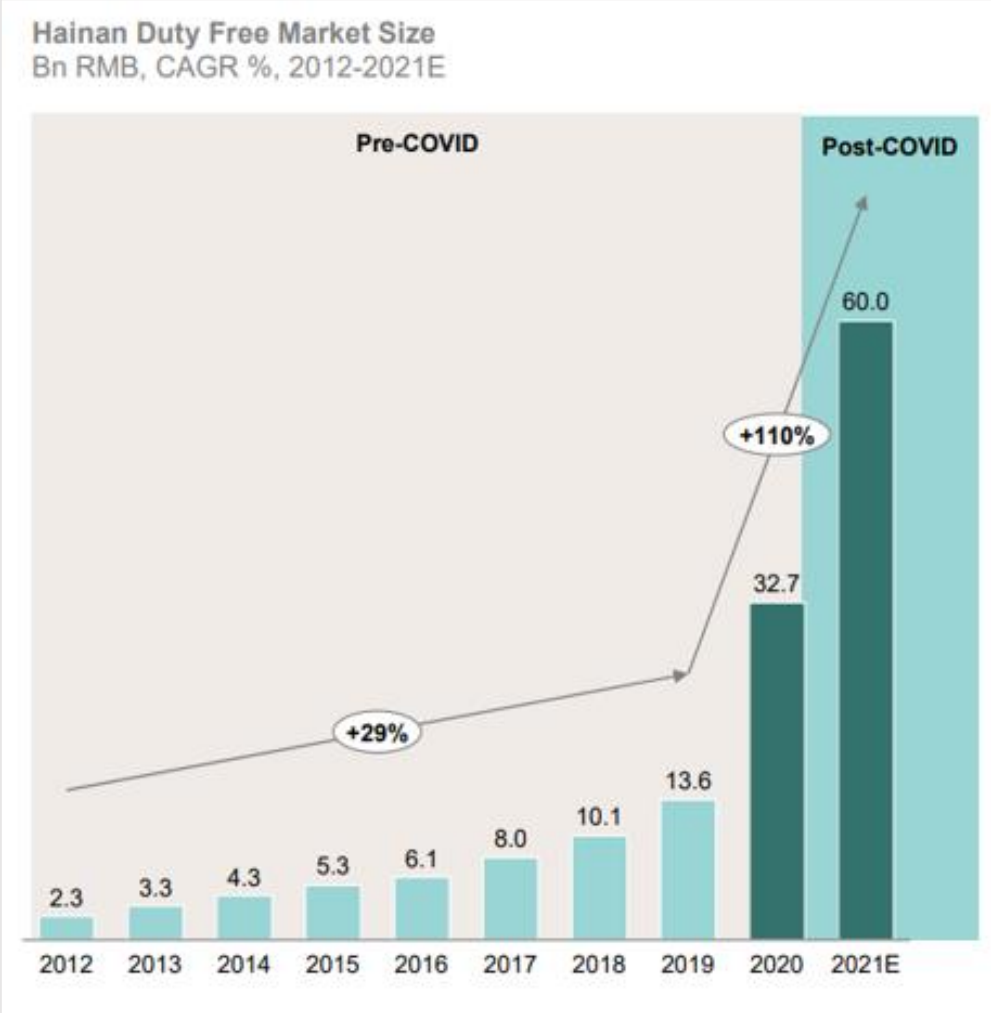
5.9.14 Passenger awareness of VAT changes is low – among UK based Heathrow passengers just one in five were aware of the changes, and one in two said it would likely make them spend less at a UK airport. As time progresses, we should anticipate that awareness will grow, and the impact on conversion to increase as it does. We therefore assume a growth in awareness of 20% per annum (to a peak of 60%) and a decline in participation of [✂] pts per annum as a consequence.

5.9.15 We also need to specifically consider the dimension of awareness of alternatives to Heathrow, particularly for Chinese passengers given their historic participation at Heathrow and the numerous options other than Heathrow:

- They can switch spending to other European destinations that continue to offer the same items but tax free, like Paris.
- They can switch spending to domestic destinations that are tax free, like Hainan.

5.9.16 Travel outside of China has declined by 90% and as a result the Government has increased efforts to repatriate consumer spend to China. During this period Chinese domestic Duty Free Spend in the Duty-Free shopping location Hainan has more than doubled to be worth 60 billion RMB or £7.2bn. There has been an 80% increase in luxury brands at Hainan and there are forecast to be 10 duty free complexes by the end of 2021, including Dufry and Lagardere.

Figure 40: Hainan Duty Free Market Size



Source: McKinsey

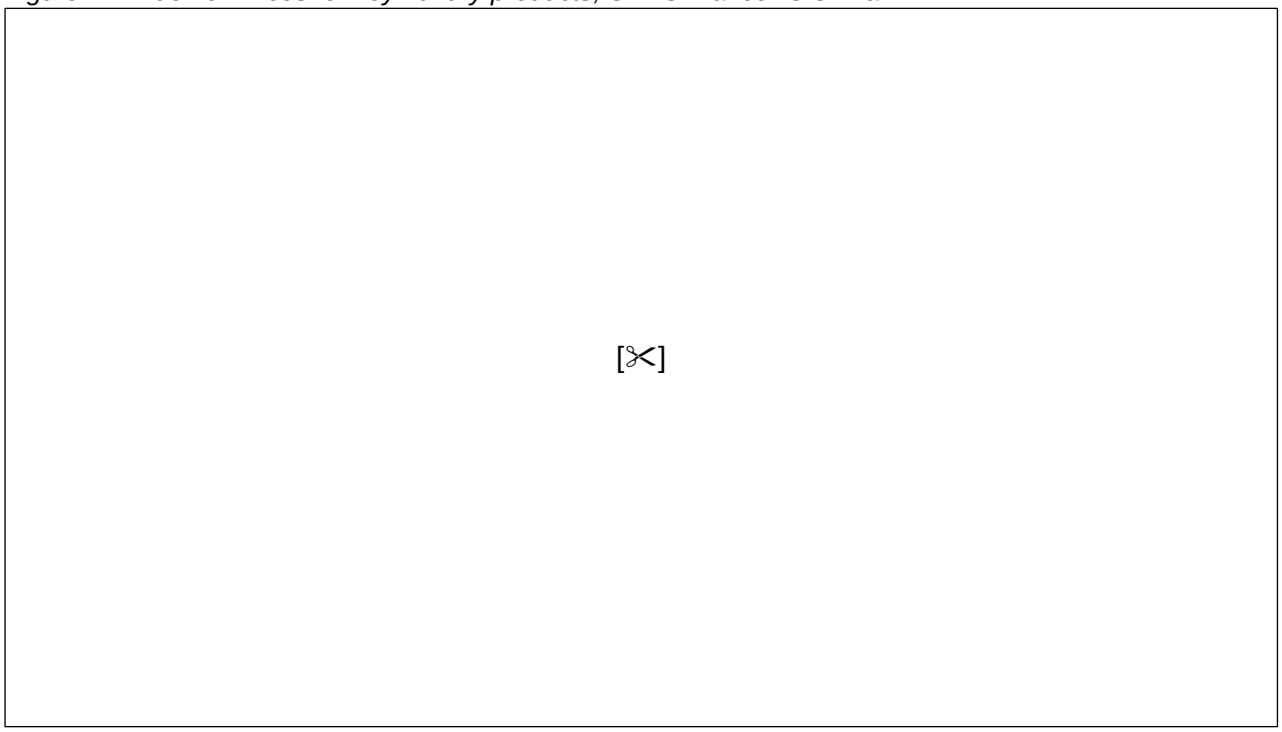
5.9.17 A narrowing price gap with overseas duty free and 30% cheaper than the Chinese domestic market. Visitors to Hainan are entitled to duty-free shopping online for up to six months after they have visited.

5.9.18 This has significant and permanent implications for Heathrow:

- Chinese passengers seeking luxury are price conscious (Pragma, 2021) and used to need to travel abroad to secure them and avoid paying a luxury tax in China. It is now the policy of the Chinese government to onshore consumer spend on luxury goods that typically leaked to European markets, and the UK in particular.

- Of all international destinations, the UK used to have the most competitive price point, now it is behind France and Hainan.

Figure 41: Index of Prices for key Luxury products, UK vs France vs China



- Hainan now has more luxury brands and outlets than Heathrow. Chinese passengers that travelled to the UK for tourism would have only encountered luxury items at Heathrow. Now, if they have been to Hainan they can access more products and services at a cheaper price.

- Chinese passengers that had travelled to the UK for retail would have accumulated VAT receipts that would have been exchanged at the airport for cash. Of the cash disbursed at the airport, [✂] of all VAT refund users went on to spend at the airport before departure (Heathrow, 2016).

5.9.19 This permanence of a Hainan impact on future commercial revenue for Heathrow is confirmed by survey data:

- 62% of shoppers surveyed said they would return to Hainan even after the reopening of international travel.

- 95% of shoppers surveyed said they would compare prices with Hainan going forwards.

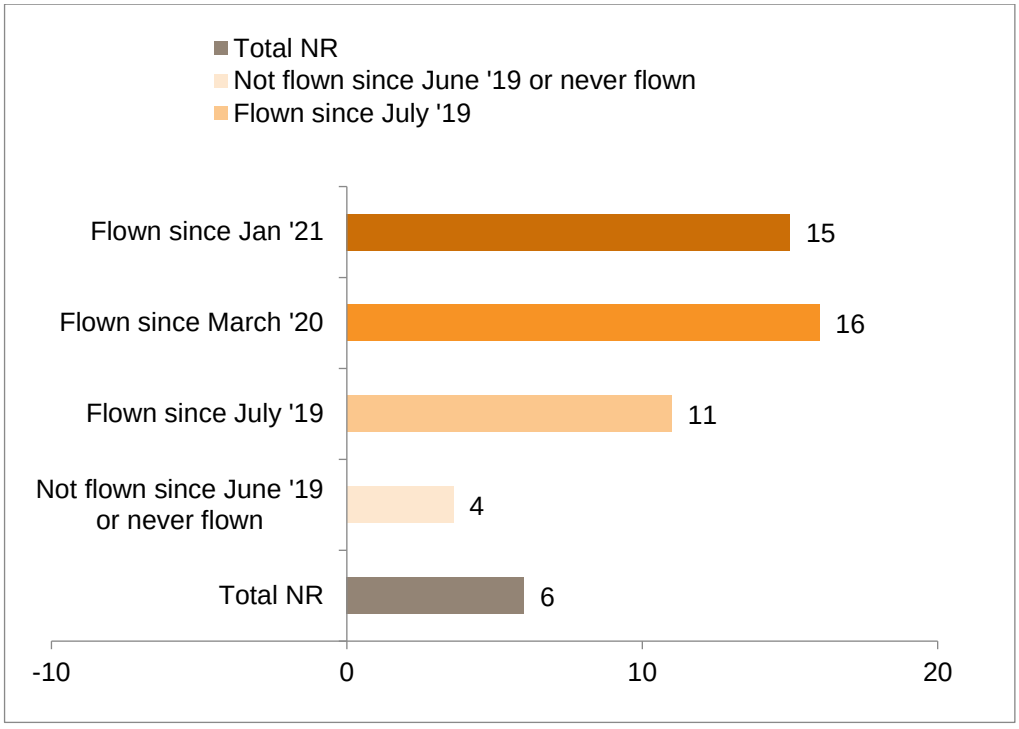
- 45% said they would at least partially spend their usual travel spend at Hainan from now on.

5.9.20 We therefore assume a further conversion impact of [✂] for Chinese passengers. Given the proportion of spend Chinese passengers made up in 2019, this is a [✂]annual overlay to our model.

5.9.21 We also observe a +12.9% increase in Average Transaction Values for European travellers. We expect this to unwind over H7:

Red Route (2021) outline: *"Most are worried about cost of living increases, but some recent flyers are now able to spend more and have been treating themselves."* Red Route demonstrate that those spending more since Covid-19 are more likely to have been recent flyers:

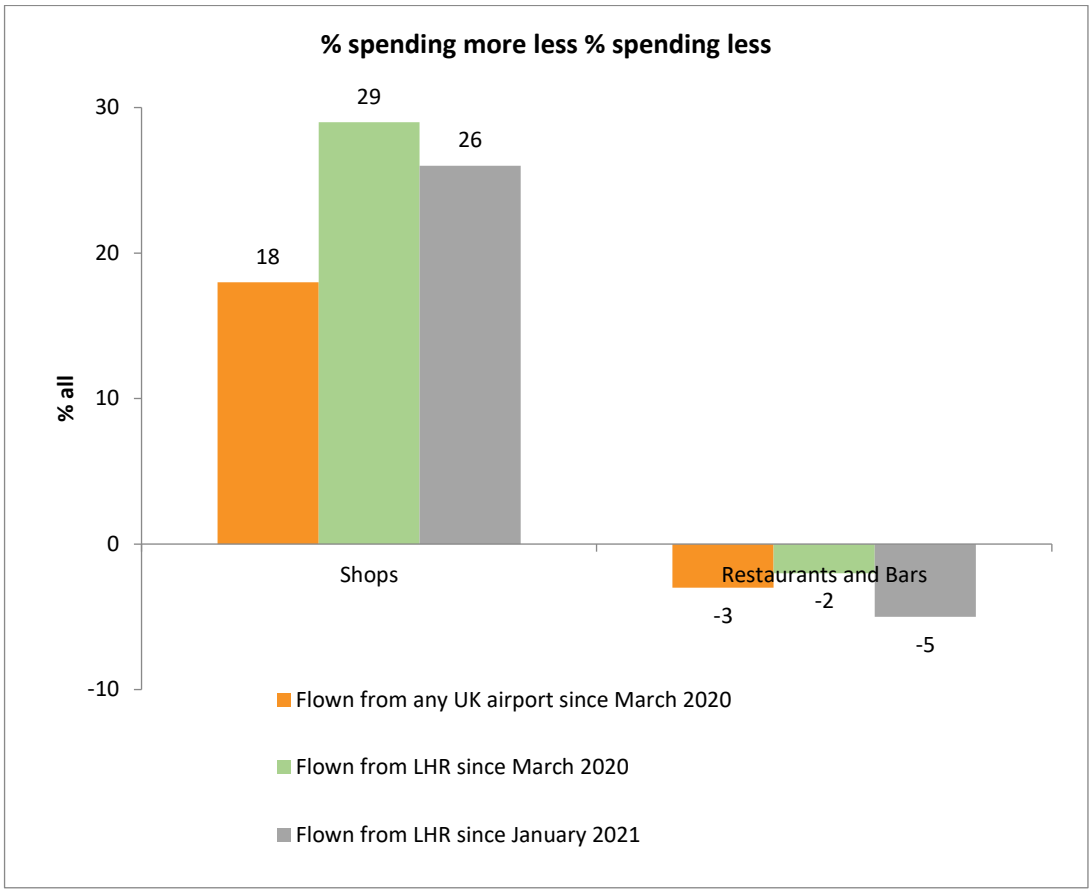
Figure 42: Spend increases post Covid by recently flown



Source: Red Route

Red Route also outline that: *"Those flying from LHR particularly likely to claim they had spent more in departure lounge shops."*

Figure : Spending increases by category, LHR vs other airports



Source: Red Route

5.9.22 We can observe the outcome of this survey data in our revenue figures: European passenger ATV for Luxury has increased from [✂] in 2019 to [✂] in 2021. We therefore assume that this is the *"revenge spending"* phenomenon that has been observed throughout Europe and North America post the pandemic and do not believe it will be permanent:

- Some people are spending more after Covid-19, those people are likely to have flown recently. This is not a permanent effect and will dissipate once that deferred spending has caught up.

- There is a general desire to "treat oneself" post the pandemic, and this is more pronounced among recent flyers. This is also a temporary effect that will dissipate once people have returned to flying.

Table 26: Bottom-up model assumptions

Category	Assumption
Destination Mix	Re-base all 2021 data for 2019 data.
Awareness	Assume awareness grows linear from 20% to 60% by 2026 Luxury participation declines from [✂] to [✂]
Chinese Conversion Impact	Downwards adjustment: • [✂] WDF • [✂] Luxury
Revenge Spending	Luxury ATV for European passengers reverts to 2019 levels
Average Heathrow Margin	Average margin reduces from [✂] to [✂]
Luxury: Non-Luxury Shop Mix	[✂] in 2019 to [✂] from 2023

Source: Heathrow

Accounting for real world data, shop mix and increasing awareness, we have refined our bottom-up overlay to [✂]

5.9.23 Our updated bottom-up model is robust:

•It uses real world data observed in the first 3 quarters of 2021 as a starting point.

•Where there are known evolutions to this impact, we include a balanced and evidenced forecast for that evolution.

•The final figure is within the [✂] envelope predicted by the improved top-down model in the response to Initial Proposals.

5.9.24 The bottom-up model also allows us to understand impacts by category, by year.

Table 27: Phasing of bottom-up drivers across retail revenue lines

Retail impacts phased	2022	2023	2024	2025	2026
WDF	[✂]	[✂]	[✂]	[✂]	[✂]
Spend Behaviour	[✂]	[✂]	[✂]	[✂]	[✂]
Awareness	[✂]	[✂]	[✂]	[✂]	[✂]
Shop Mix	[✂]	[✂]	[✂]	[✂]	[✂]
Concession Fee	[✂]	[✂]	[✂]	[✂]	[✂]
Duty Free Opportunity	[✂]	[✂]	[✂]	[✂]	[✂]
Conversion Impact	[✂]	[✂]	[✂]	[✂]	[✂]
Luxury	[✂]	[✂]	[✂]	[✂]	[✂]
Spend Behaviour	[✂]	[✂]	[✂]	[✂]	[✂]
Awareness	[✂]	[✂]	[✂]	[✂]	[✂]
Shop Mix	[✂]	[✂]	[✂]	[✂]	[✂]
Concession Fee	[✂]	[✂]	[✂]	[✂]	[✂]
Duty Free Opportunity	[✂]	[✂]	[✂]	[✂]	[✂]

Conversion Impact	[✂]	[✂]	[✂]	[✂]	[✂]
VAT Refund	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.9.25 Translated into an overlay, we conclude that as awareness grows, so too does the size of the overlay:

Table 28: H7 Retail VAT Overlay

	2022	2023	2024	2025	2026
RBP Update 1	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.10 Bureaux

5.10.1 The business environment for foreign exchange continues to remain challenging given competitive pressures from financial technology companies. As Heathrow is paid a fixed fee, the revenue forecast is not driver based. We have applied a multiplicative adjustment versus 2019 revenues.

Table 29: H7 Bureaux Revenue Overlay

	2022	2023	2024	2025	2026
RBP Update 1	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.11 Passenger Mix

5.11.1 Our methodology for estimating the impacts of passenger mix impacts on retail at RBP Update 1 and for this update is the same.

5.11.2 We use actual sales data by market (the data collected at checkout, by transaction, rather than survey data Retail Futures) and actual passenger journeys by destination in 2019 to allocate average spend per passenger by region of travel.

Table 30: Average per passenger retail spend by region

Market	Income per Passenger 2019
UK & CI	[✂]
EEA	[✂]
Other Europe & CIS	[✂]
Middle East	[✂]
Africa	[✂]
North America	[✂]
Latin America	[✂]
Asia/Pacific	[✂]
Average all markets	£6.35

Source: Heathrow

5.11.3 We then reweight this using the destination mix in our H7 passenger forecast, which is supported by transparent and validated assumptions.

Table 31: H7 passenger destination mix forecast

Market	2019		2022	2023	2024	2025	2026
UK & CI	6.0%		[✂]	[✂]	[✂]	[✂]	[✂]
EEA	38.3%		[✂]	[✂]	[✂]	[✂]	[✂]
Other Europe & CIS	2.8%		[✂]	[✂]	[✂]	[✂]	[✂]
Middle East	9.6%		[✂]	[✂]	[✂]	[✂]	[✂]
Africa	4.3%		[✂]	[✂]	[✂]	[✂]	[✂]
North America	23.3%		[✂]	[✂]	[✂]	[✂]	[✂]
Latin America	1.7%		[✂]	[✂]	[✂]	[✂]	[✂]
Asia/Pacific	14.0%		[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.11.4 The difference between H7 and 2019 is then used as an overlay to forecast income per passenger.

Table 32: H7 forecast income per passenger

	2022	2023	2024	2025	2026
Mix Weighted Income	[✂]	[✂]	[✂]	[✂]	[✂]
Average	[✂]	[✂]	[✂]	[✂]	[✂]
Passenger Mix Effect	[✂]	[✂]	[✂]	[✂]	[✂]
Update 1 Overlay	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.12 Terminal 4 Overlay

Table 33: Terminal 4 Overlay

	2022	2023	2024	2025	2026
Terminal 4 Opening	[✂]	[✂]			

5.12.1 Our assumption is that Terminal 4 will reopen in July 2022. At this point the density of passengers per sqm falls. In congestion terms this is positive – more space in shops tends to mean more people shopping. However, there are two opposite and larger impacts to consider:

5.12.2 [✂]

5.12.3 [✂]

5.12.4 The opening of T4 leads to a less efficient use of retail space, which is material and additional to our RBP model. It therefore requires an additive overlay.

5.12.5 We have assumed an impact on Terminal 4 retail that we will work to refine as we understand more about what retail will be available to passengers when it reopens.

5.13 Rail

5.13.1 Considering CEPA comments, we have refined our approach to the rail overlays. Our previous modelling approach accounted for overlays applying to Track Access Charges but did not do so transparently and did not account for TAC revenues increasing over H7 as more Crossrail trains entered service. We now account for this: splitting out the impact of Track Access Charges we now show the original forecast for Crossrail impacts on HEx yields of [✂]

5.13.2 While we accept a flat [✂] overlay throughout H7 is not needed, an adjustment needs to be made to account for 2021 prices being nominally flat relative to 2019, therefore an overlay equal to two years of RPI is needed ([✂]).

5.13.3 We agree with CEPA that rail overlays should apply to non-Track Access Charge revenue only. Indeed, our previous modelling approach baked in this estimate already. We recognise the need to transparently demonstrate the rail overlays absent of adjusting for non-TAC revenues, and therefore unpack these assumptions (see below). We also recognise the need to acknowledge that – given the introduction of Crossrail from 2022 – TAC revenues (and the proportion of rail revenues they represent) will change over H7 and these need to be considered annually when calculating the overlay.

5.13.4 Track access revenue in 2019 was £7m from 2 TfL trains per hour. This represented 5.03% of Heathrow Rail Revenue (£139m). We forecast the following growth in TfL trains per hour and estimate proportionately the same revenue.

Table 34: Track Access Charge forecast, 2022-2026

	2022	2023	2024	2025	2026
TfL tph	2	4	6	6	6
£m TAC (2018p)	7.01	14.01	21.02	21.02	21.02

Source: Heathrow

5.13.5 We recognise that our previous proposal for a flat [✂] impact on HEx yields due to Covid-19 is not sufficiently substantiated. However, there is a need to consider the impact of flat prices: our models use 2019 as a base year, HEx prices have been flat in nominal terms, and therefore lower in real terms. This leads to a flat -6.4% overlay applied throughout H7.

Table 35: Flat Fares Overlay

	2022	2023	2024	2025	2026
Indexing Flat Fares 19 - 22	[✂]	[✂]	[✂]	[✂]	[✂]
Outcome (constrained to non-TAC)	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.13.6 Our forecast commercial response to Crossrail introduction remains as per our iH7 proposals: to maximise revenues, HEx should maintain a price premium to Crossrail – the incremental volumes from price matching do not compensate for the reduced revenue per passenger. If Crossrail charge £12, the optimal HEx price is likely to be [✂]– an [✂] drop in fares relative to the current fare. We therefore continue to assume an [✂] impact on yields.

5.13.7 At RBP Update 1 we made a reduction of [✂] to overall revenue to reflect the impact of a [✂]Covid-19 impact and an [✂] price impact on the non-TAC proportion of the revenue. This was implemented as an additional adjustment of [✂] to the [✂] Covid-19 impact, but the overall impact was based on an [✂]reduction. Given the forecast changes in non-TAC revenues highlighted above, we have refined our overlay to the below:

Table 36: Crossrail Impact Overlay

	2022	2023	2024	2025	2026
Crossrail Impact to HEx Yields	-	[✂]	[✂]	[✂]	[✂]
Constrained for non-TAC only	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.13.8 Blending the same Crossrail assumption with more accurate TAC and indexing suggests the below overlay for rail revenues in H7:

Table 37: Total Rail Yields Overlay

	2022	2023	2024	2025	2026
Rail Revenue Overlay	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.14 Surface Access

5.14.1 In the previous update, while real world data was scarce, we had assumed that average transaction values for car parking and car hire would reduce because of fewer business passengers using the airport.

5.14.2 Now that we've had access to actual data for a length of time, average transaction values have been higher than pre-pandemic. Passengers have been leaving their cars in short stay parking for longer periods of time at higher yields than those in long stay car parks. In addition, Heathrow's car rental facilities have become the hub for local residents wanting to hire cars as rental companies in the area have temporarily closed.

5.14.3 We have assumed that as passenger numbers increase this overlay would return back towards zero.

Table 38: Surface Access Yield Overlay

	2022	2023	2024	2025	2026
RBP Update 1	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.15 Mode Share

5.15.1 We have updated our mode share forecasts using latest profiler survey data to re-baseline the forecast.

5.15.2 We have also made changes to assumptions around Elizabeth Line running to Heathrow from June 2022 based on information from TfL. Previously this had been assumed as the start of 2023.

5.15.3 Impacts to mode shares from Elizabeth Line and Terminal Drop Off Charge implementation have been taken from LASAM modelling.

Table 39: Mode Share Impact (LASAM)

Mode	Terminal Drop Off Charge (£5)	Elizabeth Line
Private Car	[✂]	[✂]
Taxi	[✂]	[✂]
Bus/Coach	[✂]	[✂]
Tube	[✂]	[✂]

Car Rental	[✂]	[✂]
Heathrow Express	[✂]	[✂]
Heathrow Connect	[✂]	[✂]
Elizabeth Line	[✂]	[✂]
Other	[✂]	[✂]
Rail-air	[✂]	[✂]
Charter Coach	[✂]	[✂]
Public Transport Mode Share	[✂]	[✂]

Source: Heathrow

5.15.4 Changes have been made to the assumption around when mode shares will recover to a pre-pandemic levels (e.g. passengers returning to public transport). At RBP Update 1 it had been assumed this would happen by the arbitrary date of beginning 2024. We have now linked this recovery in line with our forecast recovery in aviation demand, which we feel makes more logical sense.

Table 40: Heathrow Update 2 Mode Share Forecast

Mode	2022	2023	2024	2025	2026
Park & Fly	[✂]	[✂]	[✂]	[✂]	[✂]
Kiss & Fly	[✂]	[✂]	[✂]	[✂]	[✂]
Taxi	[✂]	[✂]	[✂]	[✂]	[✂]
Bus/Coach	[✂]	[✂]	[✂]	[✂]	[✂]
Tube	[✂]	[✂]	[✂]	[✂]	[✂]
Car Rental	[✂]	[✂]	[✂]	[✂]	[✂]
Heathrow Express	[✂]	[✂]	[✂]	[✂]	[✂]
Heathrow Connect	[✂]	-	-	-	-
Elizabeth Line	[✂]	[✂]	[✂]	[✂]	[✂]
Other	[✂]	[✂]	[✂]	[✂]	[✂]
Rail- Air	[✂]	[✂]	[✂]	[✂]	[✂]
Charter Coach	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.16 Cargo Forecast

5.16.1 We have moved away from a top-down elasticity-based approach towards a bottom-up forecast. Since the Covid-19 pandemic began there has been a substantial increase in the number of cargo movements at Heathrow, with a large amount of this increase being driven by ‘Preighters’ (passenger aircraft carrying only cargo). We don’t believe the ‘Preighter’ effect can be adequately captured using an elasticity-based approach.

Table 41: % of freighter and 'preighter' ATMs

	% of Passenger Movements	
	Pre-Pandemic (Jan '19-Feb '20)	**Pandemic (Feb' 20-Nov '21)**
Freighter	0.54%	3.32%
Preighter	0.01%	18.60%

Source: Heathrow

5.16.2 Using the passenger ATM forecast from the H7 mid-case, we have assumed that as passenger flights increase, freighter and preighter flights would decrease in proportion and return towards their pre-pandemic percentage levels. This is in line with actual observed trends as passenger demand has returned.

Table 42: H7 cargo ATM forecasts

	H7 ATM Forecast				
	2022	**2023**	**2024**	**2025**	**2026**
Freighters ATM	4,591	3,929	3,201	2,982	2,936
Preighters ATM	4,840	3,105	1,265	977	887
Total Cargo ATM	9,431	7,033	4,466	3,959	3,823

Source: Heathrow

Table 43: H7 cargo revenue forecast

	H7 Cargo Revenue Forecast 2018p				
	2022	**2023**	**2024**	**2025**	**2026**
RBP Update 1	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.17 Terminal drop-off charge (TDOC)

5.17.1 We continue to assume that Heathrow's TDOC revenues will be net of VAT and assume 1.7 passengers per vehicle. This is based on CAA passenger surveys.

Table 44: Passengers per vehicle, 2017 – 2019, CAA passenger surveys

	January – December 2017	January – December 2018	January – December 2019	Average
Travelling party size of passengers dropped off by Taxi/Minicab/Uber/Chauffeur or Private Car driven Away	**1.7**	**1.7**	**1.6**	**1.7**

Source: Heathrow

5.17.2 This is further validated by a forecast study undertaken in 2016 to understand the difference in occupancy between private hire and private car drop off:

Table 45: Passengers per Vehicle, HAL 2016 study

	Private Car Drop-off	Taxi/Minicab Drop-off	Weighted average for Private Car and Taxi/Minicab combined
Average number of passengers dropped off	1.7	1.8	1.8

Source: Heathrow

5.17.3 Our previous analysis erroneously assumed that all vehicles associated with departures and arrivals would be liable for a charge. This is, however, not the case as TDOC is levied only on those dropping off departing passengers. This means the passenger base for the charges is half of that previously assumed. The total revenue assumption for TDOC falls by a factor of two.

Table 46: H7 TDOC revenue forecast

	Update 1 - TDOC Revenues	Update 2 – TDOC Revenues
2022	[✂]	[✂]
2023	[✂]	[✂]
2024	[✂]	[✂]
2025	[✂]	[✂]
2026	[✂]	[✂]
Total	[✂]	[✂]

Source: Heathrow

5.18 Property

5.18.1 Heathrow has made an agreement with its tenants to hold rents at 2019 levels until aviation demand recovers. Therefore, we have moved away from an elasticity-based approach and now only capture the full effect of reduced floorspace while Terminal 4 remains closed.

Table 47: Utilised floor space assumptions for Property forecast

	Elasticity	2022	2023	2024	2025	2026
RBP Update 1	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

5.19 Capital investment

5.19.1 Our view, that Capital investment is a key driver of commercial revenues and key to meeting passenger expectations – our updated £693m plan secures £[✂] of revenue that would have been at risk if we did nothing, and creates the opportunity for £[✂] incremental revenue in H7.

5.19.2 Investing at this stage in the cycle is the reasonable response of an airport operating in a competitive market. The plans we propose have a strong business case, and only distortions created by regulation – and the regulator – stand in the way of investment.

5.19.3 We forecast a £693m Commercial Capital Investment Programme. As this is consistent with our historic investment, no additional stretch can be added to the forecast in exchange for this revenue taking place.

5.19.4 If the CAA continue to disallow investment in Commercial Capital, revenue forecasts would need to adjust downwards by £[✂] – the sum of revenue lost and the opportunity cost of incremental revenue missed.

Capital investment is a driver of commercial revenues and key to meeting passenger expectations

5.19.5 Even if no significant new retail space is needed, there remains a significant role for commercial capital in H7:

- Maintaining commercial assets protects current revenues and promotes efficiency in H7.
- Investment in digital retail allows us to transform our service and commercial proposition to meet materially increased passenger expectations post-Covid.
- Strategic investment enables Heathrow to diversify revenue streams to become commercially resilient.

5.19.6 Our Commercial Capital Programme is a blend of these three roles and delivers two measurable outcomes in H7:

- Protects existing revenue that would otherwise be lost in H7 due to obsolescence or failure. This outcome is quantified by "Revenue Risk"

- Creates an opportunity for incremental H7 revenue in addition to that currently generated. This outcome is quantified by "Incremental Revenue".

Table 48: Heathrow proposed Commercial Capital Programme

	H7 Capex		Incremental Revenue	Revenue at Risk
Agile Fund/Contingency	£ 4.69		[✂]	[✂]
Cargo	£ 26.90		[✂]	[✂]
Digital & Data Transformation	£ 61.81		[✂]	[✂]
Property - Development	£ 161.22		[✂]	[✂]
Retail & Media - Development	£ 207.15		[✂]	[✂]
Surface Access	£ 32.62		[✂]	[✂]
Property - Essentials	£ 28.19		[✂]	[✂]
Retail & Media - Asset Replacement	£ 33.09		[✂]	[✂]
MSCP4	£ 70.30		[✂]	[✂]
Crossrail Contribution	£ 67.50		[✂]	[✂]
Total	**£ 693.46**		[✂]	[✂]

Maintaining existing assets protects existing revenues and promotes efficiency

5.19.7 The primary function of any commercial capital programme is to protect the revenue we already raise. Most capital business cases for commercial are small and have the primary function of maintaining and maximising revenue from existing assets, products, and services. The following H7 business cases to fall under this definition:

- **Retail & Media (Asset Replacement) –** this includes the minor works required to maintain commercial assets, ensure compliance, or minor reconfigurations to promote efficiency. £23.6m was invested in Q6, the most significant of which is the £7.5m replacement of the T5 advertising towers, ensuring the revenue is protected.

- **Retail and Media (Development) –** this includes the more significant development of retail space and the shell and core investments required to launch or refurbish stores. £32.5m was investment in Q6, the most significant

of which was the £17.3m refurbishment of T5 airside retail, ensuring that the retail space continues to be attractive to passengers.

- **Property (Essentials) –** this includes the maintenance and development of non-retail commercial space, including hotels, lounges and non-passenger facing facilities. £72.9m was investment in Q6, one of the most significant of which was the £[✂] development of a new T3 East Wing hotel, helping to maximise the revenue from the land we already own.

- **Surface Access –** this includes the development and maintenance of parking, bus, coach and rail products and services. £13.9m was invested in Q6, one of the most significant of which was the £5m refurbishment of the N2 Staff Car Park, which is leased out to Team Heathrow partners.

- **T4 MSCP and Forecourt –** this is the major asset replacement of the car park and road access to Terminal 4, which life expires in 2026, and without which, the continued operation of Terminal 4 – and all the aeronautical and non-aeronautical revenue it generates – would be at risk.

5.19.8 In H7 we expect to face additional challenges for these capital business cases:

- Significant investment planned for 2020 and 2021 was slowed, paused, or stopped completely in response to the Covid-19 pandemic and now needs to be caught up in H7. We therefore anticipate a spike in Property – Essentials and Retail & Media Asset Maintenance.

- The rollover of commercial contracts in iH7 means several major contracts expire, increasing new shell and core. This is compounded by a changed passenger mix, evolved passenger behaviours and no VAT-free shopping changing the future mix of our retailers. We therefore anticipate a spike in retail & media development to adapt our commercial offer accordingly.

5.19.9 These challenges are evident in our plans, where our investment is larger than that at Q6, but the revenue at risk from not investing is too significant to ignore, and therefore has a payback period within H7:

Table 49: Heathrow Commercial Capital Programme - Maintain programmes only

	H7 Capex		Incremental Revenue	Revenue at Risk
Retail & Media - Development	£ 207.15		[✂]	[✂]
Surface Access	£ 32.62		[✂]	[✂]
Property - Essentials	£ 28.19		[✂]	[✂]
Retail & Media - Asset Replacement	£ 33.09		[✂]	[✂]
MSCP4	£ 70.30		[✂]	[✂]
Total	**£371.35**		[✂]	[✂]

5.19.10 Further details on the delivery objectives and projects that sit beneath each business case are available in the capital chapter.

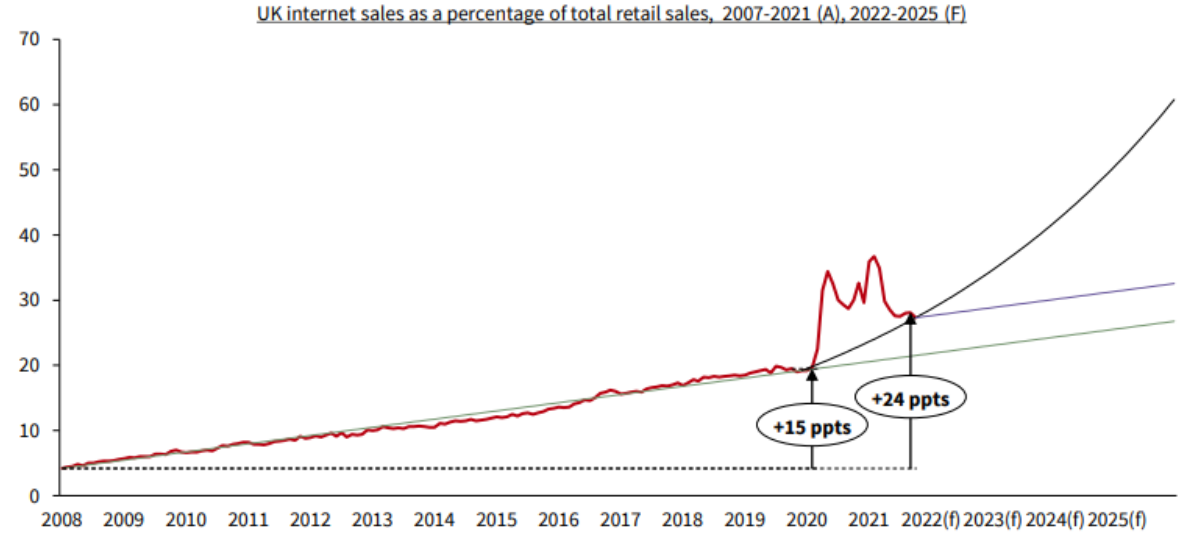
Passenger expectations on digital and physical retail have accelerated because of Covid-19

5.19.11 Commercial capital can also be used to respond to changing passenger expectations, improving existing products and services or introducing new ones. Some of this generates incremental revenue, others ensure that existing yields are not diluted from not keeping up with evolving service expectations.

5.19.12 In Q6, significant investment took place to update some elements of Heathrow's digital and data infrastructure to keep up with rapidly evolving consumer expectations on internet and mobile phone access while airside: over £20m was invested to deliver 4G mobile signal across the Heathrow Estate.

5.19.13 Digital and data expectations evolve relentless regardless, but Covid-19 and lockdown accelerated changes in passenger behaviours and expectations. Pragma (2021) outline: "*UK internet sales as a percentage of total retail sales were growing steadily prior to Covid-19, then experienced a rapid increase in market share during the months of lockdown to a high of 37% in February 2021. This subsequently reduced to 27% in October 2021 as stores re-opened, but the share is forecast to continue rising over time.*"

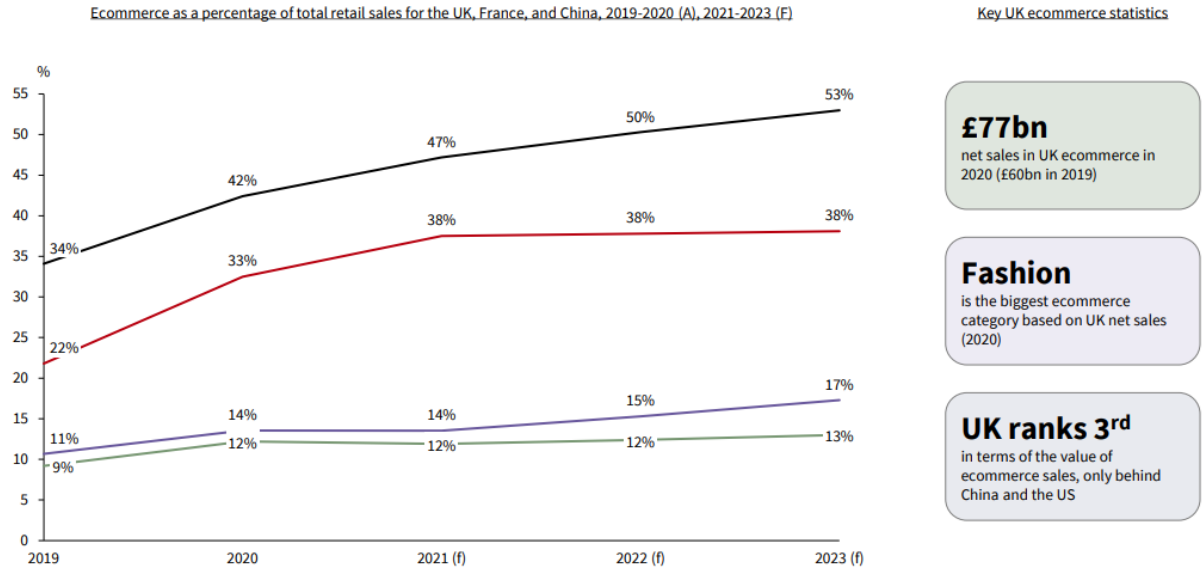
Figure 43: Online Sales as % of total Sales, UK (2007 - 2025)



5.19.14 Pragma go on to add: “greater emphasis and investment has been put into ecommerce strategies by most retailers...this will continue to put pressure on the sales potential of physical stores on the high street and airport retail environments.”

5.19.15 Ecommerce penetration by country varies significantly, with China reporting the highest share of 34% of sales in 2019, rising to an estimated 53% in 2023. The UK also has a high penetration, significantly above that of both the USA and France. This demonstrates the importance of Heathrow delivering an effective digital retail proposition[93].

Figure 44: UK online sales vs other countries



[93] Pragma (2021)

5.19.16 Expert interviews with luxury retailers confirm that the luxury consumer is becoming younger, with greater numbers of the Gen Z demographic embracing the category. In response to this, many luxury retailers are adopting global pricing and are starting to embrace digitisation and ecommerce to a greater extent.[94]

5.19.17 All generations are spending more money online versus offline, and this has only accelerated since Covid-19. However, the greatest shift before and after the pandemic has taken place among our oldest passengers, who are also our highest yielding. OC&C research observe a 9%pt increase in online sales pre- and post-pandemic among baby boomers compared to 4%pt increase in Gen Z. The same older generations are also increasingly less likely to engage in physical retail offerings, particularly in larger shopping hubs (like an airport). This is more pronounced among baby boomers, who expect to spend 32% less in shopping hubs than they used to.[95]

5.19.18 This is a change in consumer behaviours and expectations that is permanent and material and we have to respond to, or risk lower revenues. We therefore plan a £61.8m investment in digital and data transformation that will enable:

- The integration of surface access services and products to be purchased online in a single app.
- The ability to “click and collect” from Heathrow retailers.
- The delivery of key services online: from wayfinding, personal shopper and online.

5.19.19 This investment will not just protect £[✂] of current revenue at risk but generate the opportunity for £[✂] of incremental revenue. Although this is a completely different role for commercial capital investment, it delivers a similar competitive payback period within H7.

[94] Pragma (2021)
[95] OC&C (2021)

Capital investment now delivers financial resilience in the future by diversifying revenue streams

5.19.20 The Covid-19 pandemic threw into sharp focus how reliant Heathrow's commercial model is on revenue streams that are sensitive to passenger volumes – with 95% of revenues elastic, or nearly elastic, to passenger volumes.

5.19.21 Other airports, including our closest competitors, are more balanced. Amsterdam Schiphol is just 81% elastic to passenger volumes[96], underpinned by a property estate and cargo proposition that dwarfs Heathrow. This enabled a more resilient financial position – notwithstanding state aid, state ownership and less restrictive border controls – during and after Covid-19.

5.19.22 We need to consider investments that may not contribute significant revenues in H7 but will deliver significant benefits to consumers now and in the future. Such investments:

- rebalance long-term revenues to improve financial resilience to future shocks to passenger demand.
- enable the wider commercial model by improving route economics, and thereby consumer choice – a key duty of the CAA.
- grow non-passenger revenues and, through single-till economics, ensure the long-term charge is affordable.

5.19.23 We propose an ambitious, but deliverable and reasonable, strategic commercial capital programme, focused on three major investments:

- **Property Development –** investment in Q6 was aimed at lounge extensions for airlines, new business centres and new hotels adjacent to existing terminals –investment that underpins our offer to premium passengers, on land that Heathrow already owns. Neither the level of investment nor the approach taken in Q6 will rebalance Heathrow revenue exposure to passenger demand. Moreover, it is not significant enough to grow property revenues to contribute to single till economics and keep the airport charge low. We have the opportunity for a refreshed approach in H7 that will grow property – and non-passenger – revenues in H8 and beyond, improving our financial resilience and keeping the charge affordable.
- **Cargo –** investment in our cargo proposition in Q6 was minimal, and consequently processing times, storage and transhipment possibilities at Heathrow fell well behind those of competitors. If we do not invest in H7, the gap between our proposition and our European competitors will grow. Investment in cargo in H7 is critical in improving route economics for passenger aircraft and recovers our competitive position against other European airports. This will grow network breadth, improving choice for consumers – a key duty of the CAA. It will also enable more trade, supporting the "Global Britain" ambitions of the Government. Investment is also tailored to the feedback airlines have given us as to how they want the cargo proposition to be improved. Moreover, if passenger demand collapses as it has as a result of Covid-19,

[96] Heathrow analysis of public accounts

Heathrow will have the facilities to compete and win freighter traffic in support of consistently strong cargo demand.

- **Crossrail –** an existing commitment to contribute to the development of Crossrail, which while it reduces Heathrow Express revenues it does increase access to Heathrow from London and thereby our potential passenger base. Aggregating more demand improves route economics, improving network breadth and therefore passenger choice. Growing catchment is a strategic response to suppressed demand because of the Covid-19 pandemic.

5.19.24 While there are no forecast direct benefits to commercial revenues in H7, these investments all improve the revenue potential of the entire Heathrow commercial model. We have taken appropriate steps to both size this programme to ensure it balances the burden on the H7 charge, the unquantifiable benefits in H7 and the significant benefits realisable in future regulatory periods. We have also ensured that investment is backended in H7 to enable recovery to take hold before progressing.

Table 50: Heathrow Commercial Capital Programme, Strategic business cases only

	H7 Capex		Revenue Opportunity[97]	Revenue at Risk
Cargo	£26.90		[✂]	[✂]
Property Development	£161.22		[✂]	[✂]
Crossrail	£67.50		[✂]	[✂]
Total	**£255.63**		[✂]	[✂]

Our proposed capital plan is in-line with historic investment and therefore no adjustment to the elasticities or stretch is necessary

[97] For the avoidance of doubt, this refers to non-aeronautical revenues only that are quantifiable in H7. These investments will have significant revenue benefits in future periods and more widely support the revenue model.

5.19.25 CEPA and the CAA have suggested through our engagement sessions since the publication of Initial Proposals that the commercial capital Heathrow proposes could be linked to the management stretch. This is unreasonable, manifestly inconsistent and has no regulatory precedent.

5.19.26 The regulatory precedent is to account for whether proposed capital investment is proportionate to the capital investment that took place in the period where the elasticities were calibrated. This is consistent with the CAR proposals for Dublin Airport, that considered the level of capital investment and whether it was in line with previous periods where a retail elasticity was considered:

The CIP [Dublin Airport's large Capital Investment Programme] contains a number of projects specific to this category of revenue, a number of capacity projects that include retail elements and a couple of IT projects that contain enabling technology. We do not propose uplifting retail revenues for these projects as, first, similar projects in previous periods would be captured in our elasticity and, second, part of this expenditure is required to protect this revenue stream into the future

5.19.27 A similar approach can be taken to Heathrow's proposed elasticities, where the historic rate of investment can be ascertained by:

- Accounting for equivalent investment in Q6, where the elasticities were measured:
- Accounting for underinvestment in iH7 and what needs to be caught up in H7.

5.19.28 This can then be compared against the proposed rate of investment in H7, and if it is proportionate, no adjustment to elasticities needs to be made.

5.19.29 We believe it is reasonable to compare historical and proposed investment between four comparable business cases (which, absent the MSCP4 investment, make up the "maintain" bucket outlined above):

- Surface Access
- Property – Essentials
- Retail & Media – Asset Maintenance
- Retail & Media – Development

5.19.30 We estimate the historic annual investment for these four business cases to be £58.36m in Q6[98]. In the three years of iH7, commercial capital investment fell significantly behind the curve, with just £39.8m invested[99] against an expected £175.01m. Heathrow therefore enters H7 £135.28m behind on critical investment necessary to meet historical revenue performance.

5.19.31 Our proposals to invest £509m across these business cases in H7 is proportionate to Q6 levels when accounting for underinvestment in iH7:

Table 51: Investment (Actual and Forecast) vs Historic Level and Investment Gap (2019 – 2026)

	2019	2020	2021	2022	2023	2024	2025	2026
Investment	20.3	10.5	9.0	64.9	57.9	133.1	133.2	119.9
Historic Level	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4
Investment Gap	-38.1	-85.9	-135.3	-128.7	-129.1	-54.4	20.4	82.0

Source: Heathrow

5.19.32 Considering we are behind the investment curve for the majority of H7, it is reasonable to conclude that the elasticities are sufficiently stretching considering the capital investment that is proposed. If Heathrow proposals are proportionate to those delivered during the years of performance used to measure the relevant elasticity then there is no justification for a stretch, as the elasticity is dependent on capital investment.

A removal or reduction in our commercial investment capital would lead to a reduction in forecasts

5.19.33 If the CAA continue to disallow any commercial investment capital, as they do in their Initial Proposals, then not only must the incremental revenue benefits of that investment be stripped out of commercial revenue forecast but due consideration needs to be given to the capital investment necessary to maintain and operating existing commercial assets (and protect existing commercial revenue streams). As Frontier outline:

"Given the CAA's proposals to not allow any capital investment in commercial activities, it is reasonable to expect that Heathrow may have limited scope to keep up with historical performance, and arguably a less stretching forecast should be used."

5.19.34 In our RBP and Update 1 we identified an overlay to account for the differences to revenue forecasts between a £700m and £100m commercial capital plan, where a smaller plan would see a £[✂] reduction in forecast revenues over H7. Given the CAA proposals for no capital investment in commercial revenue at all, and our updated commercial capital plan, it is incumbent on us to produce a new overlay.

5.19.35 Our logic remains that absent investment:

- we will not be able to achieve our elasticities.
- in that instance, regulatory precedent is to apply an overlay to adjust forecast revenues.
- that overlay should be proportionate to the benefits associated with those programmes in H7.

- The benefits of those proposed investments are sum of the revenue that is now at risk from not investing ("Revenue at Risk") and the lost opportunity of incremental revenues ("Incremental Revenue").

5.19.36 Therefore, the necessary, efficient and proportionate Capital Investment Overlay is £[✂]- the sum of the revenue protected and new revenue generated by our £625m programme in H7.

Investing at this stage in the cycle, with these plans, is the reasonable response of an efficient airport operating in a competitive market

5.19.37 Capital investment in commercial revenue activity is the natural response to the challenges we face and would be the actions of an efficient airport in a competitive market.

5.19.38 We explicitly state our desire to ensure that airport services are efficient, reliable and affordable for airport users. Those users have responded to this price control process insisting that the airport charge is too high.

5.19.39 As stated elsewhere, any increase in the charge is a function of there being fewer passengers to service an asset base designed for many more, and a material and permanent change in the risk our investors face. That said, at a single till airport like Heathrow, a key lever to reduce the charge in this period and the future is to generate more commercial revenues to offset the costs of operating the airport.

5.19.40 As is clear in the table above, and in our capital investment overlay: the revenues generated or protected by our commercial capital investment programme in H7 are greater than the estimated cost of that programme. In other words, the charge would be higher and passenger experience worse without the investment.

5.19.41 Moreover, the most efficient way of delivering capital investment at an operational airport is when you do not have to bear the cost of disruption from taking assets offline. Delivering capital investment like MSCP4 now, when it is least needed/utilised, lowers the total cost of the project relative to when Heathrow is full again and T4 is required. That confirms:

- The commercial capital programme represents excellent value for money for both current and future consumers – there is no trade-off.

- The time to make and deliver capital investment efficiently is now when assets are least utilised.

- A rational actor that had access to liquidity in a competitive market would invest on these terms (average payback within 5 years) without question.

5.19.42 The only reasons that investment would not take place, if future passenger forecasts are accurate, are a consequence of regulatory distortion:

- Investment capacity, because of unfavourable terms for investors imposed by regulation, is limited and the nature of the single till crowds out commercial capital in favour of capital necessary to operate the airport.

- The commercial forecast imposed by the CAA is unreasonable and unachievable and so investors have no incentive to invest in commercial capital.

5.20 Modelling Alignment

5.20.1 The Heathrow RBP model is a top-down model that, from a base year, uses:

- benchmarked and externally validated elasticities to peg revenue lines to changes in passenger volumes ("multiplicative adjustments").
- overlays that account for material changes in circumstance (e.g. changes to VAT policy) that are evidenced and demonstrated to be additional and proportionate ("additive adjustments").

5.20.2 This approach is appropriate for forecasting revenues over a five-year regulatory period.

5.20.3 However, given the timing of this response and associated RBP Update 2, it is appropriate to align the outcome of this model with the more detailed bottom-up forecast that informs our annual Management Business Plan (MBP).

5.20.4 The 2022 MBP is an internal business view of Heathrow performance in the year ahead considering the passenger forecast and other known factors. As such it is more accurate than the RBP model for 2022, and ensures there is a single consistent position as to Heathrow's revenue (and operating cost) position for next year.

5.20.5 We therefore include a one-off adjustment of [✂]to our RBP model to align it with the MBP. This is a [✂] adjustment, demonstrating how accurate our model is relative to our bottom-up, one-year forecast.

5.20.6 For the avoidance of doubt:

- There is no MBP for 2023 onwards as it is the product of in-year, bottom-up, internal forecasting.
- This is different, and additional to, the overlays that include a bridge from 2019 (the base year of the model) and 2021 where there are significant and quantifiable differences in performance (e.g. flat fares for Heathrow Express) – these are considered in earlier sections.

5.21 ORCs

5.21.1 Under the requirements of the ORC protocol, we have engaged airline and non-airline users of ORCs on our charges for 2022. We have used charges consulted on for 2022 as the basis for our forecasting.

5.21.2 Our 2022 forecast ORCs represent [✂] of our operating cost base. To forecast ORCs for H7, we have applied this [✂] assumption to our total opex forecast (minus business rates) each year of H7.

5.21.3 In contrast to our RBP Update 1 forecast, our RBP Update 2 forecast assumes that all business rates and annuities and allocated costs are recovered through the airport charge. This is in line with the methodology set out in Chapter 10 of our Initial Proposals response.

Table 52: H7 ORC forecasts

ORCs (£m, 2018p)	2022	2023	2024	2025	2026	H7 Total
RBP Update 1	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
RBP Update 2	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Heathrow

6 FINANCEABILITY UPDATE

6.1 Introduction

6.1.1 Although we have seen a steady recovery in traffic across May to November, this has lagged the forecast we produced in our June 2021 Investor Report. The recent emergence of the Omicron variant of concern has once again highlighted the uncertainty facing the travel sector and in our latest Investor Report published on 10 December 2021, we stated a revised forecast for 2021 of 20 million passengers, down 1.5 million versus the June forecast. As set out, this forecast remains uncertain as the impact of cancellations is changing day by day.

6.1.2 Given the uncertainty and slower recovery, we have continued to take steps to maintain liquidity, protect covenants and maintain our credit ratings since the publication of our RBP Update 1 in June 2021. On covenants, in August 2021 we completed the waiver of the Heathrow Finance ICR covenant for the financial year ending 31 December 2021, mitigating the risk of limited headroom we faced in June. No covenant breaches are now forecast in 2021. In terms of liquidity, we completed our 2021 funding plan in October raising a further £240 million to support a liquidity position of £4bn in cash and committed facilities at the end of November 2021. From a ratings perspective, the credit rating agencies continue to monitor developments with respect to H7 very closely (see below), although no further action has been taken at this stage.

6.1.3 The purpose of this section is to provide relevant updates to the financing points set out in June 2021. Although we have moved to a single case and updated several building block forecasts to reflect latest market data, our approach to financeability is unchanged. As we emphasised in our June RBP Update 1, returning to a strong A- credit rating will ensure that we can maintain our credit community's trust, raise debt financing in a cost-efficient manner and thus, keep airport charges lower than they would be otherwise.

6.2 Rating Agency Updates

6.2.1 Regulation should provide a framework that allows for efficient debt and equity financing. This minimises costs for consumers in the short-term while allowing the long-term interests of users to be served by maintaining and improving assets, and thereby service levels. This is in line with the CAA's statutory duties.

6.2.2 As part of our RBP Update 1 in June 2021, we set out comments from each rating agency which highlighted the emphasis they place on a strong and supportive regulatory framework as part of their ratings considerations (included in section 11.7 for reference). In October, Fitch referenced this again when affirming Heathrow's rating:

06/10/21 - *"The affirmation reflects our expectation that Heathrow's significant market power and supportive regulation will allow it to increase aero tariffs to offset reduced passenger numbers throughout the pandemic recovery…….Fitch recognises that there is still significant uncertainty regarding the H7 regulatory period and will closely monitor developments."*

While no action has been taken yet, credit rating agencies have been clear that further action could be taken if the CAA does not take appropriate regulatory action.

6.3 Restoring a strong A- credit rating ensures cost efficient debt financing

6.3.1 Heathrow's senior debt is currently rated BBB+/A- by Standard & Poor's (S&P) and Fitch, both with negative outlook.

6.3.2 As described in our Update 1 in June 2021, S&P affirmed Heathrow's debt and took it off CreditWatch negative in March 2021. As well as recognising the management actions taken during the crisis to cut costs, protect covenants and preserve liquidity, the decision by S&P also reflected S&P's expectation that the CAA will take a 'balanced approach' in defining the H7 settlement and ensure that Heathrow can generate sufficient cashflows to meet its credit ratings requirements through higher airport charges. Similarly, Fitch affirmed Heathrow's senior debt credit rating at A- in late March 2021, recognising the benefits of management actions and highlighting their assumption that the regulatory reset due in 2022 would allow credit metrics to return to levels commensurate with an A- rating from 2022.

6.3.3 Both S&P and Fitch maintain a negative outlook on Heathrow's senior and junior debt. This indicates that the rating may be lowered which, as noted above, could result from their view of the regulatory framework. Any further downgrade by either S&P or Fitch at Class A to BBB/BBB+ would firmly anchor Class A debt into BBB territory. It would also move Class B debt to sub-investment grade territory as rating agencies apply a systematic gap between the two tranches.

6.3.4 Any such downgrade would have material consequences. Heathrow's ability to access deeper pools of liquidity would be restricted, which in turn would lead to higher costs of issuance. Similarly, hedging capacity would also be restricted as less counterparties would be willing to trade with Heathrow. This would limit Heathrow's ability to access non-sterling debt capital markets and take advantage of cost-efficient sources of financing.

6.3.5 In particular, a reduction in credit rating during 2022 would impact Heathrow's plans to refinance its £1.15bn Revolving Credit Facility during the first half of the year. The events of 2020 and 2021 have demonstrated the importance of maintaining a significant liquidity buffer. As the RCF is provided by the loan market, banks' willingness to provide facilities at lower ratings is significantly more limited. Furthermore, any banks willing to provide facilities would do so at materially higher costs. As such, a downgrade would reduce the liquidity buffer available to Heathrow, increase financing costs and significantly jeopardise its ability to cope with another downturn in demand were it to materialise.

6.3.6 Furthermore, investors have been explicit with Heathrow about the need to maintain and return to A- credit ratings. For some investors, their capacity to invest in Heathrow's credit is defined by their portfolio mandate and will be constrained to holding A- rated bonds. A downgrade below A- will mean they need to reduce or remove any exposure to Heathrow's credit. For other investors, Heathrow losing its A- rating will mean they would face higher capital requirements to continue holding their Heathrow bonds. In both cases, the capacity to support refinancing will become more limited. A downgrade to BBB+ will likely lead investors to sell their position or choose not to further increase their exposure. Without a settlement from the CAA which allows a return to credit metrics aligned with an A- credit rating, raising debt will become increasingly difficult and expensive, which would be inefficient for consumers who would bear these costs.

6.3.7 The fact that Heathrow has been able to continue accessing financing despite being downgraded should not be mistaken for a signal that creditors will be content to retain this credit rating throughout the H7 period or that Heathrow can achieve the same cost efficient financing at this downgraded rating for H7. Continued access to debt financing was only possible during the last 18 months due to:

- The pandemic being considered a temporary issue in nature. Creditors expect a return to stronger metrics and an A- credit rating. This is reinforced by the fact that Heathrow is regulated and with a regulatory reset due in 2022 allowing building blocks to be reset to reflect current market and trading conditions.
- Higher spreads than pre-pandemic and relatively higher spread than other regulated businesses offering creditors a good opportunity to buy bonds with Heathrow's credit fundamentals remaining effectively unchanged and the expectation that credit ratings will recover to A- after the impact of the pandemic.

6.4 RBP Update 2 Case - Financeability Assessment

6.4.1 This section provides a refresh of the financeability assessment run in our RBP Update 1. We now consider a single case based on our mid passenger forecast, a full RAB adjustment of £2.5bn (2018p), no regulatory depreciation deferral, Capex totalling £4.1bn (2018p) and a WACC of 8.5%. The assessment has been undertaken using the CAA's Price Control Model ('PCM') and therefore assumes a notional balance sheet. The analysis also includes the RAB profiling adjustment mechanism that was used in Q5 and that was part of our Q6 licence. This adjustment compensates for the impact of the lower or higher revenue generated compared to revenue requirements.

6.4.2 We have applied a tariff profile which fixes the level in 2022 (via a P0 adjustment) consistent with the charges set out in our aeronautical charges consultation document on 31 August 2021, which we were required to publish under the Airport Charges Regulations 2011. From 2023 to 2026 we have applied a tariff which is flat in 2018p at approximately £45.

6.4.3 Our RBP Update 2 case remains financeable with a mix of cashflows from operations and debt financing, supported by ongoing equity commitment provided we secure an appropriate WACC and minimum cash inflows to support our credit metrics from the start of H7. Our strong liquidity position (as noted above) ensures a liquidity horizon until 2025 and we expect gross debt financing of up to c.£1.5bn per annum in actual nominal terms.

6.4.4 When looking at key credit metrics, we have assumed a gradual increase in gearing across H7 to 60%. As per our Update 1 in June 2021, we continue to focus on Funds from Operations to Net Debt (FFO/Net Debt) as a key measure.

6.4.5 The CMA has set out clear thresholds for the level of FFO to net debt needed to target different ratings for a company geared at 60%. These are a ratio of 9% for BBB+, 8% for BBB and 6% for BBB-. Below a 6% ratio, the FFO/Debt metric is not consistent with an investment grade credit. In our view, we should target an FFO/Net Debt which does not fall significantly below 6% in any one year and not below 8% over a three-year period.

6.4.6 Our proposed charge for 2022 results in a forecast FFO/net debt for the notional company of 4.5%. This challenges the single year target of 6% and creates risk of a further ratings downgrade. However, the three-year average between 2022 and 2024 is 12.6% and the average across H7 is 14.9%. These levels are well above the threshold set by the CMA for a BBB+ rating and consistent with levels which would support an A- rating under our actual structure.

6.4.7 In respect of Net Debt to EBITDA and Post Maintenance Interest Cover Ratio (PMICR), the picture is similar in that we see increased pressure in 2022 before returning to more comfortable levels from 2023 onwards.

Figure 45: FFO to Net Debt

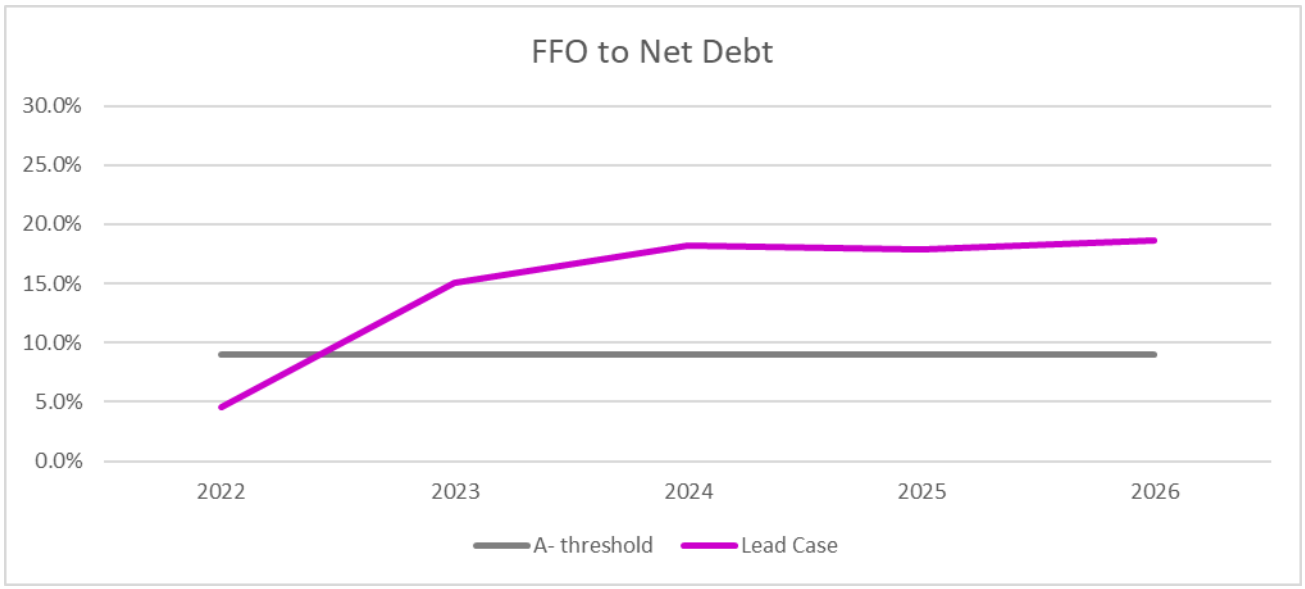


Figure 46: Net Debt to EBITDA

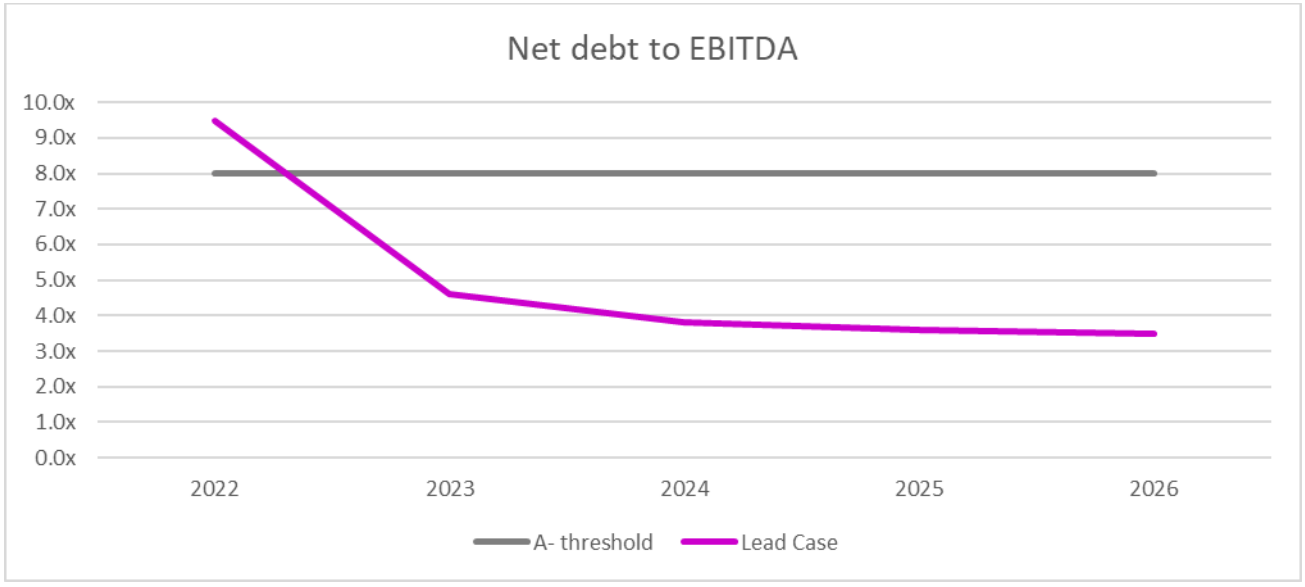
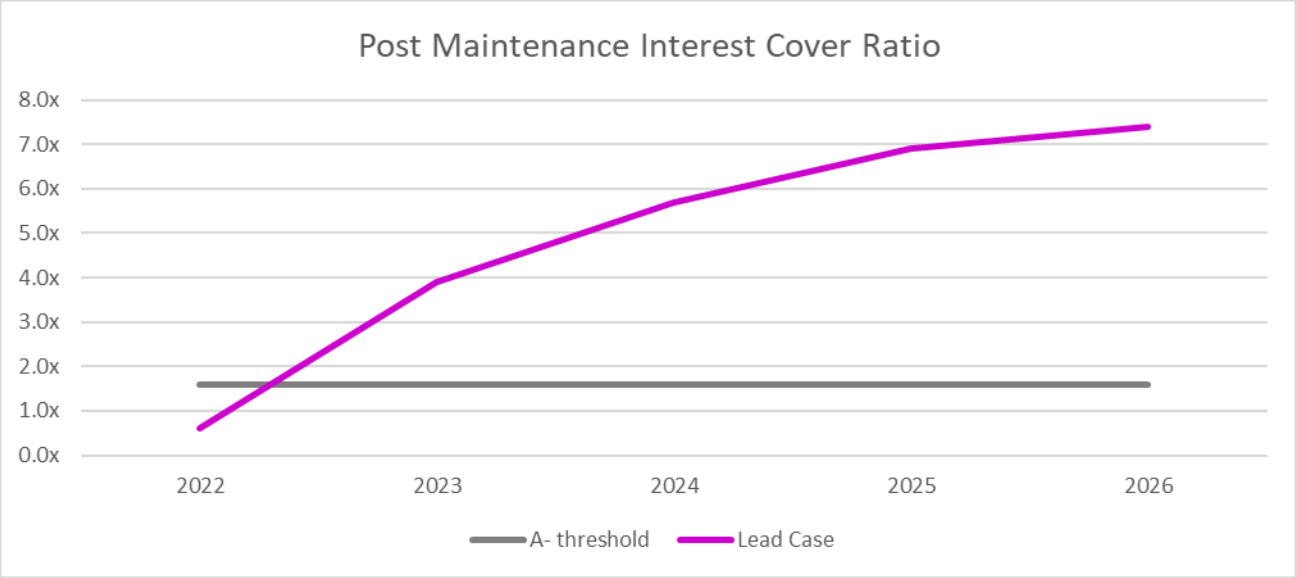


Figure 47: Post Maintenance Interest Cover Ratio



6.5 RBP Update 2 Case - Sensitivities

6.5.1 In line with the approach used in our RBP, we have tested the resilience of both cases envisaged to manage unexpected events. We outline below the key sensitivities that we believe are relevant to assessing the debt financeability of these plans.

1. A lower WACC
2. A higher cost of debt
3. A lower inflation
4. Lower passengers

Scenario descriptions

Lower WACC scenario ('Low WACC')

6.5.2 In this scenario, we assess financeability based on a WACC decreasing by 200bps.

Higher cost of debt ('High CoD')

6.5.3 This scenario reflects a risk of debt costs increasing and having to be absorbed by Heathrow before being corrected through the debt indexation mechanism. In this case we assume that the cost of new debt increases to 5% nominal from the start of 2022.

Lower inflation scenario ('Low inflation')

6.5.4 In this scenario, we assume inflation decreases by 2% across H7.

Lower passenger numbers scenario ('Low Pax')

6.5.5 In this scenario, we assume passenger numbers are based on the mid case for our revenue requirement, but outturn passengers are based on the low outurn. We also assume that a RAB only based risk sharing mechanism applies.

Assessment of key credit metrics

Figure 48: Sensitivities - FFO to Net Debt

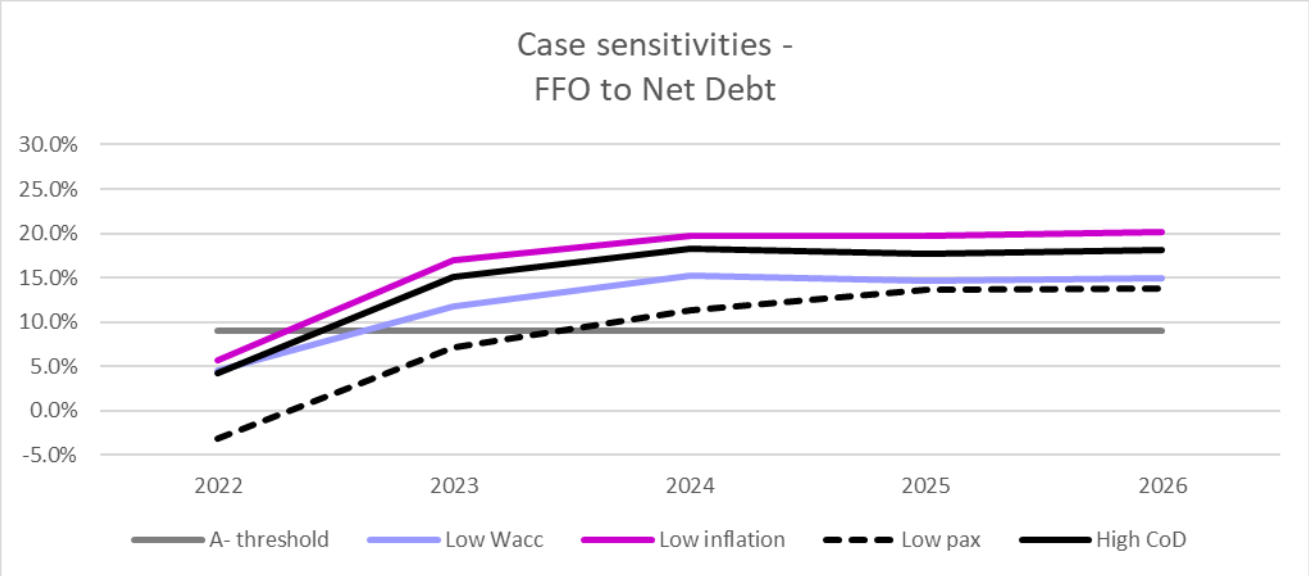
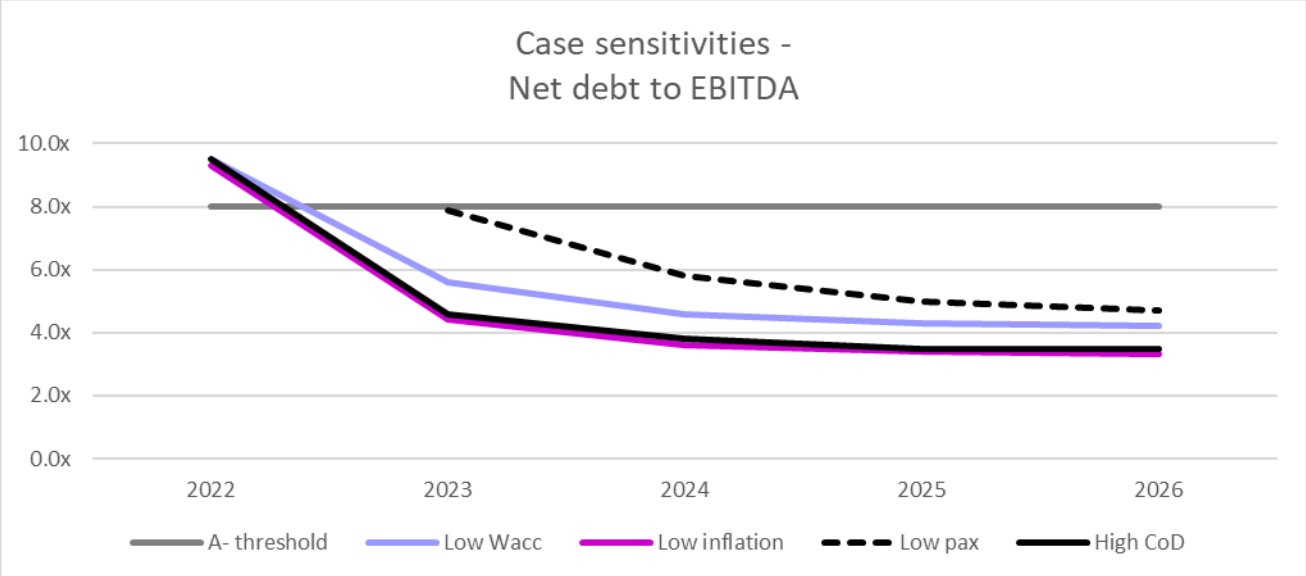
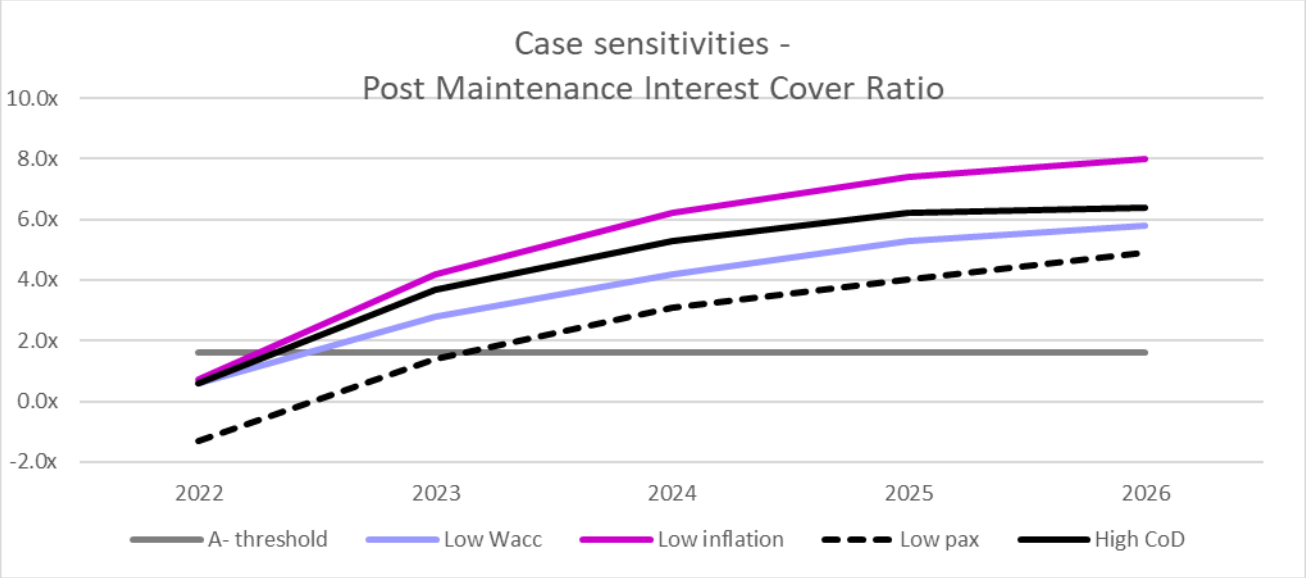


Figure 49: Sensitivities - Net Debt to EBITDA



NB: Net debt to EBITDA for 2022 under the low passenger case has been removed from the charts for ease of reading as it is above 40x

Figure 50: Sensitivities – Post Maintenance Interest Cover Ratio



6.6 Conclusion

6.6.1 Our analysis shows that we remain under pressure in terms of 2022 credit metrics. However, our lead case enables Heathrow to restore stronger credit metrics from 2023 onwards and above thresholds based on CMA guidance for a company geared at 60%.

6.6.2 In terms of the sensitivities, passenger underperformance would once again have the biggest impact on our metrics, significantly increasing the risk of covenant breaches and credit rating downgrades form both S&P and Fitch.

6.7 Rating Agency Comments (from June 2021)

Standard & Poor's

04/03/21 - *"We think the U.K. aviation regulator, the CAA, will take a balanced approach that will support Heathrow Funding Ltd.'s (HFL) financeability. We therefore think the regulatory framework in the period starting January 2022 (H7: 2022-2026) should remain supportive and transparent […]""We still expect HFL to deliver its weighted average FFO to senior debt of 6%-7% during 2021-2023 and FFO to total debt of 4%-5%. We consider these ratios to be very tight for the rating, limiting the company's financial flexibility given the high level of debt issued by entities outside the group ring fence. However, we expect these ratios to improve in 2022, subject to the outcome of the regulatory reset in 2022." "Based on the CAA's track record and statutory duty, we think it will take a balanced approach such that HFL can sustain credit metrics at least commensurate with the current ratings, considering our traffic assumptions. We think the CAA will support HFL's financeability while considering the affordability of charges for airlines and ultimate customers, as well as future expansion needs." "We would also downgrade the Class A and Class B debt if the regulatory tariff set for H7 is such that HFL cannot achieve weighted average FFO to senior debt of at least 7% and weighted average FFO to total debt of at least 5%"*

09/08/19 - *"Key strengths: A supportive regulatory environment, ensuring recovery of investment and good predictability of cash flows over five yearly resets." "In our view, the regulatory framework under which Heathrow operates is predictable and supportive. It is based on the RAB concept, which encourages investment by allowing recovery of capex costs via tariffs. A fair return over the RAB ensures the business' profitability and shareholder returns, which grow in line with capex."*

Fitch

31/03/21 - *"The affirmation reflects our expectation that Heathrow's supportive regulation and significant market power as primary hub airport, will allow it to significantly increase 2022 aero tariffs, by around 40% to 50% in nominal terms …" "We also note the regulator's mandate to ensure capex can be financed in addition to affordability to end-users as supportive"*

Moody's

15/12/20 - *"Credit strength: long established framework of economic regulation" "LHR is subject to a framework of economic regulation that is considered appropriate and transparent. It is a form of price cap regulation that has proven to permit fair recovery of costs and generates a reasonable return on invested capital."*