LEEDS BRADFORD AIRPORT

REPLACEMENT AIRPORT TERMINAL, ASSOCIATED INFRASTRUCTURE AND OPERATIONAL MODIFICATIONS

FURTHER INFORMATION REPORT

JULY 2020

Contents

1 Introduction

Context and Purpose of the Further Information Report

1.1 In April 2020, Leeds Bradford Airport Ltd (the 'Applicant') submitted a detailed planning application (ref: 20/02559/FU) to Leeds City Council (LCC) for the construction of a replacement terminal building, changes to airport infrastructure and to daytime flying hours (the 'Development') at Leeds Bradford Airport (the 'Airport'). The proposals were designed to support the future growth at the Airport and were subject to an Environmental Impact Assessment (EIA) process. The EIA process was reported in an Environmental Statement (ES) that accompanied the planning application (the 'Submitted ES'). The ES was prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1] as amended[2] (the 'EIA Regulations'). The EIA Regulations were amended[3] following the production of the Submitted ES and submission of the planning application.

1.2 The EIA used the outputs of aviation forecasts and flight schedules produced on behalf of the Applicant, by Altitude Aviation Advisory (AAA) and Air Logic Consulting Limited, as the basis of the technical assessments (see Section 4 of this report, and in further detail in Chapter 3: EIA Methodology of the Submitted ES). The forecasts and flight schedules were produced prior to the full onset of COVID-19 within the UK.

1.3 Whilst the COVID-19 pandemic is primarily a health-related shock event, there have been major knock-on economic impacts both within the UK and across the globe, with resultant consequences for the aviation sector. The effect of COVID-19 on the Airport and consequentially on the Airport's growth forecasts has been raised by LCC, LCC's technical reviewers of the EIA (WSP) and a number of statutory and non-statutory consultees since the submission of the application. As a result, on 29th July 2020, LCC wrote to the Applicant formally requesting further information on the implications of the COVID-19 pandemic on the ES, under Regulation 25 of the EIA Regulations. LCC requested that the following questions be addressed by the Applicant:

1) Is there in your view reason to believe that COVID-19 will have an effect – either positive or negative - on passenger numbers at LBA? If so, what do you believe that effect to be and why?

2) Does the effect on passenger numbers described in response to (1) above warrant a review of the aviation forecasts and flight schedules on which you have based certain parts of your Environmental Statement? If so, what would the new forecasts say? If not, why not?

3) If in response to (2) above you have stated "yes", does this have any impact on the conclusions reached in the Environmental Statement ? If so, how would this change? If not, why not?

[1] The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.
[2] The Town and Country Planning (Environmental Impact Assessment) (Amendment) Regulations 2018.
[3] The Town and Country Planning (Development Management Procedure, Listed Buildings and Environmental Impact Assessment) (England) (Coronavirus) (Amendment) Regulations 2020 (came into force May 2020).

1.4 This Further Information Report (FIR) provides the information requested by LCC and should be read in conjunction with the Submitted ES. The structure of this report is set out below.

FIR Structure and Project Team

1.5 This report has been produced to consider the implications of the COVID-19 pandemic on the air traffic forecasts and flight schedules used as the basis of the EIA and the subsequent implications on the conclusions of the ES. The document addresses each question raised by LCC in the Regulation 25 request through the following three sections:

- **Section 2 –** addresses Question (1) and the first part of Question (2) on aviation forecasts by considering the implications of COVID-19 on the Airport's air traffic forecasts.
- **Section 3 –** addresses the second part of Question (2) on flight schedules by considering the implications of COVID-19 on the schedules produced to support and inform the planning application.
- **Section 4 –** addresses Question (3) by considering the conclusions to Questions (1) and (2) in relation to the assumptions and conclusions of the ES.

1.6 This report has been co-ordinated by Quod, with input from the wider project team and technical experts central to the planning application. The project team are set out in Table 1.1.

Table 1.1: Project Team

Consultant Role / Input	Organisation
Applicant	Leeds Bradford Airport Ltd
Planning and EIA Co-ordinator	Quod
Aviation Forecasts	Altitude Aviation Advisory
Flight Scheduling	Air Logic Consulting Limited
Climate Change	Ecolyse / Air Quality Consultants
Transport & Access	Fore Consulting
Air Quality	Air Quality Consultants
Noise and Vibration	Noise Consultants
Socio-Economics	York Aviation
Biodiversity	Mott MacDonald
Human Health	Ben Cave Associates

ES Availability

1.7 Given this report provides further information to supplement the Submitted ES, this information will be subject to 30 days of public consultation. This FIR, the Submitted ES and all application documents are available online on LCC's website. Due to COVID-19 restrictions at the time of writing, hard copies are not available for viewing at LCC Planning Offices, however a hard

copy of this FIR and the Submitted ES is in place at the Airport for public viewing. In addition, hard copies can be requested for a reasonable fee and a USB stick of the ES can be made available free of charge. The Non-Technical Summary can also be obtained free of charge upon request in hard copy or as an electronic file. All ES documents are available by emailing hello@quod.com quoting Reference No. Q100632.

1.8 Comments on the planning application can be made online during the applicable consultation period via https://www.leeds.gov.uk/planning/planning-permission/view-and-comment-on-planning-applications. Alternatively, comments can be addressed to planning@leeds.gov.uk.

2 COVID-19 Implications on Air Traffic Forecasts

Introduction

2.1 AAA were engaged by the Applicant to prepare independent air traffic forecasts during the early stages of design of the Development to understand expected growth at the Airport. As part of the forecasting process, AAA consulted with the Airport's commercial team to incorporate the latest known airline developments and expectations. The air traffic forecasts provided projections of annual passenger numbers, annual passenger growth and passenger Air Traffic Movements (ATMs) growth at the Airport up to 2030. Further details on the methodology used to generate the forecasts were provided in Appendix 3.3 of the Submitted ES.

2.2 The outputs of AAA's forecast model were used in the generation of flight schedules by Air Logic Consulting Limited (see Section 3 for further discussion on flight schedules). The results informed the assessment of the noise and vibration, climate change, air quality, surface access traffic and other environmental effects of the Development that were reported in the technical chapters and appendices of the Submitted ES (Chapters 7 – 13).

2.3 To address questions raised on the implications of the COVID-19 pandemic on Leeds Bradford Airport and its future growth, AAA have undertaken a review of the implications of COVID-19 on the Airport's air traffic forecasts.

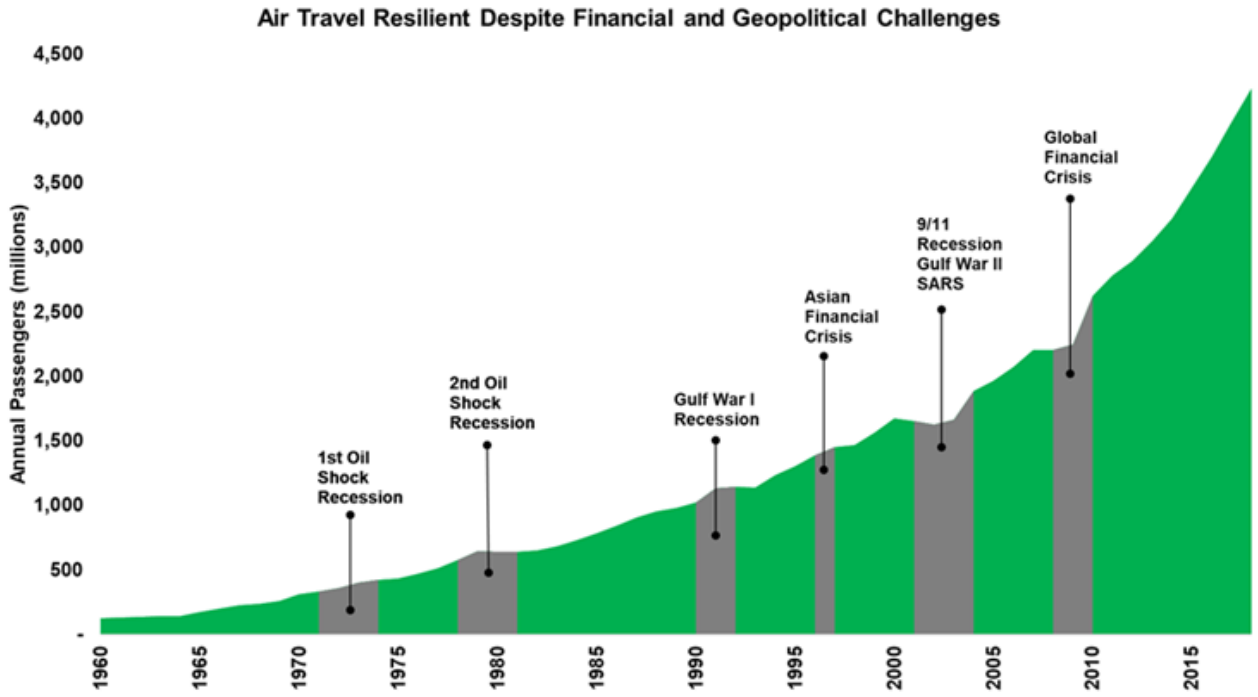
2.4 The COVID-19 pandemic is currently having a major impact on the aviation sector (as well as the wider economy). Although traffic is starting to recover in many regions of the world, much of the global aviation fleet remains grounded and current traffic volumes represent only a small proportion of normal activity levels.

2.5 This section outlines the potential implications of the current aviation downturn on the Airport's medium to long term air traffic recovery and growth prospects.

Global Traffic Context

2.6 Aviation demand is sensitive to major global events, with growth periodically interrupted by economic, political, conflict and health related shocks. However, aviation has demonstrated resilience to major shock events, with traffic growth resuming once the shock impact has subsided. The response of air travel to past financial and geopolitical challenges is shown in Figure 2.1.

Figure 2.1: Response of Air Travel to Financial and Geopolitical Challenges



Source: Boeing Commercial Market Outlook 2019-38

2.7 Broadly speaking, with non-economic shocks traffic typically returns to the previous growth path. For example, the SARS outbreak in Asia Pacific did not lead to any permanent impact on traffic growth, as traffic fully rebounded once the epidemic was under control.

2.8 However, economic shocks typically result in lower propensity to fly than would have otherwise been the case had the economy kept expanding on its previous growth path. Therefore, economic shocks at a market demand level typically result in a period of lost passenger traffic growth consistent with the period of lost economic growth. The impact on individual airports varies depending on the strength of the market and airlines serving the airport.

2.9 The COVID-19 pandemic is primarily a health related shock event. However, such is the severity of the pandemic that there have been major knock-on economic impacts. Economic forecasters model a rapid rebound in GDP in 2021. For example, the International Monetary Fund's June 2020 World Economic Outlook Update envisages a 4.9% decline in world output in 2020, followed by a 5.4% increase in 2021. Medium term economic growth projections have nevertheless been downgraded. It is therefore reasonable to assume that air traffic demand in the future could fall below previous expectations. Figure 2.2 and Table 2.1 below set out a range of forecasts of GDP performance for 2020 and 2021 and beyond for the UK.

Figure 2.2: UK GDP Outlook

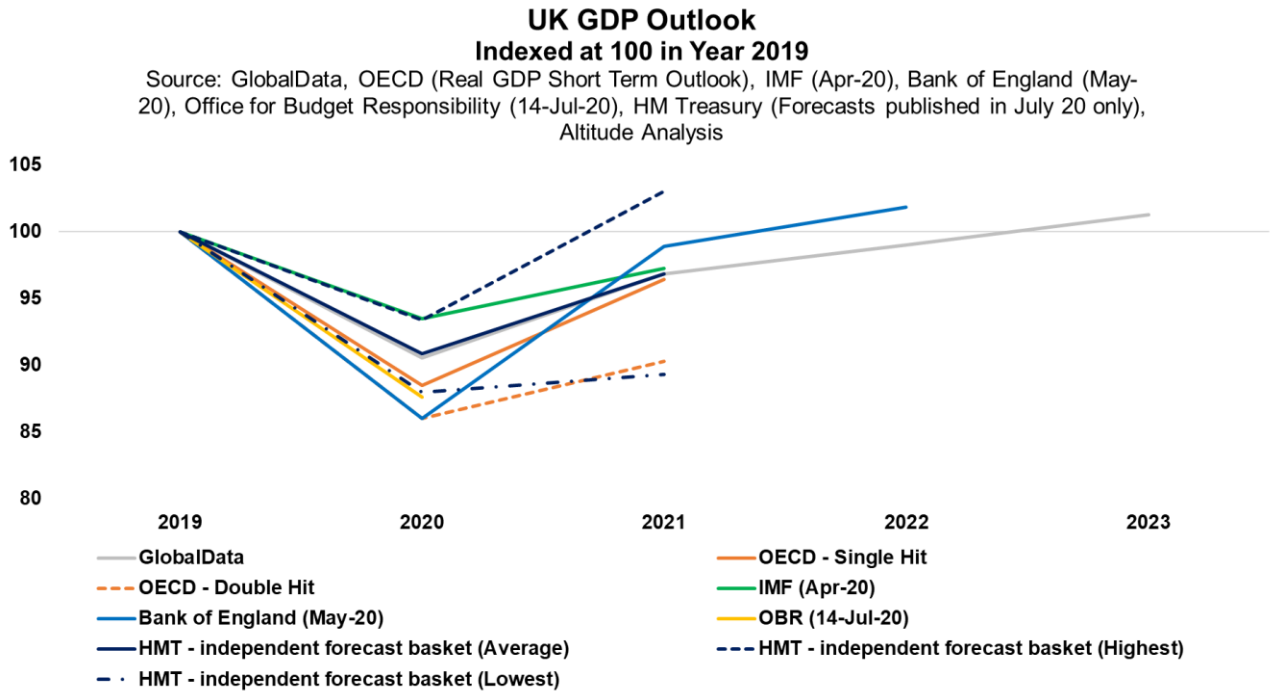


Table 2.1: UK GDP Forecast Growth

UK GDP Forecast Growth	2020	2021
City Forecasters		
Bank of America - Merrill Lynch	(11.3%)	6.8%
Barclays Capital	(7.5%)	5.8%
Bloomberg Economics	(9.7%)	9.0%
Capital Economics	(9.3%)	7.7%
Citigroup	(9.6%)	6.2%
Commerzbank	(10.1%)	7.0%
HSBC	(7.8%)	6.2%
JP Morgan	(8.3%)	6.6%
Natwest Markets	(7.8%)	6.8%
Societe Generale	(9.2%)	7.6%
UBS	(9.4%)	5.5%
Other Forecasters		
Beacon Economic Forecasting	(8.0%)	1.5%
Economic Perspectives	(9.5%)	4.9%
Experian Economics	(12.0%)	9.0%

UK GDP Forecast Growth	2020	2021
EIU	(9.0%)	6.0%
Heteronomics	(7.8%)	6.8%
ITEM Club	(8.9%)	6.0%
Kern Consulting	(9.5%)	6.0%
Liverpool Macro Research	(6.6%)	6.2%
Oxford Economics	(10.9%)	10.3%
European Commission	(9.7%)	6.0%
Average of Forecasts (excl. OECD scenarios)		
Average	(9.1%)	6.6%
Highest	(6.6%)	10.3%
Lowest	(12.0%)	1.5%
Median	(9.3%)	6.2%

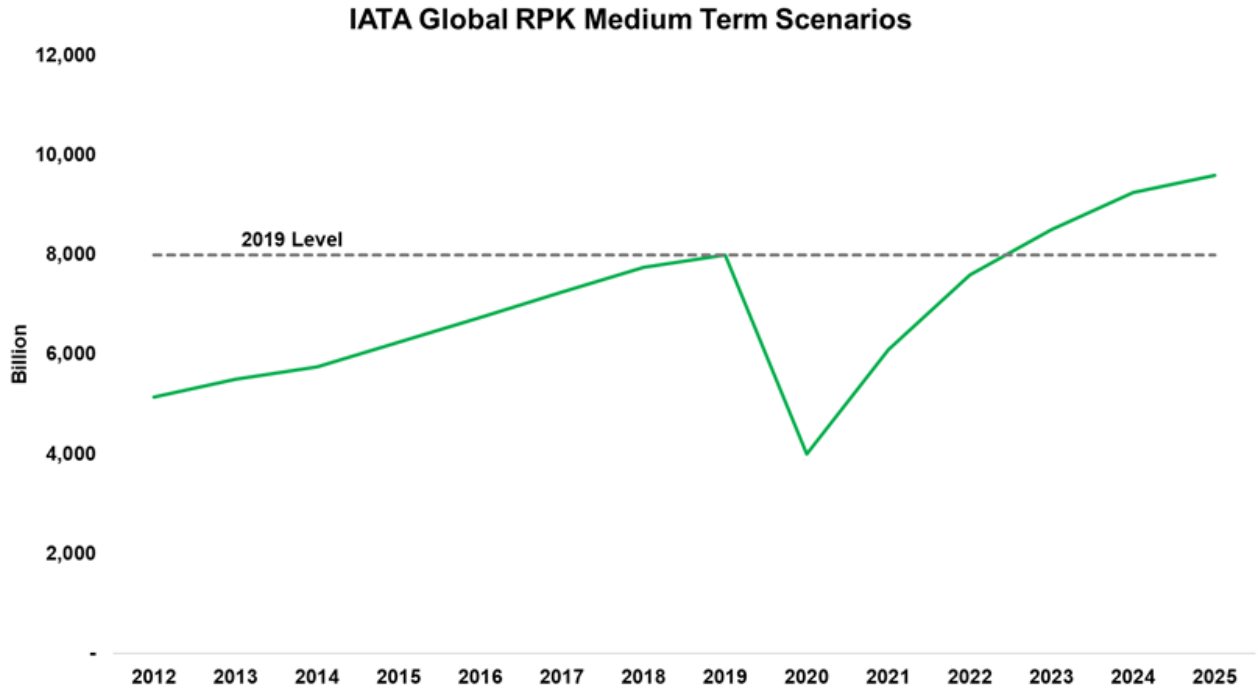
Source: HM Treasury - Forecasts for the UK economy: a comparison of independent forecasts (July 2020)

2.10 The Bank of England's forecast scenario expects the fall in GDP to be temporary followed by rapid recovery, with GDP getting back to the 2019 level in the second half of 2021 and increasing by 3% in 2022. The projection assumes UK and COVID-19 global containment measures.

2.11 The International Air Transport Association ("IATA"), the trade association of the world's airlines has developed medium term global traffic projections for recovery from the current crisis[4]. It envisages air traffic volumes will surpass 2019 levels by 2023. Figure 2.3 shows the projected outlook for air travel over the next 5 years.

[4] IATA, COVID-19 Outlook for air travel in the next 5 years, Brian Pearce, Chief Economist, 13th May 2020.

Figure 2.3: IATA Global Revenue Passenger Kilometres[5] (RPK) Medium Term Scenarios



Source: IATA: Outlook for air travel in the next 5 years

2.12 The IATA's assessment of the speed of the recovery is consistent with statements from airlines. While much uncertainty remains and there are differences in the assessments made by individual airlines, 2023 represents a consensus view.

2.13 The global economy is generally expected to recover by 2022, so there is an assumption that aviation growth will lag the economic recovery. Factors that could contribute to slower aviation recovery are tighter border controls in the future, greater use of video conferencing reducing the need for business travel, more passenger caution and distressed airline balance sheets. It could be expected that as these issues ease over time, there would be some partial "catch-up" to the previous growth path. However, the forecast recovery of 2019 traffic levels by 2023 reflects a cautious outlook.

Leeds Bradford Airport Track Record in Aviation Downturns

2.14 As outlined, the impact of previous demand shocks has varied by individual airport depending on the strength of the market and airlines serving the Airport. The Airport has demonstrated strong resilience to recent traffic shocks:

- After the terrorist attacks of 9th September 2001, traffic recovered to surpass the previous peak by 2003 (as shown in Figure 2.4).
- Following the global financial crisis, traffic exceeded the previous 2008 peak by 2011 (as shown in Figure 2.5).

[5] IATA forecasts Revenue Passenger Kilometres (RPK) which is the number of commercial fare paying passengers multiplied by distance travelled.

- In both cases, the recovery profile was much stronger than both the overall UK market and the UK regional airport market. The recovery profile from the most recent shock, the global financial crisis, was particularly strong compared to the rest of the UK market.

Figure 2.4: Recovery from 9/11 Shock: Leeds Bradford vs UK

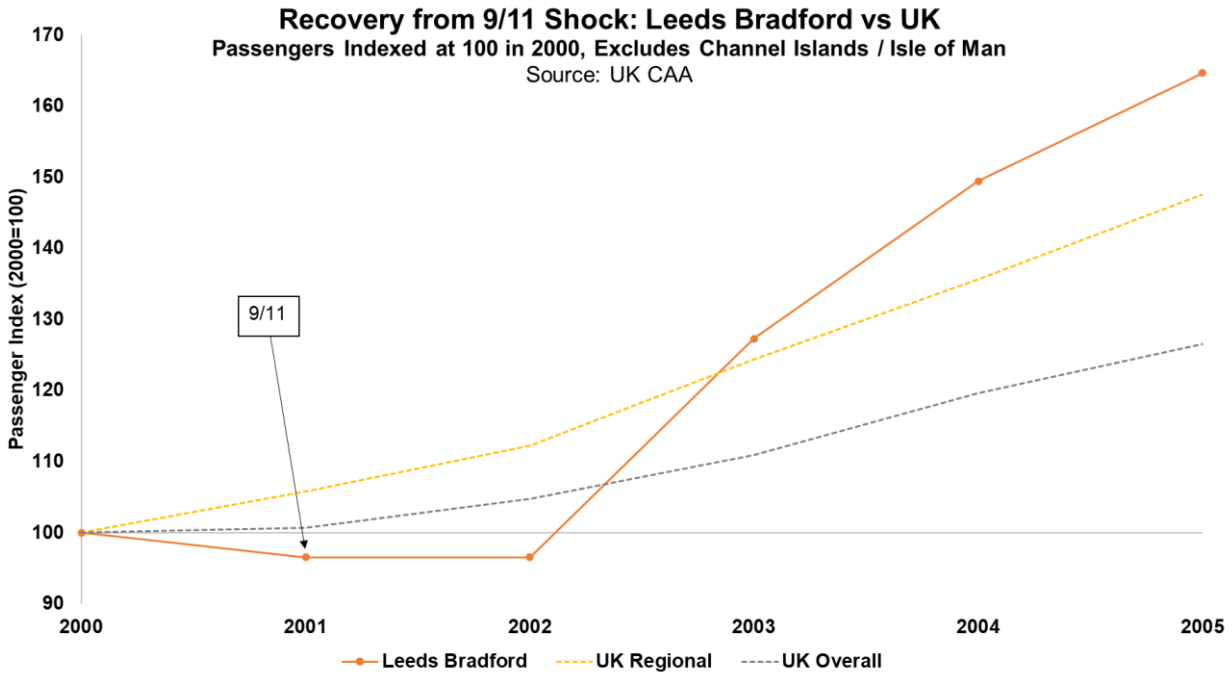
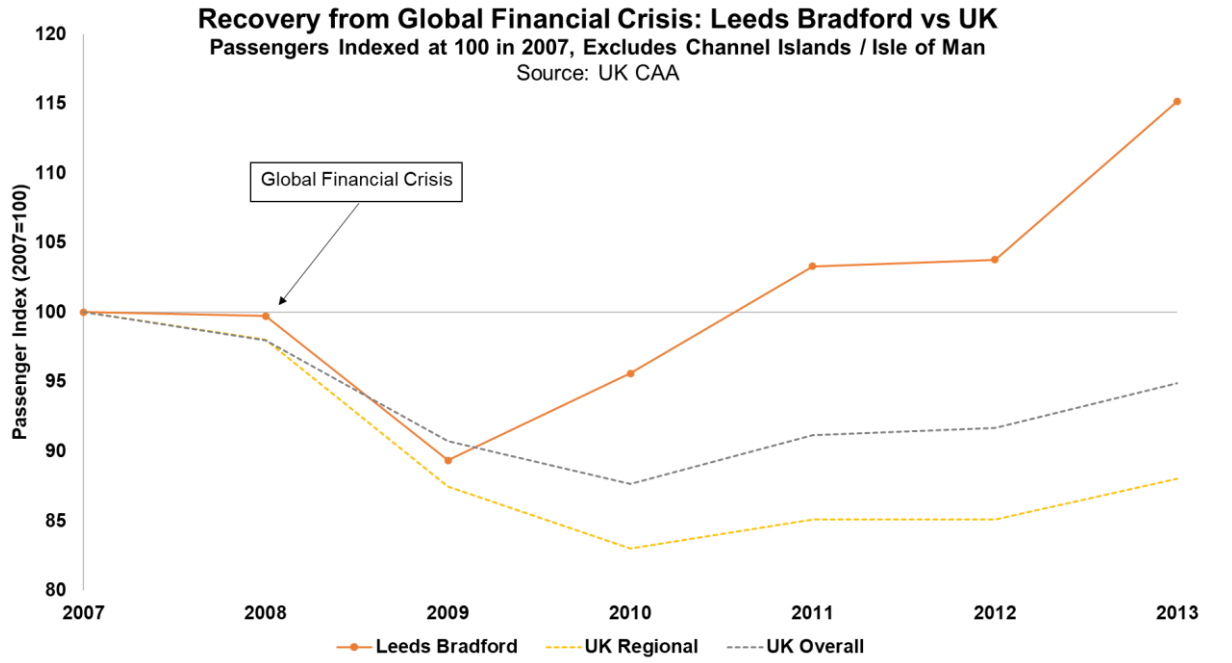


Figure 2.5: Recovery from Global Financial Criss: Leeds Bradford vs UK



2.15 The recovery profiles highlight the underlying strength of the Airport's market (i.e. a relatively affluent and large catchment, dynamic airline base, main gateway to the Yorkshire region, and the opportunity to clawback large volume of traffic using airports outside the region). It would be reasonable to assume this would be replicated in the recovery profile from the COVID-19 demand shock where the Airport would be expected to recover faster than the wider UK market.

Leeds Bradford Airport Outlook

2.16 The Airport, like all airports, has been negatively impacted by the current COVID-19 pandemic. While traffic is starting to return, the Airport has lost some airline customers:

- Flybe ceased flying immediately before the pandemic (5.7% of 2019 traffic at the airport) following its collapse in early March 2020.
- British Airways has announced it is to withdraw its Heathrow service (2.5% of 2019 traffic).

2.17 However, the traffic recovery profile is relatively positive for the bulk of airline traffic at the Airport with airlines carrying over 90% of 2019 passengers either having already restarted services or will have restarted by the beginning of August:

- Jet2 (53% of 2019 traffic) returned to flying from July 15th. It has already launched its Summer 2021 programme with new LBA destinations added. While the airline is seeking to rationalise (including 102 pilot redundancies), the scale of the cuts is less dramatic than seen at other airlines. Jet2 has also improved its customer service reputation through quick refunding of cancelled flights which should support future customer confidence.
- Ryanair (31% of 2019 traffic) has resumed services from the Airport. Chief Executive Michael O' Leary has previously been quoted as expecting Ryanair to recover traffic relatively quickly ("I think Ryanair in summer 2021 will be carrying our 2019 traffic plus growth, but the airports will still have less traffic than they had before").
- KLM (4.6% of 2019 traffic) has restored its Amsterdam services to Leeds Bradford, in advance of some of its other UK regional routes. KLM is expected to benefit from British Airways stopping the Heathrow service which had a high share of passengers transferring to other connecting international flights.
- Aer Lingus (1.8% of 2019 traffic) has announced restoration of the Dublin service from the start of August.
- Eastern Airways, a new entrance airline has already started to operate from Leeds Bradford, replacing a number of routes previously operated by Flybe.

2.18 It is reasonable to assume that the medium-term impact of the COVID-19 pandemic on UK aviation market demand will be a delay of two to four years compared to previous expectations. There is no reason to suggest any fundamental changes to future UK growth beyond the two to four year delay.

2.19 In the context of the Airport's strong recovery from previous demand shocks, we would expect traffic to exceed 2019 levels by 2022. With continuing recovery beyond 2022, reaching 7 million passengers per annum by 2032 is a reasonable projection. This would reflect a two year delay to the pre-COVID19 forecasts.

2.20 It is also possible that the Airport may benefit from structural airline industry changes, such as smaller airports being financially unsustainable or airlines consolidating services at particular airports. This is supported by airlines re-commencing services at the Airport before some other UK regional airports indicating market strength.

2.21 It is also likely that having a new terminal with higher airline and passenger service levels will potentially support faster traffic growth, with any delay in achieving the 2030 forecast largely mitigated.

2.22 However, despite the Airport's resilience, and based on the assumption of a delay of up to two years, Table 2.2 sets out the potential delay impact on annual passengers and passenger Air Traffic Movements (PATMs) for the With and Without Development Scenarios. This report goes onto consider the implications for the ES findings if the PATMs are delayed by 2 years.

Table 2.2: Potential COVID-19 Traffic Delay Impact

Scenario	2018	2019	2024	2030	2032
Without Development					
Passengers	4.0m	4.0m	4.3m	5.5m	5.5m
PATMs	30.2k	29.5k	31.3k	36.2k	36.0k
With Development					
Passengers	4.0m	4.0m	4.5m	6.4m	7.0m
PATMs	30.2k	29.5k	32.9k	42.6k	45.7k

Impact of COVID-19 Pandemic on Future Fleet Evolution

2.23 Aircraft can be categorised by which "generation" they belong to with aircraft divided into the generations set out in Table 2.3.

Table 2.3: Aircraft Generations

Generation	Description	Example Aircraft
Generation 0	Older aircraft types, typically developed before the 1990s and now out of production	A320-200, B737-300, B757-200, B767
Generation 1a	Current aircraft types, typically developed in the 1990s and still in production	B737-800, A319-100, A321-200, B777-200ER, Q400
Generation 1b	Current aircraft types, typically developed in the 2000s and still in production	B737-900, B787-8, Embraer 190/195
Generation 2	Latest aircraft types, recently entering production	B737MAX, A320neo, Embraer Ejet-E2, B787-9

2.24 Newer generation aircraft are invariably more fuel efficient (reducing carbon emissions) and with a lower noise footprint than equivalent aircraft from previous generations. The differences between aircraft generations are significant. For example:

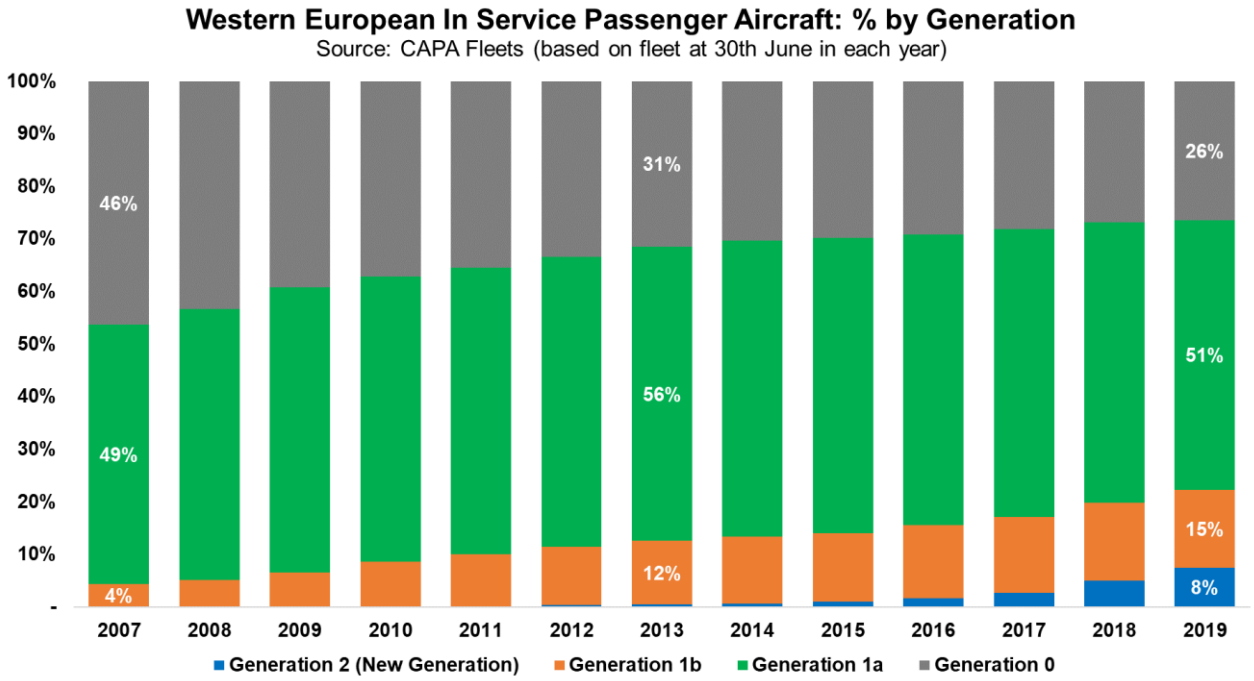
- A320-200 (Generation 0) has a maximum approach quota count (QC)[6] rating of 0.25 / 0.5 (depending on engine type). This compares to the A320neo (Generation 2) with equivalent QC rating of 0.125.
- B737-300 (Generation 0) has a maximum approach QC rating of 1.0. The B737-800 (Generation 1a) equivalent rating is 0.5, while the Boeing 737-8 200 (MAX) (Generation 2) has a rating of 0.25.

2.25 To provide a profile on how airlines have renewed their fleets over a long period, the Western European fleet of registered commercial passenger aircraft has been analysed for the period 2007 to 2019 (see Figure 2.6). There has been a clear and consistent trend of airlines progressively acquiring newer generation aircraft and retiring older generation aircraft. For example:

- From 2007 to 2019, the proportion of Western European aircraft that were Generation 0 declined from 46% to 26%.
- The proportion of Generation 1a aircraft has remained relatively constant, increasing from 49% to 51%.
- Generation 1b aircraft moved from only 4% of the fleet in 2007 to 15% in 2019.
- New generation aircraft (by definition not around in 2007) accounted for 8% of the fleet in 2019.

[6] The quota count (QC) system classifies aircraft models based on their noise output (in controlled conditions), where aircraft are rated separately for take-off and landing. Low QC values are assigned to quieter aircraft and louder aircraft receive larger values. The system is used by airports to limit noise resulting from night-time operations.

Figure 2.6: Western European In Service Passenger Aircraft



2.26 It is notable that the onset of the global financial crisis in 2008 which had a materially negative impact on the airline industry financial performance did not have any visible impact on the trend towards airlines acquiring newer generation aircraft.

- Any cancellations of new aircraft orders (reducing the % of newer generation aircraft) as a result of the economic downturn was offset by the accelerated retirement of older generation aircraft.

- After previous demand shocks, aircraft manufacturers have discounted new aircraft orders to mitigate cancellations of previous existing orders. Low cost carriers have been key beneficiaries of this approach.

2.27 In the current COVID-19 pandemic, many airlines have announced the accelerated retirement of older aircraft types. For example, British Airways announced in mid-July that *"It is with great sadness that we can confirm we are proposing to retire our entire 747 fleet with immediate effect… due to the downturn in travel caused by the COVID-19 global pandemic….as we head into the future we will be operating more flights on modern, fuel-efficient aircraft such as our new A350s and 787s, to help us achieve net-zero carbon emissions by 2050."* (Source: https://www.travelweekly.co.uk/articles/379395/british-airways-retires-boeing-747-fleet)

2.28 Some of the most prominent examples of confirmed or expected aircraft retirements are summarised in Table 2.4.

Table 2.4: Accelerated Airline Fleet Retirements

Airline	Aircraft Types Affected/At Risk
Asia-Pacific	
Singapore Airlines	A330, B777-200ER
Europe	
Air France-KLM: Air France	A340, A380
Air France-KLM: KLM	B747
IAG: British Airways	A320 ceo family, B747
IAG: Iberia	A320 ceo family, A340
Lufthansa Group: Austrian	A319, Bombardier Dash 8, B767
Lufthansa Group: Lufthansa	A320 ceo family, A340, A380, B747
Lufthansa Group: Swiss	A320 ceo family, A330, A340
Virgin Atlantic	A340, B747
North America	
Air Canada	A319, B767, Embraer190
American Airlines	A330-300, B757, B767, Embraer 135, Embraer 145, Embraer 190*
Delta Air Lines	B777, McDonald Douglas MD-88 and MD-90
Southwest Airlines	B737-700

Source: Company statements, FlightGlobal research (https://www.flightglobal.com/fleets/air-france-latest-to-act-as-coronavirus-speeds-wave-of-fleet-retirements/138473.article)

2.29 In addition to the removal of older aircraft types from the fleet, the noise footprint and level of emissions will also decline as a result of reduced flying volumes in the current aviation downturn. Furthermore, in some countries, COVID-19 related state financial support for a number of airlines is conditional on environmental commitments.

2.30 For example, state aid for Air France was linked to the following conditions:

- Air France is to reduce its CO_2 emissions on long and medium-haul routes by 50% per passenger and kilometre by 2030; on flights within France until 2024.
- By 2025, at least 2% of the fuel should come from a climate-neutral source.
- Over the next few years, the long- and medium-haul fleet is to be renewed with a focus on reducing emissions, for example through the use of the new Airbus models A220 and A350, which emit up to 25% less CO_2.
- Source: https://www.dw.com/en/lufthansa-mulls-options-as-air-france-state-aid-strings-revealed/a-53325173

2.31 Ryanair and KLM are two of the major continuing airlines at Leeds Bradford Airport with large orders for new generation aircraft. These orders are currently unchanged by the COVID-19 pandemic. As of 6th July 2020, CAPA Aviation was showing:

- Ryanair: 135 x Boeing 737-8 200 (Generation 2) aircraft to be delivered by 2025 (no change from April 2020 update).
- KLM Cityhopper: 21 x Embraer ERJ195-E2 (Generation 2) aircraft to be delivered from Q1 2021 to 2023 (no change).

2.32 Furthermore, the proposed expansion of facilities at the Airport will attract new airline entrants, supporting the shift to newer aircraft types. The Airport is currently in discussion with a number of new airlines.

Summary

2.33 The COVID-19 pandemic is not expected to lead to a major change in the medium term traffic forecasts and fleet mix projections. The 2030 passenger volumes may be reached around two years later than originally envisaged.

2.34 The Airport's track record following previous demand shocks provides evidence that recovery should be more rapid than the UK overall and regional airport markets.

2.35 It is also possible that having a new terminal with much higher airline and passenger service levels could potentially support faster traffic growth with any delay in achieving the 2030 forecast largely mitigated.

2.36 There is no new information to suggest that the forecast aircraft mix impacts would be delayed:

- Analysis of previous airline sector behaviour does not provide evidence that aviation shocks slow down the replacement of older aircraft with the latest generation aircraft
- For existing carriers at the Airport, there is no indication of delays to orders for more efficient Generation 2 aircraft being added to the fleets to replace older aircraft.
- More generally, the COIVID19 shock has led to the acceleration of the retirement of older aircraft types.

2.37 Therefore, this implies that the environmental impacts in 2030 would be lower compared to the pre-COVID-19 forecasts given the following:

- Same benefit from changes in aircraft mix (with newer aircraft replacing older aircraft).
- Lower overall volume of flying due to projected 2 year delay in traffic development.

3 COVID-19 Implications on Flight Schedule Assumptions

Introduction

3.1 Design Day flight schedules were developed by Air Logic Consulting Limited to support the planning application to determine the future predicted demand that may be placed on the Airport considering expert inputs. The flight schedules were used in the EIA scenarios and subsequent modelling, as set out in Section 4. The schedules supported the planning, design and development needs of the facilities and infrastructure required to support the Development's growth at the Airport.

3.2 Details on the flight schedules were provided in Appendix 3.3 of the Submitted ES. A supplementary note on flight schedules has also been prepared in response to consultation responses on the planning application, titled Flight Schedule Technical Note dated July 2020. These 'design day' flight schedules were created to represent a 'busy day' in the year. The flight schedules included busy day schedules for both the summer and winter months. For example, in the 2018 schedules the 'busy day' in the summer months reflected the 68.27th percentile day to match the expected volumes for 2020 (circa 4 mppa). This formed a base set of factors used for annualised passengers for all other schedules.

3.3 As noted in Section 2, the air traffic forecasts produced by AAA were used in the generation of the flight schedules and the schedules considered year on year growth in flights, reflecting the Airport's commercial views and aspirations as well as the typical patterns at the Airport and other UK regional airports. They also had regard to changing technologies in the airline industry, with a move towards more efficient (passenger loading and environmental) aircraft, and therefore a changing fleet mix over the modelling period.

3.4 These 'design day' flight schedules were created to represent a 'busy day' in the year. The flight schedules included busy day schedules for both the summer and winter months. The schedules were broken down into the two different future development or no development scenarios; the Without Development Scenario and the With Development Scenario. The schedules modelled out to 2030, the year in which the Airport was forecast to reach 7mppa. Further details on the flight schedules were provided in Appendix 3.3 of the Submitted ES and are also covered in a separate Flight Schedule Technical Note produced by the Applicant's team in response to queries raised by various parties.

Potential Impact on Flight Schedules

3.5 As outlined in Section 2, the COVID-19 pandemic is not expected to lead to a major change in the medium term annual passenger traffic forecasts and fleet mix projections.

3.6 The 2030 passenger volumes could however be delayed, and potentially be reached two years later than originally envisaged. This is a reasonable assumption based on currently available information that combines:

- Forecasts from a wide range of sources for UK economic recovery in 2021 and returning to growth thereafter.
- Statements from airlines and IATA's forecast that 2019 passenger levels will be exceeded by 2023.
- The Airport's track record following previous demand shocks which provides evidence that recovery should be more rapid than the UK overall and regional airport markets.
- The traffic recovery profile being relatively positive for the bulk of airline traffic at the Airport with airlines carrying over 90% of 2019 passengers either having already restarted services or will have restarted by the beginning of August.

3.7 It is however also possible that the catalytic effect of having a new terminal with improved service levels could potentially support faster traffic growth with any delay in achieving the 2030 forecast largely mitigated.

3.8 The assumption that the flight schedules profile could be delayed by up to two years but would not be expected to materially deviate from the original forecast profile is based on the following:

- A traffic delay of up to two years would be expected to result in lower overall demand with some reductions across the operational day impacting off-peak periods more than the more commercially attractive first wave early morning departures.
- The change in night-time restrictions to allow these earlier departures will drive the subsequent schedule changes across the rest of the operational day by moving subsequent operations up to one hour earlier than the 2019 base line.
- Airlines prioritising early morning departure slots to provide a more commercially attractive schedule which would allow day return trips.
- Early morning departures provide airlines with a larger operating window to maximise aircraft utilisation which contributes to cost efficiency and route sustainability.

Potential Impact on Fleet Mix

3.9 As outlined in Section 2, newer generation aircraft are more fuel efficient (reducing carbon emissions) and with a lower noise footprint than equivalent aircraft from previous generations.

3.10 Analysis of the Western European fleet of registered commercial passenger aircraft for the period 2007 to 2019 (see Section 2) illustrates a clear and consistent trend of airlines progressively acquiring newer generation aircraft and retiring older generation aircraft.

3.11 Despite the global financial crisis from 2008 having a materially negative impact on the airline industry financial performance, this did not have any material impact on the trend towards airlines acquiring newer generation aircraft.

3.12 It is reasonable to expect that the airline industry would continue the trend of replacing older aircraft with newer generation aircraft.

3.13 There is no new information to suggest that the forecast aircraft mix impacts would be delayed:

- Analysis of Western European airline sector behaviour since 2007 in replacing older aircraft with the latest generation aircraft. After previous demand shocks, aircraft

manufacturers have discounted new aircraft orders to mitigate cancellations of previous existing orders. Notably, low cost carriers have been key beneficiaries of this approach.

- Recent airline announcements that retirement of older aircraft types has been accelerated.
- There is no new information to suggest there would be any reason to change the forecast fleet mix assumptions. For example, to date, Ryanair and KLM have not indicated any delays to orders for more efficient Generation 2 aircraft being added to the fleets to replace older aircraft.

4 COVID-19 Implications on the EIA

Introduction

4.1 The planning application and accompanying ES were submitted on 30th April 2020. Whilst at the time of the submission, there had been an immediate impact on air travel and the aviation sector both within the UK and across the globe, the medium and longer term implications of COVID-19 were unknown. In light of the preceding discussion on the medium and longer term impacts of COVID-19 on the aviation industry and flight schedules, this section of the report reviews the conclusions of Sections 3 and 4 to establish whether they materially affect the conclusions reached in the Submitted ES.

4.2 The methodology applied to the EIA is set out in Chapter 3: EIA Methodology of the Submitted ES. The ES used the outputs of aviation forecasts and flight schedules produced by AAA and Air Logic Consulting Limited, as the basis of the technical assessments. Each technical assessment considered the future baseline conditions, i.e. the baseline conditions without implementation of the Development (the Without Development Scenario) and assessed the potential effects of the completed and operational Development (the With Development Scenario).

4.3 In both the With Development and Without Development scenarios, the EIA assessed assessment years of 2024 and 2030. 2024 was selected as an assessment year as it is the first full year when the Development is expected to be complete and operational. Modelling was projected out to 2030 to assess the future growth potential of the Development.

4.4 A summary of the key assumptions of the With and Without Development scenarios used in the EIA are presented in Table 4.1. This table is replicated from Table 3.3 of Chapter 3: EIA Methodology of the ES.

Table 4.1: Summary of Key Assumptions of Without and With Development Scenarios

Assumption Description	2018/2019 Existing Baseline	2024 Future Baseline (Without Development)	2030 Future Baseline (Without Development)	2024 With Development	2030 With Development
Million passengers per annum (mppa)	4.0	4.9	5.5	5.2	7.0
Passenger ATMs[1] (000s)	30.2	34	36	35.7	45.7
Non-commercial ATMs[2] (000s)	9.97	9.97	9.97	9.97	9.97
Parking	7,601	7,601	7,601	7,601	8,338
Operational flight controls	No change to flight hour	No change to flight hour	No change to flight hour	Expansion of the day-time	Expansion of the day-time

Assumption Description	2018/2019 Existing Baseline	2024 Future Baseline (Without Development)	2030 Future Baseline (Without Development)	2024 With Development	2030 With Development
	controls (07:00-23:00)	controls (07:00-23:00)	controls (07:00-23:00)	flight hours (06:00-23:30)	flight hours (06:00-23:30)

[1] Passenger ATMs refers to aircraft movements that transport passengers.

[2] Non-commercial movements cover all types of flight apart from commercial passenger and cargo operations. This includes private flying or general aviation flights, testing and training flights, aircraft positioning, and military flight activity at the Airport. Given the nature of non-commercial aircraft demand, the assessments assume a similar level of non-commercial movement to 2019 for future years (see Appendix 3.3 of the Submitted ES).

4.5 In Sections 2 and 3 of this document, AAA have reviewed the implications of the COVID-19 pandemic on the air traffic forecasts and flight schedules produced to support the EIA and wider planning application.

4.6 Table 4.2 sets out the potential COVID-19 delay impact established by the preceding sections of this Note.

Table 4.2: Potential COVID-19 Traffic Delay Impact

Scenario	2018	2019	2024	2030	2032
Without Development					
Passengers	4.0m	4.0m	4.3m	5.5m	5.5m
PATMs	30.2k	29.5k	31.3k	36.2k	36.0k
With Development					
Passengers	4.0m	4.0m	4.5m	6.4m	7.0m
PATMs	30.2k	29.5k	32.9k	42.6k	45.7k

4.7 The Sections 2 and 3 conclude the following:

- There could be a two year delay to the pre-COVID-19 air traffic forecasts, i.e. the forecasted passengers in 2024 (5.2 mppa) would instead be achieved in 2026 and the forecasted passengers in 2030 (7 mppa) would be achieved in 2032. This is also the case for the forecasted passenger ATMs, i.e. 35.7 would now be in 2026 and 45.7 would now be in 2032. Non-commercial ATMs and parking assumptions would be unaffected.
- There is no new information to suggest that the forecast aircraft mix impacts would be delayed.
- The underlying assumptions used in the generation of the flight schedules applied to the EIA remain valid and as a result, so do the flight schedules.
- The indicative construction programme and opening year of the new terminal assumed by the EIA remain valid.

4.8 There are no plans to delay the delivery of the Development as a result of the pandemic and the Airport remains committed to ensuring that the Development is completed in 2023.

4.9 The non-commercial ATMs were held flat for each year across the scenarios within the flight schedules and this would not change as a result of COVID-19.

4.10 In addition, assumptions on car parking provision or the operational flight controls that underpinned the scenarios would also not change as a result of the pandemic.

Baseline Conditions

4.11 Baseline survey work in inform the ES was undertaken prior to COVID-19 and is therefore representative of conditions in that period. Future baseline conditions were assessed for 2024 and 2030. Commentary on potential changes to future baseline as a consequence of COVID-19 are provided under 'Operational Stage – Effect Review'.

Proposed Development

4.12 The Airport has confirmed that COVID-19 would not necessitate any changes to the design as submitted and presented in Chapter 5: Description of Development of the ES.

Enabling, Demolition and Construction Stage – Effect Review

4.13 The Applicant has no plans to delay construction of the Development as a result of the pandemic and they remain committed to ensuring that it is completed in 2023. The Applicant has confirmed that COVID-19 would not result in any effect on the enabling, demolition and construction programme or opening year assumptions applied in the EIA and reported in Chapter 6: Demolition and Construction of the ES. Demolition and construction stage effects of the Development as reported in the ES are therefore not considered further.

Operational Stage – Effect Review

4.14 In this section, the technical experts responsible for the EIA topic assessments presented have outlined how / if the conclusions outlined above impact the conclusions of the EIA. Each technical expert has considered the implications of the aforementioned conclusions on the methodology and assumptions behind that particular topic assessment, the future baseline conditions, the assessment of effects, the mitigation measures proposed, and any cumulative effects identified in the Submitted ES.

Climate Change

4.15 The Climate Change assessment has considered the effects of the Development through two separate assessments, namely:

- The likely effect of the development on climate change represented by the change in greenhouse gases (GHG); and
- The likely effect of future climate change on the development.

4.16 The change in the demand forecast is only relevant for the former since the quantification of GHG emissions is driven by the forecast and ATM schedules. The effects of climate change on the Development is independent of the GHG emissions resulting from the Development and

relies on global forecasts of GHG emissions. It is therefore not affected by any change to the forecast.

4.17 The implications of a slower growth under the With and Without Development scenarios due to COVID-19 on the assessment of GHG emissions is considered in Table 4.2.

Table 4.3: Implications of COVID-19 on the Climate Change Assessment

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
Methodology	The change in the forecast on the assessment relate to the temporal scope, emission factors and the policy context comparison years. Temporal scope: The slower growth means that the maximum GHG emissions are likely to occur now in 2032 rather than 2030. Since the first full year of opening remains 2024, the cumulative growth includes an additional two years to reach capacity, but with lower year-on-year growth as a consequence. Emissions factors: Emissions factors for 2032 for all sources fall with time due to decarbonisation and technological improvements. The effect of COVID-19 is assumed to shift the air transport movements schedule used in the ES from 2030 to 2032. This means the emission factors assumed in the year of maximum GHG emissions for flights would be the same as in the ES. Policy context: The change of assessment year would not have a material impact on the assessment of policy context. GHG emissions from the construction pause remain unchanged since the construction programme is unaltered.
Future Baseline	Table 7-5, Figure 7-4 and 7-5 presents future baseline (Without Development) GHG Emissions in 2024 and 2030. The Without Development GHG emissions associated with activities at the Airport in 2024 and 2030 are 339,887 tonnes CO_2e and 348,980 tonnes CO_2e, respectively. The Without Development GHG emissions associated with activities at the Airport between 2024 and 2030 are 2,411,037 tonnes CO2e. Due to COVID-19, GHG emissions in the future baseline (Without Development) would be lower in 2024 and in 2030 than that presented in the ES. The assessment of the future baseline emissions presented in the ES is therefore a worst case. The maximum annual GHG will now occur in 2032, 2 years later than in the ES and will be marginally lower than the maximum presented in the ES. Cumulative GHG emissions Without Development between 2024 and 2032 would be higher than the cumulative emissions between 2024 and 2030 presented in the ES.

	The reduction in GHG emissions compared to the ES in 2024 and 2030 is due to the lower passenger numbers (which will reduce GHG emissions from surface access to the airport) and lower air transport movements (which will act to reduce GHG emissions from flights). The maximum GHG emissions which will now occur in 2032 will be marginally lower since emission factors for surface access and for airport operational sources will have improved relative to 2030. Cumulative emissions would be higher since they would be calculated over 9 years compared to 7 years in the ES. The cumulative emissions between 2024 and 2032 with COVID-19 would be lower than the cumulative emissions over this period with the forecast used in the ES. The ES also examined GHG emissions in 2050 through a sensitivity assessment, summarised in Table 7.10. GHG emissions from flights Without Development in 2050 would be expected to be the same, since longer term technology trends are considered to remain unchanged.
Assessment of Effects	Due to COVID-19, GHG emissions With Development would be lower in 2024 and in 2030 than that presented in the ES. The maximum annual GHG will now occur in 2032, 2 years later than in the ES and will be marginally lower than the maximum presented in the ES. Cumulative GHG emissions With Development between 2024 and 2032 would be higher than the cumulative emissions between 2024 and 2030 presented in the ES. The reduction in GHG emissions compared to the ES in 2024 and 2030 is due to the lower passenger numbers (which will reduce GHG emissions from surface access to the airport) and lower air transport movements (which will act to reduce GHG emissions from flights). The maximum GHG emissions which will now occur in 2032 will be marginally lower since emission factors for surface access and for airport operational sources will have improved relative to 2030. Cumulative emissions would be higher since they would be calculated over 9 years compared to 7 years in the ES, however this is purely a result of taking longer to reach maximum effect. The cumulative emissions between 2024 and 2032 with COVID-19 would be lower than the cumulative emissions over this period with the forecast used in the ES. The ES also examined GHG emissions in 2050 through a sensitivity assessment, summarised in Table 7.10. GHG emissions from flights With Development in 2050 would be expected to be the same, since longer term technology trends are considered to remain unchanged. With COVID-19 the assessment of the Development's consistency with national and local climate change policy remains unchanged from the ES. With COVID-19 the assessment years would be 2024 and 2032 as they correspond to the opening year and the point at which the Airport is predicted to

	achieve full growth potential. Since the emissions in 2024 and 2032 would be lower by similar amounts in the With and Without Development cases (than in the ES), the difference in emissions between the With and Without Development cases in 2024 and 2032 would be broadly the same as that presented in the ES. Since the magnitude of the effects remains broadly unchanged the assessment of likely effects would remain the same as significant adverse. It is not therefore necessary for the assessment presented in the ES to be updated. Consequently, the assessment of likely effects would remain the same as significant adverse. Overall, consistency of the Development with climate change policy would remain the same. Since the result of changing the forecast to delay growth means that the assessment presented in the ES is worst case it remains valid and it is not necessary for it to be updated.
Mitigation Measures	The mitigation measures in the ES remain appropriate and would continue to minimise GHG emissions.
Cumulative Effects	The ES concluded that due to nature of the GHG assessment there are no additional cumulative effects. This conclusion remains unchanged by COVID-19.

4.18 Overall, the effects of slowing growth by two years will be to reduce GHG emission in 2024 and 2030 in both the With and Without Development scenarios, with maximum GHG emissions occurring in 2032 compared to 2030 in the ES. The maximum GHG emissions and the change in annual GHG emissions between the With and Without Development scenarios in the assessment years would be marginally smaller with COVID-19 compared to that presented in the ES. Since the effects of the Development would thus be broadly similar, COVID-19 would not change the assessment of significance or conclusions reached on consistency of the development with local and national climate change policy. The assessment presented in the ES therefore remains valid and it is not necessary for it to be updated.

Transport and Access

4.19 Chapter 8: Transport and Access of the ES relied upon traffic impact assessments and mode share forecasts which reflect the predicted 'busy day' summer passenger throughput achieved by the Airport both with and without the Development for 2024 and 2030.

4.20 As a consequence of COVID-19, the forecasted passengers of 5.2 mppa would be achieved in 2026 rather than 2024 as assumed by the EIA. Also, the forecasted passengers of 7mppa would be achieved in 2032 rather than 2030. This is also the case for the forecasted passenger ATMs.

4.21 The additional daily With Development road traffic forecasts for 2024 and 2030 are predicted to occur two years later than those reported in the ES. Whilst there would be some adjustment to future baseline traffic levels in 2026 due to growth in the network, the predicted volume of

additional daily traffic With Development would not be altered. As a consequence, the magnitude of change associated with the Development would actually be smaller relative to a higher baseline of background traffic in 2026 and 2032 compared to 2024 and 2030 as assessed in the ES. As such, the effects reported in the ES represent a reasonable worst-case.

4.22 As set out above, the COVID-19 pandemic is likely to lead to a delay of up to two years in the fleet mix progression. However, the fleet mix assumptions used within the forecasts and flight schedules remain valid.

Table 4.4: Implications of COVID-19 on the Transport and Access Assessment

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
Methodology	The two year delay in the Airport reaching its forecast passenger throughputs does not necessitate any changes to the methodology used in Chapter 8: Transport and Access of the ES. Whilst the TA assumed an opening year of 2024, the study area and scope and establishment of baseline conditions remains the same. Critically, the EIA and TA assumed an opening year of 2024 which is unaffected by COVID-19.
Future Baseline	Future baseline traffic flows (Without Development) on the study highway network were established for 2024 and 2030 by applying TEMPro growth factors for the Leeds zones covering the extent of the study highway network for 2024 and 2030. Whilst the impact of COVID-19 could result in changes to when, why and how people choose to travel in the short term, the applied growth to background traffic is considered to remain valid for the medium to long term future year assessments. The economic effect of COVID-19 is likely to impact future forecast growth to background traffic on the study highway network. The effects are uncertain and cannot be quantified at this present time. However, it is likely that as a result of the effect from the COVID-19 impact, the growth factors applied to the 2024 and 2030 assessments would now occur two years later. Consequently, the applied factors are considered to remain valid for 2026 and 2032.
Assessment of Effects	As a result of COVID-19, the additional daily road traffic forecasts for 2024 and 2030 are predicted to occur two years later than assessed in the ES. However, the flight schedule and passenger information, trip generation and mode share are unaffected by COVID-19 which means that the With Development traffic assumptions would be unaltered. As such, the effects reported in the ES represent a reasonable worst-case and are considered to remain valid.
Mitigation Measures	The mitigation measures in the ES remain appropriate to deliver growth at the Airport to 7.0 mppa and no amendments are necessary.

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
Cumulative Effects	For the reasons set out above relating to the fact that the additional traffic generated by the Development would be the same as reported in the ES, the assessment of cumulative effects reported in the ES remains valid and unaffected by COVID-19.

4.23 A two year delay in the Airport achieving its passenger forecasts will simply delay the assessed transport effects. However, the effects remain the same as those set out in the submitted ES.

Air Quality

4.24 The potential implications of COVID-19 on the conclusions of the air quality assessment are likely to be very limited. If there was any effect of peak airport operations two years later in 2032, it would likely be that impacts on ambient air quality would be lower than that reported in the ES as baseline air quality will improve further in those two years.

4.25 The key airport-related emission sources with the most potential to affect local air quality are road traffic and aircraft; the impacts reported in the ES were very much driven by emissions from road traffic. Impacts at all model receptors were shown to be negligible in 2030 and therefore effects were reported as 'not significant'; assuming the operational peak assessment year moved to 2032, the evaluation of significance would remain unchanged.

4.26 As discussed above, the aircraft fleet is likely to renew at the same rate as considered in the ES, albeit the recovery in ATMs post COVID-19 may mean that maximum capacity at the Airport may not be reached until 2032. The air quality assessment assumes this peak is reached in 2030 rather than 2032, but in terms of total emissions from the aircraft, it would be reasonable to assume that in 2032 the emissions would be no greater than assumed in the ES for 2030.

4.27 Predicted additional daily road traffic associated with maximum capacity of the Airport with 7 mppa remains as previously assessed. The only difference being that as a result of the impact of COVID-19, the additional daily road traffic forecasts for each scenario are predicted to occur two years later than those assessed in the submitted ES. The emissions from road traffic associated with the peak of 7mmpa would be higher in 2030 than 2032, as by 2032 there will be further penetration of low and zero emission vehicles into the fleet and average emissions per vehicle will therefore be lower. Baseline concentrations of NO_2 and particulate matter are also expected to reduce between 2030 and 2032, thus additional development-related road traffic will be even less likely to lead to exceedances of Air Quality Objectives.

4.28 In the context of LCC's plans for implementing a Clean Air Zone, whether this is delayed, and/or whether the peak of airport operations moves back to two years, will have no bearing on the conclusions on the air quality assessment in 2030 or 2032 as air quality in those years will have improved substantially from 2020.

Table 4.5: Implications of COVID-19 on the Air Quality Assessment

Assessment Aspect	Impact of COVID-19 on the Technical Assessment
Methodology	The study area and scope and establishment of baseline conditions remain unaffected.
Future Baseline	The air quality assessment reported future baseline air quality conditions (Without Development) in both 2024 and 2020. Baseline concentrations of air pollutants are expected be lower in the future than they are today. As baseline air quality conditions will continue to improve, concentrations of air pollutants will be lower in 2024 than in 2022, and lower again in 2032 than in 2030. The risk of exceeding the Air Quality Objectives continues to decline. As a result of COVID-19, the additional daily road traffic forecasts for 2024 and 2030 are predicted to occur two years later than assessed in the ES. Whilst there would be some adjustment to future baseline traffic levels in 2026 and 2032 due to background growth in the network, which may lead to a slightly higher number of non-airport related vehicles on the road in 2024 compared to 2022, and in 2032 compared to 2030, the emissions per vehicle will be lower as the vehicle fleet continues to renew (average emissions per vehicle therefore reduce over time). Baseline concentrations of air pollutants will remain below the Objectives and the impacts of the additional Development-related road traffic in 2026 and 2032 will remain negligible. Baseline emissions from the aircraft in 2026 and 2032 would be no greater than assumed in the ES for 2024 and 2030 as the number of ATMs would be the same, and owing to the rate of improvement in aircraft emissions, it's possible that emissions per ATM may actually reduce.
Assessment of Effects	Air quality is forecast to be significantly below the Objectives in 2026 and 2032. The concentration contribution from airport-related emissions in 2026 and 2032 would be added to an improved air quality baseline (compared to 2024 and 2030) and the risk of exceedances of Air Quality Objectives will be further reduced. The impacts of the Development will remain as negligible (they will in fact be lower than assessed in 2024 and 2030). The overall assessment of effects will lead to the same conclusion reached in the ES that effects are not significant.
Mitigation Measures	The mitigation measures assessed and presented in the ES remain valid. No other measures are considered necessary.
Cumulative Effects	For the same reasons as described above, and assuming there were no other major developments to be considered cumulatively in 2032, the assessment of

Assessment Aspect	Impact of COVID-19 on the Technical Assessment
	cumulative effects in ES for 2024 and 2030 remain valid and its conclusions appropriate for 2026 and 2032.

4.29 A two year delay in the Airport achieving its maximum passenger forecasts would not alter the conclusions set out in the ES.

Noise and Vibration

4.30 Chapter 10: Noise and Vibration of the ES considers the potential noise and vibration impacts of the Development and their associated significance. The Chapter considers two assessment years, 2024 and 2030 along with an existing baseline year of 2018. The 2024 assessment year is used to identify the impacts following first full year of opening. With respect to aircraft noise particularly, the impacts presented for the assessment year of 2030 are the most critical for the determination of the significance of the proposals for the following reasons:

- This assessment year represents the forecast associated with the greatest aircraft noise impacts arising from the Development;
- This assessment year is the earliest at which the forecasts of 7mppa is reached and as such where airport related road traffic would be at its highest in comparison to background traffic; and
- The forecast schedules and resultant noise impacts for the 2030 With Development assessment scenario are relied upon in the Airport's proposals for the proposed noise limits attached to the Development through the night noise envelope, i.e. the night noise contour cap and noise quota scheme. This is reported and evidenced within Appendix 10.7 of the ES.

4.31 With respect to aircraft noise, the COVID-19 pandemic has a potential consequence on noise impacts in the 2030 assessment year for the following reasons:

- The number of aircraft movements, notably the rate of recovery in air traffic movements following the COVID-19 pandemic; and
- Potential changes in aircraft fleet mixes, arising notably from changes to airlines retirement and acquisition plans.

4.32 Taking into account the information outlined in Section 3, the following conclusions which affect aircraft noise are made:

- Airlines are bringing forward fleet retirements which means that over the short-term recovery from the pandemic is more likely to be delivered by more modern and quieter aircraft types. Over the medium-term, i.e. in 2024, 2030 and beyond, it is expected that fleet mixes at the Airport will be consistent with those used relied on in the forecasts which have underpinned the aircraft noise assessment work reported in the Chapter 10: Noise and Vibration; and

- Passenger and corresponding air traffic volumes would be delayed by two years due to the pandemic. This means that the air traffic volumes currently forecast for 2030 would occur by 2032.

4.33 Taking the above into consideration, the magnitude of the aircraft noise exposure reported in Chapter 10: Noise and Vibration of the ES for both the With and Without Development scenarios would be forecast to occur in 2032 rather than 2030. This means that the level of noise impact associated with the Development for the air and ground noise assessments would not change from what is reported in Chapter 10: Noise and Vibration, however those impacts are now forecast to occur two years later than stated within the ES.

Table 4.6: Implications of COVID-19 on the Noise and Vibration Assessment

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
Methodology	No change to the methodology and approach to assessment. Whilst some consideration could be given with respect to the demographic and population datasets used within the assessment year to make it more representative of a 2032 base, it is stressed that the population data would be only two years different in both the future baseline and With Development scenarios. This is unlikely to make a difference in the assessment when considering the uncertainty attached to such forecasts.
Future Baseline	Future baseline conditions in terms of noise exposure would not change as there is no change to the 'noise output' being forecast. However, future baseline conditions for 2030 would be representative of 2032.
Assessment of Effects	The assessment of effects will not change in terms of the levels of the noise change that is being forecast because of the Development. This is due to no expected changes to aircraft numbers and mix, and diurnal trends in future baseline conditions and with the Development. Effects in 2030 as reported in the ES are now more likely to be worst case for this year given the two-year delay on this level of effect occurring. The 2030 assessment presented in the ES may be considered representative of a 2032 position for the specific receptors considered, although population exposure data may not be fully representative of 2032 given additional population growth which may occur over the two-year delay. However, given the uncertainty which may be attached to such forecasts and the noise contour data itself, it is unlikely that the assessment would reach any alternative conclusions by considering this. As such, no change in the significance of effects is expected due to operational noise.
Mitigation Measures	As outlined above, the delay of two-years does not change the expected peak noise output of the Airport with the Development as such a two-year delay in this output being realised does not require any changes to be made to the proposed night noise envelope, i.e. the proposed noise contour cap and noise quota scheme. However, the availability of the noise insulation scheme would need to be extended for a further two years to 2032.

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
Cumulative Effects	The assessment of cumulative effects set out in the ES remains valid and its conclusions appropriate.

4.34 A two-year delay in the airport achieving its operational forecasts will delay the effects presented in the key noise assessment year of 2030 by two years. It is concluded that this delay would not result in a change in the forecast levels of noise from the Airport and as such the main outcomes of the noise assessment.

Socio-Economics

4.35 The socio-economic impact assessment of the Development ultimately reflects the passenger throughput achieved by the Airport. The Gross Value Added (GVA) and employment supported in the economy reflect the level of economic activity at the Airport, which is a reflection of passenger numbers. However, it should also be remembered that the significance of effects is a reflection of the sensitivity of the economy to economic stimulus. The impact of COVID-19 on the airport's passenger forecasts will change when benefits are delivered but it will also increase the sensitivity of the economy to economic stimulus, as, particularly in the medium term, employment opportunities are likely to be at a premium.

Table 4.7: Implications of COVID-19 on the Socio-Economics Assessment

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
Methodology	The two year delay in the Airport reaching its forecast passenger throughputs does not alter the methodology used in ES Chapter 11 - Socio-economics. The study area and scope and establishment of baseline conditions remains the same.
Future Baseline	The ES assumes that without the Development of the new terminal, the Airport is expected to grow to around 4.9 mppa by 2024 and to around 5.5 mppa by 2030. Slower passenger growth due to COVID-19 means that in 2024 the future baseline traffic is lower than that previously assessed at 4.2 mppa. However, by 2030, would still reach 5.5 mppa in the future baseline. The future baseline for 2024 and 2030 reported in Table 11.10 of the ES therefore remains valid and representative for 2026 and 2032, respectively.
Assessment of Effects	In 2024, both the future baseline and With Development scenarios are reduced from that reported in the ES and the difference between the two remains similar. Hence, the assessment of effects reported in 2024 remains representative for 2026. In 2030, the two year delay in the Airport reaching its forecast passenger throughputs will mean that the economic impacts described in the ES will ultimately be delivered two years later than originally assessed. However, it is unlikely that the delay will significantly alter the overall magnitude of these effects

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
	once these thresholds are reached. As such, the effects reported for 2030 can be considered representative of 2032. The overall socio-economic effects would still be assessed as significant. This is particularly given the fact that COVID-19 is likely to increase the sensitivity of the economy as a receptor to economic stimulus, at least into the medium term.
Mitigation Measures	The mitigation measures in the ES remain appropriate and would continue to enhance the socio-economic effects locally.
Cumulative Effects	The assessment of cumulative effects set out in the submitted ES remains valid and its conclusions appropriate.

4.36 A two year delay in the airport achieving its passenger forecasts will delay the delivery of the assessed socio-economic effects. However, the Development will, ultimately, deliver the socio-economic impacts assessed and the results of the socio-economic assessment remain an appropriate and valid assessment.

Human Health

4.37 The ES health assessment has been reviewed against the scenario of a two year delay to the pre-COVID-19 air traffic forecasts and no change to the fleet mix assumptions or flight schedules. The delay affects the timeframe over which both negative and positive population health effects would be experienced. The influence of such delay would be to marginally reduce the negative and positive effects with reference to the current assessment years, though the full effect would still be anticipated two years later. The assessment scope and methodology remain valid and the assessment conclusions would be unchanged.

4.38 Please refer to the preceding sections on climate change, transport and access, air quality, noise and socio-economics for details of how these inputs to the ES health chapter have been considered and remain valid.

Table 4.8: Implications of COVID-19 on the Human Health Assessment

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
Methodology	The health chapter provides a qualitative assessment based on the quantitative modelling of other ES topic chapters. The two year delay to the pre-COVID-19 air traffic forecasts and forecasted passenger ATMs does not affect the qualitative methodology of the health chapter. The assessment years described in the health chapter's temporal scope, e.g. 2024 and 2030, align with those of the other ES chapters and remain valid as a consistent temporal framing to the assessment. The health chapter methodology distinguishes between very-short, short, medium or long-term effects. Issues of exposure and frequency, which inform magnitude, also have a temporal dimension. The two year delay to air traffic forecasts and forecasted passenger ATMs does not change the way that methodology would be applied within the assessment.

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
Future Baseline	The health chapter provides a qualitative assessment. The future baseline in terms of air traffic forecasts, forecasted passenger ATMs and flight schedules feeds into the health chapter indirectly through the quantitative modelling outputs of other ES chapters. The two year delay to the pre-COVID-19 air traffic forecasts and forecasted passenger ATMs has no direct effect on the health chapter future baseline, other than in relation expected further population growth. The population growth between 2030 and 2032 is discussed in Table 4.6 (noise) and would not change the health chapter assessment conclusions. How COVID-19 changes the future population health baseline is a developing agenda as routine baseline data sources have yet to reflect the impact of COVID-19. The health chapter assessment was undertaken with awareness of the unfolding COVID-19 pandemic, so COVID-19 as an issue is not new information that would change the assessment. The current population health baseline is considered to remain a suitable proxy for the future population health baseline. This reflects underlying complexities in that COVID-19 both reduces the number of sensitive individuals within the population and increases the sensitivity of those who remain. COVID-19 disproportionately affects the most vulnerable members of society and is exposing inequalities. Effects are both directly due to COVID-19 and indirectly due to how NHS use has been affected for those with other conditions. Premature mortality for those with existing poor health across all ages is increased (particularly older people). Increased morbidity due to long-term or permanent effects of surviving COVID-19 is also increased. The duration of the influence of COVID-19 is likely to be long-term, though the severity likely mediated by vaccines and treatments currently in development. For assessment purposes it is reasonable to assume that population sensitivity within the current and future health baseline is increased to some degree due to COVID-19. Such sensitivity would not be evenly distributed and is likely to predominantly affect vulnerable groups (e.g. those with existing poor health, those with low incomes and the elderly). As vulnerable groups are already allocated a 'high' sensitivity rating within the health chapter assessment (the highest level of sensitivity on the assessment scale), the assessment findings remain valid and reflect a worst-case for the population health future baseline. In relation to the assessment findings the influence of COVID-19 on population sensitivity has been considered and it does not affect the health chapter's conclusions.
Assessment of Effects	The health chapter's assessment considers: determinants of health that would be negatively affected (e.g. environmental exposures); and determinants of health that would be positively affected (e.g. socio-economic effects). There is a relationship between the negative and positive effects as they have a common driver, i.e. air traffic and passenger ATMs. The two year delay to the pre-COVID-19 air traffic forecasts and forecasted passenger ATMs therefore acts to both delay the negative effects and delay the positive effects. Within the operational

Assessment Aspect	Implications of COVID-19 on the Technical Assessment
	assessment the delay feeds into the consideration of magnitude. As described in Table 4.3 to 4.7 the two year delay acts to spread a given effect over a longer duration. Within the health chapter methodology for magnitude this relates to: (a) reduced scale or level of exposure experienced; but (b) over an increased duration. The shift in these criteria informing magnitude has been considered and it has been concluded that it does not affect the health chapter's conclusions, i.e. the magnitude scores remain the same, albeit the reasoning behind that conclusion is subtly altered. This is a conservative conclusion as the spreading out of an environmental exposure over a longer time period typically reduces its concentration or frequency, and thus reduces its effect on health outcomes. The ES health chapter conclusions therefore represent a more worst-case scenario of negative health effects than under the two year delay to the pre-COVID-19 air traffic forecasts and forecasted passenger ATMs. With regard to positive health effects, i.e. the socio-economic benefits of employment and investment, the ES health chapter conclusions remain likely to be realised but delivered two years later. These operational benefit conclusions relate to the effects being characterised as 'long-term' which remains the correct characterisation with or without the two year delay to the pre-COVID-19 air traffic forecasts and forecasted passenger ATMs. As noted in Table 4.6 the economic effects of COVID-19 may increase the sensitivity of the economy. For the health assessment any delay in the timeframe over which operational jobs come forward is likely to be balanced (or exceeded) by the increased relative benefit of those jobs to health outcomes (including for dependants) in an economic climate of increased unemployment. In summary, it is concluded that the ES health chapter assessment conclusions remain valid.
Mitigation Measures	The need for or level of health chapter mitigation is not changed by the two year delay to the pre-COVID-19 air traffic forecasts and forecasted passenger ATMs. The operational mitigation would not be affected. The health assessment states that "*the Applicant will complete a risk profile to take account of risks associated with COVID-19, such as the IDB Invest COVID-19 risk profile and decision framework or an equivalent for the UK, for each stage of the project*" (para 13.8.3, bullet point 2). The existing mitigation therefore already takes appropriate account of COVID-19. With regard to the health chapter mitigation relating to employment (for young people not in education, employment or training and for adult learning), these measures are likely to become increasingly beneficial to health outcomes (particularly in reducing unemployment) in the economic conditions resulting from COVID-19.
Cumulative Effects	As the individual assessment conclusions of the health assessment would not be affected by the two year delay to the pre-COVID-19 air traffic forecasts and forecasted passenger ATMs, the in-combination (intra-project) and inter-project cumulative effects would also remain unchanged.

4.39 The ES health assessment conclusions on significance are robust and would be unchanged under the scenario of a two-year delay to the pre-COVID-19 air traffic forecasts and no change to the fleet mix assumptions or flight schedules.

Biodiversity

4.40 The Biodiversity assessment did not directly include the aviation forecasts or flight schedule as a basis for the assessment. Therefore, the ES biodiversity assessment conclusions on significance are robust and would be unchanged under the scenario of a two-year delay to the pre-COVID-19 air traffic forecasts and no change to the fleet mix assumptions or flight schedules.

4.41 The Habitat Regulations Assessment (HRA) Screening Report considers whether the construction and operation phases of the Development would give rise to any Likely Significant Effects (LSEs) on Natura 2000 sites and their qualifying features. The Stage 1 HRA Screening demonstrated that the Development, either alone or in combination, is not likely to have a significant effect on the European designated sites South Pennine Moors SAC and SPA, or the North Pennine Moors SAC and SPA. Due to the distance between the designated sites and the Development any potential impacts from air quality, water quality, noise/disturbance will have dissipated before reaching the European sites.

4.42 Given that a two year delay in the Airport achieving its maximum passenger forecasts does not affect the conclusions set out in the air quality and noise assessments in the ES, there consequently would be no change to the conclusions of the HRA Screening Report.

Conclusion

4.43 Sections 2 and 3 of this report conclude that the forecast air traffic growth and flight schedule profiles could be delayed by up to two years as a result of the COVID-19 pandemic.

4.44 The recovery profiles of the Airport to previous demand shocks, such as the 2001 terrorist attacks and the 2008 global financial crisis, demonstrate the Airport's business resilience, with a historically stronger recovery profile than the overall UK market and the UK regional airport market. It would therefore be reasonable to assume this would be replicated in the recovery profile of the COVID-19 demand shock, with the Airport expected to recover faster than the wider UK market.

4.45 To provide a comprehensive review of the implications of COVID-19 on the EIA, this section of the report draws on the conclusion that COVID-19 demand shock would result in a two year delay to the achievement of the forecast air traffic growth and flight schedule profiles at the Airport. The key findings of this technical EIA review are as follows:

- Existing baseline conditions reported in the ES are representative of pre-COVID-19 conditions.

- Future baseline conditions reported in the ES for 2024 and 2030 are broadly similar and representative for 2026 and 2032.

- Enabling, demolition and construction stage effects reported by the ES are unaffected by COVID-19 as the programme would be unaltered.

- Likely significant effects reported in the ES for 2024 and 2030 can be considered representative of those in 2026 and 2032 respectively.

- No further mitigation measures are required due to COVID-19.

- The significance of cumulative effects (intra-project and inter-project) are unaffected by COVID-19.

4.46 In line with the EIA Regulations, the ES must include the *"information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment".* It is our view that the ES provides the necessary information for LCC to reach a reasoned conclusion accepting the fact that the reported effects are likely to be delayed by up to two years.