BA Fleet Optimisation

Samuel Forrest's Work Experience

All data from publicly available sources.

The Task

- British Airways is considering investing in a new narrowbody fleet type. Which aircraft should British Airways invest in and why?
- Consider the following in your response:
  - Aircraft range & payload
  - Pilot training & fleet commonality
  - Network opportunities
  - Other considerations, e.g., purchase price, competitor fleets, and slot availability at the base.
  - Your response should use publicly available information only.

Section 1: All Possible aircraft options

Boeing

737-7

Never purchased

737-8

Never purchased

737-9

Never purchased

737-10

Never purchased

737 Max Family

- Omitted the Next Generation (NG) Boeing aircraft due to no longer being produced

Airbus

A220 -1 / -3

Never purchased

A318

Fully Retired (LCY)

A319neo

Never purchased

A319ceo

Phasing out (LHR)

A320neo

In service (LHR)

A320ceo

In service (LHR/LGW)

A321neo

In service (LHR)

A321ceo

In service (LHR/LGW)

A320 Family

Embraer

E190-E1

In service (LCY)

E190-E2

Never purchased

E195-E2

Never purchased

E175-E2

Never purchased

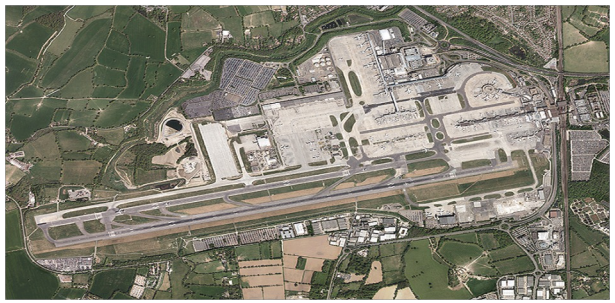
Profit hunters

- Omitted the other first-generation e-jets due to no longer being produced

Section 2: Slot availability at operational bases

Heathrow (EGLL)

- New slots are heavily constrained
- **99%** capacity[1]
- If approved, new runway operational in > 10 years



Gatwick (EGKK)

- Steward Wingate says the airport is ”very full”[2]
- If approved, runway migration will be complete by 2030.
- Expansion = 70%[2] increase in traffic

London City (EGLC)

- Government authorised a 39% passenger movement increase[3]
- City must now enforce quieter and cleaner aircraft
- Highly rated customer satisfaction

Therefore, the best base for a new narrowbody fleet expansion would be at London City Airport, as the capacity expansion under the Labour government has immediate potential and impact. Heathrow and Gatwick are at capacity limits, and the potential for expansion there may take longer than a decade. This hence narrows down the possible aircraft to choose from, due to London City’s short runway, steep descent profile, and aircraft restrictions.

1. https://www.ft.com/content/a71dc3c4-7139-4843-b0fc-2ff1cbf012f8
2. https://www.ft.com/content/df102dea-61f9-49c3-a07c-a482605ca54a
3. https://www.ft.com/content/b1c59fd6-88b8-4643-b5c5-dc35c191ae46

Section 3: Aircraft certified for London City Airport

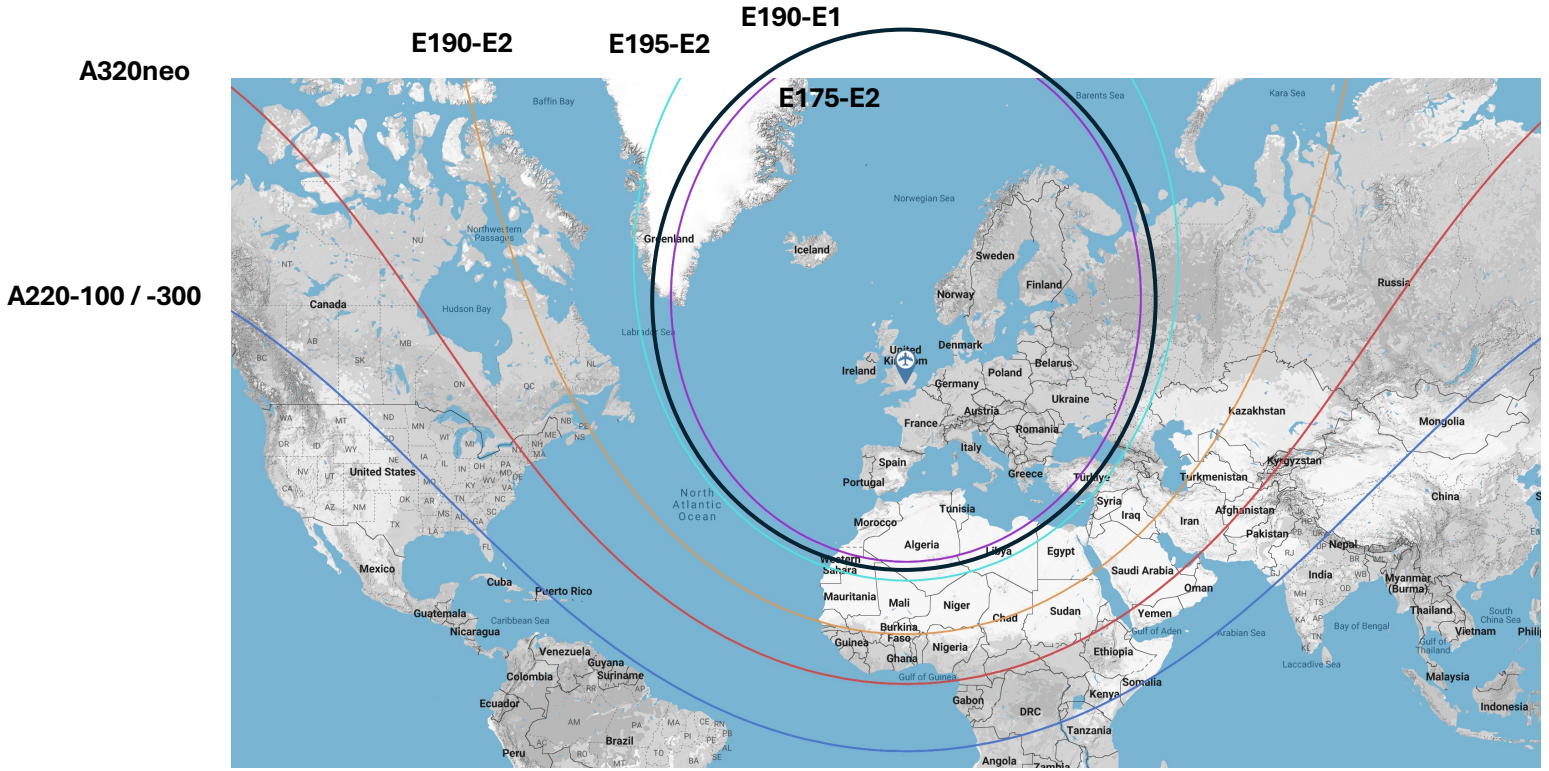
- The aircraft currently authorised for operation at London City include: A220-100, A318, the E-JETS (E170-E1/E190-E1) and the newly-approved E2 family (E175-E2, E190-E2, E195-E2).[1]
- Other aircraft include the ATR 42/72 and Dash 8 Q400, as well as smaller executive jets.
- Notably, in January 2025, London City Airport applied to the CAA for approval to operate the A320neo. However, there is no guarantee that this request will be approved.
- Furthermore, in 2023, Airbus confirmed they're certifying the A220-300 for steep approaches at London City Airport, at the Dubai air show.[2]
- We are therefore left with 4 approved aircraft that British Airways has never purchased, and the pending A320neo. (Left to Right: A320neo, A220-100, A220-300, E175-E2, E190-E2, E195-E2)

Pending

Pending

1. https://simpleflying.com/london-city-airport-approved-aircraft & London City Airport Data
2. https://aviationweek.com/shownews/dubai-airshow/airbaltic-orders-30-a220-300s-airbus-works-lcy-certification

Section 4: Range and Network Opportunities



- The increase in range from the current E190-E1 to an E195-E2 is not significant, around 300-400nm, which could potentially open small opportunities to the wider European network, such as Cairo, Athens and Istanbul.
- The E190-E2 has slightly more range but does not open any major network opportunities.
- However, the introduction of an A320neo would allow flights to the Middle East, such as the cities Dubai and Doha, which have strong business and financial connections with London. The cabin configuration would be all-business.
- An A220-100 or A220-300 flight could allow transatlantic flights, with a stopover in Shannon, much like the retired A318 flight. However, operational constraints, such as the short runway at London City mean direct is not feasible.

Section 5: In-depth aircraft comparisons

First generation E190-E1 fuel efficiency: 3.54L / 100km / seat

A320neo

Capacity: 180
Range: 3400nm
Fuel efficiency/seat: 1.94L / 100km [2]
Crew: 6
Fleet commonality: Yes
Unit cost: £86.7mn

A220-100

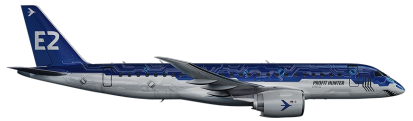
Capacity: 125
Range: 3600nm
Fuel efficiency/seat: 2.28L / 100km [2]
Crew: 5
Fleet commonality: No
Unit cost: £65mn[3]

A220-300

Capacity: 150
Range: 3400nm
Fuel efficiency/seat: 2.02L / 100km[2]
Crew: 5
Fleet commonality: No
Unit cost: £72mn[3]

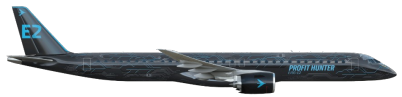
E175-E2

Capacity: 88
Range: 2000nm
Fuel efficiency/seat: 3.44L / 100km [2]
Crew: 4
Fleet Commonality: Yes
Unit cost: £34.6mn[3]



E190-E2

Capacity: 106*
Range: 2950nm
Fuel efficiency/seat: 3.32L / 100km [2]
Crew: 5
Fleet Commonality: Yes
Unit cost: £39.2mn[3]



E195-E2

Capacity: 132
Range: 2600nm
Fuel efficiency/seat: 2.70L / 100km [2]
Crew: 5
Fleet Commonality: Yes
Unit cost: £44.5mn[3]

1. Capacity assumptions were maximum available currently certified configurations, then British Airways can offer a business service by blocking seats, dependent on demand.
2. Fuel Efficiency Figures from a wide variety of credible sources via Wikipedia: https://en.wikipedia.org/wiki/Fuel_economy_in_aircraft
3. Simpleflying.com. Highest figures available. E—series jets costs quoted from 2013 figures.

Section 6: Competitor Case Study

HELVETIC

- 134 Seats
- E195-E2 / E190-E2 (wet lease from Swiss)
- Operating the ZRH-LCY-ZRH route
- Sole E2 jet carrier at LCY

SWISS

- 125 Seats
- A220-100
- Operating the ZRH-LCY-ZRH route

Section 7: Conclusion

In conclusion, the new narrowbody aircraft type which British Airways should invest in is the Embraer E195-E2 for its highest profitability due to:

- Increased range over E190-E1 if E2TS – Embraer Enhanced Take-off System is certified at London City, opening up more destinations, specifically Istanbul, Gran Canaria, Casablanca, Athens and Cairo.[1]
- The best fuel efficiency (per passenger) of the E2 jets lineup by at least 20%.[2]
- High-capacity flights to frequent European destinations (up to 134), making use of London City's increased passenger capacity, but with similar flight capacity.
- High commonality in cockpits of E1 and E2 – easy for pilots, maintenance personnel and cabin crew to transfer, with some additional training (called 'differences training'). Less expensive and time-consuming than switching to the A220 fleet.
- Potentially fewer cabin crew required than A220, if fewer than 100 passengers.
- 'Quiet' cabin – passengers describe[3]
- 23-30% more fuel efficient than the E190-E1 (2.70 vs 3.54 L/100km/seat)[2]
- 63% smaller noise footprint than the E190-E1 [3]
- 31.5% more affordable unit cost in comparison to A220, and higher capacity (9 seats)
- No middle seat, in comparison to A220 and A320neo

1. https://www.key.aero/article/london-citys-largest-ever-jet
2. Calculation from data on previous slide
3. https://www.helvetic.com/en/mediarelease/285

Section 8: Long term thoughts

The A320neo would be a great fit for London City Airport if certified:

- Increased passengers whilst not increasing aircraft movements (LCY restrictions)
- High-margin business-class passengers in a low-density layout
- Possibility to reach Dubai/Qatar, with a business-heavy cabin configuration, or blocked-out middle seats
- Fleet commonality
- Superior fuel efficiency of all aircraft

Section 9: Reflection

- I learned more about the E-series jets from my vague knowledge before.
- Corrected my mistake that direct transatlantic flights from LCY were possible – actually, the runway length of LCY is too small for that fuel payload.
- There is a significant opportunity for British Airways expansion at LCY as passenger capacity increases, whereas other London bases are full.