

THE BENEFITS OF REDUCING DOMESTIC APD

A note prepared for Heathrow

Heathrow has commissioned Frontier Economics and Quod to consider the potential impact of a reduction in Air Passenger Duty (APD) on domestic UK routes. We have considered two scenarios: (i) completely removing APD on domestic routes; and (ii) a more conservative 50% reduction in APD, which mirrors the Scottish Government's stated proposals for APD in 2018.

Executive Summary

In 2016, approximately 17 million passengers travelled on UK domestic routes with almost 2 million of these point-to-point passengers travelling to/from Heathrow. Given the importance of the domestic market, Heathrow is naturally an interested party in proposals to reduce Air Passenger Duty (APD). Heathrow has already shown support for the Scottish Government's proposals to reduce APD in Scotland by 50%, and it is now considering its position on reducing APD on all domestic UK routes.

Reducing APD aligns with Heathrow's long-held position that APD is an unnecessary burden on competitiveness, tourism, investment and trade. Heathrow has commissioned Frontier and Quod to analyse the potential impact of reducing domestic APD. We have considered two scenarios:

- A 100% reduction in APD on all domestic routes at Heathrow; and
- A more conservative 50% reduction in APD on domestic routes, which mirrors the Scottish Government's plans to half APD in Scotland in 2018.

Due to the terms and conditions of APD, the policy change would not impact transfer passengers flying on domestic routes. Therefore, our analysis only considers the impact on point-to-point passengers.

For both scenarios, we have estimated the total cost savings that would be made by UK passengers at Heathrow and the potential increase in demand. We find that the reduction in APD could:

- Reduce the cost of air travel between Heathrow and the UK regions by around **£24 million per annum**, under the 100% reduction scenario, and £12 million under the 50% scenario.
- Stimulate an **8% increase** in point-to-point demand on Heathrow's domestic routes under the 100% reduction scenario. This equates to around **75,000** more round trips per year to and from Heathrow. Under the 50% reduction scenario, there would be a 4% increase in demand, the equivalent of 37,000 additional trips.

Reducing APD would benefit all domestic passengers and not just those flying on domestic routes at Heathrow. 17 million passengers flew on domestic routes in the UK in 2016 – of which almost 2 million were at Heathrow. Therefore, extending the benefit to the whole of the UK, we find that the reduction in APD could:

- Reduce the cost of air travel to and from the UK regions by around £225 million per annum, under the 100% reduction scenario, and around £112 million under the 50% scenario.
- Stimulate an approximate 8% increase in point-to-point demand on UK domestic routes under the 100% reduction scenario. This equates to around 1.3 million more domestic point-to-point trips per year. Under the 50% reduction scenario, there would be an approximate 4% increase in demand, the equivalent of about 650,000 additional trips.

The proposals would also benefit the wider economy, for example:

- Enabling IT, business and financial services sectors in Scotland and Northern Ireland’s key cities to retain strong links to London and beyond and foster trading of knowledge and best practice with cost efficient flights;
- Enabling burgeoning scientific, engineering and medical research sectors in Manchester, Leeds and Newcastle to grow their supply chains and become world-leading institutions in R&D.

Reducing APD would also improve the viability of potential new domestic connections because the cost of travel for passengers would be lower. The specific routes that could benefit include connections between Heathrow and Belfast International, Isle of Man, Liverpool, Humberside, Newquay and Jersey.

Moreover, expansion of Heathrow would ensure the full benefits of APD reduction are realised:

- If an airport is constrained, as in the case of Heathrow, passengers may face congestion premiums in which case reductions in charges may not be passed to passengers. However, congestion per se is not sufficient to mean that reductions in APD are not passed on. As found in *Impact of airport expansion options on competition and choice* (Frontier 2014), short haul routes at Heathrow do not have a congestion premium, suggesting there is sufficient competition to constrain prices, congestion notwithstanding. In this case, we would expect reductions in domestic APD to be passed on to passengers.
- However, even if savings should be passed to passengers, there is a clear limit to the amount of extra domestic demand that can be currently accommodated at Heathrow. Airlines at Heathrow may be able to use larger aircraft or increase load factors on some routes, but they will not be able to increase the frequency of flights, unless they reduce the frequency on alternative routes, or cancel other routes altogether.
- Expansion of Heathrow would ensure the full benefits of APD reduction are realised. The Airports Commission confirmed that increasing capacity at Heathrow would “drive significant connectivity benefits” (Airports Commission Final Report, p20). New capacity would allow Heathrow to create a stronger long-haul network while also providing new slots for domestic flights thereby

increasing access to this long-haul network from the rest of the UK. Thus, with an expanded Heathrow, the UK can achieve the full extent of the benefits generated from a reduction in APD.

In the rest of this note, we provide more details on our analysis.

How the proposal would apply at Heathrow

As of 1 April 2017, the ‘reduced’ APD rates, which are charged for passengers in economy class seats, are as follows:

- £13 per passenger for passengers departing the UK to destinations less than 2,000 miles from London; and
- £75 per passenger for passengers departing the UK to destinations greater than 2,000 miles.¹

As a result, a passenger making a return trip from a UK regional airport to Heathrow, or vice versa, would pay £26 in APD. The impact of the APD reduction on *point-to-point* demand is relatively straightforward. APD in one direction of travel will fall from £13 to zero or £6.50 (depending on the modelled scenario) for passengers travelling in economy class to/from Heathrow on a domestic route².

However, the proposed reduction in APD would not apply to passengers on domestic routes *connecting* at Heathrow. This is because for domestic passengers connecting at Heathrow to an international flight, APD is levied on the basis of the final destination. For example, for a passenger flying from Edinburgh to Beijing via Heathrow, the chargeable segment in the context of APD would be the Heathrow-Beijing leg. Therefore, the APD reduction for domestic passengers would not apply. Also, for the reverse journey, international flights to domestic flights are exempt from APD. Therefore, the reduction in APD will not have a direct impact on ticket fares for connecting passengers at Heathrow.

These points are discussed in more detail below.

The impact of the reduction in APD on *point-to-point* demand

We have made high level estimates of how the decrease in APD could affect point-to-point demand on domestic Heathrow routes in two scenarios. In the first scenario, we consider a 100% reduction in APD, and in the second, a 50% reduction. We have assumed for simplicity that the reduction in APD would be passed through to passengers in the form of an equivalent reduction in ticket fares, which is broadly to be expected given the competitive nature of aviation

¹ APD has various ‘terms and conditions’. For example, there is a ‘standard’ rate (which is double the ‘reduced’ rate) for passengers not flying in the lowest class of travel available on the aircraft. Also there is a higher rate (at three times the ‘regular’ rate) for passengers flying in aircraft weighting 20 tonnes or more equipped to carry fewer than 19 passengers. Also, different treatments apply with respect to connecting passengers. For example, ‘international-to-international’ passengers, and ‘international-to-domestic’ passengers are exempt from APD, and for ‘domestic-to-international’ passengers, APD is based on the final destination (and class of travel). Also, passengers flying from airports in the Scottish Highlands and Islands region are exempt from APD.

² Passengers carried on flights departing from airports in the Scottish Highlands and Islands region (which includes Inverness) are not chargeable passengers. However, passengers carried on flights from other areas of the UK to airports in the Scottish Highlands and Islands region are chargeable passengers and subject to APD at the appropriate rate. This means that APD is not applicable for passengers flying from INV-LHR, but it is applicable for passengers flying in the other direction. Therefore, APD for passengers flying from INV-LHR is already zero.

markets. Figure 1 below provides an overview of the calculations setting out how the reduction in APD could affect point-to-point demand on the routes between Heathrow and the UK regions assuming a 100% reduction in APD for domestic passengers. This decrease in APD would result in a £26 saving per passenger, which is conservative as this does not take into account higher rates of APD paid by business class passengers.³ As set out in the table, removing APD could reduce average ticket fares by around 10% on many routes. The impact would be even more pronounced for more price-sensitive passengers, who pay below the average fare. For example, if a return ticket were to cost £80, removing APD would imply a 33% reduction in air fares. Thus, the proportional reduction in ticket fares from removing APD will be much higher for these passengers than passengers paying the average fare.

We estimate that the passengers on these routes would benefit by £24 million per annum from the lower fares. As a result of the benefit to passengers, demand between the UK regions and Heathrow would increase by almost 75,000 round trips per year.

Figure 1 The impact of a 100% reduction in APD on point-to-point demand between LHR and UK regional airports

Airport	Return trips ¹	Average return ticket fare ²	APD Reduction	% change in ticket fare	Total cost saving made by passengers (£)	% increase in demand ³	Extra trips
ABZ	140,000	£252	£26	-10%	3,600,000	7%	10,100
BHD	178,000	£218	£26	-12%	4,600,000	8%	14,800
EDI	230,000	£239	£26	-11%	6,000,000	8%	17,500
GLA	180,000	£250	£26	-10%	4,700,000	7%	13,100
INV	12,000	£214	£13	-6%	200,000	4%	500
LBA	33,000	£137	£26	-19%	900,000	13%	4,400
MAN	86,000	£207	£26	-13%	2,200,000	9%	7,600
NCL	72,000	£232	£26	-11%	1,900,000	8%	5,600
UK Total	931,000				24,100,000		73,600

Source: Frontier analysis

Note: 1. Passenger volumes are based on 2016 OAG Passenger data. For simplicity it is assumed that all point-to-point passengers make a return trip. Because the Inverness route began in May 2016, we have scaled up the 2016 passenger statistics.

2. Ticket fare data is also based on 2016 OAG Passenger data. The underlying data does not include taxes or airport charges. Therefore, we have added in the relevant APD (assumed at £13 per passenger) and the DPC for domestic O/D passengers (£19). However, OAG data does not provide estimates of ticket fares for low-cost carriers. Therefore, the average ticket fare used in our calculation may overstate the actual average ticket fare. This means that our estimate of the potential increase is

³ Note that in the case of Inverness, because APD is not applied between Inverness and Heathrow, a 100% reduction in APD corresponds with a £13 per passenger reduction in ticket fare.

demand is conservative because removing APD represents a lower reduction in ticket fare. Therefore, the increase in demand could be even higher.

3. Change in demand is calculated using the price elasticity of demand. This argues that a 1% change in price leads to an x% change in demand. We assume an elasticity of -0.7 based on Gillen et al. 2002.

Figure 2 below provides the same estimation but assumes a 50% reduction in APD for domestic passengers. This decrease in APD would result in a £13 savings per passenger, which is conservative as this does not take into account higher rates of APD paid by business class passengers.⁴ As set out in the table, we estimate that the passengers on these routes would benefit by £12 million per annum from the lower fares. As a result of the benefit to passengers, demand between the UK regions and Heathrow would increase by almost 37,000 round trips per year.

Figure 2 The impact of a 50% reduction in APD on point-to-point demand between LHR and UK regional airports

Airport	Return trips ¹	Average return ticket fare ²	APD Reduction	% change in ticket fare	Total cost saving made by passengers (£)	% increase in demand ³	Extra trips
ABZ	140,000	£252	£13	-5%	1,800,000	4%	5,100
EDI	230,000	£239	£13	-5%	3,000,000	4%	8,700
GLA	180,000	£250	£13	-5%	2,300,000	4%	6,500
INV	12,000	£214	£7	-3%	100,000	2%	300
<i>Scottish Total</i>	<i>562,000</i>				<i>7,200,000</i>		<i>20,600</i>
BHD	178,000	£218	£13	-6%	2,300,000	4%	7,400
LBA	33,000	£137	£13	-9%	400,000	7%	2,200
MAN	86,000	£207	£13	-6%	1,100,000	4%	3,800
NCL	72,000	£232	£13	-6%	900,000	4%	2,800
UK Total	931,000				11,900,000		36,800

Source: Frontier analysis

Note: 1. Passenger volumes are based on 2016 OAG Passenger data. For simplicity it is assumed that all point-to-point passengers make a return trip. Because the Inverness route began in May 2016, we adjust the passenger numbers to account for the three missing months.

2. Ticket fare data is also based on 2016 OAG Passenger data. This reports average one-way ticket fares on different routes excluding airport charges. We have assumed a return ticket would be twice the fare of a one-way ticket, and we have added in known APD and DPCs. However, OAG data does not provide estimates of ticket fares for low-cost carriers. Therefore, the average ticket fare used in our calculation may overstate the actual average ticket fare. This means that our estimate of the potential increase in demand is conservative because removing APD represents a lower reduction in ticket fare. Therefore, the increase in demand could be even higher.

3. Change in demand is calculated using the price elasticity of demand. This argues that a 1% change

⁴ Note that in the case of Inverness, because APD is not applied between Inverness and Heathrow, a 50% reduction in APD corresponds with a £6.50 per passenger reduction in ticket fare.

in price leads to an x% change in demand. We assume an elasticity of -0.7 based on Gillen et al 2002.

Estimates from scenario 2, the 50% reduction in APD, can also provide useful insights into likely outcomes from the proposed 50% decrease in Scottish APD that may come into effect in 2018. APD is currently applied on both the inbound and outbound legs at Heathrow (with the exception of Inverness, where it is only levied on flights departing Heathrow). Therefore, the 50% scenario also indicates the likely impact of removing this 'double application' of APD.

Should the Scottish Government approve the decrease, APD for flights between Heathrow and Glasgow, Edinburgh, Inverness, Belfast and Aberdeen will decrease bringing about the estimated benefits as shown in Figure 2. In total, we would expect passengers to be £7.2 million better off, leading to an increase in demand of 21,000 return passengers.

Reduction in APD charges also impacts other UK airports beyond Heathrow. Heathrow would not experience the greatest benefits from APD reduction as it ranks only second in the UK for the number of domestic passengers. Instead, Edinburgh Airport, with the highest numbers of domestic passengers in the UK, can expect to realise the greatest benefits from domestic APD reduction. Glasgow, Gatwick and Belfast Airports, with the third, fourth and fifth highest numbers of domestic passengers respectively, will also incur large benefits from APD reduction.

Furthermore, we can also follow a similar approach to estimate the total effects for all 17 million passengers travelling domestically within the UK. Considering the impact on all passengers, and not just passengers at Heathrow, we find that the reduction in domestic APD could reduce the cost of air travel to and from the UK regions by around £225 million per annum, under the 100% reduction scenario, and around £112 million under the 50% scenario. It would also stimulate an approximate 8% increase in point-to-point demand on UK domestic routes under the 100% reduction scenario. This equates to around 1.3 million more point-to-point trips per year to and from the UK regions. Under the 50% reduction scenario, there would be an approximate 4% increase in demand, the equivalent of about 650,000 additional trips.⁵ Thus, while the benefits are large for Heathrow, the benefits are even greater for the whole of the UK.

Finally, while a reduction in APD will reduce tax revenue for the UK government, expansion of Heathrow will offset this reduction, leading to a net positive benefit for the government. The £225 million to £115 million cost savings for passengers will result in an equivalent loss of tax revenues. However, with a third runway at Heathrow and assuming current travel trends, the increase in demand on international routes (where APD would still be applied in full) would result in an increase in tax revenues of approximately £500 million annually by 2030, more than offsetting the reduction from domestic APD. Furthermore, "The Economic Impact of Air Passenger Duty Analytical Update" shows that abolishing APD could bring about increases in GDP and thus tax receipts that could offset the

⁵ To estimate the change in demand, we have assumed an average one-way ticket fare of £119. This is based on 2016 OAG Passenger data. OAG data does not provide estimates of fares for low-cost carriers. Therefore, the average ticket fare used in our calculation may overstate the actual average ticket fare. This means that our estimate of the potential increase in demand is conservative because removing APD represents a lower reduction in ticket fare. Therefore, the increase in demand could be even higher.

initial costs of APD abolition.⁶ Therefore, if Heathrow expands, reducing APD on domestic routes may have a net positive impact on UK tax revenue.

Impact on the wider economy

By increasing demand between Heathrow and the UK regions, reduced APD will help facilitate business links and therefore will impact the wider economy. In this section, we explore the particular links based on the existing connections between Heathrow and the UK regions.

Heathrow and Aberdeen

A third of business trips between Aberdeen and Heathrow are directly related to the chemical/petro-chemical sector. In fact, this route accounts for two out of every three domestic departures to Heathrow in this sector. Although Aberdeen's North Sea oil reserves have surpassed peak production, the city and region still support a wide range of multi-national energy sector companies and are re-developing as a research and development hub, rather than a base for offshore drilling. Maintaining efficient and affordable links to Heathrow (and onwards) is critical to this evolution.

Heathrow and Edinburgh

Nearly half of business passengers travelling between Heathrow and Edinburgh work in the financial services or IT sectors. This route accounts for 1 in 3 domestic business passengers travelling by air to Heathrow in this sector.

Edinburgh is home to a wide spectrum of domestic and international financial services companies. The largest financial services sector companies headquartered in the city are the Royal Bank of Scotland Group, Standard Life, AEGON UK, Scottish Widows, Baillie Gifford, Tesco Bank and Sainsbury's Bank. The city has also attracted significant inward investment, with a large number of foreign-owned companies including State Street, JP Morgan Chase, BlackRock, HSBC and Société Générale. Overall, the sector employs over 36,800 people with a concentration of over 265 companies in Edinburgh's financial services portfolio, and Scotland (mostly Edinburgh) manages an estimated £800 million of funds.

Heathrow and Glasgow

One in three business passengers travelling between Heathrow and Glasgow work in the city's internationally significant financial services sector. This link is critical to maintain inward investment in this typically footloose sector and has helped Glasgow's International Financial Services District attract £1 billion of investment since 2001, generating over 15,000 jobs and enabling new investment from companies such as JP Morgan and Morgan Stanley, and expanded operations of global players such as Barclays and BNP Paribas.

⁶ PwC May 2015.

Heathrow and Leeds-Bradford

Business passengers in the medical sector represent the second greatest proportion of business travellers between Leeds-Bradford and Heathrow. The health and life science sector is the key focus of Leeds City Region's Strategic Economic Plan (specifically medical device manufacture, health data analysis, regenerative medicine). The city already hosts one of Europe's largest teaching hospitals, the headquarters of NHS England and over 100 companies specialising in medical devices, biotechnology and pharmaceuticals.

Furthermore, Leeds' City Deal is targeted at improving below-average export rates (recent business survey data shows that only 10% of firms in the city region export outside the UK) and specifically at improving links in those areas where the city is understood to have its greatest strengths (such as services, healthcare and medical devices). As part of achieving this, the aim is to deliver a Medical and Bioscience Hub in the City Region, along with an annual Global Medical and Bioscience event, and work on a three-year campaign to strengthen trade and investment links with the USA. Ensuring more affordable and reliable links to Heathrow for business passengers in this sector will help to foster growth in these sectors as a result.

Additionally, around 2,500 business journeys between Leeds-Bradford and Heathrow are accounted for by the telecommunications sector. This sector is strongly represented around Leeds-Bradford, with three times the national average concentration of jobs in the manufacturing of communications equipment. Less costly services to London ensure that this globally mobile sector can reach key markets – both in terms of trade of the high-tech and lightweight components and in terms of enabling meetings and knowledge sharing between primary and secondary sectors within the industry. Enabling contact with London ensures connectivity to the rest of the world.

Heathrow and Belfast

More than 55,000 business passengers in financial and IT sectors fly from Belfast to Heathrow each year, which reflects the city's strong and internationally focused financial services and fintech sectors employing 30,000 people.

Heathrow and Manchester

More than 36,000 business passengers from scientific or IT sectors travel by air from Manchester to Heathrow each year. A review of sectoral concentration around Manchester reveals that the area has 3 times the national average concentration for jobs in R&D of natural sciences and engineering. The local area also has more than 2.5 times the normal level of representation in both the manufacturing of electronic components and precision instruments used for measuring and testing, reflecting a strong base in advanced manufacturing and robotics. This reflects the globally significant status of Salford Robotics Centre.

Additionally, Greater Manchester's Local Enterprise Partnership aims to put the region at the leading edge of science and technology, which includes progressing its role at the centre of the UK advanced materials research base, with the National Graphene Institute and follow on facilities providing world class research facilities and capabilities around commercialisation and IP development. It also

identifies key opportunities to build on the strengths of the Manchester Science Corridor – a collection of science assets at Medipark and Alderley Park offering a diverse range of expertise and facilities for Life Science sub-sectors such as medtech, cancer care, e-health and stratified medicine.

Ensuring access to Heathrow and the rest of the world via reduced cost to business passengers in this sector will aid R&D and the global and domestic sharing of best practice and enable supply chains to grow and thrive.

Heathrow and Newcastle

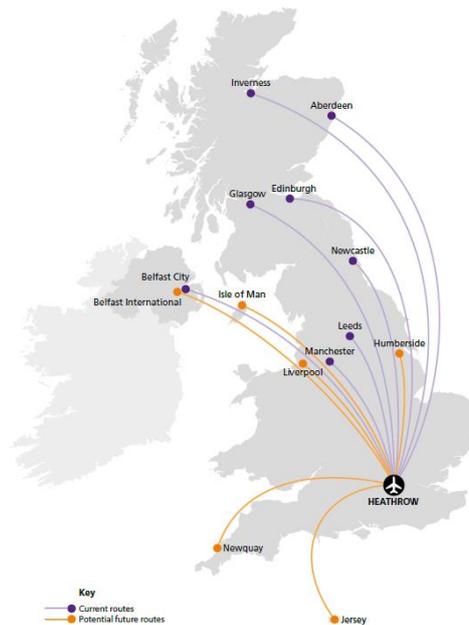
Business passengers in the medical / healthcare / marine / science sector flying from Newcastle to Heathrow are over-represented compared to the average for all business passengers on this route (around 1.5 times the average). This route accounts for more than 1 in 10 business passengers travelling on domestic routes to London Heathrow by air in the UK. This enables critical exchange of business services and medical and cosmetic R&D for companies like Proctor & Gamble, who manufacture products in their Newcastle plant and design and market them in Egham, near Heathrow. Newcastle City Region's "City Deal" has focused primarily on the marine and offshore technology sector, and aims to secure £1 billion of investment and create around 13,000 additional jobs over the next 25 years. Savings for passengers on this key route could be an enabler of this sectoral growth.

Heathrow and Inverness

Although data on business passengers is unavailable, we know that there are key sectors in Inverness that stand to benefit from more cost-effective routes to Heathrow. Inverness is a world leader in diabetes research. For example, LifeScan – a subsidiary of J&J – develops technology and software that enables self-monitoring of blood glucose and supports 1,100 jobs in Inverness. The intellectual property for diabetes research is in significant demand around the world, particularly in emerging Middle Eastern economies.

Impact on new domestic routes

By decreasing domestic APD, potential new routes between Heathrow and the UK regions may also be more viable. Recently, Heathrow has proposed new domestic connections to airports such as Belfast International, Isle of Man, Liverpool, Humberside, Newquay and Jersey, as shown in Figure 3. Similar to the impact on point-to-point demand as described above, reducing domestic APD will also lower ticket fares on these routes, and lower fares will encourage more passengers to travel via air. As a result, demand will increase, and the routes themselves will become more viable as they will serve higher numbers of passengers. Higher demand will also benefit the UK economy more widely in ways similar to the impacts of the current routes as described above. Thus, reduction in APD not only benefits current UK domestic routes but will also bring further benefits in the future as more domestic routes are added.

Figure 3 Potential new domestic routes from Heathrow

Source: "Heathrow. Our Manifesto for Britain," page 13.

Consequences of Heathrow capacity constraints

While the above estimates provide insight to the potential benefits of APD reduction, the reality is that Heathrow is currently capacity constrained with regards to runway slots. When an airport is constrained, passengers may face congestion premiums in which case reductions in charges may not be passed to passengers. As found in *Impact of airport expansion options on competition and choice* (Frontier 2014), short haul routes at Heathrow do not have a congestion premium, suggesting there is sufficient competition to constrain prices, congestion notwithstanding. In this case, we would expect reductions in domestic APD to be passed on to passengers. However, realising the full benefits described above assumes that airlines can meet the increases in demand.

While some increase in capacity may be achievable by airlines increasing the size of aircrafts they use on domestic routes, or increasing load factors, increases in frequencies, or wholly new routes can only be introduced by reducing frequencies on other destinations or cancelling them entirely. This is unattractive to airlines if those established routes are also profitable. Hence as a consequence of Heathrow's capacity constraint, it is unlikely that the potential benefit to the UK economy and to passengers of reducing APD will be fully realised.

While some extra point-to-point demand could, in principle, be accommodated at other London airports instead, this is an imperfect alternative for many passengers accessing Heathrow directly, as Heathrow is one of the top destinations from UK airports and also the best placed airport in London with respect to travel times to central London and the best placed to serve the M3/M4/M40 corridor, which is a source of significant demand. Heathrow's surface access links means that it has the largest catchment area in terms of population

living within given drive time boundaries. Passengers may also prefer the destinations, specific departure times and arrival times of the Heathrow options.

In addition, as the UK and London's only hub airport, Heathrow can provide higher frequency services to the UK regions than can be sustained at other airports because point-to-point traffic combines with connecting passengers from the UK regions using Heathrow to connect to its long haul destinations, which means higher overall demand on domestic routes – and a more commercially viable operation for airlines. Thus, driving point-to-point traffic to other airports will lead to a worse quality of service to passengers overall and will also reduce the extent to which the economic benefits of reducing APD can be fully achieved.

If Heathrow were unconstrained, then airlines would be able to accommodate this extra demand more easily, and the full benefit of reduced APD could be realised.