

SNAPSHOT

- Of all the UK's big infrastructure projects, nothing polarises the nation as much as if, where, when, how much and at whose cost we should build additional runway capacity in the south east of England.
- Since early 2013, the UK has been 'post-monopoly' for the first time in the ownership of its major south east airports.
- Would London and the UK be best served by three competing hubs at Heathrow, Gatwick and Stansted?
- Between 2011 and 2015,
 China will have built 56 new airports and upgraded 91 others¹ each with their own Aerotropolis, which puts the UK's delays in perspective.²
- Our objective has to be embracing the competitive opportunity, driving down costs, increasing consumer choice and supporting growth opportunities.

Crunch time for UK airport capacity

Dan Lewis, Senior Adviser on Infrastructure Policy at the IoD and Chief Executive of Future Energy Strategies and the Economic Policy Centre, reviews the outlook for airport capacity in the South East of England, as decision time approaches.

ir Howard Davies' Airports Commission has a battle on its hands. Of all the UK's big infrastructure projects, nothing quite polarises the nation as much as if, where, when, how much and at whose cost we should build additional runway capacity in the south east of England. No wonder it has been continually put off since the 1960s. And today there are many added complications such as the environment, where and in what volume future demand will come from, and the plethora of new technologies that could turn any number of received assumptions upside-down.

TABLE 1					
Timeline - 50 years of mostly Centrally Planned Indecision ³					
Date	ate Action				
1963	Stansted recommended as the location for a new London airport				
1966	Government sets up Interdepartmental Committee to revisit case for Stansted				
1967	Ministerial statement announcing decision to develop Stansted				
1968	Government sets up the Roskill Commission to recommend a new London airport				
1971	Roskill Commission recommends Cublington, Oxfordshire as new airport for London; Government selects Maplin Sands; Foulness to be London's new hub airport				
1974	Maplin Sands proposal abandoned by the Government				
1978	Aviation White Paper identifies Heathrow capacity as 'restricted'				
1979	'Gatwick Agreement' between BAA and West Sussex County Council that there would be no operational second runway at the airport before 2019				
1990	Government commissions the study on airport capacity 'Runway Capacity in the South East Study' (RUCATSE)				
1997	RUCATSE concludes that expanding Heathrow 'would afford the greatest benefits'. Planning permission granted for second runway at Manchester Airport Continued over				

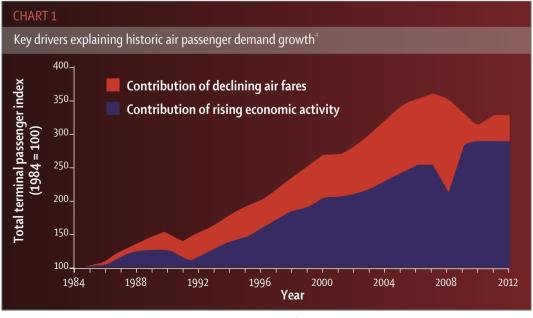
See http://centreforaviation.com/analysis/china-continues-to-invest-in-aviation-infrastructure-53677

² See 12th 5-Year Plan – 2011-2015. China also built 33 new airports between 2005 and 2010.

³ Source: Adapted from Aviation Foundation and Airports Commission Interim Report.

TABLE 1 – Continued					
Timeline - 50 years of mostly Centrally Planned Indecision					
Date Action					
2001	Second runway at Manchester Airport completed				
2002	Government publishes SERAS (South East of England Regional Air Services Study) with options for new runway capacity in the South East				
2003	Air Transport White Paper supports a third runway and sixth terminal at Heathrow and a second runway at Stansted				
2006	Government Progress Report confirms commitment to third runway at Heathrow and a second runway at Stansted				
2007	Government consults on expanding Heathrow				
2008	British Airports Authority ordered by Competition Commission to sell Stansted, Gatwick and Edinburgh – start of long legal battle and the break-up of monopoly control of 90% of South-East's air traffic				
2009	Government backs a third runway decision (subject to conditions) and rules out mixed-mode operation of existing runways at Heathrow				
2009	Gatwick Airport sold by BAA to Global Infrastructure Partners for £1.5bn				
2010	Coalition Government reverses third runway decision and rules out new runways at Gatwick or Stansted				
2011	Government publishes 'scoping document' on a 'sustainable framework for UK aviation'				
2012	Government publishes draft aviation policy framework for further consultation. Independent Airports Commission established in November 2012.				
2013	Stansted sale by BAA to Manchester Airports Group for £1.5bn approved by Competition Commission in January				
2013	Airports Commission releases Interim Report in December				
2015	Post-general election – final airport commission report revealing recommendations for South-East expansion, assessing the environmental, economic and social costs and benefits of various solutions to increase airport capacity				

It is not true to say that the last 50 years have been all bad for airport expansion and these are, after all, the growing pains of a successful industry in an expanding economy.



⁴ See UK Aviation Forecasts, Department for Transport, January 2013.

As this timeline in Table 1 shows, the stand-out positives are the construction of Stansted, a second runway at Manchester and, last but not least, the breakup of the BAA monopoly by the Competition Commission, of which more later. On the other hand, the original Thames Estuary airport idea, which would have been ready by 1990, was proposed in 1971 and then quashed in 1974. And all through a tremendous growth period for air passengers, nothing much was done to prevent Heathrow reaching capacity at 99% with Gatwick not far behind at 85%.

TABLE 2								
London Airports: Runway Length, Passengers, Aircraft Movements (AMs) & Capacity								
Airport	Runway(s) Length in Feet	Passengers – 2013 except City	AMs Commercial Passenger	AMs Freight	AMs Other	AMs Total	Capacity (Est.)	% of Capacity Used
Gatwick	10,879	35,433,900	244,313	258	6,496	251,067	295,373	85%
Heathrow	12,795 and 12,008	72,367,054	473,839	2,456	4,611	480,906	490,000	98%
London City	4,948	3,016,664 (2012)	61,064	0	7,728	68,792	73,000	94%
Luton	7,087	9,693,487	70,421	1,717	25,436	97,574	199,000	49%
Stansted	10,000	17,844,355	127,140	9,759	11,418	148,317	264,000	56%
Total:	N/A	138,355,460	976,777	14,190	55,689	1,046,656	1,321,373	79%

Some British Airport Authority (BAA) detractors would argue that this happened because the BAA monopoly prevented competition, so Gatwick and Stansted – the only ones with long enough runways to field all commercial airliners at 10,879 and 10,000 feet respectively – were not able to redistribute some of this growth in traffic. Nor was there much interest from BAA in increasing the speed, quantity and quality of the surface transport access to those other airports at the expense of Heathrow.

So what about London's other airports?

OUT OF THE LIMELIGHT – LONDON'S OTHER AIRPORTS: CITY, LUTON, SOUTHEND, BIRMINGHAM?

Life not only goes on but plans for expansion are afoot for London's other aerodromes.

London City last year submitted plans to Newham Council to double the number of passengers to 6 million per year by 2023 by extending the runway, building new aircraft parking stands, a parallel taxi land and a terminal extension.

Luton, a kind of sub-regional rival to Stansted and the home of Easyjet, would like to expand capacity from 12 to 18 million passengers per year by remodelling the terminal building and

constructing a new parallel taxi runway as well as some road and parking improvements. Most of the growth is projected to come from Easyjet – which intends to grow from 4 to 9 million passengers.

Southend the baby of the three, last year completed a larger passenger terminal and related facilities, allowing it to grow to 1 million passengers a year.

Meanwhile, **Birmingham Airport**, which to the Chinese rail engineer might look like a suburb of London, flirts with the idea of taking traffic from London – if HS2 gets built.

On the other hand, at 15 miles, **Heathrow** is simply the closest large airport to central London and serves the wealthiest section of it too – the western half. And for most airlines, it is a more profitable airport. According to Airports Commission analysis taken from Sabre ADI, operating costs out of Heathrow earned approximately 21 US cents per passenger mile on average. For Stansted and Gatwick, the equivalent figures were 15 and 10. However, critics contend that this is merely a display of proportionally higher margin long-haul flights and a greater share of business and upper class flights.

And it is also the best connected in terms of railway journey times to the centre:

Heathrow to Paddington 15 minutes
Gatwick to Victoria 30 minutes
Luton to Thameslink 40 minutes
Stansted to Liverpool Street 47 minutes

Against this backdrop, the Airports Commission, headed by Sir Howard Davies, was set up in September 2012 by the government to consider "...the need for additional airport capacity and recommend to government how this can be met in the short, medium and long term". Critics of the Airports Commission argue that its creation is a classic government fudge of creating a fine-sounding public body that kicks the issue into the long grass for a few years longer, beyond the 2015 General Election.

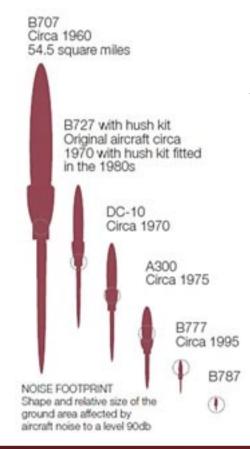
Supporters would say that the Airports Commission has a real chance of depoliticising the debate beyond party political lines and even building a consensus for action. What's most interesting though is that no-one disputes that future demand will not before long eclipse current capacity. And Air Travel around London is already under severe stress with three of London's airports in the Top 10 of longest delays to air transport in Europe according to Eurocontrol.

Clearly, if Ryanair were to operate from Heathrow rather than Stansted, it would be a much rarer event for customers to have to endure listening to the mantra on landing "Welcome! You've arrived on yet another on-time flight from Ryanair".

For low-cost short-haul carriers, Heathrow is a poorly designed airport, quite unable quickly to turn around the same aircraft up to four times a day. And their landing charges to the airlines, amongst the highest in the world, are beyond the reach of the low-cost carriers. Indeed, so high are their charges that the Civil Aviation Authority is forcing Heathrow to lower them by inflation minus 1.5% per annum until 2019.

BOX 1

How much does aircraft noise matter?



Aircraft have got dramatically quieter over the last 50 years, but noise remains a major issue for Heathrow as some 240,000 people are subject to a level of noise above 57 decibels. The equivalent figure for Gatwick is just under 4,000. One of the most innovative ideas to combat noise was suggested in a recent paper for the Institute of Economic Affairs, 'Depoliticising Airport Expansion', by Kristian Niemitz. He argued that the principal problem with airport expansion in the UK was that benefits were collectivised nationally, but the externalities like noise, were felt locally without due fiscal compensation. The natural outcome of this was politicised 'nimbyisation'. The solution then could be to tie the level of compensation such as council tax rebates from the airport to the level of noise in the affected area. This way, airports would have a vested interest in working to reduce their noise footprint and their fiscal rebates to the locally affected area. Meanwhile, Gatwick recently upped its noise compensation scheme to include an area 15 km beyond each end of the runway with grants for double glazing, loft insulation and other financial compensation for the 2,000 affected homes. The Airports Commission meanwhile recommends the creation of yet another public body, an Independent Aviation Noise Authority, "to provide expert and impartial advice" about noise and how to mitigate it.

Source: Australia government figures from AC Interim Report

Heathrow's crowded skies manifest themselves in another way. Between 2009 and 2013, up to 260 planes were forced to land at Heathrow with low fuel, engine problems or other technical faults – most likely demanding priority over the queue.⁵

In forecasting future aviation demand, there are many variables, each prone to quite dramatic and unforeseen swings in both directions; oil and carbon prices, GDP growth, behavioural change, airline business model (r)evolution, central and local government fiscal returns and technological innovation in aircraft design, air traffic control volumes and noise, air and CO_2 emissions – to name but a few.

In 2014, there is another rather more profound issue facing the UK and meeting infrastructure commitments – there is not enough money, public and private and even sovereign wealth capital wants a good return or it will go elsewhere. For government, there will be no forecast budget surplus until 2019 and the national debt will not return to the pre-recession level of 2007 until 2030 or thereabouts. So making a cost-effective decision, at minimum outlay to the taxpayer, for the long-term, matters.

This situation therefore calls for some sound principles of infrastructure investment which asks questions like:

⁵ See http://www.standard.co.uk/news/transport/how-16-jets-running-out-of-fuel-landed-at-heathrow-9208209.html

TABLE	TABLE 3						
All-Causes Delay. Top 10 Affected Departure Airports 2012							
Rank	Departure Airport	Average Delay per Departure (mins)	Average Delay per Flight Percentage Change (vs. 2011)	Average Delay per Delayed Departure	Percentage Delayed Departures		
1	LISBOA	16.4	19%	31.3	52.4%		
2	ISTANBUL-ATATURK	13.8	81%	28.6	48.0%		
3	MANCHESTER	13.7	8%	32.4	42.1%		
4	LONDON/HEATHROW	12.5	16%	26.8	46.5%		
5	LONDON/GATWICK	12.0	10%	28.1	42.7%		
6	LONDON/LUTON	11.7	-7%	29.5	39.8%		
7	MALAGA	11.4	1%	29.2	39.1%		
8	PARIS CH DE GAULLE	11.4	-9%	23.9	47.6%		
9	MADRID BARAJAS	11.2	-30%	25.2	44.5%		
10	PALMA DE MALLORCA	10.7	-19%	27.4	39.2%		

What is the cost of doing nothing?

Will it increase consumer choice?

Will it lower the cost of doing business?

Will it create capital deepening?

Can it create sufficient local as well as national winners?

How long will it take to get the first spade in the ground?

How long will the construction period last?

How much of the cost and risk will taxpayers be meeting?

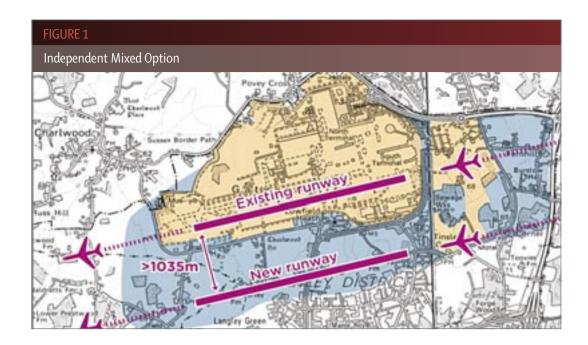
Is connecting road and rail infrastructure already in place?

First of all, the cost of doing nothing – always worth asking – is significant. According to the Airports Commission Interim Report, the cost amounts to £18-20bn to users and providers of airport infrastructure and £30-45bn to the wider economy. So clearly, there is a good case for airport expansion and the Commission has shortlisted three locations. But how do the different locations stack up?

i) A second runway at Gatwick of 9,843 feet

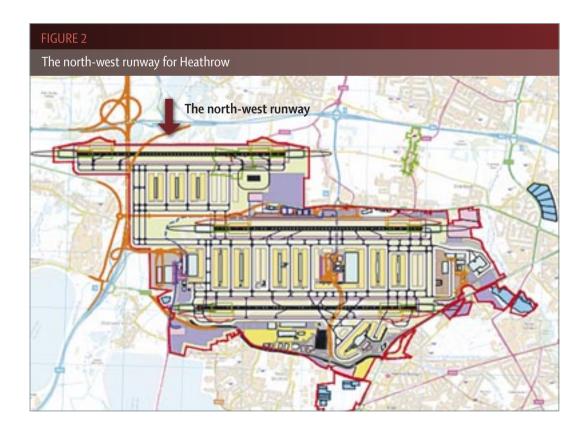
Gatwick originally tabled three different plans for expansion, each involving a second runway and dependent on the distance between them from less than 760 to over 1,035 metres.

The winning third option that was shortlisted is called 'Independent Mixed Mode'. This runway would be placed furthest away at over 1,035 metres from the existing one. This is the maximum capacity option and could support up to 100 ATMs per hour. At this greatest distance apart, each



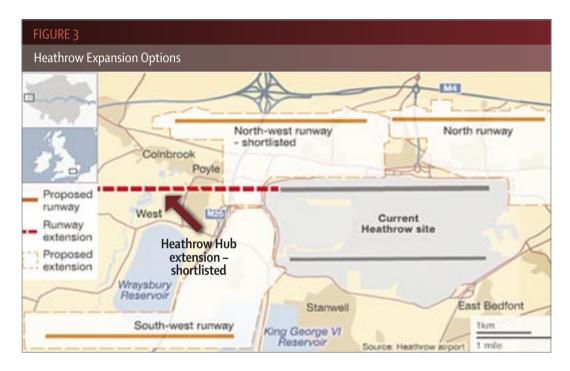
runway is given the flexibility to operate arriving and departing aircraft at the discretion of the air traffic controllers.

This third option was slated to cost £9bn, would involve the loss of 50-100 homes and construction could start in 2019 and finish by 2025. Ironically, one of the buildings that will have to be destroyed is the headquarters of the Civil Aviation Authority. Gatwick recently restated the figure for developing this as £7bn – perhaps not coincidentally a figure that matches that of the Heathrow Hub option.



ii) A third runway of 11,483 feet at Heathrow to the north-west of the existing location

The north-west third runway would cost £17bn according to Heathrow, which can be broken down to £11bn of airport infrastructure costs, £2.1bn of surface access costs and £3.8bn of environmental or community costs. £6bn of this cost may have to be met by the taxpayer. The village of Harmondsworth, which has a population of about 850, would have to be demolished. Major road infrastructure would be required, including a 1,000m tunnel for the M25 and a realignment of the M4/M25 junction.



iii) 'Heathrow Hub' - an extension of Heathrow's existing northern runway to at least 19,685 feet to be used for both take-offs and landings

Heathrow Hub is estimated by its proposers to cost £7bn. Although it is potentially the cheapest option, there is the possibility of delays being encountered in having to divert or bridge over the M25. There would also be a new railway station on the Great Western Main Line which would be connected to Crossrail. Much of the parish of Colnbrook with Poyle, which has a population of about 6,200, would have to be demolished, including 720 properties and eight listed buildings. The Heathrow Hub also lays open the path to a future runway extension to the southern runway to the west, to mirror that to the north. Even greater engineering and cost challenges are likely to be encountered, however, by the obstruction of the Wraysbury Reservoir.

Critics contend that neither of the Heathrow options is deemed viable for completion before at least 2030. Not everyone agrees though – Heathrow believes the north-west runway could start in 2020 and be ready by 2026. All developers would like to see all planning and permitting completed in

⁶ See http://mediacentre.heathrowairport.com/press-releases/heathrow-north-west-third-runway-option-short-listed-by-airports-commission-779.aspx

⁷ See https://www.hillingdon.gov.uk/article/27835/Heathrow-news-update

the timeframe of the next government 2015-2020 with construction starting in period of the following government in 2020.

The really interesting angle to the Interim Report though, is which options they chose not to shortlist. There were, after all, 52 submissions and only three have been shortlisted and none of those included improving surface access. They were selected on the basis of the Airports Commission's 'Sift Criteria'. The Sift Criteria cover the strategic fit, economy, surface access, the environment, people, cost, operational viability and delivery. Under each of these lie many questions like what are the air quality and noise implications or what are main delivery risks or will it rebalance the economy and align with climate change commitments and even does it involve the destruction of Grade II listed buildings?

TABLE 4					
Who's right? Shortlisted price tags for three shortlisted proposals					
Proposal	Proposer Cost	2030 Risk-Adjusted Total			
Gatwick 2nd runway	£7-9bn	£10-13bn			
Heathrow north-west runway	£17bn	£13-18bn			
Heathrow Hub – north runway extension	£7bn	£13-18bn			

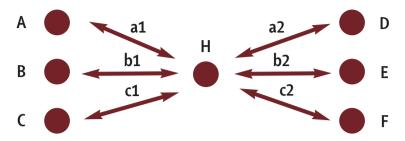
Clearly no one proposal can score 100% on everything and there is wide disagreement about the costs. The nub of the disagreement is to do with to what extent surface access costs should be apportioned as stand-alone costs to a selected airport and the "Optimism Bias". This is what HM Treasury calls the "...systematic tendency for public sector project appraisers to be overly optimistic". Gatwick contends that the Airports Commission view of their transport costs is not accurate because of the benefits incurred to the rest of the transport network from increasing connectivity to a through point rather than an end destination as in the case of Heathrow. Equally, as a privately-funded expansion, they feel that optimism bias is not an issue for them, as being unrealistically optimistic comes at the internal cost to their investors and not to the taxpayer.

With so much at stake, all three shortlisted candidates revised their proposals in mid-May 2014. Gatwick submitted a 3,200 report that came in with a more precise costing of £7.8bn, a revised additional 260,000 flights by 2050, and emphasis on its ability to service all types of airline business models. Heathrow Hub - the northern runway extension claimed it could remodel the road network around Heathrow, negating the need to shut down the M25 or to tunnell and bridge the runway over it, and a much reduced compulsory purchase of 250 dwellings to make way. Heathrow Airport's proposal for a third runway to the north-west has had its cost revised to a more precise £15.6bn, would accommodate 260,000 flights a year, and would require a much lower taxpayer contribution of £1.2bn for a 600-metre, 14-lane tunnel to replace an existing section of the M25. Heathrow Airport had also earlier announced the drawing up of plans to introduce congestion charging in 2030 if airport expansion was to go ahead, and a £550m compensation fund for noise abatement for those affected by the noise of a north-west runway.

⁸ See Airports Commission Publication, Guidance Document 02: Long Term Capacity Options: Sift Criteria, May 2013.

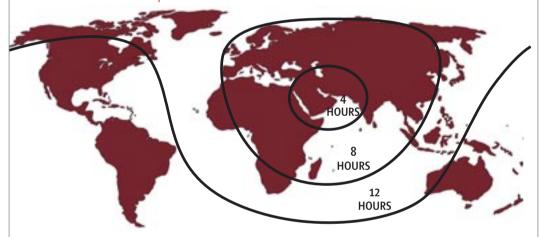
BOX 2

How important is the Hub to the future of London airport capacity?



An aviation hub (here represented by H – source: Airports Commission) allows airlines and alliances to major on one airport which offers spokes (a1, b1 etc.) to connecting flights to further destinations via additional spokes such as a2 to D. It's a bit like trying to get a train to Brighton from London Waterloo via Clapham Junction, where Clapham Junction is the hub. Hubs are popular with big airlines and alliances and the more runways you have, the more transfers can be offered. They also work well and have most potential where a large part of the world population is within eight hours' flying time. In Dubai's case, the equivalent figure is 70%.

FIGURE 4 Dubai's Hub Population Reach



For London, the figure is probably closer to 25%, albeit a much wealthier section of the world population. However, to say that London must have one massive super-hub and build accordingly is to overlook a number of existing facts, trends and technological developments that are going in the opposite, or at least different, direction.

First of all, if you look at the existing range of air traffic from London, in 2012, 68% of it was short-haul to and from the UK and Europe, while the remainder is long-haul; 15.6% is with Africa, Asia and South and Central America; 12.1% with America and the Caribbean, with the rest made up of Australasia and the Middle East. So London is really a hub primarily for North American destinations. And if there was demand for additional flights to the emerging markets of China, short-haul slots could be sold and repurposed. The problem is more a lack of profitable demand than a lack of capacity.

Secondly, a new range of 'hub-busting' aircraft, epitomised by the Boeing 787 Dreamliner and Airbus A350, can fly from London to the northern tip of Australia non-stop and negate the need for hubs for long-haul flights. One more generation of even more fuel-efficient planes some time within the next 20 years could probably bring within reach Australia's southern coastline and indeed anywhere in the world, creating more point-to-point non-stop flights without need of a stopover hub. As the Interim Airports Commission report noted "...the smaller, more fuel efficient models are proving more popular with airlines than 'superjumbos', very large wide-bodied planes such as the Boeing 747-8I and the Airbus A380 that mostly serve the thickest routes, often from major hubs. Whereas there are only 143 current orders for A380s, 72 of which have been placed by the Middle Eastern carriers that specialise in intercontinental hubbing, there are 789 orders for A350s and 754 orders for Boeing 787s".

Whatever happens, this is a decision that will always have losers as well as winners. But we should note that of all the different proposals to build an airport in the Thames Estuary, not one was shortlisted. In an 'if moneywere-no-object' world, building a new airport far out to the east of London has a lot going for it. With so few people around, you could operate and have air traffic movements 24 hours a day, effectively doubling capacity per runway and have virtually no noise impact over populated areas. Indeed, Heathrow is the only major European airport that allows incoming flights to approach over the city. This is why London Mayor Boris Johnson saw great opportunity in ending flights over London and replacing Heathrow.

Lord Foster proposed building a four-runway hub on the Isle of Grain called Thames Hub. Their latest figures estimate it could be built for about £24bn and could be completed by 2027. The other main proposal was called London Britannia Airport, also known as Boris Island, and would have six runways on a man-made island and cost £47.3bn and be built within seven years.

So much for the upside.

In both cases, the business model is ultimately dependent on closing down Heathrow and City Airport at no small cost and creating one massive super-hub which would have competition implications for the remaining airports. And opinion is at least divided on whether the future of Hub business is quite as bright as its advocates fervently believe (See Box 2). It is also seen that the positive value of closing down Heathrow would be the redevelopment of the whole area, perhaps adding homes for up to 190,000 people in what would be already a very well-connected location. But all of that would take time too. Many businesses are located near to Heathrow and they would have to consider relocating or may indeed not relocate at all, and this is without mentioning the loss of jobs of those currently working in the airport.



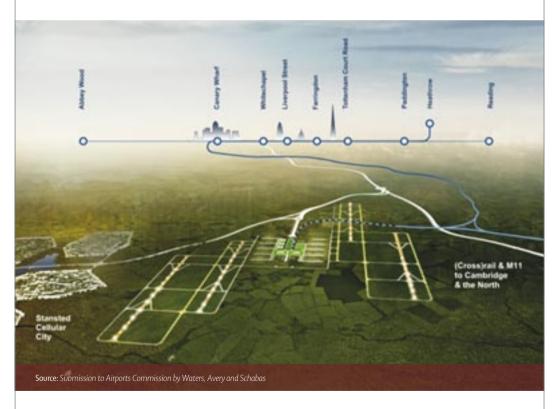
BOX 3

The rise of the Aerotropolis

One of the most exciting and thought-provoking books about aviation trends over the last few years has been Aerotropolis: The Way We'll Live Next by Greg Lindsay and Dr John Kasarda. In the future, they argue, instead of airports being built around cities, towns and cities will be constructed around airports. This is not unlike America's railway boom in the late part of the 19th century. Whole towns were built around railway stations. Only with airports, the prize is much bigger, especially in an undeveloped, greenfield site. When far enough from a metropolitan centre, they develop major employment clusters of their own. It is not just the terminals and their shopping malls. We must also consider new locations for finance houses, administration, universities, research, hotels, museums and, last but not least, the opportunity to create new residential areas, providing homes and amenities for those who work in the airport.

Between 2011 and 2015, China plans to have built 56 new airports, each with their own Aerotropolis, which puts the UK's endless delays in perspective. The only real chance to create an Aerotropolis in Britain - i.e. where there is space to expand - is at Stansted, which could even support up to four runways, as was argued in one submission to the Airports Commission by Brian Waters, Bryan Avery and Michael Schabas. However, the key to doing this would be first to extend Crossrail to Stansted, largely along the M11, at a cost of £3bn and dramatically reduce the journey time into Central London: to 25 minutes to the City, 35 minutes to the West End and 60 minutes to Heathrow.

FIGURE 5
Extend Crossrail to Stansted and new eco-towns



Schabas, who oversaw the Jubilee Line extension, which doubled the value of Canary Wharf, also argues that for every three passengers that pass through an airport per day, one full-time employee is needed at the airport. This often means that more daily ground trips are made by the airport workers than the passengers themselves, with all the associated air pollution and traffic congestion. The solution is to build a neighbouring town(s), with buses that shuttle those workers in on a 24-hour basis. And it would be an eco-town as they would not need to commute to work by car.

There is also a complete absence of connectivity in trains, tubes and roads that would have to be built at no small expense. Moreover, there will be a huge battle with the environmentalists over the large number of birds residing in the estuary, dismantling the LNG facilities on the Isle of Grain and dealing with the World War II shipwreck of the SS Richard Montgomery which contains 1,400 tonnes of explosives which cannot be moved without the risk of an explosion. Were it to explode, it would apparently be one of the biggest non-nuclear blasts ever, causing a tidal wave, £1bn of damage and a lot of burst eardrums.

If the Thames Estuary airport proposal at Maplin Sands had not been cancelled in 1974, it would have been ready in 1990 and we could have had 25 years of redistribution of air traffic away from Heathrow, incremental improvements in surface access and regional growth in what is still a largely greenfield site bereft of economic opportunities. The Airports Commission appears to have quietly but fatally wounded the idea of a Thames Estuary aiport, estimating the full cost of an Isle of Grain airport to be £112bn. It does seem then that the Thames Estuary airport proposals have had their day.

CONCLUSION

It would be easy to get too carried away with the case for new airport capacity. People do not just visit or invest in a country because they like the airport and its facilities. They have nonetheless become semitrophy items of national prestige. The next government, which will receive the final recommendations of the Airports Commission in 2015, would be well advised to pause for thought and not rush through legislation. The goal has to be to encourage competition and further localisation of the fiscal gain at the least possible cost. An expansion anywhere would be a net economic gain to the South East.

⁹ See http://www.bbc.co.uk/news/uk-england-17513286.