

Appendix B

ALTERNATIVES CONSIDERED: AOS FOR AIRPORTS NPS

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ASSESSMENT OF LONG-TERM AND, SHORT- AND MEDIUM-TERM OPTIONS

1.1 INTRODUCTION

- 1.1.1 This appendix provides information on the Long-, Medium- and Short-term options examined by the Airport Commission for proposals received from both organisations and private individuals. It displays how the Airports Commission examined alternatives to decide on a short-list of realistic proposals which have been taken forward for assessment within the AoS.
- 1.1.2 This Appendix is based on information from the following sources:
- Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*;¹
 - Airports Commission, 2013. *Airports Commission: Interim Report, Appendix 1: Assessment of Short- and Medium-Term Options*;²
 - Airports Commission, 2013. *Long term options: sift 1 templates*;³
 - Airports Commission, 2013. *Long term options: updated sift 2 templates*;⁴ and
 - Airports Commission, 2013. *Long term options: updated sift 3 templates*.⁵
- 1.1.3 No additional analysis or interpretation of the sifting process had been undertaken.
- 1.1.4 A total of 52 proposals were received, of which, ten of the proposals involved surface transport improvements or other policy alternatives which would deliver improved use of the UK's current airport infrastructure. These encompassed a broad range of schemes, including radial railways around London and "hub-and-spoke" models based from a single central London terminal. The Airports Commission combined elements of these proposals to create three templates testing key themes, which would assess the overall potential to use surface access improvements to address aviation capacity constraints. These proposals are described in the Interim Report (Appendix 2, Table 4.1⁶). These schemes represented the 'do minimum'⁷ alternative. A principle issue of these proposals was that they were not considered to deliver the overall objective of providing additional long-term capacity and connectivity for the UK.

1.2 LONG-TERM OPTIONS

- 1.2.1 Long-term options are those options which involve the substantial development of a new or existing airport sites. This includes the delivery of any major surface access links or other infrastructure required to ensure that the new airport capacity can be utilised.

¹ Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016

² Airports Commission, 2013. *Airports Commission: Interim Report, Appendix 1: Assessment of Short- and Medium-Term Options*. [\[online\]](#) Accessed 21/03/2016

³ Airports Commission, 2013. *Long Term Options: sift 1 templates*. [\[online\]](#) Accessed 05/04/2016.

⁴ Airports Commission, 2013. *Long Term Options: updated sift 2 templates*. [\[online\]](#) Accessed 05/04/2016.

⁵ Airports Commission, 2013. *Long Term Options: updated sift 3 templates*. [\[online\]](#) Accessed 05/04/2016.

⁶ Airports Commission, 2013. *Interim Report*. [\[online\]](#) Accessed 05/01/2016.

⁷ represents the conditions which would exist if a scheme did not go ahead.

- 1.2.2 The following tables present the long-term options proposed, along with the Airports Commissions justification for sifting the proposals. The Commission engaged in three sifts used to identify proposals which would not merit more detailed assessment and could be removed from consideration. This was in order to develop a short-list of the long-term options. This sifting was based on the Commissions publication '*Guidance Document 02: Long Term Capacity Options: Sift Criteria*'⁸, which identified the sift criteria that the Commission used to assess submissions.
- 1.2.3 The first sift was based on high-level information provided in relation to each proposal. The remaining proposals for the second sift were considered further, with more developed information. The proposals remaining after the two sifts went forward to the final sift with full additional analysis.
- 1.2.4 The Commission initially sifted proposals out on the basis of:
- a) The proposals had fundamental issues which could not conceivably be addressed;
 - b) the proposals were similar in scope to other better developed and more detailed proposals; and
 - c) the proposals did not fit with the Commission's remit or offer a solution to the key question of providing additional long-term capacity and connectivity for the UK.
- 1.2.5 The proposals sifted during the first sift are presented in Tables 1, 2, 3 and 4. Tables 1 to 3 display those proposals sifted out for reasons a-c set out in the sifting criteria above. Of the proposals received, ten suggested surface transport alternatives to make better use of the UK's current infrastructure. The Commission decided to combine elements of the ten surface transport proposals to create three templates (proposals) which would assess the overall potential to use surface access improvements to address aviation capacity constraints. These ten proposals are displayed in Table 4.
- 1.2.6 The remaining proposals not included within Tables 1 to 4, which the Airport Commission did not sift out during the first sift and which were therefore taken forward to the second sift, are listed in Table 5.

Table 1. List of proposed long-term alternatives sifted out during the first sift by sift criteria (a) 'the proposals had fundamental issues which could not conceivably be addressed'.⁹

PROPOSAL ALTERNATIVE	OUTLINE
Exhaustless	A scale proof of concept for an innovative assisted take off system. An electromagnetic propulsion system launches unmodified aircraft at high speeds.
Imperial College London	Dispersed hub system comprising a number of two-runway airports at Heathrow, Gatwick and Stansted.
Private – Foulness	A new airport at Foulness, Essex, on government owned land currently used as an experimental munitions testing facility for the Ministry of Defence.
Private – Heathrow 7	Call for action to ensure that Heathrow retains capacity to ensure London has sufficient hub capacity for the long-term. A high level scheme setting out the potential for seven runways and a spaceport is illustrated.
Private – London East	New two runway airport in the motorway triangle (M25, M26, M20). Some element of traffic distribution.
Private – Lydd & Gatwick	Proposal for Gatwick to put its existing second runway into service, and for expansion of Lydd Airport near Romney Marshes, potentially adding two runways.

⁸ Airports Commission, 2013. *Guidance Document 02: Long Term Capacity Options: Sift Criteria*. [\[online\]](#) Accessed 05/04/2016.

⁹ Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 1. List of proposed long-term alternatives sifted out during the first sift by sift criteria (a) ‘the proposals had fundamental issues which could not conceivably be addressed’.⁹

PROPOSAL ALTERNATIVE	OUTLINE
Private – Maplin	New London airport to be constructed on reclaimed land on Maplin Sands as part of a broader programme of infrastructure developments.
Private – Mega Hub	High level design concept for group of “mega hubs” in the South East.
Private – London Thames Global (Thurrock)	A single runway airport proposed at the London Gateway Logistics Park, a brownfield site and deep water port being developed by DP World on the Thames estuary near Thurrock, south of Basildon.
Private – Walland Marsh	To develop a modular four runway airport on Walland Marsh on the southern Kent coast as a replacement for either Heathrow, Gatwick or Stansted airport.

Table 2. List of proposed long-term alternatives sifted out during the first sift by sift criteria (b) ‘the proposals were similar in scope to other better developed and more detailed proposals’.¹⁰

PROPOSAL ALTERNATIVE	OUTLINE
Aras Global	Heathrow to be developed as the UK’s hub airport. The scheme comprises various elements including the introduction of mixed mode on existing runways, construction of a third runway and a fourth runway in the longer term.
Beckett Rankine	A new airport with up to five runways located on reclaimed land, built upon Goodwin Sands, 71 miles from London and two miles to the east of Deal.
London Medway Airport	New four runway airport on the Hoo Peninsular on the north Kent coast, predicated upon the closure of Heathrow.
MAKE Architects	The scheme proposes a four-runway international hub airport at Stansted, building on existing air, road and rail facilities.
Private – LHR and STN	A range of potential developments at a number of locations around London (existing airports as well as new on and off shore locations). Should a threshold of one million noise impacted residents be considered acceptable, the submission proposes that Heathrow should be developed, otherwise it recommends the development of Stansted into a replacement hub with Heathrow closed and redeveloped.
Private – LHR four runways (two southern)	Two additional runways located southwest of the existing airport. Two options appear to be proposed, one with equal length additional runways, one with a shorter northerly of the two new runways.
Private – Twyford	A new airport development at Twyford in North Buckinghamshire at the intersection of two prospective railway lines: HS2 (London-Birmingham) and the East West line which will eventually connect Southampton and Reading with Bedford, Cambridge and the various northbound Main Lines.
Progressive Aviation Group – RAF Croughton and Steventon	Proposed two sites: RAF Croughton near Brackley, Northamptonshire and a greenfield location near Steventon southwest of Abingdon, Oxfordshire. At either location a new London Gateway Airport comprising four parallel runways, each pair separated by two terminal buildings, which could be provided as a replacement for Heathrow which would be closed and redeveloped.

¹⁰Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 3. List of proposed long-term alternatives sifted out during the first sift by sift criteria (c) 'the proposals did not fit with the Commission's remit or offer a solution to the key question of providing additional long-term capacity and connectivity for the UK'.¹¹

PROPOSAL ALTERNATIVE	OUTLINE
Drive Through Airport	The proposal is a concept for a revolutionary view of an airport terminal as opposed to a particular solution to UK airport capacity.
Fairoaks	Fairoaks Airport lies two miles north of Woking. It currently serves General Aviation and some business aviation but has spare capacity within its existing permissions to accommodate more business traffic from Heathrow or another large airport in the south east. Thus it could act as a reliever airport and free up slots to increase hub airport capacity elsewhere.
Manston Airport	Policy initiatives and surface transport improvements to develop Manston as a 'reliever' airport for London and the South East, freeing up capacity at more congested airports, and reducing the need for new runway capacity to be built.
MSP Solutions – Severnside	Submitter suggests the construction of an airport in the Severn estuary to replace Bristol and Cardiff airports.
Richmond Heathrow Campaign	Range of no-build options that seek to increase passenger throughput, across all London's airports within existing aircraft movement capacities in order to make best use of existing infrastructure.
Severn24	New two runway airport on a reclaimed island in Severn Estuary with road and rail links to M4 and Great Western Mainline near Newport.

Table 4. Sifted out¹² proposals which offered surface transport and other alternatives to make better use of the UK's current infrastructure.

PROPOSAL ALTERNATIVE	OUTLINE
Avery Waterhouse Schabas	Proposal to connect Stansted via Crossrail into central London providing non-stop services from Stansted to Stratford or Canary Wharf.
First Class Partnerships	This submission presents a number of surface access improvements to Stansted as part of a wider transport strategy. It also proposes to construct a four-runway airport at Stansted, with no requirement to close or downgrade Heathrow which is being tested in other proposals.
Greengauge21	This proposal suggests a high speed railway network connecting Heathrow with the south and west over existing railway lines, and new connections to Euston and northbound main lines. It suggests creating a surface transport hub at Heathrow with direct rail connectivity to all of the major cities and regions in England by the late 2020's as well as to south and north Wales and to Scotland.
Grimshaw – London Hub City	This proposal seeks to redefine the concept of a hub airport and proposes that London should become a 'Hub city', with excellent connections to its major airports, encouraging transfer passengers into central London to break up their journey and contribute to the economy.
Interlinking Transport Solutions – London Air Rail Rapid Transit System (LARTS)	Construction of a light rapid transit system alongside the M25, M23 and M1 connecting the existing airports and railway lines is promoted by this proposal. The light rail 'RapidRail' system will mix express services with stopping services and with a maximum speed of 125kph. RapidRail stations will be located close to airport terminals and will integrate with existing stations using elevated platforms and guide ways.

¹¹ Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

¹² Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 4. Sifted out¹² proposals which offered surface transport and other alternatives to make better use of the UK's current infrastructure.

PROPOSAL ALTERNATIVE	OUTLINE
Private – London Orbital Maglev	A London orbital MAGLEV system to connect London's five main airports is suggested in this proposal. It is proposed to run beside/over the M25 with spurs to each airport. This is considered a way to encourage passengers to transfer between airports generating a dispersed hub.
Private – London Orbital HS Railway	Proposal for a high speed underground orbital railway to connect existing capacity and increasing glide slopes to 5.5 degrees.
Private – MERLIN	This proposal suggests the development of Luton Airport as either a single hub with a high speed rail link connecting Luton to HS2 and the East Midlands, the Midland Express Rail Link (MERLIN), or to develop Luton and Heathrow as a dual hub with a new high speed rail link between the two airports.
Private – Universal Hub for London	The construction of a single universal hub at Farringdon with a station beneath Smithfield Market used by all air travellers irrespective of airport or airline is suggested by this proposal. The Universal Hub would serve London's main airports via direct, non-stop underground rail links.
Quaestus (Poppleton) Ltd – Surface Transport: Heathrow-Gatwick Multi-Site Hub	This proposal suggests the development of high speed rail infrastructure such that all major cities north of Milton Keynes will have a direct connection to Heathrow, reducing the demand for domestic flights. Low frequency domestic flights from regional airports would be expected to be replaced by frequent train services bringing most cities to within three hours of Heathrow.

Table 5. List of proposal long-term alternatives not sifted out during the first sift.¹³

PROPOSAL ALTERNATIVE	OUTLINE
Heathrow Airport (one north runway)	New 2,800m runway constructed to the north of the existing airport with linking taxiways to the east of the current north runway. The new runway could operate independently from the existing runway. (London Heathrow Airport – 3 rd Runway: North Option)
Heathrow – one additional north west runway	New 3,500m runway constructed to the northwest of the existing airport with linking taxiways to the west of the current north runway. (London Heathrow - 3 rd Runway: Northwest Option)
Heathrow – one additional south west runway	Proposed by Heathrow Airport Ltd. New 3,500m runway constructed to the southwest of the existing airport with linking taxiways to the west of the current south runway. (London Heathrow Airport – 3 rd Runway: Southwest Option)
Heathrow – extension of the northern runway (Heathrow Hub)	Firstly an extension of both existing runway to a length of 6,400m enabling each runway to operate as two runways: the down-wind runway used for arrivals and the up-wind runway for departures. Secondly, a multi-modal interchange and passenger terminal, 'Heathrow Hub' located 3km north of the existing airport.
Centre Forum, Policy Exchange joint submission (Heathrow – four west runways)	Following a review of various aspects of the southeast airport policy debate, the proposers preferred solution is to develop hub capacity at Heathrow. Heathrow development comprises the displacement westwards and marginal widening of separation of the current runways, and expansion to four by the addition of two close-spaced parallel runways one to the north and one to the south. The existing central terminal area would be retained, and extended westwards between the displaced runways. The two pairs of close spaced runways would be around 380m apart, while the distance between the sets of runways would be 1,035m. (Bigger and Quieter: Heathrow)
Birmingham Airport	One additional wide spaced runway at Birmingham.

¹³ Airports Commission, 2013. *Long Term Options: sift 1 templates*. [\[online\]](#) Accessed 05/04/2016.

Table 5. List of proposal long-term alternatives not sifted out during the first sift.¹³

PROPOSAL ALTERNATIVE	OUTLINE
Gatwick – one additional south runway	Proposed by Gatwick Airport Ltd. Assessment based on the widest spaced runway of the three options provided by the proposer for a second runway to the south of the existing runway, permitting fully independent mixed mode to both runways. (London Gatwick Airport – 2 nd Runway Options)
Kent County Council (and Medway local authority) 'Dispersed Hub' Model	High level presentation of provision of additional capacity at some existing airports, together with improved rail access to facilitate better strategic use of the London/South East multi-airport system. Better utilisation of regional airports including Manston and Lydd in Kent, for point to point flights, to release capacity and complement the main London airports to provide enhanced 'hub' operations. Additional runways proposed at Gatwick and subsequently Stansted, to encourage competition with Heathrow and establish a 'dispersed hub', with the potential for second runway at Birmingham should future capacity be required.
Stansted – one additional east runway	Proposed by Manchester Airport Group Two in-principle options for the provision of a second runway: either to the northwest of the existing runway or to the east. The closed spaced northwest runway option could operate in either segregated mode or provide independent departures, whereas the wide-spaced east runway would permit fully independent mixed mode operations to both runways. (Stansted Airport – 2 nd Runway)
Western Gateway Airport / Group (Cardiff)	Proposed by University of South Wales. Expanded Cardiff to be part of a dispersed model.
AC Secretariat (Milton Keynes/Bedford Airport)	New four runway hub between Milton Keynes and Bedford.
AC Secretariat (New West London Heathrow – Maidenhead)	Replacement airport for Heathrow located to the west of current site between Maidenhead and Reading (West London Heathrow Replacement)
Thames Hub Airport	Submitted by Foster + Partners. New four runway airport on the Isle of Grain at the eastern end of the Hoo Peninsula on the north Kent coast. Four runways airport constructed on reclaimed land platform measuring 5.2km by 4.5km. Requires all supporting infrastructure, plus settlements.
London Gateway Airport	Submitted by International Aviation Advisory Group (IAAG). A package of short, medium and long term measures, commencing with the introduction of mixed mode for resilience at Heathrow, construction of a second runway at Gatwick, and construction of a 3-runway 24-hours hub airport, on the western end of the Hoo Peninsula in Kent.
Metrotidal Tunnel and Thames Reach Airport	Submitted by Metrotidal Ltd. Proposal for a new airport constructed on an artificial island in the Thames Estuary, immediately north of the Hoo Peninsula. Other airports, notably Heathrow, Gatwick and Stansted, would be constrained to their current capacity to encourage growth and to establish a hub operation at the new airport. Four runways would be developed as demand required, with each pair of runways in an east-west alignment. All supporting infrastructure, plus settlements to accommodate direct and indirect employees to be constructed. The airport would lie at a major transport node and the 'Metrotidal Tunnel' would facilitate a wider regional surface transport strategy for the east of England.
Pleiade Associates (London Oxford)	London Oxford (LOX) – New 3 or 4 runway airport on farmland near Abingdon in Oxfordshire approximately 50 miles west of central London.

Table 5. List of proposal long-term alternatives not sifted out during the first sift.¹³

PROPOSAL ALTERNATIVE	OUTLINE
London Britannia Airport	Submitted by TESTRAD. New five (expandable to six) runway airport on purpose-built island off the north Kent coast. On opening of the new airport Heathrow would be closed and its site redeveloped, with the realised value offsetting the cost of construction of the new airport.
Isle of Grain	Submitted by Mayor of London. New four runway airport, developed on the Isle of Grain at the end of the Hoo Peninsula on the north Kent coast, as a direct replacement for Heathrow. Partially constructed on reclaimed land.
Outer Estuary	Submitted by Mayor of London. New four runway airport, developed off the north Kent coast, as a direct replacement for Heathrow. Constructed on reclaimed land (total site area 55 m ²).
London Luton Airport	Submitted by WestonWilliamson+Partners. New 4 runway hub airport replacing the existing London Luton Airport extending its current site southwards and eastwards into farmland between Luton and Kimpton.
London Gatwick Airport – Hub Option	Significant expansion, in line with the options considered prior to the 2003 Air Transport White Paper consultation document, as a replacement for Heathrow. A second runway is suggested to the south of the existing runway at a width that enables mixed mode operations. A third, independent runway is proposed to the north, with an enlarged terminal zone. The scheme could be further expanded to include a fourth runway to the north of required.
Stansted 4-runway hub	Submitted by MSP Solutions. The submitter concludes that Stansted offers the best balance of cost and environmental impact, and that it should be developed into a 4-runway hub airport, along the lines anticipated by the 2003 Air Transport White Paper consultation documents. Depending on the runway configuration, up to c.950,000 ATMs could be handled by the airport.
Bigger and Quieter: Luton	Submitted by Policy Exchange and CentreForum. Develop an alternative hub at Luton. In principle, two options are presented to either build a new airport between Luton and Harpenden, or to extend the existing airport broadly along the lines of the airports former master plans.
Stansted Hub	Submitted by Manchester Airport Group; Mayor of London. Similar concepts for the provision of four (MAG) and five (Mayor of London) runways, including the current runway.

1.2.7

The second sift of proposals was undertaken by the Commission using a second, more detailed set of criteria which are listed below. This second sift developed the information considered by independently analysing the proposals according to a consistent methodology in relation to the sift criteria.¹⁴ Proposals sifted out during the second sift are displayed within Table 6. The proposals which did not meet the criteria were therefore deemed not reasonable alternatives. Table 6 also displays the Airport Commissions more detailed reasoning for the sift decisions made. The proposals that did not conflict with the second sifting criteria were not sifted out and were carried forward to the next stage of analysis. These are listed within Table 7. The second sift criteria included¹⁵:

- Strategic fit - Nature, scale and timing of the aviation capacity and connectivity delivered
 - What is the nature, scale and timing of the aviation capacity and connectivity delivered by the proposal? How will the proposal support or enhance the UK's status as Europe's most important aviation hub?

¹⁴ Airports Commission, 2013. *Guidance Document 02: Long Term Capacity Options: Sift Criteria*. [\[online\]](#) Accessed 21/03/2016.

¹⁵ Airports Commission, 2013. *Guidance Document 02: Long Term Capacity Options: Sift Criteria*. [\[online\]](#) Accessed 21/03/2016.

- Does the proposal support the Government's wider objectives and legal requirements (for example, support of national and regional economic growth, re-balancing of the economy or alignment with national climate change commitments and global targets)?
- Economy - Economic impacts
 - What are the potential national economic impacts of the proposal?
 - What are the likely impacts of the proposal on the regional/local economies surrounding a) the proposed site for new or enhanced capacity and b) other airports affected by the proposal?
 - What is the likely impact of the proposal on the UK aviation industry? How will other airports be affected by the proposals and what will the impacts of this be for air passengers and other users, airlines and the wider economy?
- Surface access - Surface access requirements and effective surface access
 - What estimate has been made of the surface access requirements of the proposal in relation to existing and new infrastructure?
 - Does the proposal provide effective surface access for passengers, businesses and relevant freight traffic?
 - How will the proposal change journey times from major business and population centres for users of aviation services?
- Environment – Air quality, noise, designated sites and others
 - What are the air quality implications of the proposal (including impacts due to aircraft, air side operation and local surface transport links)? Are these consistent with the legal frameworks for air quality? What mitigation plans are proposed?
 - What are the noise implications of the proposal?
 - Does the proposal affect any designated sites (for example Sites of Scientific Interest or Special Protection Areas) and if so how might any effects be managed?
 - How might the proposal compare, in terms of its impact on greenhouse gas emissions, with alternative options for providing a similar amount of additional capacity? What are the proposals plans for continuous improvement and reduction of carbon emissions over time?
 - Are there other significant local environmental impacts which should be taken into account?
- People - Impact upon the passenger experience
 - How will the proposal impact upon the passenger experience (eg. choice, cost, accessibility, etc.)?
 - What are the likely local social impacts of the proposal, including impacts around the proposed location for new capacity and around any other airports which would be affected?
 - Are there other significant wider social impacts of the proposal which should be taken into account?
 - How does the proposer plan to engage with local communities in taking forward their plans?
- Cost - Estimated cost
 - What is the estimated cost of the proposal, including surface access, land purchase, compensation and any other associated infrastructure? What are the associated cost assumptions and risks?
 - Is it likely that the cost can be met entirely by the private sector?
- Operational viability - consistent with relevant safety requirements and airspace constraints

- Is the proposal consistent with relevant safety requirements? What operational, safety and/or resilience risks are associated with the proposal? What measures are proposed to mitigate these?
 - Is the proposal deliverable within relevant airspace constraints? What assumptions underpin this assessment?
- Delivery – Delivery risk
- What are the main delivery risks in the proposal?

Table 6. List of proposed long-term alternatives and their reason for rejection (sift out) during the second sift.¹⁶

PROPOSAL ALTERNATIVE	OUTLINE	AIRPORTS COMMISSION DETAILED REASON FOR REJECTION
Long term – Second Sift		
Alternatives to new runways		
London Orbital	Linking the London airports by a rapid transit system to enable passengers to interline between airports. The surface transport systems would also be connected to the national rail system to facilitate improved surface access for travellers and workers.	This option does not deliver the additional capacity that will be required in the future as set out in the assessment of need. Obtaining an acceptable transfer time between airports with some of the concepts presented here would be difficult. The option would entail significant cost. Local environmental costs of the infrastructure not quantified but likely to be significant additional impact.
National Network	Substituting domestic flights from UK regional airports into the main London airports by high speed rail with two options: (i) substituting all air traffic, i.e. point-to-point and feeder, connecting traffic; or (ii) only point-to-point traffic. This would require the construction and operation of additional high speed rail links connecting the catchment areas of the regional airports to the main London airports.	This option would entail significant cost. However, with the potential to substitute domestic air journeys there is more possibility that slots at the South East airports might be freed. Analysis of the current slots shows that the potential scope for international flight substitution is limited e.g. under 7% of Heathrow's ATMs. This absolute maximum potential falls short of the identified need, even before consideration is given to the plausibility of turning these slots into additional international movements that increase international capacity. As with London Orbital, local environmental costs would likely be significant.
London Central	Enable central London to operate as a 'virtual' or actual hub, with a downtown mega-terminal connecting existing London airports.	This option does not increase the capacity of the system, rather it improves surface connectivity. Given that demand growth is forecast to exceed overall capacity within the London system, it is unlikely that this approach will mitigate the need for new infrastructure. The validity of the concept that passengers would be drawn to using the central or orbital hubs has yet to be tested, and there are several risks that are deemed not able to be satisfactorily addressed. It also involves considerable cost.
Maximum Capacity from Airport Operations	Package of proposals to maximise the use of existing capacity at South Eastern airports by removing any planning and operational constraints e.g. operational restrictions on night flights or increasing upper movement caps at Heathrow. This would allow both runways at Heathrow to be used for both arrivals and departures (mixed mode) as opposed to current operations where a single runway is currently used for arrivals and the other for departures (segregated mode). It is based on the option considered for the short and medium term.	The assessment of need concludes that by 2050, with a carbon constraint in place, there is expected to be demand in excess of existing capacity around 170,000 – 200,000 ATMs a year in the South East. It is clear from the work done for the short and medium term that of all the airport operations options looked at, mixed mode and night flights are the only ones that offer any significant additional capacity. Together these offer a maximum of an additional 60,000 ATMs coupled with very significant noise impacts and concerns over resilience. This is deemed not to be sufficient to meet the identified demand.

¹⁶ Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 6. List of proposed long-term alternatives and their reason for rejection (sift out) during the second sift.¹⁶

PROPOSAL ALTERNATIVE	OUTLINE	AIRPORTS COMMISSION DETAILED REASON FOR REJECTION
Dispersed		
Birmingham Airport	One additional wide spaced runway at Birmingham	Significant distance from the key catchment area of London makes it unlikely that this airport would cater as well as more proximate options. It would offer the largest catchment of people within two hours of the airport of all options. This is largely dependent on the journey time assumptions of HS2, which also makes the London airport system easier to access for passengers from Birmingham's core aviation market. Largest noise impacts of the group and current demand profile favours other airports in the group.
Kent County Council and Medway local authority (various)	Dispersed model of extra runways at Gatwick and Stansted	This proposal delivers an over provision of capacity compared to the assessment of need and overlaps other options for expansion at Gatwick and Stansted.
Western Gateway Group (Cardiff)	Expanded Cardiff to be part of a dispersed model	This proposal has a high cost due to its high speed requirements and does not deliver any significant additional capacity. Furthermore the very limited additional capacity it does deliver is in a region of the country where it is not clear that unfulfilled demand exists. Therefore does not meet the requirements identified in the assessment of need.
Heathrow		
Heathrow Airport (one north runway)	North Option: one new short wide spaced runway	The capacity gained by the shorter runway in this option is lower than the other two longer runway options offered by the airport. This option also has the highest number of people within the 57 LAeq contour and the most houses that will need to be demolished of all the Heathrow Ltd options. Other options in the group offer more potential.
Centre Forum, Policy Exchange joint submission (Heathrow – four west runways)	Relocate the current Heathrow runways to the west and add two more runways	This proposal entails extending the airport westwards, a concept which has also informed Heathrow Airport Ltd's proposals. There are time, cost and environmental issues associated with building over the reservoir which are not applicable to other options in the group. This option also potentially gives more capacity than is needed at a higher cost than other Heathrow options and is therefore considered less credible.

Table 6. List of proposed long-term alternatives and their reason for rejection (sift out) during the second sift.¹⁶

PROPOSAL ALTERNATIVE	OUTLINE	AIRPORTS COMMISSION DETAILED REASON FOR REJECTION
New		
AC Secretariat (New West London Heathrow – Maidenhead)	Replacement airport for Heathrow located to the west of current site between Maidenhead and Reading	The assessment of the noise impact of this option appears much greater than the others in the group. It also suffers from environmental issues such as a significant flood plain not associated with other options in the group. Potential need to demolish more houses than others in the group.
Thames Estuary Research and Development Company (outer estuary)	London Jubilee International Airport (off-shore Thames Estuary airport)	Compared against the inner estuary options, this is a more expensive proposal due to its surface access requirements and location, and it also delivers an over provision of capacity set against the assessment of need, and will place a large amount of pressure on Ebbsfleet. Its benefit over the inner Estuary proposals is the complete lack of people affected by noise but the inner Estuary offers very few people affected. The inner Estuary was therefore considered a more plausible option for further analysis.
Mayor of London (outer Estuary)	Outer Estuary – new four runway hub airport on an artificial island in the Thames Estuary	Compared against the inner Estuary options, this is also a more expensive proposal due to its surface access requirements and location. This option also delivers an over provision of capacity set against the assessment of need. The inner Estuary was therefore considered a more plausible option for further analysis.
Pleiade Associates (London Oxford)	London Oxford – New four runway hub in Oxfordshire	Although less housing would be demolished and this was cheaper with a better relative noise performance to some others in the group, this option is at a greater distance from London. This proposal would also cause the loss of over 300 hectares of high value agricultural land and would sit on a major floodplain needing significant compensatory storage provision. This area has also been earmarked as a site for a future reservoir by Thames Water.
AC Secretariat (Milton Keynes/Bedford)	New four runway hub between Milton Keynes and Bedford	Amongst the cheapest in the group and located very close to good transport links to the rest of the country, this option is, however, located further from London and the core centre of demand identified in the assessment of need than many other options in the group. This option potentially necessitates the closure of Heathrow and Luton lessening the additional capacity it supplies to the London airport system. It may also impact on the competitiveness of Birmingham and could constrain the maximum utilisation of Stansted, all of which could reduce the competitiveness and capacity of the overall airport system.

Table 6. List of proposed long-term alternatives and their reason for rejection (sift out) during the second sift.¹⁶

PROPOSAL ALTERNATIVE	OUTLINE	AIRPORTS COMMISSION DETAILED REASON FOR REJECTION
Existing		
Policy Exchange and Centre Forum (Luton Hub)	Expand Luton airport to become a four runway hub	Due to the closure of Heathrow and the reduction in capacity at Stansted for commercial and airspace issues respectively that is necessitated by this proposal, the overall effect was considered to be a likely overall reduction in capacity. Therefore despite being amongst the cheapest in the group this option was sifted out.
Weston Williamson and partners – (Luton Hub)	Expand Luton airport to become a four runway hub	Due to the closure of Heathrow and the reduction in capacity at Stansted for commercial and airspace issues respectively that is necessitated by this proposal, the overall effect was considered to be a reduction in capacity. Therefore despite being amongst the cheapest in the group this option was sifted out.
Manchester Airports Group/ Mayor of London (Stansted Hub)	Combined template incorporating both proposals for a four/five runway hub at Stansted	Although only one template was produced at this point for the two similar proposals from the Mayor of London and Manchester Airports Group only the four runway option was sifted out at this stage. The proposal for the four runways gave very little extra capacity in the system due to its likely effect on Luton and the need to close Heathrow. The five runway proposal was taken forward for further assessment.
MSP Solutions (Stansted Hub)	Proposal to expand Stansted to four runways, operate Heathrow in mixed mode and build a Severn estuary airport	As per the above proposal, very little extra capacity in the system is created due to its likely effect on Luton and the need to close Heathrow for airspace and commercial issues respectively.
AC Secretariat (Gatwick four runways)	Expand Gatwick to a three or four runway hub airport	Maximum capacity is likely to be significantly less than the requirement identified in the assessment of need. Largest number of houses likely to be demolished in the group and only middling noise performance and costs.

Table 7. List of proposed long-term alternatives not sifted out during the second sift.¹⁷

PROPOSAL ALTERNATIVE	OUTLINE
Heathrow Northwest Runway	Submitted by Heathrow Airport Limited. New 3,500 m runway constructed to the existing airport with linking taxiways to the west of the current north runway. The new runway could operate independently from the existing runways. Includes expansion of existing terminals plus new Terminal 6 immediately west of Terminal 5 serving new satellites and aprons located between the new and current northern runways.
Heathrow Southwest Runway (one additional south west runway)	Submitted by Heathrow Airport Limited. New 3,500 m runway constructed to the southwest of the existing airport with linking taxiways to the west of the current south runway. The new runway could operate independently from the existing runways. Includes expansion of existing terminals plus new Terminal 6 immediately west of Terminal 5 serving new satellites and aprons located between the new and current southern runways.
Heathrow Hub (Heathrow – extension of the northern runway)	Submitted by Heathrow Hub limited. The proposal contains two elements. Firstly, an extension of both existing runways to a length of 6,400 m enabling each runway to operate as two runways: the down-wind runway used for arrivals and the up-wind runway for departures. Secondly, a multi-modal interchange and passenger terminal, 'Heathrow Hub', located 3km north of the existing airport.
London Gatwick Airport – 2 nd Runway Options	Submitted by Gatwick Airport Limited. Three in principle options to provide a second runway to the south of the existing runway, with three centreline separations permitting dependent segregation, independent segregation and fully mixed mode as the separation is increased between options.
Stansted Second Runway (Stansted – one additional east runway)	Submitted by Manchester Airport Group. Two in principle options for the provision of a second runway: either to the northwest of the existing runway or to the east, broadly based upon the options considered for BAA's Stansted Generation 2 project. Neither option is fully defined. This proposal assumes Heathrow remains open. The closer spaced northwest runway options, depending upon separation could operate in either segregated mode or provide independent departures, whereas the wide-spaced east runway would permit fully independent mixed mode operations to both runways.
Thames Hub Airport	Submitted by Foster + Partners. New four runway airport on the Isle of Grain at the eastern end of the Hoo Peninsula on the north Kent coast. On opening of the new airport Heathrow would be closed and its site redeveloped, with the legalised value offsetting the cost of construction of the new airport. Four runway airport constructed on reclaimed land platform measuring 8.7 km by 4.2 km, 7 m above sea level. The airport comprises two pairs of wide-spaced parallel runways in an East/West orientation, each 4,000 m long. The inner pair are dependent, separated by 380 m, while each outer and inner pair are proposed to be operated independently, being separated by 1,570 m.
London Gateway Airport	Submitted by International Aviation Advisory Group (IAAG). A package of short, medium and long Term measures, commencing with the introduction of mixed mode for resilience at Heathrow, construction of a second runway at Gatwick, and construction of a 3-runway 24-hours hub airport, on the western end of the Hoo Peninsula in Kent.

¹⁷ Airports Commission, 2013. *Long Term Options: updated sift 2 templates*, [[online](#)] Accessed 05/04/2016.

Table 7. List of proposed long-term alternatives not sifted out during the second sift.¹⁷

PROPOSAL ALTERNATIVE	OUTLINE
Metrotidal Tunnel and Thames reach Airport	New airport constructed on an artificial island in the Thames Estuary, immediately north of the Hoo Peninsula. The proposer states that other airport, notably Heathrow, Gatwick and Stansted, would be constrained to their current capacity to encourage growth with the establishment of a hub operation at the new airport, potentially in a split hub with Heathrow. Amongst a number of runway configurations submitted, proposer's preferred option is the east configuration of a four runway airport, each pair of runways in line East-West, with further scope to extend.
London Britannia Airport	New five (expandable to six) runway airport on a purpose-built island off the north Kent coast. On opening of the new airport Heathrow would be closed and its site redeveloped, with the realised value offsetting the cost of construction of the new airport. Construction on 15 km by 6 km reclaimed land platform with option to expend to 6 runways. Runways of unspecified length, aligned E/W. Triple independent approaches with dual independent departures or vice-versa.
Isle of Grain	Submitted by Mayor of London. New four runway airport, developed on the Isle of Grain at the eastern end of the Hoo Peninsula on the north Kent coast, as a direct replacement for Heathrow. Partially constructed on reclaimed land with a total site area of 55 m ² . The airport comprises four independent parallel runways in an East/West orientation, each 4,000 m long.

- 1.2.8 The Commission reviewed the proposals and decided to combine elements of the inner Estuary proposals from Foster and Partners, the International Aviation Advisory Group, Metrotital Limited and Transport for London into one package. In addition, the Commission decided to combine elements of the various Heathrow proposals to offer an option with four runways at Heathrow.¹⁸
- 1.2.9 The final sift assessed the remaining eight proposals, listed in Table 8 and 9, in more detail and additional work was carried out including¹⁹:
- Capacity analysis was developed;
 - Noise modelling was further refined;
 - Surface access analysis was refined;
 - Costs were refined;
 - A 45 minute isochrone was developed;
 - Likely financing opportunities of each option were assessed;
 - Analysis of local and regional GVA was undertaken; and
 - Further specific study into the economic, financial, and social impacts of closing Heathrow was completed.
- 1.2.10 A list of long-term alternatives sifted out during the final sift are presented within Table 8. These proposals were sifted by the Commission, supported by the additional work carried out, for not meeting a number of the sift criteria listed in Section 1.2.7. Therefore, these proposals were deemed not reasonable alternatives. Further detail for those proposals sifted out at this stage is also provided within Table 8. Those proposals that did not conflict with the sifting criteria listed in Section 1.2.7, were taken forward for further consideration and formed the short list of sites. These four short-listed proposals are listed in Table 9.

¹⁸ Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

¹⁹ Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 8. List of proposal long-term alternatives and their reason for rejection (sift out) during the final sift.²⁰

PROPOSAL ALTERNATIVE	OUTLINE	AIRPORTS COMMISSION DETAIL REASON FOR REJECTION
Long term – Final Sift		
Stansted – one additional east runway	Proposed by Manchester Airports Group. The most easterly and wide spaced of the two options submitted for a second runway at Stansted, which would allow for fully independent operation on both runways	<ul style="list-style-type: none"> - Uncertain that it would provide an effective solution to wider emerging capacity constraints and there is a lesser immediate catchment around the Stansted area than at Gatwick or Heathrow. - Rail journey times to Stansted are longer (over 40 minutes) from central London than for other options. - There are potential impacts on 39 listed buildings and two Scheduled Monuments, more than any other option at this stage for one additional runway. - To fund the debt requirement without government funds, the aeronautical charges would have to increase to around 1.6 times Heathrow's Q6 charges
Heathrow – one additional south west runway	Proposed by Heathrow Airport Ltd. New 3,500 m runway constructed to the southwest of the existing airport with linking taxiways to the west of the current south runway.	<ul style="list-style-type: none"> - The proposed location would cause the loss of the King George IV reservoir and a reduction of the Wraysbury reservoir (SPA/Ramsar). This impact would require an alternative storage capacity of around 22 million m³ meaning a new reservoir would be required in a location unknown at this stage. - An initial conclusion was that to replace the reservoir could take up to 14 years, and that replacement should take place before construction of any new airport infrastructure, in order to maintain supplies to London - Locating on this area would potentially cause a flood plain loss of ~ 670 hectares requiring over 1.4 million m² of compensatory storage. - The EA has plans to construct a new flood diversion channel in the Lower Thames which the proposed runway would cross.

²⁰ Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 8. List of proposal long-term alternatives and their reason for rejection (sift out) during the final sift.²⁰

PROPOSAL ALTERNATIVE	OUTLINE	AIRPORTS COMMISSION DETAIL REASON FOR REJECTION
Heathrow – four runways	Heathrow Airport Ltd did not put forward a fully developed proposal for four runways (although the concept was described in their submission), however, the Commission looked at this option to ensure there was a full understanding of the possible future of Heathrow. Of the several possible options a fourth runway north of the north west option was analysed. This was chosen as it minimised the cost and avoided creating two separate airport operations at the site, as would have been necessary if the fourth runway was built to the south west of the airport.	<ul style="list-style-type: none"> - It may be difficult to realise the full additional benefit of the additional runway in the current London airspace architecture, due to potential impacts on other traffic, potentially resulting in little or no additional capacity. - The projected capacity if fully realised would be in excess of identified need, which a single additional runway at Heathrow satisfies. - The additional costs of a fourth runway bring extra costs for airport and highway infrastructure as well as the runway, without it being clear that this extra capacity is desirable or possible. - The fourth runway would require further disruption to the road system around Heathrow. - More houses lost than other options except for Estuary which has a similar impact.
Stansted – five runways	The proposal submitted by the Mayor of London was for four additional runways plus the retention of the existing runway. The current runway and terminal would be used to serve low-cost carriers with the four further runways built adjacent to the current airport site. These four would be wide spaced independent runways. This would require the closure of Heathrow for commercial reasons and reduction in capacity of Luton and London City.	<ul style="list-style-type: none"> - with the large surface access requirements as with the Estuary, on top of the new airport costs, the total cost is very large (although lower than the Estuary) and far higher than the expansion of an existing airport; and, - these costs do not include any finance required for buying and closing Heathrow and the resulting requirements to making it attractive to investors, nor any costs relating for compensation to Luton or London City for any necessary reduction in their capacity. - significant additional surface transport infrastructure would be required which would add to the cost, complexity and risk associated with the proposal; and,

Table 9. List of proposal long-term alternatives that required further assessment or were short listed, and the reason for the decision.²¹

PROPOSAL ALTERNATIVE	OUTLINE	REASON FOR DECISION
Long term – Further assessment		
Isle of Grain (Thames Estuary)	A four runway option considered for the Thames Estuary area developed by the Commission incorporating elements from several proposals submitted to the Commission that would give the maximum noise reduction available and the best chance of avoiding an impact on the LNG facility at the south east corner of the Isle of Grain.	A key advantage of this option is that it would deliver the most significant noise reduction of any of the options considered at this stage, effectively solving the problem of airport noise for all but a few thousand people in the South East. It also has potentially lower air quality impacts than most of the other options considered. It would additionally create a new pole of economic development east of London and an opportunity for substantial redevelopment of the Heathrow site. In addition its operations would be subject to fewer restrictions than Heathrow for noise or night operational reasons. Possible challenges include a potentially very large cost, impacts on two Special Protection Areas (SAP) and two Ramsar Sites, is likely to require a significant government subsidy (no precedent for such a large infrastructure project in the UK), aeronautical charges would have to increase over three times that of the proposed Heathrow Q6 charges to break even, large requirements for new surface access and would require both Heathrow and London City to close.
Long term – Short-list		
Gatwick – one additional south runway	Proposed by Gatwick Airport Ltd. Assessment based on the widest spaced runway of the three options provided by the proposer for a second runway to the south of the existing runway, permitting fully independent mixed mode to both runways.	An expanded Gatwick could operate at 70% capacity in 2030 and could be achieved at a relatively low cost, Stansted offering the only cheaper option. The strong demand suggests that finance could be credibly found, although some Government support may be necessary. Local noise impacts are of a similar order of magnitude to other incremental expansions of existing airports. No internationally designated sites are directly impacted though there may be indirect impacts on nearby Sites of Special Scientific Interest, Conservation Areas and Scheduled Monuments. There is some potential for local and regional economic and employment benefits.

²¹ Airports Commission, 2013. *Appendix 2: Assessment of Long-term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 9. List of proposal long-term alternatives that required further assessment or were short listed, and the reason for the decision.²¹

PROPOSAL ALTERNATIVE	OUTLINE	REASON FOR DECISION
Heathrow – one additional north west runway	Proposed by Heathrow Airport Ltd. New 3,500 m runway constructed to the northwest of the existing airport with linking taxiways to the west of the current north runway.	Demand forecasts indicate that expansion at Heathrow would see the airport operating at around 80-90% capacity by 2030, with a new runway in place. The costs would be similar to the Heathrow extended northern runway. This would be more expensive than additional runways at Stansted and Gatwick but cheaper than the south west runway at Heathrow. It would be orders of magnitude cheaper than any of the new hub airport options. The connections and proximity to central London and the catchment area of the airport is amongst the best of the options considered. The site would potentially have indirect impacts on some internationally designated sites and would require the demolition of significant numbers of residences and impacts on local cultural heritage. Overall noise impacts at Heathrow are higher than at any of the other locations under consideration.
Heathrow – extension of the northern runway	Proposed by Heathrow Hub Ltd. Firstly, an extension of the most northerly existing runway to a length of 6,400 m enabling it to operate as two runways. This option was reduced from the proposer's four runway option to three runways to allow for comparison with other Heathrow Airport three runway options. Secondly, a multi-modal interchange and passenger terminal, "Heathrow Hub", located 3 km north of the existing airport.	Impacts for this option are broadly similar to those for the north west runway with a small number of key exceptions. The noise impacts are worse at 57 LAeq as the additional traffic is focussed on the same approach paths, however noise impacts at night would be lower than for the north west runway option. The novel nature of the proposal introduces some risks to the delivery of the capacity as a safety case will need to be made. Impacts on local cultural heritage are less significant and would result in few demolitions of residential properties than for the north west runway option.

1.3 SHORT-TERM OPTIONS

- 1.3.1 The Airports Commission addressed how the UK could make the best use of its existing capacity in the short- and medium-term, until any new capacity could be delivered. This was to fulfil the Commission's terms of Reference²², which state the Commission should report:

'its recommendation(s) for immediate actions to improve the use of existing runway capacity in the next 5 years – consistent with credible long term options'

- 1.3.2 The commission determined that the Terms of Reference required it to identify a set of measures which could be implemented relatively quickly and without prejudice to the deliverability of any of the long-term options for new capacity.²³

- 1.3.3 The Commission considered proposals received in submissions against its own initial inventory of options, breaking them into categories. The Commission then collected more information on the potential impacts and conflicts of proposals in order to produce a medium- and short-term recommendation including²⁴:

- An 'Optimisation Strategy' to improve the operational efficiency of UK airports and airspace, including:
 - Airport collaborative decision making;
 - Airspace changes supporting performance based navigation;
 - Enhanced en-route traffic management to drive tighter adherence to schedules; and,
 - Time based separation.
- Trials at Heathrow of measures to smooth the early morning arrival schedule to minimise stacking and delays and to provide more predictable respite for local people.
- The establishment of a Senior Delivery Group to drive forward the implementation of the Future Airspace Strategy and the delivery of the Commission's recommendations.
- The creation of an Independent Aviation Noise Authority to provide expert and impartial advice about the noise impacts of aviation and to facilitate the delivery of future improvements to airspace operations.
- A package of surface transport improvements to make airports with spare capacity more attractive to airlines and passengers, including:
 - The enhancement of Gatwick Airport Station;
 - Further work to develop a strategy for enhancing Gatwick's Road and Rail Access;
 - Work on developing proposals to improve the rail link between London and Stansted;
 - Work to provide rail access into Heathrow from the South; and,
 - The provision of smart ticketing facilities at airport stations.

²² Airport Commission, 2016. *Terms of reference*. [\[online\]](#) Accessed 21/03/2016.

²³ Airports Commission, 2013. *Airports Commission: Interim Report, Appendix 1: Assessment of Short- and Medium-Term Options*. [\[online\]](#) Accessed 21/03/2016.

²⁴ Airports Commission, 2013. *Airports Commission: Interim Report, Appendix 1: Assessment of Short- and Medium-Term Options*. [\[online\]](#) Accessed 21/03/2016.

1.3.4

The proposals received which helped to develop the above medium and short-term recommendations, as well as the Commission conclusions, are displayed in Table 10. A number of options have resulted in similar conclusions due to the final recommendations set out above. The Commission's view of these options is summarised above. Further information is provided within Section 2 of the Airports Commission's Assessment of Short- and Medium- Term Options Appendix²⁵.

²⁵ Airports Commission, 2013. *Airports Commission: Interim Report, Appendix 1: Assessment of Short- and Medium-Term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
Airport operations options		
1	<p>Application of the alternation regime on easterly operations (Heathrow):</p> <p>Heathrow's runways are operated in segregated mode where one runway is used for arrivals and the other for departures. The arrival and departure runways are alternated at 15:00 each day to give those living under the flight paths respite from noise. For historical reasons, there is no alternation of the runways on easterly operations. This measure would support a move to a full alternation regime.</p>	see recommendation
2	<p>Removal or change to the westerly preference criteria (Heathrow):</p> <p>Heathrow's runways are oriented east-west and due to the prevailing wind the airport operates mainly with arrivals and departures to the west, i.e. flying into the wind. This is supplemented by a 'westerly preference' during daytime operations, which means that the airport continues to operate in a westerly direction until the easterly component of the wind (effectively the tailwind) exceeds 5 knots. This measure would support a change to this preference either by (a) removing it so that aircraft would always operate into the wind; or (b) increasing it so that a 10 knot easterly (tailwind) would be needed before the switch were made away from westerly to easterly operations.</p>	see recommendation
3	<p>Use of displaced thresholds:</p> <p>This would allow aircraft to land further towards the centre of the runway, meaning that their approach paths would be higher and therefore less noisy than at present when entering the airport perimeter. This measure has been proposed in relation to London Heathrow but could be considered in relation to other airports in the UK.</p>	The Commission sees merit in considering further the feasibility of displaced thresholds at Heathrow. Further work is required to understand the full costs and benefits of this proposal, including the infrastructure changes required, the safety risks, the impact on runway occupancy and therefore capacity, and the corresponding noise impacts before a recommendation can be made. However, this proposal should be considered further as part of the work to develop the long-term options.
4	<p>Putting an end to the routine use of both runways for arrivals between 06:00 and 07:00 (Heathrow):</p> <p>This would see a redistribution of existing flights in the early morning arrival period permitting an increased number of arrivals in the 05:00 – 06:00 period in order to reduce the use of both runways for arrivals in the early morning period to mitigate community disturbance.</p>	see recommendation

²⁶ Airports Commission, 2013. *Airports Commission: Interim Report, Appendix 1: Assessment of Short- and Medium-Term Options*. [\[online\]](#) Accessed 21/03/2016.

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
5	<p>Introducing measures assessed during the recent Operational Freedoms trial at Heathrow including 'early vectoring' to improve departure rates; tactically using both runways for arrivals when there are delays and using the southern runway for the arrival of A380s and for Terminal 4 arrivals:</p> <p>These measures were trialled as part of the Operational Freedoms trial in 2012/13 at Heathrow to enable a more flexible approach to the operation of the runway infrastructure. The original objective of the Operational Freedoms trial was to test the way in which changes to operational practices might have a beneficial effect on the reduction in delays experienced by users, improvement in flight punctuality and the increased resilience of the flying schedule. The specific measures proposed are as follows:</p> <p>'Early vectoring' – Aircraft departing from Heathrow follow set departure routes (known as Noise Preferential Routes or NPRs). The choice of departure route used by aircraft is mostly decided on their destination. Those heading to Scandinavia for example will use northerly departure routes whereas those destined for southern Europe will use southerly departure routes. Due to the fact that the majority of the destinations served by Heathrow are destined towards the south, this can often cause delay on departure. 'Early vectoring' was the procedure tested during the trial which saw departures using southerly departure routes being redirected from the departure route earlier than is usual. This meant the separations between aircraft could be reduced from two minutes to one minute on these southerly departures.</p> <p>Tactically using both runways for arrivals – Heathrow's runways are operated in segregated mode where one runway is used for arrivals and the other for departures. When the build-up of arriving aircraft results in severe delays, air traffic control is allowed to land aircraft on both runways. This is known as Tactically Enhanced Arrivals Mode (TEAM). This measure was only used when specific trigger conditions were met.</p> <p>Using the southern runway for the arrival of A380s and for Terminal 4 arrivals – The A380 is the biggest aircraft that operates at Heathrow. Due to the vortex it produces, aircraft behind it have to allow a greater distance when coming in to land. This can lead to a delay in the arrivals programme. This measure would take A380s out of the arrival sequence to land on the designated departure runway so as not to disrupt the arrival flow. The use of the southern runway for Terminal 4 arrivals is intended to reduce the time needed for aircraft to taxi to the terminal on arrival as Terminal 4 is situated south of the southern runway. This could potentially reduce ground noise and emissions and avoid the need to cross the southern runway, therefore reducing disruption.</p>	see recommendation

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
6	<p>Mixed mode at Heathrow:</p> <p>Introduction of mixed mode operations for Heathrow runways would allow both runways to be used for arrivals as well as departures, whereas a single runway is currently used for arrivals and the other for departures. This measure has been proposed in two forms: to increase capacity at Heathrow (which would necessitate an additional planning condition to allow for more aircraft movements) and to increase resilience (not necessitating a change to the number of aircraft movements allowed under the planning rules applied at Heathrow) either as a tactical solution when delays reach certain levels or as a full time measure.</p>	<p>The Commission's view is that mixed mode – both for resilience and for additional capacity – should not form part of its recommendations for making best use of existing capacity in the short-term. Instead, the option should be given further consideration as part of the transition scenarios for the long-term options taken forward for further development. More information on the Commission's consideration of mixed mode can be found in Chapter 5 of the Interim Report.</p>
7	<p>Airport Collaborative Decision Making (ACDM):</p> <p>This measure is about partners (airport operators, aircraft operators/ground handlers, air traffic control and the Network Manager) working together more efficiently and transparently in the way they make decisions and share data. At an airport level, the ACDM system would aim to improve the overall efficiency of operations with a particular focus on aircraft turnaround times and the pre-departure sequence. One of the main outputs of the ACDM process is intended to be more accurate information about aircraft Target Take Off Times which could then be used across the European Air Traffic Management Network to plan air traffic movements further into the system.</p>	<p>see recommendation</p>
8	<p>National and local capacity management cells:</p> <p>This proposal supports the establishment of airport bodies representing the range of airport stakeholders. The aim of these bodies is to manage demand levels as well as prioritising access to airports and airspace to minimise the impact of adverse conditions.</p>	<p>The Commission notes that Gatwick and Heathrow airports have established capacity management cells to balance demand and capacity, particularly to manage major disruption. If capacity management cells would be beneficial on a national level, industry should work together to identify an appropriate body to take this forward.</p>
9	<p>National and local capacity management cells:</p> <p>This proposal supports the establishment of airport bodies representing the range of airport stakeholders. The aim of these bodies is to manage demand levels as well as prioritising access to airports and airspace to minimise the impact of adverse conditions.</p>	<p>The Commission notes that Gatwick and Heathrow airports have established capacity management cells to balance demand and capacity, particularly to manage major disruption. If capacity management cells would be beneficial on a national level, industry should work together to identify an appropriate body to take this forward.</p>
10	<p>Reduced engine taxi:</p> <p>This measure would involve aircraft taxiing to and from the runway using a reduced number of engines. This has the potential to reduce fuel burn and therefore emissions such as carbon dioxide and nitrogen oxides.</p>	<p>see recommendation</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
11	<p>Use of electric vehicles airside:</p> <p>This proposal supports the use of electric vehicles for airside operations to decrease the emissions associated with ground operations.</p>	see recommendation
12	<p>Traffic light systems for aircraft to maximise runway utilisation:</p> <p>This measure has been proposed to reduce the time taken for aircraft to exit the taxiway onto the runway by providing aircrew with an indication that their air traffic control clearance is imminent through a traffic light system. This would allow them to initiate final checks and power settings and thus move onto the runway sooner than would otherwise be the case, because it is suggested that there is a small delay incurred due to the reaction time between air traffic control giving an instruction to proceed and the aircrew enacting that decision.</p>	The Commission does not recommend this measure. There are no existing precedents for this system and it is not clear what the benefits of this proposal are.
13	<p>More use of remote stands:</p> <p>This measure proposes the use of additional remote stands away from the main terminal areas to provide additional parking space for aircraft to reduce congestion on the busiest parts of the airfield.</p>	The Commission believes that this measure is for airports and their own master-planning. The Commission does not recommend this measure.
Airspace operations options		
14	<p>Airspace restructuring:</p> <p>This measure supports the implementation of major programmes, including the Single European Sky (SES) / Single European Sky Air Traffic Management Research (SESAR), Future Airspace Strategy (FAS), the London Airspace Management Programme (LAMP) and the more specific airspace changes that underpin them. It also includes aircraft departing at steeper angles of ascent so that the aircraft reaches higher altitudes earlier. The Single European Sky (SES) initiative was established to simplify and harmonise airspace structures across Europe. As part of the Single European Sky initiative, SESAR (Single European Sky ATM Research) represents its technological dimension. In the UK and Ireland NATS are setting out a plan to modernise airspace by 2020 supporting the Future Airspace Strategy, part of which includes the London Airspace Management Programme. These programmes are intended to redesign airspace structures to exploit aircraft abilities to fly precise and efficient trajectories using performance based navigation.</p>	See recommendation

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
15	<p>Civil/military airspace optimisation:</p> <p>This measure proposes the reprioritisation of access to airspace from military to civil operations. Currently airspace is structured so that military authorities have control of some areas where weapons testing occurs from time to time for example. Under current arrangements within the so called flexible use of airspace, this airspace is released for civil use when it is not required by the military. Decisions to release airspace for civil use are taken by military authorities. This measure would impose a limit on military operations that impinge on civil traffic, effectively releasing the airspace for more civil use.</p>	See recommendation
16	<p>Creation of a known-surveillance environment:</p> <p>This would lead to the definition of areas of airspace within which all aircraft must carry technology that identifies them and makes them visible to air traffic control all of the time.</p>	The Commission recommends that the CAA and NATS should re-consider the options for managing the risk of infringements into airspace around airport arrival and departure routes from aircraft not fitted with transponders.
17	<p>Incentivisation of flights' arrival punctuality instead of departure punctuality:</p> <p>This would move the main performance incentive from on-time departure to on-time arrival to align the objectives of individual airlines to those of the overall system more than at present. Currently the main incentive for airline performance is focused on departures, measured as the time that the aircraft leaves its stand compared to its scheduled time. This incentive can cause perverse behaviours that compound to the detriment of the system as a whole. These behaviours include: (a) excessive buffers in schedules, to ensure on-time arrival in time for on-time or early departure, which can cause bunching in arrivals that leads to delay and in turn leads to increased buffers in the schedule; (b) early push- back from stand that can cause queues in the airport perimeter and departure delays.</p>	<p>The Commission does not consider it possible in the short-term to achieve whole industry shift to arrival punctuality, which is what would be needed to implement this effectively.</p> <p>Industry should, however, work to consider incentivising arrival punctuality in the context of improved performance and schedule adherence as part of the transition to long-term options to make best use of additional capacity when it comes on stream.</p>
18	<p>Redefining the triggers for the application of low visibility procedures (LVP):</p> <p>This measure would lead to improved planning for reduced runway visibility due to fog and cloud at an early stage to improve resilience against low visibility. Low visibility procedures are enacted when either the runway visible range or cloud ceiling is below minima defined on an airport-by-airport basis. There is currently no differential between LVP caused by reduced runway visual range (fog) and low cloud ceiling. Pre-emptive action is taken, usually the day before, to manage disruption due to the application of LVP. This action is based on the weather forecast and can lead to changes in the number of aircraft that are allowed to land and take off from the runway.</p>	The Commission recommends industry continues to work to review the triggers associated with low visibility procedures, particularly those associated with low cloud.

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
19	<p>Distributing departure routes within noise preferential route (NPR) swathes:</p> <p>This would change the policy of concentrating aircraft on only a few flight paths to one of using a greater number of routes in a pattern that could provide additional predictable periods of respite from aircraft flying.</p>	See recommendation
20	<p>Arrival queue management:</p> <p>This measure has been proposed to address the management of inbound delay. At present air traffic control manage holding delays in two forms: (a) holding on the ground at the origin airport arranged through Eurocontrol through Air Traffic Flow Management, and (b) holding in the air. This occurs in four stacks which are used to buffer inbound aircraft to Heathrow. This measure proposes the absorption of delays associated with sequencing for access to runways further upstream on the aircraft's flight path thereby reducing the need for more localised holding in stacks or through extended approach paths.</p>	See recommendation
21	<p>Enhanced processes against weather disruption through the use of Time Based Separation (TBS) and through the use of alternative navigational technology:</p> <p>Inbound delays are exacerbated during periods of bad weather when the number of aircraft able to land on the runway is reduced. This is principally because of the need to maintain safe separation between approaching aircraft in an arrivals stream. In high (head) winds and low visibility, the separation between aircraft needs to be increased: in the first case to maintain the separation standards defined in terms of distance between aircraft, and in the second case to ensure the safe functioning of the precision guidance system (the Instrument Landing System – ILS) for approaching aircraft to guide them to land on a runway. In busy airports the number of arrivals are packed together to allow for maximum runway throughput. As such, they are more prone to weather disrupting their operations. This measure would address the impacts of high winds on runway throughput by moving to a process based on separations in time between successive aircraft in the sequence (time based separations) rather than distance-based separation as at present. It would allow for the arrival traffic to be reduced to a lesser extent than currently occurs. This measure also supports the transition to a Microwave Landing System (MLS) already used by British Airways, instead of the current Instrument Landing System (ILS). MLS is considered to perform better in all weather conditions than ILS.</p>	See recommendation

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
22	<p>Steeper approaches into airports, including both continuous and stepped:</p> <p>This measure would increase the height of aircraft as they make their final approach to the airport, thereby reducing noise. Approach paths could either be at a continuous approach angle (between 3.2 and 3.5 degrees) or be stepped at different angles (with a steeper intermediate approach followed by the standard 3 degree airport approach).</p>	<p>The Commission supports the principle of steeper approaches but has not been able to prove a strong noise benefit from the introduction of 3.2 degree approaches at Heathrow. Steeper approaches at steeper angles do not appear feasible at Heathrow due to the current fleet mix, with the impact on the landing rate unknown. The Commission considers these issues should form part of any future trials of steeper approaches and, if the benefits can be proved, that steps be taken to implement them.</p>
23	<p>Dual approaches to a single runway:</p> <p>This would use differential approach path angles to reduce the separation needed because of aircraft wake vortex constraints, thereby increasing the arrival flow on the runway.</p>	<p>There appear to be significant concerns about the operational viability of this measure and uncertainty about its benefits. In addition, the complexity of preparing safety cases would be likely to push implementation past the short-term.</p>
24	<p>Multiple approaches to a single runway to guarantee respite:</p> <p>This measure would allow for a change to the policy of concentrating aircraft on only a few flight paths to one of using a greater number of routes in a pattern which could provide predictable periods of respite from aircraft flying.</p>	<p>See recommendation</p>
25	<p>Independent parallel approaches at Heathrow:</p> <p>This measure supports the use of both runways simultaneously for arrivals at Heathrow, allowing independent parallel approaches that would maximise arrival runway throughput. At present when both runways are used for arrivals, the air traffic stream on one runway is dependent on the traffic stream on the other. This means that aircraft must be offset from each other, meaning that the arrival flows are not optimised.</p>	<p>See recommendation</p>
26	<p>New service concepts:</p> <p>Currently queues of aircraft are managed on a first-come, first-served basis. This can sometimes result in behaviours that are detrimental to the performance of the system as a whole, eg. in incentivising flights to be at the front of the queue, for example when the airport opens after the night period or after periods of disruption. This can cause bunching and increased aircraft queue lengths on arrival, particularly at busy airports like Heathrow. This measure would result in the application of the most appropriate method of aircraft queue management, selected from 'first-come, first-served' (as at present), 'on-time, first-served' (where priority is given to flights that are on-time) or 'best-equipped, best-served' (where priority would be given to the most capable aircraft).</p>	<p>The Commission understands the benefits that could be derived from moving away from a system of first come, first served but considers that in the short term without additional capacity, this is an unrealistic expectation. There is, however, merit in considering whether a system that prioritised better equipped aircraft would provide an incentive for airlines to invest in performance based navigation capability, which could facilitate the introduction of the Future Airspace Strategy and the Commission's recommendations.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
27	<p>Linking airspace slot management to airport slots:</p> <p>This measure proposes the management of airport and airspace slots linked, strategically in terms of capacity declaration but also tactically, as was applied to the London airport system during the London 2012 Olympic Games.</p>	The Commission is not recommending this option as it would likely create a regulatory burden, distorting the business jet market
28	<p>Optimised departure separation using advanced aircraft navigational technology:</p> <p>Currently, aircraft fly along Standard Instrument Departure routes (SIDS) that are defined as the centreline of established Noise Preferential Routes (NPRs). SIDS are single routes and departing aircraft using the same SID fly in sequence along the route with their minimum separations as defined by the air traffic control baseline rules. For a constant stream of aircraft departing down the same SID, these separation rules are a constraining factor on the frequency of departures. This measure is seeking to offset the angle between SIDS so that the departures no longer need to fly in sequence down one SID. This would effectively relax the required minimum separation required therefore increasing the frequency that aircraft can depart the runway. Most aircraft are now equipped with advanced navigational capability, which means they can accurately navigate routes without extensive air traffic control intervention. This concept would require airspace change and potentially a redefinition of NPR but could enable aircraft to be dispersed within the NPR rather than being concentrated on the centreline as at present.</p>	See recommendation
Slot / scheduling options		
29	<p>Return to direct Government control regarding the allocation of slots:</p> <p>The measure proposes Government asserting control over the allocation of slots at UK airports, distributing them in accordance with its assessment of the national interest.</p>	<p>The Commission does not recommend this measure. There has never been direct Government control of slot allocation.</p> <p>Government taking control would place it in violation of European and broader international treaty commitments.</p>
30	<p>Use of Public Service Obligation (or other means) to safeguard UK regional access to Heathrow:</p> <p>This measure proposes the use of Public Service Obligations (PSOs) or, alternatively, financial or regulatory instruments to ensure the continuance of flights from UK regions into Heathrow Airport.</p>	The Commission does not recommend this measure. The rules surrounding PSOs would not allow for this, and the Commission are unconvinced of the benefits of this measure.
31	<p>Designate different airports to serve different types of traffic:</p> <p>This measure would use Traffic Distribution Rules (or other mechanisms) to allocate certain categories of flight (e.g. short-haul, long-haul, domestic, general aviation) to specific airports.</p>	<p>The Commission does not recommend this measure. The Commission believes that the Government's levers of influence in this area are minimal and that attempting to impose changes to traffic distribution would be rendered unworkable by the commercial realities of the industry.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
32	<p>Reduce capacity declaration at airports and ensure the efficient utilisation of slots:</p> <p>This measure would provide a lower capacity declaration at airports, to manage down congestion over time (or prevent airports reaching full capacity) so as to minimise the impacts of congestion on resilience. The proposal would be for a greater focus to be provided on the efficient utilisation of slots through the slot allocation process.</p>	<p>The Commission does not recommend this measure.</p> <p>International treaties would render the implementation of this measure effectively unworkable.</p>
33	<p>Changes to market based slot allocation mechanisms (eg slot auctioning or slot rentals):</p> <p>This would change the systems for slot allocation to permit more diverse market-based solutions, such as slot auctions, allowing the system to better respond to changes in demand.</p>	<p>The Commission does not recommend this measure. While the Commission believes that there may be a case for a review of slot allocation mechanisms in the longer term, it does not see any prospect of change in the short or medium term. Changes to slot mechanisms would require agreement at the European and broader international level, which would be difficult to achieve.</p>
34	<p>Financial incentives to use slots for routes to emerging markets:</p> <p>This option would provide financial incentives for airlines to use slots to provide new routes to emerging markets rather than serving existing 'thick' routes, with a view to enhancing connectivity to these regions.</p>	<p>The Commission does not recommend this measure. The Commission believes that there is a high potential for gaming of the system and the creation of perverse incentives, together with the risk of market distortion. Changes to slot mechanisms would require agreement at the European and broader international level, which would be difficult to achieve.</p>
35	<p>Operation of an optimised, daily service plan:</p> <p>This measure proposes operating to an optimised daily service plan to produce, ensure compliance with and deliver an optimal on-the-day arrival and departure schedule based on accurate predictions of runway throughput rates.</p>	<p>See recommendation</p>
Regulatory options		
36	<p>End economic regulation of airports:</p> <p>This would see the end of the Civil Aviation Authority's economic regulation of airports, with a particular view to allowing the consequent rise in landing charges at the most congested airports to redistribute traffic around the network.</p>	<p>The Commission will consider the regulatory structures that might underpin the delivery of future airport infrastructure as part of Phase 2.</p>
37	<p>Reduce landing charges at Heathrow and Gatwick:</p> <p>This proposal would introduce a tougher cap on landing charges at these airports via the regulatory framework with the intention of reducing ticket prices for passengers and driving operating efficiencies.</p>	<p>The Commission recognises that it is the role of the CAA to regulate the aviation sector and believes that this measure may have some merit in being further considered as part of the wider regulatory framework considerations in Phase 2 as appropriate.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
38	Prohibit certain aircraft types (e.g. freighters) from congested airports: This measure would require aircraft whose perceived need to use a 'hub' airport is lower than others to use airports other than Heathrow.	The Commission does not recommend this measure. The Commission believes that the market has already provided incentives that have minimised the use of the types of flight under consideration at the most congested airports.
39	Ban general and business aviation from congested airports: This would prevent general and business aviation flights from using Heathrow (and potentially Gatwick), with the intention of improving capacity usage at those airports.	The Commission does not recommend this measure. The Commission believes that the market has already provided incentives that have minimised the use of the types of flight under consideration at the most congested airports.
40	Remove restrictions on usage of general aviation airfields (e.g. to allow for scheduled flights): This measure would remove the restrictions under which some airfields primarily serving the general aviation community currently operate, allowing them to accommodate scheduled flights, relieving pressure elsewhere in the network.	The Commission favours this measure in principle but believes that this should be assessed on a case-by-case basis and the decision left to the airfield and local authority.
41	Streamline planning process for new airport infrastructure: This is proposing a reform to the UK's planning laws to accelerate the process for delivering new airport infrastructure.	The Commission believes that this measure has merit in being further considered as part of Phase two as appropriate
42	Establish an independent noise regulator: This measure would lead to the creation of an independent body responsible for the regulation of aircraft (and potentially other sources of) noise, to introduce transparency and consistency into the system.	The creation of an Independent Aviation Noise Authority forms part of the Commission's Optimisation Strategy.
43	Border control reforms: A number of measures have been proposed, including reforms to the UK's visa system, an increase in the number of border control staff at airports, and the provision of US border-control facilities in UK airports.	This is not technically within the Commission's remit, although the Commission recognises that this forms an important part of passenger experience. The Commission invites the Government to consider this further.
44	Minimum aircraft size rules at congested airports: This measure would prohibit small aircraft from using the most congested airports via licence condition.	The Commission does not recommend this. Evidence shows that the market is already working to remove smaller aircraft that are not essential for supporting the passenger base required for larger aircraft on long haul routes and providing connectivity for more distant UK regions.

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
Air Passenger Duty (APD) options		
45	<p>Reduce or abolish Air Passenger Duty:</p> <p>This would reduce the level of Air Passenger Duty (or remove it altogether) to increase the financial viability of routes connecting the UK to new destinations.</p>	<p>The Commission did not feel that changes to the overall scale of APD were deliverable.</p>
46	<p>Increase Air Passenger Duty:</p> <p>This measure proposes an increase in Air Passenger Duty (or the introduction of equivalent new taxation) to reduce the demand for flying.</p>	<p>The Commission did not feel that changes to the overall scale of APD were deliverable.</p>
47	<p>Devolve to Scottish and Welsh Governments:</p> <p>This would allow the devolved administrations to set the rate of Air Passenger Duty that would be applied at Scottish and Welsh airports.</p>	<p>The Commission was concerned that this proposal had the potential to create market distortions between airport pairs such as Bristol/Cardiff and Edinburgh/Newcastle.</p>
48	<p>Apply to transfer passengers:</p> <p>This proposal would change the rules surrounding Air Passenger Duty so that it applies to passengers connecting via UK airports without leaving the 'airside' area of the airport.</p>	<p>The Commission did not feel that the emerging analysis on the value of transfer traffic had made a case for this measure at this time.</p>
49	<p>Regional variation of Air Passenger Duty:</p> <p>This would apply a lower rate of Air Passenger Duty at airports outside of London and the South East.</p>	<p>The Commission considered 49 and 50 together, with a primary focus upon 50, due to the perception that there would be fewer legal barriers. The Commission does not recommend taking forward these options. While they create some benefits for less congested airport, the overall impact was likely to drive a shift towards smaller aircraft and constrain the UK's overall connectivity.</p>
50	<p>Variation of Air Passenger Duty by airport congestion:</p> <p>This measure would seek to apply a higher rate of Air Passenger Duty at highly congested airports, which could be used to offset a lower rate elsewhere.</p>	
51	<p>Temporary Air Passenger Duty reduction or 'holiday' for new routes:</p> <p>This proposal would make passengers using new routes exempt from Air Passenger Duty for an initial period (perhaps two years) or apply a reduced rate.</p>	<p>The Commission does not recommend this measure. The Commission noted the potential for 'perverse incentives' within this measure, as well as the potential legal (competition) obstacles.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
Air services agreements		
52	<p>Liberalisation of bilateral air services agreements to support the granting of Fifth Freedoms at regional airports:</p> <p>This proposal would lead to the reduction or removal of the restrictions associated with air services agreements for air services travelling from an origin airport through a UK airport and on to third airport, where either or both of the origin airport or final destination is outside of the UK.</p>	<p>The Commission supports the Government's position but recognises it is not possible to go further within EU law.</p>
53	<p>Liberalisation of bilateral air services agreements on a bilateral or unilateral basis:</p> <p>This measure would reduce or remove the restrictions associated with bilateral air services agreements for point-to-point services between the UK and third countries, on a bilateral or unilateral basis.</p>	<p>The Commission did not consider that this measure was desirable, due to the likely State Aid issues.</p>
54	<p>'Code sharing' between airlines and rail operators:</p> <p>This would enable the sale of integrated tickets that combine both air and rail portions into a single ticket and journey plan.</p>	<p>The Commission suggests that if airlines are interested in pursuing this measure, they discuss the franchise terms and conditions with the rail operator. The Commission is supportive of this measure in principle, but recognises that the Government lacks any real drivers to make this happen.</p>
55	<p>Expansion of the UK high speed rail network:</p> <p>This measure proposes the construction of new high speed lines between UK cities to provide an alternative to domestic air travel.</p>	<p>This is not technically within the Commission's remit for Phase 1, but it may consider high speed rail connections to specific airports as part of Phase 2.</p>
56	<p>Provision of direct high speed rail services to more continental destinations:</p> <p>This measure would lead to the introduction of high speed rail services between London (and potentially other UK cities) and continental cities beyond Paris and Brussels, to provide an alternative to short haul flights.</p>	<p>The Commission is supportive of efforts to extend the UK's high speed rail connectivity, but recognises that capacity constraints around the Channel Tunnel will limit the extent of what can be achieved.</p>
57	<p>HS2 spur to Heathrow:</p> <p>This proposes building a spur from HS2 into Heathrow Airport to improve the airport's surface access, particularly from non-London urban centres.</p>	<p>The Commission will return to this proposal in Phase 2.</p>
58	<p>Enhanced rail links between existing airports:</p> <p>These measures would be delivered through either the construction of new lines, or alterations to existing surface patterns to provide direct rail connections between existing London and South East airports, facilitating a 'virtual hub' concept.</p>	<p>The Commission does not believe that present or likely short to medium-term future demand would justify dedicated services between existing airports in light of the impacts upon congested commuter flows.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
Surface transport options		
59	<p>Other improvements to road and rail networks to improve access to Heathrow:</p> <ul style="list-style-type: none"> → A range of proposals were submitted. These include: → Complete planned Piccadilly line upgrade → Create central London downtown air terminal adjacent to a key railway station → Enable London Waterloo to Heathrow rail services from Eurostar platforms to T5 → Relocate Heathrow's bus and coach station to an intermodal interchange on the motorway network → Great Western main line western connection to London Heathrow → Enhanced highway capacity between the South West and Heathrow (e.g. M4, M3, A3) → Improvements to M25 corridor to ensure it is not a constraint on access → A Piccadilly line service to Park Royal to interchange with Central Line → New high speed rail station and terminal adjacent to the Great Western main line → High speed monorail to Northolt (to support as a reliever airport) → Southern Access Study to increase accessibility from the south to Heathrow 	<p>The Commission is supportive of those schemes the Department for Transport is already funding, such as Western Rail Access to Heathrow and Crossrail. The Commission will return to other surface access improvements for Heathrow as part of Phase 2, though options involving enhanced links between Heathrow and Northolt will not be taken forward. See also the Commission's view for proposal number 83 on Northolt.</p>
60	<p>Remodelling of Gatwick Airport station:</p> <p>This proposes improvements to the station, with a particular view to improving accessibility for passengers with luggage.</p>	<p>The Commission puts forward this measure as part of the short-term recommendations.</p>
61	<p>Enhancement of Gatwick Express:</p> <p>This would lead to the reintroduction of the 'dedicated' Gatwick Express service (without the onward journey to Brighton) and the provision of more suitable rolling stock.</p>	<p>The Commission recommends that there is no degradation of the current service quality on the Gatwick service and is supportive of refurbishing the rolling stock. It believes that the case for a dedicated 'not onward' to Brighton service may need to be revisited in Phase 2.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
62	<p>Other improvements to existing road and rail networks to improve access to Gatwick:</p> <p>A range of proposals were submitted, including:</p> <ul style="list-style-type: none"> → Additional platform at Redhill to support more services to Reading → Incremental Brighton Main Line capacity enhancements → Old Oak Common interchange for linking Gatwick to HS2 → Increased Lower Thames Crossing capacity → Direct rail services between Gatwick and other London and South East airports → Highways Route Study of congestion pinch points (e.g. M25-M23 Interchange and M23-Gatwick turn-off) 	<p>The Commission is supportive of those schemes the Department for Transport is already funding, such as Redhill enhancements and the additional platform at Gatwick Airport station. The Commission is proposing the further enhancement of Gatwick Airport station as part of its recommendations. The Commission is further recommending that Government and Network Rail should accelerate the development of options for enhancing the Brighton main line and that Government and the Highways Agency should develop a network study with a focus on relieving capacity pinch points around the airport.</p>
63	<p>Improvements to existing road and rail networks to improve access to Stansted:</p> <p>A range of proposals were submitted, including:</p> <ul style="list-style-type: none"> → West Anglia main line improvements including 4 tracking in Lea Valley to allow for an increase in services and to achieve maximum 30 minute rail travel time to Stansted from central London → Reinstate rail link to Braintree to connect Stansted to the Great Eastern main line (and services on that line north or south to Felixstowe, Harwich and Thames Ports) → Route improvements on the A120/M11 and West Anglian railway line if there is expansion beyond current permitted levels → Direct rail services between Stansted and other London and South East airports → Monitor congestion levels around Stansted 	<p>The Commission is recommending a study into enhancing the rail line between London and Stansted as part of its Interim Report. It is also recommending that congestion levels on roads around Stansted be kept under review.</p>
64	<p>Take Crossrail/Crossrail 2 to Stansted:</p> <p>This measure is seeking to modify the existing Crossrail scheme or the proposed Crossrail 2 scheme so that it serves Stansted Airport.</p>	<p>Crossrail is at a relatively late stage of delivery. The Commission does not, therefore, believe it is practical to fundamentally alter the nature of the service at this stage by extending it to Stansted. Extension of Crossrail 2 to Stansted is likely to involve costs that could only be justified alongside Stansted expansion.</p>
65	<p>Restored Whitacre Link to improve access to Birmingham airport:</p> <p>This would lead to the reintroduction of services on the (disused) Whitacre Link to enable better rail access to Birmingham Airport from different directions.</p>	<p>The Commission is not convinced that there is a credible business case for this option.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
66	<p>Other surface transport improvements relating to Birmingham airport:</p> <p>A range of proposals were received, covering heavy and light rail and roads. These include:</p> <ul style="list-style-type: none"> → Improved HS2 interchange with Birmingham Airport → Birmingham Gateway Project → Coventry-Nuneaton line improvements → London Midland speed enhancements (Project 110) → Upgrades to enable 59 minute journey time Euston-Birmingham Airport → Midland Metro to Airport; → M42/Junction 6 improvements → Birmingham New Street station baggage drop off (check in facilities). 	<p>The Commission is supportive of those schemes the Department for Transport is already funding, such as the Birmingham Gateway Project and the London Midland speed enhancements. Road congestion around the airport should be kept under review. However, other options should be considered by Local Transport Authorities, primarily on their local social and economic benefits.</p>
67	<p>Rename 'Birmingham International' station to 'Birmingham Airport':</p> <p>This measure proposes to rename station to facilitate journey planning for users unfamiliar with the airport.</p>	<p>The Commission believes that if the Airport wishes to take forward this option, it should itself progress it with its local stakeholders and the train operator.</p>
68	<p>Range of road and rail improvements to improve access to other airports:</p> <p>Proposals covering road and rail access to a number of other airports, including (but not limited to): Bristol, Bournemouth, Cardiff, Edinburgh, Glasgow, London City, Luton, Manchester, Manston, Newcastle, Southampton and Southend.</p>	<p>The Commission recommends that some of these proposals are considered in further detail, specifically better accessibility to Glasgow. The Commission is supportive of ongoing work by the Department for Transport on schemes such as the Northern Hub.</p>
69	<p>Check in/bag drop at rail stations:</p> <p>This measure would provide facilities for passengers to conduct check-in and bag-drop activities at stations serving airports, reducing the need for terminal capacity.</p>	<p>The Commission believes that this measure may be worth considering alongside specific long-term options as part of Phase 2.</p>
70	<p>Develop an integrated surface transport strategy:</p> <p>This measure would see transport planning strategy methodologies adapted to make more account of the needs of airports and users of aviation.</p>	<p>The Commission is supportive of aviation needs being properly included in any future integrated surface transport strategy. The Commission invites the Department for Transport to consider this further.</p>
Options for financial incentives to promote behavioural change		
71	<p>Route development funds to promote new routes:</p> <p>This measure would be intended to promote increased connectivity providing financial support for the introduction of new routes for a certain period of time (likely two years) after their introduction.</p>	<p>The Commission believes that there are significant practical and legal obstacles for the Government in doing this, but would support airports who wished to advance this option independently.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
72	Higher landing charges at congested airports: This would lead to the introduction of a congestion charging element into landing charges at the busiest airports, to incentivise airlines to make greater use of other, less congested airports.	This Commission considers that this is undesirable for similar reasons to the use of 'APD congestion charging'.
73	Market non-London cities as destinations in their own right: This measure proposes a marketing campaign to promote inbound tourism to non-London UK cities, balancing demand for aviation capacity away from London and the South East.	The Commission support work to market UK cities as destinations in their own right.
74	'Fly local' marketing campaign: This measure proposes the launch of a marketing campaign to promote the use of local airports for journeys where they offer a viable alternative.	The Commission does not recommend this, on the grounds that it does not believe that it would be a helpful market intervention.
Night flight and enhanced mitigation options		
75	Night flights: A range of measures have been proposed in relation to the night flights regime at Heathrow, Gatwick and Stansted airports seeking to increase, decrease or maintain the current number of air transport movements at the relevant airports.	The Commission is recommending a trial to smooth the early morning arrivals peak between 06:00 and 06:59 at Heathrow to allow for more flights between the 05:00 to 05:59 period to limit the use of both runways to those days when the most significant delays are experienced, thus providing more certainty for those not expecting to be overflown as part of their half-day respite arrangements. Any further consideration of night flights will be undertaken by the Commission in Phase 2 as part of the development of the long-term options shortlisted.
76	Development of planning restrictions and section 106 agreements around airports: This measure supports the development of clear guidance on the planning, policy and compensatory action that would be considered appropriate to address significant environmental and community effects at the local level around airports.	The Commission considers that an Independent Aviation Noise Authority should have a statutory role in providing input to planning inquiries relating to new housing developments in the vicinity of existing airports. The Commission expects to consider this issue further in the next phase of its work as part of its assessment of the shortlisted long-term options.
77	Incentivise quieter aircraft through landing charges: This would see quieter aircraft being incentivised through a variable landing charge regime which saw louder aircraft being charged higher landing charges than quieter aircraft.	The Commission believes that these measures have merit in being further considered as part of Phase 2 as appropriate.
78	Introduce higher night time landing charges: This proposal would see the introduction of a variable landing charge regime which charged night aircraft movements higher landing charges than those operating during the daytime.	

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
79	<p>Implement a quota count (QC) system for daytime air traffic movements and/or extend the quota count system to other airports:</p> <p>This measure proposes an expansion in the current use of QC categories as a method for incorporating noise management into airport capacity management. The QC system allows each night flight to be individually counted against an overall noise quota (or noise budget) for an airport according to the QC rating (i.e. the noisiness) of the aircraft used. This measure would extend this QC system to day time operations.</p>	<p>The concept of noise envelopes – including the implementation of a quota count system – will be considered further in Phase 2, taking account of the shortlisted options under consideration.</p>
80	<p>Introduction of a comprehensive noise compensatory regime at airports:</p> <p>This would lead to the development of an agreed noise compensatory package based on best practice across all airports.</p>	<p>The Commission considers that the role of an Independent Aviation Noise Authority should include responsibilities for advising the Secretary of State for Transport and the CAA in respect of appropriate noise compensation schemes. The Commission expects to consider this issue further in the next phase of its work as part of its assessment of the shortlisted long-term options.</p>
81	<p>Development of a noise envelope concept:</p> <p>This measure proposes the definition of a noise envelope around airports within which aviation growth could be managed with consideration for technology and operational changes leading to a reduction in noise impacts per plane.</p>	<p>The Commission will consider the concept of noise envelopes further in Phase 2, taking account of the short listed options under consideration. Noise envelopes could be an effective way of managing the noise impacts of any new airport or runway development.</p>
Traffic distribution rules		
82	<p>Promote 'reliever airports' concept:</p> <p>This would provide support and/or financial incentives to encourage the growth of airports providing dedicated support for the business and general aviation markets, with the potential additional benefit of reducing the use of congested airports for this traffic.</p>	<p>The Commission is supportive of the reliever airports concept. The Commission recognises that this may be the best way to cater for the needs of business users without disrupting the wider airport system. The Commission acknowledges, however, that the UK's competitive, privatised ownership model does not lend itself to a strict replication of the 'New York system'. The Commission recognises that airports such as Luton have successfully built their share of the business jet market and is not convinced of the need for Government intervention.</p>

Table 10. Short- and medium-term proposals received and the Commission conclusions.²⁶

	OUTLINE	COMMISSION'S VIEW
83	<p>Promote use of Northolt to accommodate some Heathrow traffic:</p> <p>This measure would make further use of RAF Northolt to accommodate some small aircraft that would otherwise use Heathrow, providing a fast, regular surface transport link (and potentially road improvements) between the two airports. More ambitious versions of this proposal would see the runway at Northolt lengthened (to allow for use by larger aircraft) and realigned (to reduce conflicts with Heathrow's airspace).</p>	<p>The Commission does not recommend this option. The Commission has concluded that Northolt's current runway length and alignment place significant restrictions upon its use. Furthermore, that the population affected by noise from increased operations at Northolt would be substantial, and that extending and realigning Northolt's runway would require planning processes of comparable length and difficulty to the construction of one net additional runway at Heathrow.</p>
84	<p>Introduction of a helicopter link between Heathrow and Gatwick airports:</p> <p>This proposal is seeking to remove restrictions in place to allow for a fast and frequent helicopter link between Heathrow and Gatwick airports to facilitate a virtual hub concept.</p>	<p>The Commission does not recommend this. There is no clear evidence of substantial demand for interchange and a helicopter shuttle would not appear to represent a cost effective or environmentally proportionate solution.</p>