

# Assessment of LRAIC-based price cap within the Q5 Stansted inquiry

## Introduction

1. In its reference to the Competition Commission (CC) the Civil Aviation Authority (CAA) set out two options for price regulation that are based on long-run average incremental cost (LRAIC).
2. The aim of a LRAIC-based approach is to set a price cap at (or above) the long-run competitive price, to encourage the regulated company and its competitors to undertake efficient and timely investment. In addition, the CAA stated that LRAIC-based pricing removes the link between actual investment and the charge to airlines, removing the need for the regulator to make decisions about the timing and specification of specific investment projects. As a result, a LRAIC-based approach may be expected to reduce the risk of regulatory gaming.
3. This paper sets out our initial views on using a LRAIC-based approach to set the Q5 price cap at Stansted. The paper begins by discussing the proposed benefits of a LRAIC-based approach and then goes on to discuss a number of practical problems with applying LRAIC at Stansted.
4. The paper concludes by considering the specific LRAIC-based approaches put forward by the CAA: Option 4, the Market Led Price Cap, which sets the price cap just above the LRAIC to include a mark-up for uncertainties in forecasting the LRAIC; and Option 5, the Precautionary Price Cap, which sets the price cap just below the level which would be considered excessive by competition authorities. Both of these options are 'safeguard' caps and presume that Stansted faces sufficient competitive constraints to maintain prices below the cap.

5. This paper is being published alongside a working paper on the competitive constraints facing Stansted,<sup>1</sup> in order to invite comments from all interested parties. The views expressed in these papers are only provisional and are subject to change following our review of the responses we receive.

## Summary

6. Setting a price cap which is unrelated to actual investment undertaken and/or proposed by the airport operator and instead attempts to mimic prices that would prevail in a competitive market, may help to align investment incentives. In particular the airports' incentives to invest would not be conditioned on trying to increase the price cap and the airlines views would not be affected by the impact that supporting investment might have on the current charges they face, as may be the case under a RAB-based approach.
7. Correctly applied, LRAIC-based models would be expected to result in prices closer to the long-run competitive level, providing the appropriate signals to the market to foster efficient entry, investment and innovation. Indeed we recognise that LRAIC-based forms of regulation have significant merits in many regulated industries.
8. However there appear to be a number of practical difficulties in applying a LRAIC-based price cap at Stansted in Q5. These problems are specific to the question of what price cap should be set at Stansted in Q5, and are not necessarily problems with a LRAIC-based approach more generally:
  - (a) *Competitive constraints.* We do not consider that Stansted faces sufficient competitive constraints to ensure that prices will fluctuate below the price cap in line with the price that would be expected within a well-functioning market. We therefore we do not consider that it would be appropriate in the case of Stansted

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<sup>1</sup> [http://www.competition-commission.org.uk/inquiries/ref2008/stansted/pdf/working\\_paper\\_assessing\\_competition.pdf](http://www.competition-commission.org.uk/inquiries/ref2008/stansted/pdf/working_paper_assessing_competition.pdf)

to apply a LRAIC-based price cap that included a mark-up for uncertainties in forecasting as this would result in a substantial risk that prices at Stansted would be maintained above the level that would be expected to prevail in a well-functioning market.

- (b) *Establishing an efficient benchmark.* Given the unique circumstances of each airport and the indivisibility of airport capacity expansions, it is not clear that it would be possible to find appropriate comparators, from which to establish the efficient investment benchmark for the required capacity expansion at Stansted.
- (c) *Data requirements.* Given the lack of competitive constraints on Stansted, if we were to adopt a LRAIC-based approach we would need to conduct a robust estimation of the LRAIC in order for it to be reliable. This would require regulators to first conduct a detailed specification of the relevant increment and then to determine the efficient level of investment required to build and operate it. This would require similar cost and demand forecasts as required under a RAB-based approach, but over the life of the asset rather than over a five-year period. Long-term forecasts are likely to be subject to a greater risk of forecasting error, making it more difficult to accurately forecast the correct LRAIC.
- (d) *Timescales.* Given the forecasting requirements, we do not consider that it is practical to conduct the modelling and consultation exercises that would be necessary to calculate the LRAIC price within the Q5 inquiry, particularly as there has been limited upfront preparatory work.
- (e) *Regulatory commitment.* To be effective, the LRAIC approach needs to support a price path over the life of the assets and therefore over considerably more than five years. This raises issues of regulatory credibility, on the basis that neither the CAA nor the CC are in a position to enter into a legally binding commitment as to how price caps will be set at future reviews, particularly given the wide-ranging

reviews of BAA's airports and airport regulation by the CC, in its market investigation, and by the Department for Transport.<sup>2</sup>

(f) *Consistency of approach.* We consider a LRAIC approach at Stansted may also distort investment incentives on the grounds that Heathrow and Gatwick operate under a different price control methodology. Under this scenario BAA may be encouraged to increase investment above efficient level at those airports operating under a RAB-based approach in order to increase the price cap at these airports, instead of conducting efficient investment programs at Stansted.

9. On the basis of the above the LRAIC-based options for the price cap at Stansted put forward by the CAA do not appear to be viable options within the Stansted Q5 Inquiry.

### **LRAIC pricing**

10. Under certain assumptions short-run marginal cost (SRMC) pricing may be expected to maximize social welfare and result in the efficient allocation of resources. However, where there are economies of scale or scope, resulting from significant fixed or joint costs or where capacity increments are indivisible, as is the case in airports, this methodology may not result in the most efficient outcome.
11. Under these circumstances, for SRMC pricing to provide correct investment incentives, there would be a volatile price path with large spikes when capacity is fully utilized and price drops when new capacity is completed.
12. Where investments are lumpy, calculating marginal costs is difficult, therefore long-run incremental costs (LRIC) may be considered as a proxy. LRIC estimates calculate the costs of adding (or removing) a non-marginal change in output or

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<sup>2</sup>Similarly the regulator cannot fully commit to a RAB-based approach in any future review.

capacity. As spare capacity comes into use and the time of the next investment becomes nearer, the LRIC price estimate would increase, and then post-investment the LRIC estimate would be relatively low given the levels of spare capacity—mimicking the expected price path in a competitive market in a similar way to SRMC pricing.

13. The LRAIC is equal to the total costs of a specific variation in output (the increment) averaged over the units of output the increment produces resulting in a constant charge over the life of the asset, in effect, smoothing the LRIC over the life of the asset.
14. A LRAIC-based price would ensure that, in the long run, all the relevant costs of an investment (including the cost of capital) are covered, providing efficient investment incentives.<sup>3</sup> In industries with significant economies of scale or scope, such as airports, LRAIC-based pricing may result in a more efficient outcome than marginal cost pricing, for example, investments may be inefficient over a marginal increase in capacity, but efficient over a relevant increment.
15. Under a LRAIC approach, there is no link between the actual or planned investment of the incumbent operator and the price cap. Instead the LRAIC approach is based on the efficient specification of a given increment. As a result, the regulator is removed from specific investment decisions,<sup>4</sup> reducing the risk of regulatory gaming and allowing the operator a greater degree of flexibility over the specification and timing of investment. In turn, this may improve the level of engagement between Stansted and the incumbent airlines.

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<sup>3</sup>Provided the LRAIC approach is continued over the life of the asset.

<sup>4</sup>Although the regulator will still have to take a policy decision on the specification of the increment to be considered under the LRAIC.

16. If implemented appropriately, LRAIC can be used to estimate the maximum prices Stansted would be able to charge on average over time in a well-functioning market. However, LRAIC is not the only methodology for approximating the long-run competitive price; both the replacement cost and RAB approaches attempt to estimate the competitive price in different ways. For example, if we considered a *de novo* airport entrant, both the LRAIC and RAB approaches would be expected to result in the same net present value, if correctly applied.<sup>5</sup>
17. Annex 1 briefly discusses the use of a LRAIC-based approach in the gas and electricity sector and the telecoms sector.

### **Conceptual issues with LRAIC**

18. Whilst we consider that a LRAIC approach would be expected to improve signals for efficient investment, entry and expansion, there are a number of conceptual issues with the LRAIC approach, some of which are only relevant to airports. These would need to be weighed against the benefits outlined above and in the context of the practical problems with applying a LRAIC price cap to Stansted in Q5 which are discussed in the next section.

### ***Efficiency***

19. Whilst LRAIC pricing can better reflect competitive pricing than other approaches such as the RAB-based approach, it does not precisely mimic a perfectly competitive outcome and therefore does not ensure an efficient outcome.
20. Productive efficiency implies that outputs are produced at the least-cost level. Under a LRAIC approach the incumbent would have the incentive to reduce costs between reviews as they are able to keep any cost savings, as such LRAIC pricing may

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<sup>5</sup>However, in reality at Stansted the two approaches would not result in the same net present value, partly due to historic application of the RAB, including cross-subsidies from Gatwick and Heathrow.

broadly be expected to promote productive efficiency. This incentive to reduce costs between reviews is also evident under a RAB-based approach. However under the LRAIC approach it is not clear whether these cost savings would be passed on to consumers as the LRAIC-based price cap is not adjusted for actual spend by the operator at each review.

21. LRAIC-based pricing would also be expected to promote allocative efficiency, but as it is unlikely that the LRAIC estimate would ever coincide with SRMC, where there are high fixed costs, it is not clear that the outcome would in fact be allocatively efficient.
22. It is also unclear whether in the case of Stansted a LRAIC-based approach could be expected to achieve dynamic efficiency. Dynamic efficiency implies that the operator invests in new assets and innovation at an optimal rate and point in time, such that welfare is maximized over time. In general, it would be expected that LRAIC-based pricing would result in an efficient signal for entry and expansion. However, as there is very limited spare capacity at Luton and a very short runway at City, no rivals with expansion plans that would be expected to affect the price at Stansted and no prospect of new airport entry in the South-East, a LRAIC-based price cap may not be sufficient to ensure efficient expansion.
23. For example, if Stansted is assumed to have market power, a scenario could be developed where a LRAIC-based price cap may lead to adverse incentives, such that a high LRAIC-based price cap would not be sufficient to encourage Stansted to invest in SG2, even if it were socially optimal. This would occur if the net present value of only operating the existing assets at a high LRAIC based price cap exceeds the net present value of operating the existing assets plus SG2 at a decreased price (due to expansions in demand).

24. The difference in the net present values would be caused by the effects of expansion: (i) decreasing the willingness to pay per passenger; (ii) resulting in significant investment costs and (iii) allowing Stansted to serve additional passengers. If the first two effects outweigh the latter, a higher price cap would make investing in SG2 profitable, but would actually induce Stansted not to invest and to instead extract a higher consumer surplus from the remaining passengers. This scenario would be unlikely to hold if Stansted was constrained by the threat of entry or expansion from other airports in the South-East, which would push down passenger willingness to pay at Stansted.<sup>6</sup>
25. Furthermore, in reality airport investment in the South-East is unlikely to ever be the result of purely competitive interactions given the political, environmental and social issues airport development raises. Therefore although one of the rationales for using a LRAIC-based approach is that it gives the right signals at the right time for efficient investment, it is not clear that a LRAIC-based approach to airport charges would ensure efficient investment actually occurred.

### ***Future investment***

26. In the Q4 review, the CAA put forward a Price Path Commitment proposal which incorporated a long-run incremental cost approach to ensure a return on current expected investment (in T5). This commitment would apply irrespective of the actual costs of operating or enhancing existing assets at T5, but average charges would change in line with the mix of existing passenger, incremental passengers and incremental costs of any further investments and passengers attributed to them.<sup>7</sup> The CC identified that this approach could in itself distort investment as investment plans

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<sup>6</sup>In reality a number of other factors may also affect Stansted's incentives to expand, including the risk of a significant decline in low-cost carrier (LCC) demand, due the current economic downturn, and the risk of current oil prices being sustained in the medium term.

<sup>7</sup>BAA Plc: *A Report on the Economic Regulation of the London Airport Companies (Heathrow Airport Ltd, Gatwick Airport Ltd and Stansted Airport Ltd CC*, November 2002. Paragraph 2.237.

which became efficient at a future date within the LRAIC time frame would not be easily remunerated.

By fixing prices for existing assets and major projects to expand capacity, no return would be allowed on additional investment that may prove desirable to improve the quality of service ... Such distortions could also occur if the price cap fixed a level of incremental cost insufficient to justify some investments.<sup>8</sup>

27. Similar arguments may be expected to apply under a LRAIC-based price cap approach.

### ***Risk***

28. The CC report following the Q4 review also concluded that the use of such fixed long-term prices would significantly increase the level of risk faced by BAA in conducting such investment plans.
29. This may equally apply to a LRAIC approach, where there is the potential for large fluctuations in cashflow if the price cap cannot be fully adjusted at each regulatory review to take account of forecasting errors in passenger demand or real project costs. As the level of risk faced by BAA increases, the more likely it is that they will decide not to invest in SG2 in order to extract higher surplus from the existing passengers and to avoid the costs of SG2 and the associated fall in passenger willingness to pay, following the capacity expansion.
30. In addition a move away from a RAB-based approach may have consequences for the availability of funding, partly due to increased uncertainties regarding return on

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<sup>8</sup>Ibid paragraph 2.243.

investment and partly due to perceptions that asset transparency may be reduced by moving away from a RAB-based approach.

### ***Consistency of approach***

31. Investment incentives may also be distorted if different airports under common control operate under different price cap methodologies.<sup>9</sup> The quinquennial price reviews at Heathrow and Gatwick were conducted in 2007/08 with a RAB-based price cap being applied for the period 2008 to 2014. Below we discuss the practical application of a LRAIC approach at Stansted, but if for now we consider that the LRAIC approach is the most appropriate for Stansted itself, it may still be the case that given the joint ownership of Stansted, Heathrow and Gatwick, having Stansted operating under a different regulatory regime could affect BAA's investment decisions.
  
32. Under this scenario BAA may be encouraged to increase investment above efficient level at those airports operating under a RAB-based approach in order to increase the price cap at these airports, instead of conducting efficient investment programs at Stansted. In the shorter-term, it could lead to an inefficient allocation of demand between the relatively unconstrained Stansted where prices could increase and the relatively constrained Gatwick and Heathrow where prices would remain low.

### ***Quality of service***

33. As discussed above, once a LRAIC-based price cap is in place, it may be the case that Stansted would have the incentive not to invest in SG2 and instead earn a higher consumer surplus on each remaining passenger. Similarly, as some investment is in quality improvements rather than capacity increase, once the LRAIC calculation has

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<sup>9</sup>The CAA argued that the LRAIC approach was particularly relevant to Stansted rather than Heathrow or Gatwick as historical cross-subsidization by BAA of Stansted had resulted in a RAB-based price cap which did not reflect costs.

been made on the basis of a certain specified level of service, Stansted may have the incentive to under-invest in service quality.

34. This risk of adverse incentives regarding quality may be overcome by calculating the efficient benchmark on the basis of a low level specification of the increment and then allowing Stansted and the airports to negotiate any additional quality improvements.

### **Application of LRAIC pricing at Stansted**

35. The aim of the LRAIC approach is to measure the cost of efficient expansion and to calculate the average incremental cost per unit. This exercise is achieved by identifying an 'efficient benchmark', which is a proxy for efficient expansion across the sector.

### ***Defining the increment***

36. The first steps in determining the LRAIC price is to define the appropriate increment to use as a proxy for efficient airport expansion at Stansted and to define the timescale over which it will be considered.
37. Increments may be based on hypothetical, expected or historic variations in either capacity or service. In the case of Stansted, service-based increments would, for example, involve considering baggage handling and passenger handling services separately. However, this would be inconsistent with the favoured single-till approach. We therefore consider capacity as the relevant variable.
38. In some sectors it may be possible to calculate the long-run marginal incremental cost, the cost increase resulting from a *unit* change in the planned investment program, but this is less relevant in the case of airports where capacity increases are

not homogenous and are often indivisible. Similarly considering the incremental costs arising from a 10 per cent increase in demand may not be consistent with an efficient capacity increase due to the indivisibility of facilities.

39. It would therefore appear to be more appropriate to consider average incremental cost across an entire airport, taking into account all the facilities required to deliver airport services. The benchmark could be the cost of a new green-field airport, however, at Stansted we could use SG2 as a proxy of the cost of building and operating a new airport and then apply this price cap to all the assets at Stansted, existing and new.
40. The applicability of a price cap based on SG2 to existing assets will depend on the extent to which there are differences in the specification of old and new assets. As a result, adjustments may need to be made to reflect these differences, for example if the new assets are designed to meet the needs of a different set of airlines than the existing facilities.
41. Alternatively we could consider Stansted as a whole, including existing and new infrastructure, as the relevant increment.<sup>10</sup> This would have the advantage of treating all assets in the same manner; however, it would involve further considerable estimation, opening up further risk of forecasting errors (see below).
42. In the case of Stansted whether the relevant increment is taken to be the new runway and associated terminal buildings or Stansted airport as a whole, cost allocation should be a relatively straightforward process, ie all those costs relevant to the designing, building and operating of SG2 (although determining what those costs should be is more complex, as discussed below). This is in contrast to telecoms,

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<sup>10</sup>This is similar to the approach in mobile call termination charges where OFCOM have conducted a full lifetime bottom-up model.

where LRAIC-based prices only apply to mobile termination charges and therefore require a complex process of cost allocation.

43. In terms of timing, for the LRAIC to be correctly applied the relevant 'long run' should be the longest term relevant for planning and decision-making in the industry. In order to ensure all relevant costs are just covered over the life of the asset and therefore avoid any distortions in investment decisions, it is necessary to consider that the assets have a long, but finite life—in the case of runway and terminal assets this would be expected to be in the region of 30 to 50 years.

### ***Approaches for identifying the efficient benchmark***

44. If we consider using SG2 as the appropriate incremental investment project to establish the efficient benchmark, any implementation of a LRAIC-based price cap will require the regulator to take a view on the capacity and quality requirements of SG2.<sup>11</sup> In addition the regulator will need estimate the cost of this development, the useful economic life of the asset, any repair or renewal costs of assets which expire within the period, opex costs for the increment over the relevant period and the relevant cost of capital. It would also be necessary to estimate the volume of traffic the development would serve in each period.
45. One of the main advantages of using LRAIC-based pricing is that it reduces reliance on information provided by the incumbent. The aim is to determine for a given capacity increase, what is the most efficient investment program. The LRAIC approach would allow any investment project that was at least as efficient as the benchmark, whereas anything less efficient would be become unprofitable. As such, whilst, as a starting point, it is useful to consider an actual or planned investment program as the relevant increment, the incumbent's actual or planned capex and

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<sup>11</sup>In consultation with the airlines and BAA.

opex program is only one source of information on what the relevant efficient costs should be in determining the LRAIC price.

46. Broadly speaking there are two distinct approaches that can be used to establish an efficient benchmark.
47. Firstly, a *top-down approach* based on actual costs of the incumbent (from financial statements) and their demand and cost forecasts relating to the planned expansion investment program. The links to the formal accounts would ensure that all relevant costs were accounted for; however, it relies on the assumption that the airports' plans approximate to the least cost means of meeting demand or at least that any diversion from the least cost plan can be effectively identified and challenged.
48. As it is not clear that this would be the case, analysis of the incumbent's business plans for SG2 would be supplemented by other information on efficient airport costs to avoid the position where the price cap is driven specifically by the BAA investment plans at Stansted.<sup>12</sup>
49. The cost of existing assets at different airports worldwide with similar characteristics<sup>13</sup> may be used as comparators to check whether the proxy derived from the SG2 expenditure plans is realistic.<sup>14</sup> Similarly, other business plans or historic accounts relating to other planned or historic investments could provide useful cross-checks, for example, SG1 at Stansted or R3, T5 or T6 at Heathrow. It may also be useful to consider examples from non-regulated airports given the potential incentive for over specification at regulated airports. All these examples

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<sup>12</sup>If the LRAIC price is based solely on planned SG2 expenditure, it would be expected to give rise to similar distortions in capex investment incentives as could be expected under a RAB-based approach.

<sup>13</sup>Service levels, capacity etc.

<sup>14</sup>These comparators may include looking at the cost of building a box terminal at a military airfield, as has been done at Frankfurt Hahn and Prestwick.

would need to be adjusted for different service quality levels and further analysis may be required to ensure that historic or planned investments were efficiently specified.

50. The requirement to verify that costs are efficient increases the level of complexity, particularly where there is little (or no) consensus between the airport and the incumbent airlines on what is the appropriate level and specification of the investment at Stansted.
51. Practically therefore, the key issues are whether relevant comparators can be found and, if not, how the most efficient least cost investment plan can be determined. The concern is that, unlike mobile call termination, for example, which is a standard homogeneous service, airports are unique. Each airport has distinctive geographical and environmental features, serves a different passenger catchment area and airline customer base, and requires its own unique facilities. Given the high economies of scale and scope, the unique circumstances of each airport and the indivisibility of airport capacity expansions, it is not clear that it would be possible to find a perfect comparator in terms of size/specification of the investment project, from which to establish the efficient least-cost investment required to meet the relevant capacity expansion at Stansted. Therefore, it is likely that several comparators will need to be considered and potentially adjusted for quality and capacity differences, further increasing the required analysis.
52. There is also a much wider scope for quality differences within airport capacity investments compared with the telecoms and energy sectors, where there is broad consensus over the appropriate level of quality to provide across a network.
53. A LRAIC approach produces a proxy for efficient airport investment, but the unique nature of each airport, including the wide variations in potential quality and service

level, limits the applicability of a LRAIC estimate based on the specific capacity requirements of SG2 and the service level/quality requirements of Stansted, to expansion programs at other airports.

54. The second option is to consider an engineering-based *bottom-up approach* to estimate the costs of efficiently providing a given increment in capacity, independent of any actual or planned expenditure by the incumbent. In the absence of any consensus between BAA and the main airlines operating at Stansted, the bottom-up approach is likely to be even more complex. Again, it would be necessary to make a reasonably detailed specification of the runway and associated facilities, including capacity and quality requirements, through consultation with BAA, the airlines and potentially other industry experts.
55. In reality the calculation of the LRAIC is likely to involve a combination of these approaches with a view to reconciling the results. The process of reaching an estimate of the LRAIC will therefore require a degree of discretion on behalf of the regulator to balance the potential inefficiency biases of the information provided by the incumbent and the likelihood that information from third parties may be less complete and less accurate. For example, where some design elements have been customized for BAA they may not have a well-defined market price and therefore consultation with third parties may not necessarily result in accurate cost estimates.

***Information requirements to calculate efficient benchmark***

56. In addition to estimates of capex, opex and cost of capital, to correctly calculate the LRAIC, both the above approaches require further forecasting exercises.
57. First, passenger demand forecasts: In order to calculate a reliable LRAIC estimate, passenger and cargo forecasts are required for every year over the life of the asset.

In this case this is likely to be between 30 and 50 years. Passenger forecasts are particularly uncertain both in the short-term, due to the price of oil and the general economic downturn, and in the long run. There is no consensus on forecasts and the uncertainties surrounding passenger forecasts are likely to reduce the reliability of any LRAIC estimate.

58. Second, technological progress: Given the long-term nature of the cost and demand estimates, it will be necessary for the regulator to make forecasts regarding future technological advancements and innovations in the sector and how they may be expected to affect consumer demand and the efficient least-cost way to meet that demand. This is particularly relevant in the telecoms sector, but may be less of a concern in the context of airports, as technological progress is less important in determining operator growth. However, it will still be necessary to consider what changes are likely over the forecast period, for example any changes that may affect the number of passengers that can be served by a given terminal or runway.
59. Under the LRAIC approach the specification of the increment remains the same at each quinquennial review regardless of the investment actually undertaken at Stansted. Input costs are updated at each review, but it is not clear whether there would be any way to update the LRAIC for changes in the benefit arising from the specified increment, for example if the number of passengers a given investment can serve increases over the life of the assets, once the LRAIC has been set. It would therefore be necessary to have accurate forecasts any such changes, which are likely to become more difficult over a longer time horizon.

### ***LRAIC with mark-up***

60. Given the potential uncertainties both in determining what would be the most efficient investment program to meet a given capacity increment and in calculating accurate

demand and cost projection over a long timeframe, the CAA have proposed a LRAIC with mark-up (LRAIC-MU) methodology.<sup>15</sup>

61. The argument for a LRAIC-MU methodology is to ensure that forecasting errors do not result in a LRAIC price which is too low and therefore discourages efficient expansion.
62. According to the CAA, building in a requirement for a mark-up reduces the level of detail and accuracy required for the demand and cost forecasts. Specifically, the CAA considers that Stansted faces sufficient competition from other south-east airports to ensure that prices will fluctuate below the cap, in line with the level that would result in a well functioning market. Therefore, the CAA argues for a relaxed approach to the required investment specification, cost and demand forecasts and the level of the mark-up applied. The LRAIC price cap would be set just high enough to prevent any risk of distortions in investment incentives.
63. However, given our provisional view that there is insufficient competitive pressure acting on Stansted to prevent it being able to sustain prices at the maximum level of the cap,<sup>16</sup> the requirement for a mark-up over LRAIC (which in itself would be open to a certain amount of discretion regarding its size) raises significant concerns over using a LRAIC-based approach in relation to Stansted.
64. Furthermore, with regard to the use of a LRAIC-MU approach, Article 12(2) of the EU-US Open Skies Treaty explicitly states that prices of airport services should not exceed the costs of providing those services. To the extent that this applies to Stansted, it may be the case that a LRAIC-MU approach, where the mark-up is

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<sup>15</sup>Mark-up for uncertainties in calculation rather than the LRAIC-Plus methodology used in telecoms where the price cap is set above the LRAIC price to cover common costs.

<sup>16</sup>Assessment of Competition at Stansted CC [http://www.competition-commission.org.uk/inquiries/ref2008/stansted/pdf/working\\_paper\\_assessing\\_competition.pdf](http://www.competition-commission.org.uk/inquiries/ref2008/stansted/pdf/working_paper_assessing_competition.pdf).

based on uncertainties in forecasting rather than simply to cover common costs, is not a viable regulatory option.

### ***RAB v LRAIC data requirements***

65. If we consider that Stansted has market power and is therefore able to maintain the price at the price cap, then for a LRAIC price to give the correct investment incentives it would need to be accurately calculated. To do this would require CAA to take a view on the required capacity and service levels at SG2, as well as conducting detailed forecasts of capex, opex and passenger numbers.
66. This is the same data as required under the RAB based approach, only the data requirements under the LRAIC approach would in fact be expected to be more onerous in the Q5 review. A LRAIC approach requires forecasts of passenger numbers, capex and opex over the life of the asset and therefore over a considerably longer period of time than required under a RAB-based approach. Forecasting beyond five years becomes increasingly subject to forecasting errors and uncertainties. While the discounting of future projections means that long-run forecasts carry less weight in the calculation than shorter-term forecasts, the requirement for longer-term forecasts will still reduce confidence in the accuracy of the LRAIC.
67. In addition, depending on whether a top-down or bottom-up methodology is applied, information may also be required for a number of different comparator investment schemes.
68. The need for long-run and additional project forecasts also raises practical issues, as to whether a LRAIC approach could be correctly estimated at Stansted within the Q5 inquiry period, especially when extensive consultation will be required as a result of

the lack of agreement between Stansted and the incumbent airlines as to what level of investment would be efficient.

69. Whilst under a LRAIC approach future reviews may be less onerous, it will still be necessary to review input costs on a regular basis to adjust for forecasting errors and any changes in efficient methods of production or operation.

### ***Regulatory credibility***

70. To be effective, the LRAIC approach needs to support a price path over more than five years. This raises issues of regulatory credibility, on the basis that neither the CAA nor the CC are in a position to enter into a legally binding commitment as to how price caps will be set at future reviews. The credibility of committing to a LRAIC-based approach is likely to be further undermined by the ongoing reviews by the Department for Transport and the CC.

71. In the Q4 review, the CAA proposed a Price Path Commitment approach to calculate the price cap. The final report by the CC<sup>17</sup> also raised concerns about the credibility of an approach to which neither the CAA nor the CC can bind their successors. The report stated that:

It is in our view questionable whether it is desirable or realistic to expect a commitment to future prices, based on current estimated costs of existing operations or estimated costs of T5.

72. In practice such problems also exist with a RAB approach, although it could be argued that there is more credibility to a commitment to a RAB-based approach at subsequent reviews than a LRAIC approach due to the historic use of the RAB.

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<sup>17</sup>BAA Plc: *A Report on the Economic Regulation of the London Airport Companies (Heathrow Airport Ltd, Gatwick Airport Ltd and Stansted Airport Ltd* CC, November 2002. Paragraph 2.241.

## Comparisons with other sectors where LRAIC is used<sup>18</sup>

### *Telecoms*

73. Applying the LRAIC to airports does not raise the same cost allocation issues as within the telecoms sectors due to the distinct nature of the increments being considered. In addition lower rates of technological development within the airports sector reduce the risk of forecasting errors.
74. However, given the longer asset life in the airports sector than the telecoms sector, and therefore the requirement for cost and demand forecasts over a longer timeframe, and the greater scope for variation in the specification and quality of capacity increments (ie for low-cost carriers versus full-service carriers), establishing an efficient benchmark on the basis of a 'bottom-up' approach would be expected to be at least as complex as within the telecoms sector.
75. In addition, conducting a 'top-down' approach would be considerably more complex to apply to airports than to apply to mobile termination charges, where there are at least four telecom providers, all with similar market shares, which can be used as comparators to establish the appropriate benchmark. Given the degree of competition between these providers, it is realistic to assume that an analysis of their accounts would be more informative on the price which would be expected to prevail in a well-functioning market than an analysis of BAA's figures would be.
76. Furthermore there was considerable and prolonged consultation between mobile phone providers and OFCOM to reach an agreement on the efficient benchmark for the LRAIC. It would be reasonable to expect that given the lack of agreement between the airport and the airlines that the consultation process for determining the efficient benchmark at Stansted would also take a considerable period of time.

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<sup>18</sup>Annex 1 contains a summary of the use of LRAIC in the telecoms and gas and electricity sectors.

## Gas and electricity

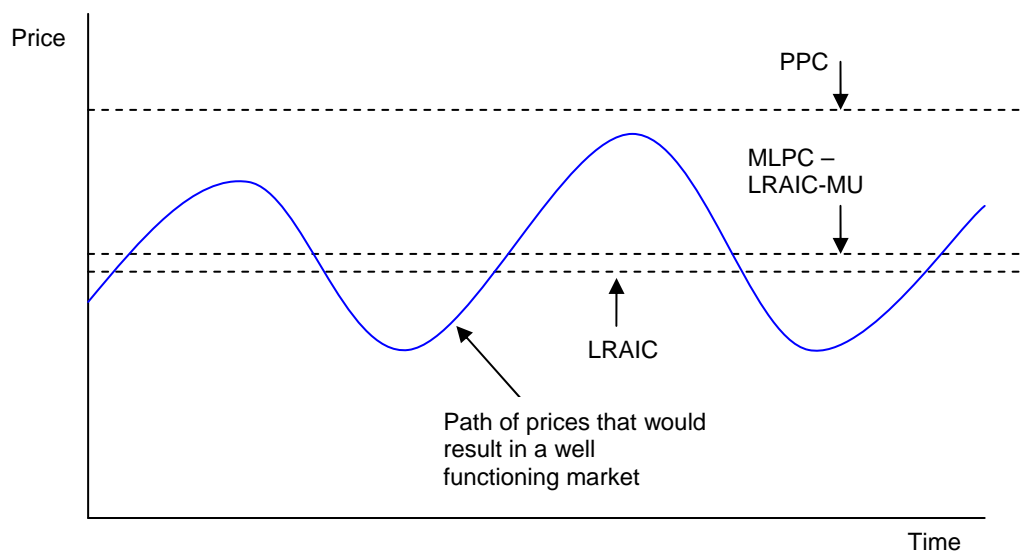
77. Similarly, applying the LRAIC to the energy sector raised significant cost allocation issues which would not apply to airports. The asset life of airport infrastructure is likely to be more comparable to gas and electricity infrastructure than telecoms, but we consider that the application of LRAIC is still likely to be more straightforward than in the airport sector, due to the relative level of agreement on specification and quality aspects of investment plans in the energy sector relative to the airports sector.

## CAA options for a LRAIC-based price cap at Stansted

78. In the CAA reference to the CC on Stansted,<sup>19</sup> the CAA set out two potential regulatory options based on LRAIC pricing illustrated in Figure 1: Option 4, the Market Led Price Cap (MLPC), and Option 5, the Precautionary Price Cap (PPC).

FIGURE 1

### Hypothetical illustration of options 4 and 5



Source: CAA.

79. Both of these options place a reliance on the competitive constraints faced by Stansted to protect users. The CAA considers that Stansted faces sufficient

<sup>19</sup>Price Control Review—CAA Reference to the Competition Commission for Stansted Airport, CAA, April 2008. [http://www.competition-commission.org.uk/inquiries/ref2008/stansted/pdf/stansted\\_reference\\_apr08.pdf](http://www.competition-commission.org.uk/inquiries/ref2008/stansted/pdf/stansted_reference_apr08.pdf).

competitive constraint and therefore that these LRAIC-based price cap options will involve the CAA setting a price cap that leaves it to the commercial interaction of the airport and airlines to set prices, reducing the degree of regulatory intervention.

80. *Option 4—the MLPC* sets the price at the lowest level consistent with not distorting long-run investment incentives of competition between airports. In practice, there are two options for the application of MLPC. First the price cap could be set slightly above the LRAIC estimate due to estimation uncertainties. This is consistent with the LRAIC-MU approach outlined above. However, where competitive constraints are limited this may be expected to result in over-recovery, harming passengers and possibly resulting in inefficiently high levels of investment.
81. Alternatively the price cap could be set equal to the LRAIC estimate, but with any under-recoveries rolled forward into subsequent periods. For example, if in some periods Stansted were not able to charge up to the price cap, but in others it would have been able to charge a higher price in the absence of the price cap, setting the price cap at LRAIC may prevent efficient investments being made. To resolve this issue provisions for over- or under-charging in relation to the long-run average could be employed within and between price control periods—allowing Stansted to carry forward any pricing allowances unused in any year. However, as allowances can only be rolled forward and not used in advance, it is not clear that costs will always be recovered in the long-run.<sup>20</sup>
82. It would also be necessary under this approach to consider whether there are any measures the regulator can take to give a credible commitment to applying the same approach at subsequent quinquennial reviews, as over- and under-recoveries are likely to be needed to be rolled forward over several quinquennia to ensure full cost

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<sup>20</sup>For example, if prices are initially constrained by the price cap but the airport would have been able to charge more in a competitive market and only later do they under-recover relative to the cap, there may be no way to recover the later costs.

recovery over the life of the asset. Without regulatory commitment, it is difficult to see how a MLPC with allowances for under- and over-recoveries would work in practice.

83. *Option 5—the PPC* sets the price at a level just below that which would be likely to be deemed excessive under competition legislation. The PPC is slightly above the highest level which would result at any point in a well-functioning market, due to a mark-up for uncertainties regarding the LRAIC estimation and the proposal by the CAA that it is only necessary to set a safeguard cap as Stansted faces sufficient competitive constraint.
84. Option 5 requires a view to be taken on what constitutes an ‘excessive price’ at Stansted. Price fluctuations are necessary to recover long-run costs—the implication being that the price at any one time could be substantially above the LRAIC and not be considered ‘excessive’. In the case of airports, an important cause of price fluctuations would be fluctuation in demand at times when capacity is fixed—therefore one option would be to consider the ‘excessive’ price as that which could not reasonably be achieved in the short-run (ie with the given capacity) following fluctuations in demand.
85. Both options 4 and 5 rely on competition to ensure prices reflect those that would be expected in a well-functioning market and to promote allocative efficiency. Clearly, the PPC requires more confidence that Stansted faces sufficient competition. In addition, both options rely on there being no restrictions (planning or otherwise) on developing extra capacity when required.
86. Given our provisional assessment of the competitive constraint operating on Stansted we consider that Stansted is likely to be able to profitably maintain prices above the price that would be expected in a well-functioning market.

87. Furthermore, the dynamic incentive properties of the LRAIC rely on competition, otherwise Stansted may have the incentive to charge higher prices to existing passengers and not incur the investment expenditure.
88. If there were no specific problems with using a LRAIC approach at Stansted in Q5, the MLPC with allowances for over- and under-recovery has substantial merits and is most likely to result in the correct incentives without harming passengers, provided that over and under recoveries can be matched over the life of the asset. However, there are many problems with using the LRAIC at Stansted in Q5, as outlined above, including the issue of making a credible commitment to LRAIC by the regulator, which makes ensuring all costs are recovered over the life of the asset difficult.

## **Conclusion**

89. Correctly applied and with sufficient accurate information, a LRAIC-based model would be expected to result in prices closer to the level which would be expected in the long run in a well-functioning market than may be expected under a RAB-based approach. Under these circumstances a LRAIC approach would be expected to provide the correct signals to foster efficient entry, investment and innovation.
90. However, there are significant practical problems in calculating an accurate LRAIC estimate, especially within the timeframe of the Stansted Q5 inquiry. In particular the lack of agreement between BAA and the incumbent airlines on the most efficient investment program and the requirement for long-term forecasts for costs and demand over the life of the assets.
91. In addition, the CAA's LRAIC-based price caps rely on Stansted facing sufficient competitive constraint to ensure that prices fluctuate below the price cap. As outlined in our paper on competition currently, we do not think Stansted does face sufficient

competitive constraints and in the light of these findings, we consider that Stansted could maintain prices at the high cap, harming its airline customers and passengers.

92. As a result of the practical difficulties of calculating an accurate LRAIC within the relevant time frame and our provisional belief that Stansted has market power, we do not consider that options 4 and 5 are viable for the Stansted Q5 inquiry.

## **Annex 1. Application of LRAIC-based pricing in other regulated industries**

### ***Gas and electricity***

1. In the energy sector, LRAIC estimates have largely been used to structure charges calculated on the standard building block approach. The National Grid's most recent statement<sup>21</sup> indicates that charges are calculated on an incremental cost basis rather than on an average costs in order to optimize the use and investment of the transmission system.
2. In the energy sector, the definition of the long run which has been applied, ranges from 10 to 30 years, and therefore may be more in line with the long asset life observed in the airports sector.

### ***Telecoms***

3. The European Commission has previously recommended the use of a forward-looking LRAIC approach for the assessment of cost-oriented interconnection tariffs on the basis that they are the most comparable with a competitive market.
4. The use of LRAIC in the telecoms sector has been based on the desire to send efficient signals for entry and investment. These are considered particularly important in the telecoms industry due to the potential for new network technologies to emerge that might challenge the essential facility status of the incumbent networks.
5. LRAIC has been used to set telecoms prices in both Europe and the USA. OFCOM currently uses price controls for mobile termination charges defined with reference to a LRAIC Plus model which includes a contribution to overheads and common

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<sup>21</sup> *The Statement of the Connection Charging Methodology*, National Grid, April 2008.

costs.<sup>22</sup> In practice, it considers the LRAIC approach to be very similar to a Current Cost Accounting (CCA) fully-allocated costs methodology. In 1997, OFCOM performed a comprehensive modelling exercise based on LRAIC and since then has used CCA as an approximation.

6. Practically, the application of a LRAIC-based price cap by OFCOM took over a year to complete. A consultancy firm was contracted to build a complex model based on a 'bottom-up' engineering approach which was calibrated by a 'top-down' assessment of providers' costs. There was considerable and prolonged consultation between mobile phone providers and the regulator in order to reach an agreement on the efficient benchmark for the LRAIC.

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<sup>22</sup>OFCOM have also used a fixed network LRIC model for BT.