Promoting cost efficiency and financeability – discussion paper

Wednesday 20 April 2016

Introduction

1. The current regulatory controls on the charges and services that Heathrow Airport Limited (HAL) offers to airlines, and ultimately to consumers, are due to expire on 31 December 2018. The CAA has therefore launched a review (called 'H7') of the appropriate regulatory arrangements that should be put in place after that date.

2. To initiate this review, we published a discussion document in March 2016[1] seeking views from all interested parties on the process, strategic themes, and the relevant issues that should shape the CAA's methodology for the H7 review.

3. We are now hosting a series of seminars through which we would like to explore each of our strategic themes[2] in greater detail with interested stakeholders. The objective of the seminars is to help the CAA to develop its thinking on the overall design of the framework in these key areas ahead of our 'Policy Update' document in September 2016 which will set out our latest views on the approach to carrying out the H7 review.

Issues to consider

4. This paper has been drafted to inform the *'promoting cost efficiency and financeability*' seminar. We would like to use the session to consider three key areas:

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1 www.caa.co.uk/CAP1383

2 The four strategic themes are (i) Empowering consumers and furthering their interest (ii) Incentivising the right consumer outcomes. (iii) Increasing airport resilience; and (iv) Promoting cost efficiency and financeability. Separate seminars have been arranged to cover each of the themes.

- The overall timetable for the price review including when HAL should be asked to produce its initial business plan and the relationship of that plan to the process of constructive engagement.
- Our approach to assessing efficiency including the steps that the CAA should take to develop its own view of the efficient level of cost and revenues.
- Certain aspects of the financial framework including a number of areas where we have observed that other regulators have modified their approach and we are considering doing likewise.

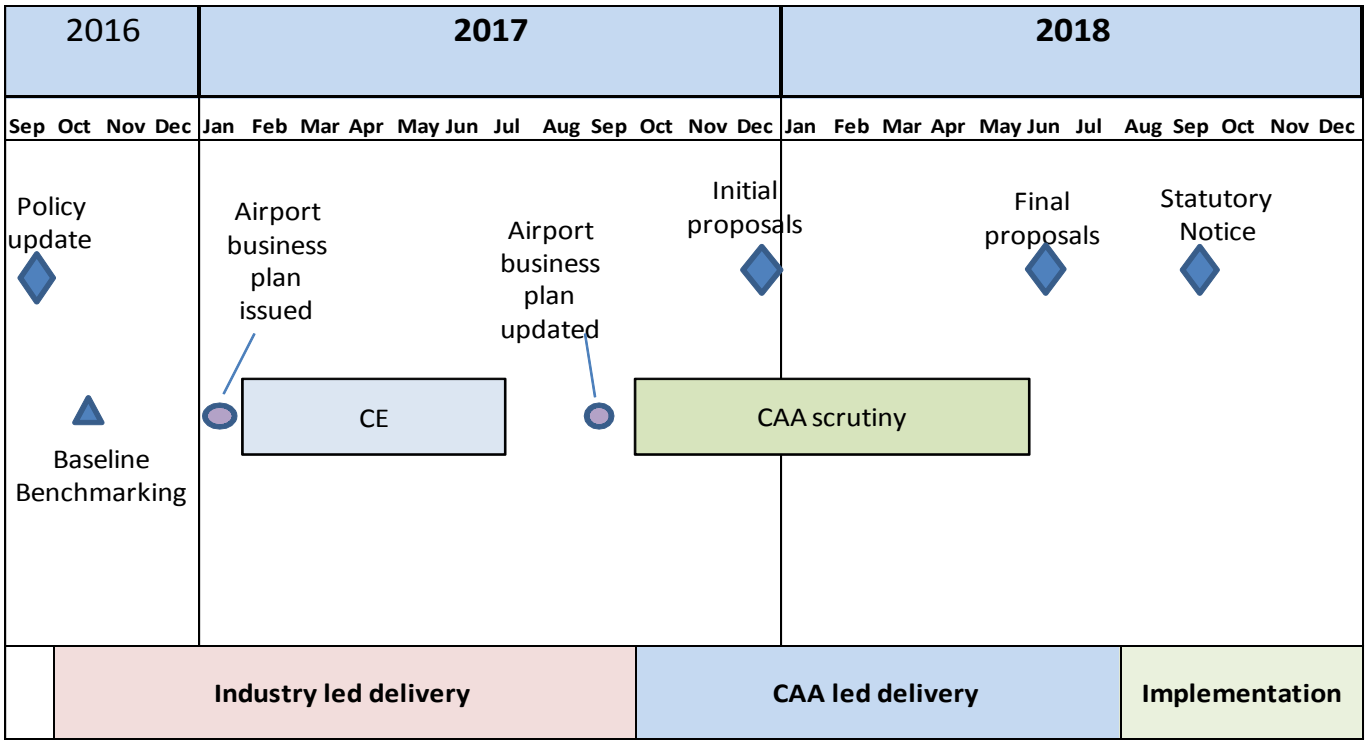
5. This paper is structured as follows:

- Section 1 considers the pros and cons of different timelines.
- Section 2 provides further details of our proposed approach to assessing efficiency / benchmarking etc.
- Section 3 sets out further details of the financial issues we identified in the strategic themes document where we consider it would be helpful to signal early on in the process a potential change in approach.
- Appendix A presents a time series analysis of HAL's traffic and business performance against regulatory assumptions from 2003/04 to 2015.
- Appendix B contains further details of the draft terms of reference for the priority studies that we have identified.

Section 1
Timing of HAL’s initial business plan

6. An important milestone in any price review process is the publication of the company’s initial business plan setting out its assumptions, expectations and forecasts for the future period. The H7 discussion document envisaged that this would take place in January 2017 as per the chart below.

Timeline in CAA strategic themes document



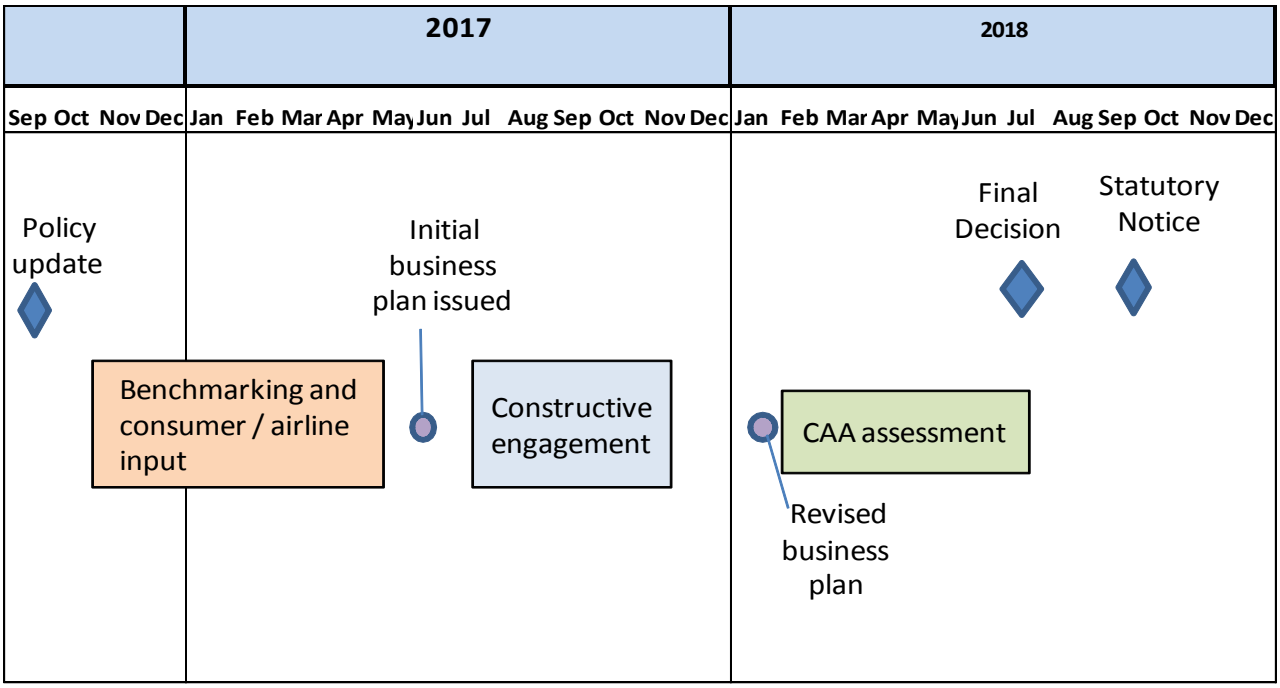
7. Under this approach, the CAA would issue its Policy Update in September 2016 setting out further details on the regulatory framework. We would also issue a set of baseline benchmarking studies to help inform the initial stages of the process (the timing and scope of these are discussed further below). Following this we anticipated a period of engagement between HAL and the airlines to provide input to the business plan before it is issued in January 2017.

8. The plan would then be challenged and scrutinised by airlines through the CE process. At the end of this process, airlines would submit their views on the plan with recommendations on areas for improvement. HAL would then have an opportunity to revise the plan before it is resubmitted to us around September 2017 in preparation for the CAA led stage of the review.

HAL's suggested approach

9. HAL has suggested there may be a case for working to an alternative timeline based on providing the initial business plan slightly later in the process as per the chart below.

HAL proposed timeline



10. This timeline is based upon delaying the publication of the initial business plan until June 2017 followed by a shorter, more focused version of CE.

11. In making this proposal, HAL has emphasised the importance of providing an opportunity for the initial plan to reflect the most up to date position at the time of the H7 settlement. HAL has also suggested that this approach would bring the following benefits:

- Allow more time for consumer research and the establishment of the Consumer Challenge Forum.
- Provide more time for HAL to consult with airlines.
- Support the prospect of a high quality business plan.
- Enable a more tailored approach to CE.
- Reduce uncertainty in the business plan.

12. HAL has also noted that the process should be flexible in response to uncertainty related to airport expansion.

CAA assessment

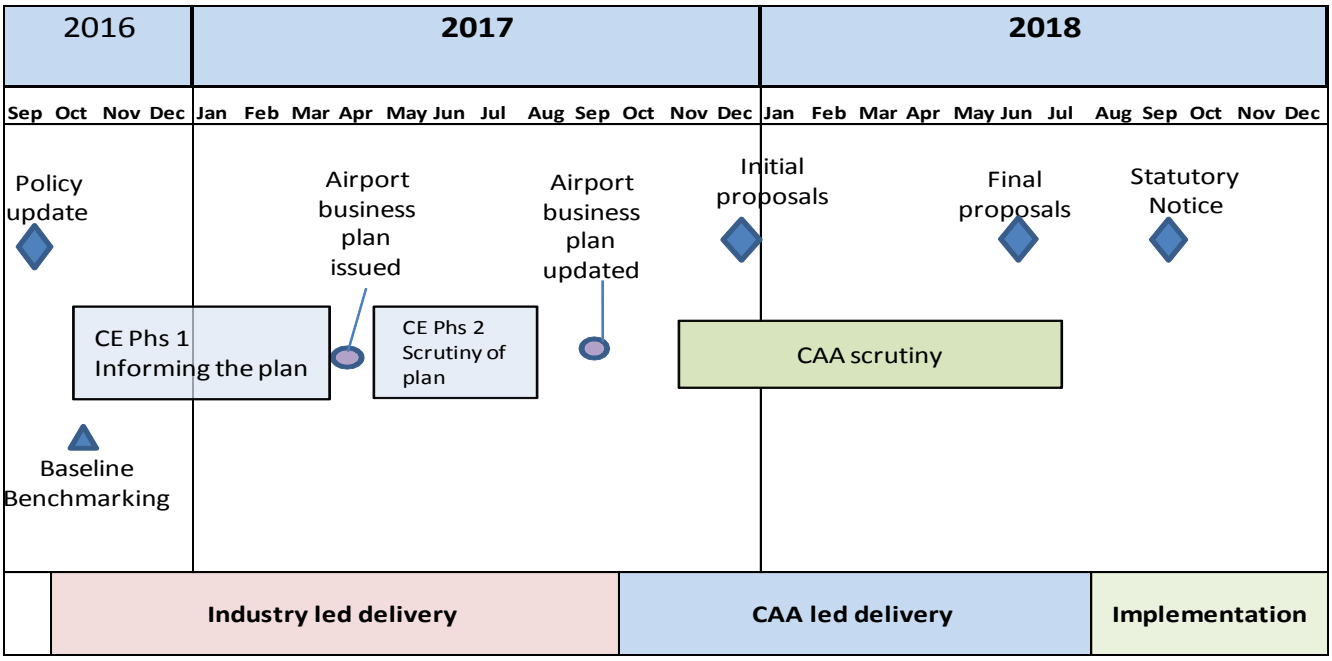
13. We acknowledge that the timetable set out in our discussion document is ambitious and that HAL will need to work quickly to take into account the

benchmarking studies (scheduled to be published in Sept/Oct 2016) in a plan for January 2017. Similarly, the CCF will need to be established quickly for it to positively influence the research and other consumer led inputs which we expect to form part of HAL's initial plan.

14. Looking at HAL's alternative proposal, this has some strengths but also some drawbacks. In particular, receiving a revised plan in early 2018 would substantially compress the CAA led part of the review which includes a number of statutory milestones where flexibility is limited. We understand that reducing the duration of CE may also be unpopular with airlines. In short, we consider that HAL's proposal may be too back end loaded which could create process risk for the CAA.

15. We have therefore developed an alternative option based upon HAL providing the plan at the end of March 2017 and would like to understand views on this option in the seminar.

CAA revised timeline



16. This revised timeline takes into account the issues raised by HAL including the importance of accommodating benchmarking and the establishment of the CCF.

17. Under this alternative option, CE would be conducted under two discrete phases of (i) ex-ante consultation with airlines / consumers from September 2016 until March 2017 to inform the developments of HAL's plan and (ii) ex-post scrutiny of the building blocks, assumptions, cost and revenue projections etc to assist the CAA in its assessment of the plan and the areas for further scrutiny in the CAA led phase of the review. The first part of this phase could be kicked off by HAL with a high-level or outline business plan covering themes and issues. This second phase would run from April 2017 for between 3-6 months.

Section 2
Approach to efficiency assessment

18. We noted in the H7 discussion document that we would like to consult with stakeholders on our overall approach to the cost and revenue assessment as well as the objective, scope and timeline of a series of consultancy studies that we plan to commission over the next month or so.

19. We also confirmed that we would use a broad toolkit approach to our assessment to build up a picture of the extent to which HAL's operations are currently managed in an efficient way. Over the course of the H7 process, we plan to do this using both quantitative and qualitative analysis, information provided by HAL, views and supporting evidence provided by other stakeholders (e.g. through CE), historical costs and HAL's forward looking forecasts of costs and revenues.

20. Comparative analysis will continue to form a critical part of our assessment. We plan to follow the usual practice[3] of complementing our own analysis with input from bespoke consultancy studies. However, we intend to approach the H7 efficiency assessment in a slightly differently

[3] For example, the list of benchmarking studies undertaken for Q6 can be found at: http://webarchive.nationalarchives.gov.uk/20150601163349/http://www.caa.co.uk/default.aspx?catid=78&pagetype=90&pageid=14279

way than the we did for Q6 by commissioning consultancy studies in two phases:

- An initial baseline analysis to be undertaken in 2016 to inform the earlier stages of the process. The findings of these studies will help to form the basis for ongoing stakeholder engagement. We expect these studies to be published in autumn this year and to be a key input to inform HAL's initial business plan.
- The second phase is expected to be ready in time to inform the CAA led part of the review. The breadth and depth of these studies will depend on the CAA's assessment of the quality of HAL's business plan which will, in turn, be informed by the views of airlines and progress made through Constructive Engagement (CE).

Advantages of this approach

21. We consider that splitting the benchmarking phase into two parts and publishing the results of the first phase of studies in Autumn 2016 will:

- Provide additional context for the cost and revenue projections set out in HAL's initial business plan;
- Help to frame the conversation for CE by providing a suite of independent evidence on the main cost and revenue building blocks;
- Assist with a more consumer-focused approach and the objective of incentivising a high quality plan; and
- Potentially reduce the back loading of work in the later stages of the review.

22. For the second phase of studies, we are minded to focus on the high-risk areas and/or key areas of disagreement, as well as, if appropriate, updating the findings of the first suite of studies as new information becomes available. This assessment will be informed by the views of airlines and the CCF on the extent to which HAL's business plan is well justified and in line with consumers interests.

23. In theory, therefore there may be scope for us to do less in the later stages of the process. On the other hand, if the outcome of CE and CCF

input is that there is room for improvement in HAL's business plan, we could also take the opportunity in the second phase of benchmarking studies to conduct a similar level of detailed analysis as we did for the Q6 review.

24. We welcome views on this proposed approach through the seminar.

Priority studies for 2016

25. In light of the suggested approach described above, we have identified five priority studies that we plan to carry out over summer 2016, subject to views received through the seminar.

26. In designing the initial scope of this programme, the CAA has carried out a detailed time series analysis of HAL's traffic and business performance against regulatory assumptions from 2003/04 to 2015. This analysis is set out in Appendix A to this paper.

27. The CAA considers that all types of benchmarking have certain limitations as regards the availability and comparability of data and caution, therefore, has to be exercised in interpreting the results. The CAA's proposed approach at this early stage of the review is to take an overall view of the results from a wide range of studies and to consider their implications for HAL's business as a whole.

28. For that reason, the CAA intends to compile a range of top down evidence upon which initial judgements can be formed rather than proceeding directly to the more detailed, bottom-up studies that were carried out in the latter part of the Q6 review. The list of studies that we have in mind is set out in the table below.

Study	Objectives
Opex efficiency review	To indicate the level of cost savings HAL might achieve by adopting relevant leading practice to improve cost efficiency.

Cost and revenue allocation	To ensure that HAL's accounting policies (and practices) are consistent with best practice regulatory economic principles such that the outputs in the HAL business plan are appropriate and in line with the CAA's statutory duties.
Commercial revenues	To review performance relative to the regulatory assumptions as well as an assessment of the reasons for variances and the scope for improvements in the future.
Top down benchmarking	To gather evidence and examine key headline metrics for Heathrow compared to relevant comparator airports (to be defined but could include European and global hubs).
Treatment of capex	An independent and objective review of how well the new arrangements (core/development, IFS, CPB etc) are working. Development of a framework through which the CAA can form a view on HAL's current and prospective ability to deliver investment projects efficiently and effectively

29. The more detailed terms of reference for each proposed study is included within Appendix B. We would like to use the seminar to discuss views on this initial straw man including the scope, methodology, suitability of comparators and timing.

Section 3
Financial issues

30. Our detailed assessment of the financial framework will be set out at a later stage of the H7 process. In the meantime, this section sets out further details of some of the issues we identified in the strategic themes document where we consider it would be helpful to signal early on the direction of travel. We consider in turn (i) the overall approach to the allowed return (ii) the treatment of the cost of debt and (iii) the treatment of inflation.

Allowed return

31. For H7, as in previous period, the allowed return for HAL will be an estimation of the returns that investors in HAL will expect in order to attract, retain and remunerate investment in the provision of airport services.

32. In our strategic themes document we proposed to use a similar overall approach to the one used during HAL's previous price control review (Q6). The Q6 control covers the period 1 April 2014 to 31 December 2018. The price control before Q6, is referred to as Q5 and covered the period 1 April 2008 to 31 March 2014.

33. The allowed return for HAL has typically been applied to its RAB on a pre-tax 'real' basis and has been calculated using the Capital Asset Pricing Model (CAPM). The high level parameters, as determined by us, for both Q5 and Q6 are displayed below.

Parameter	**HAL Q5**	**HAL Q6**
%	Point estimate[4]	Point estimate[5]
Gearing	60	60
Pre-tax cost of debt	3.55	3.20
Post-tax cost of equity	7.3	6.84
Tax rate	28	20.2
Pre-tax cost of equity	10.2	8.58
Pre-tax WACC	**6.2**	**5.35**
Vanilla WACC[6]	**5**	**4.66**

4 March 2008, our decision, Table 10-1: http://webarchive.nationalarchives.gov.uk/20140713054907/http://www.caa.co.uk/docs/5/ergdocs/heathrowgatwickdecision_mar08.pdf

5 February 2014, a technical appendix to our notice granting the licence, Figure 7.1: www.caa.co.uk/CAP1155

6 Vanilla WACC shown for comparative purposes only and is based on the conversion method used in the Q6 review.

34. Given that H7 is not due to commence until 1st January 2019 we do not intend to focus, at this stage, on specific estimations, but rather how we should approach this key issue overall.

35. The allowed return will be a key input in HAL's business plan. For example, during the Q6 review, HAL proposed[7] a pre-tax WACC of 7.1%, and compared to our final decision of 5.35%, this would have resulted in charges being about 17% higher.

36. We are interested at this stage in seeking views from stakeholders on when we should give a view on the allowed return during the H7 process, and in particular whether we should give a view prior to HAL submitting its business plan. We consider there may be four main options:

- HAL to use the existing Q6 point estimate of 5.35%;
- HAL to propose the allowed return it deems appropriate;
- The CAA to provide an updated point estimate that HAL should assume for the allowed return in preparing its plan; or
- The CAA could provide a range within which HAL could choose the allowed return it deems appropriate for the purposes of progressing its business plan.

37. In any of these scenarios we do not intend to prejudice our future work on allowed return and we will, of course, consider the matter in more detail as the H7 review progresses.

38. However, we are mindful that HAL's business plan will be significantly affected by this key input. For example there may be projects which HAL considers are not viable at a certain level of allowed return. There is a strong link between the level of allowed return and the level of investment by HAL and we are interested in stakeholder views about how we should consider the relationship between these two areas.

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7 February 2013, a report from Europe Economics on behalf of Heathrow, Table 1.1 : http://webarchive.nationalarchives.gov.uk/20150601163349/http://caa.co.uk/docs/78/heathrowcostofcapitalstudy.pdf

39. A government decision on the location of new runway capacity may also be a relevant consideration to this assessment.

40. The benefits of us giving a view earlier however need to be weighed against the drawbacks. For example, more market data will be available to us further down the track and other aspects of the price control framework (e.g. Constructive Engagement) will help contribute to a more accurate and better informed decision at a later stage. In addition there is a risk that early views on this central issue could be distracting or counterproductive.

41. Our current view is that there may be an opportunity to achieve the benefits of both an early view and a more detailed view later in the process, perhaps by giving a high level view on the allowed return at an earlier stage (i.e. prior to the submission of HAL's plan) and by conducting a more detailed review at the later stages. We would welcome views on this approach.

Approach to determining the WACC

42. As noted above, we have typically approached the WACC from a pre-tax 'real' basis using the CAPM model, however this is not the only way of setting the WACC for H7. For example, most regulators use a 'vanilla WACC' to set the cost of capital excluding tax costs, while making a separate allowance for tax costs.

43. In addition, some observers consider that the CAPM model may have limited ability to accurately reflect the risks that investors take in the provision of airport services. For example Ofgem has stated[8] it would: *"consider in more detail the appropriate methodology to employ for the equity market return, as well as looking at risk issues including our beta assumption. Within this longer-term work, we will also consider whether it would be appropriate to introduce an index for the cost of equity in future RIIO price reviews"*

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8 Ofgem, February 2014: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/decision_on_equity_market_return_methodology.pdf

44. We are therefore interested in stakeholder views if we should consider in more detail our approach to the cost of equity and whether we can improve the approach, perhaps by using a different methodology, from the CAPM model we have used heavily in the past.

Cost of debt

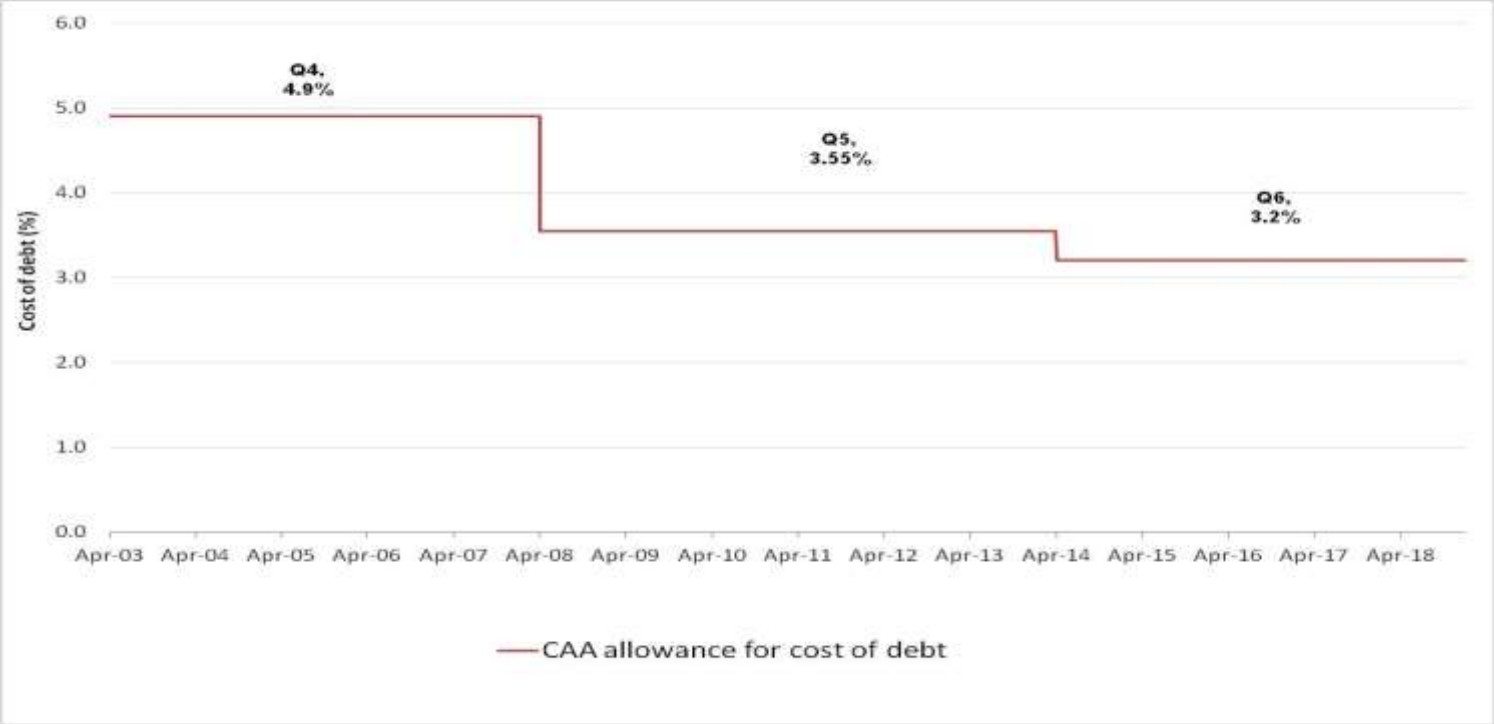
45. In this section, we intend to provide information for stakeholders to consider and engage with us in the seminar, as they deem appropriate. We do not ask any specific questions or at this stage propose any changes to existing policy.

Setting the cost of debt

46. A key part of the allowed return for H7 will be the amount allowed for debt costs.

47. In previous price control reviews we have estimated a forward looking cost of debt, using a combination of embedded debt costs and new debt costs. For example, in Q6, we decided the cost of debt should be 3.2% (excluding inflation) after assuming a weighting of 70:30 between the historical debt costs and the new debt costs. This approach can be referred to as a ‘fixed allowance’ approach because it set the allowance before the price control began and did not update or change for any new information afterwards.

48. The 'fixed allowance' approach has been adopted in each of the CAA's previous 3 price control reviews, as shown below.



49. However the fixed allowance approach is not the only way to set the cost of debt. For example the cost of debt can be updated each year based on movements in actual market rates. This can be referred to as an indexation approach. Ofgem has set the cost of debt by referring to published indexes in both its gas and electricity price controls and, at the time of writing, is the only UK regulator to do so. The approach has been tested with the Competition and Markets Authority (CMA) during the appeal against Ofgem's RIIO ED-1 price control[9].

50. We considered adopting an indexation approach during both the Q5 and Q6 reviews. Arguments in favour of an indexation approach include that:

- It might reduce the incentive on the regulator to aim up in its estimate of the cost of debt to protect against market movements;

9 Appeal by British Gas Trading Limited against Ofgem's decision to modify the licences of 10 electricity distribution network operators, opened March 2015 and closed September 2015: https://www.gov.uk/cma-cases/energy-price-control-appeal-british-gas-trading

- It would enable the costs of cheaper finance (or more expensive finance) to be passed through to passengers as markets moved; and
- It would encourage the regulated company to continually finance itself efficiently rather than just take the opportunity to lock-in gains by issuing debt at the start of the price control period.

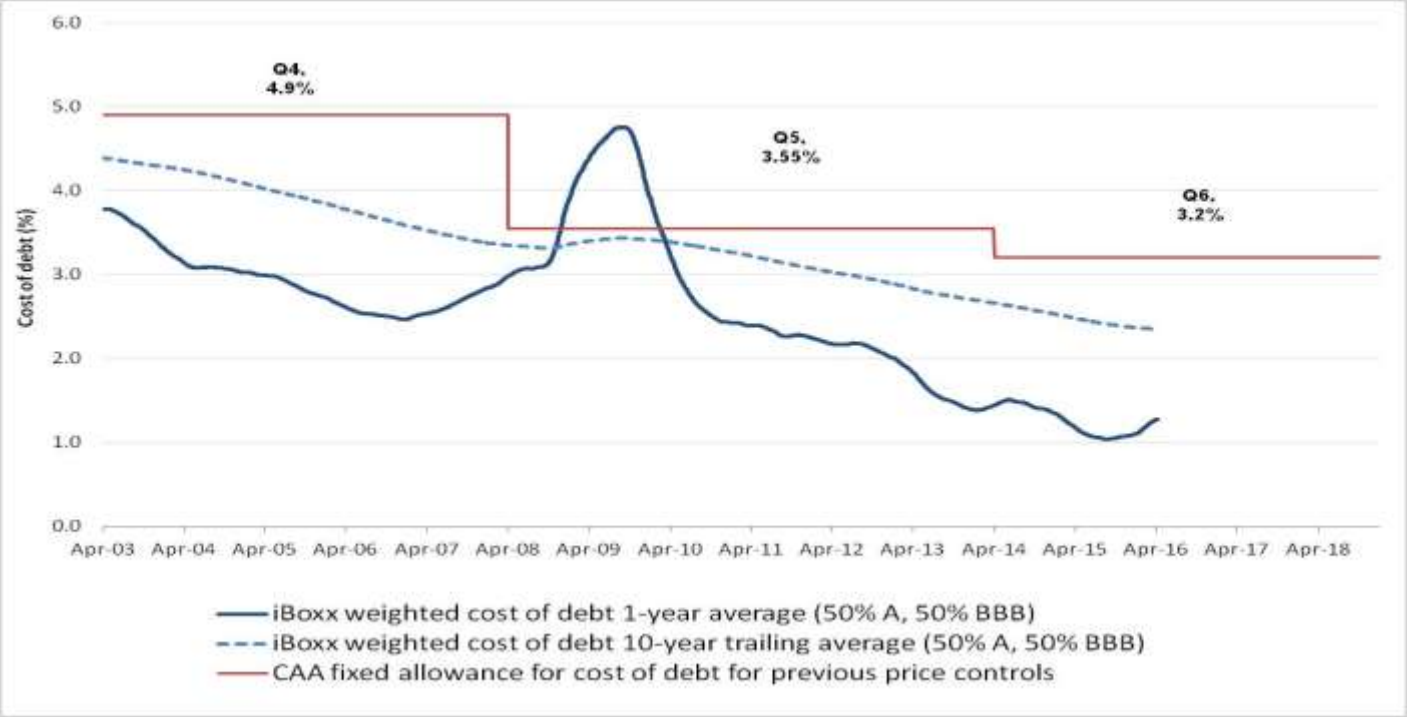
51. Concerns over the introduction of debt indexation include:

- Whether airlines or passengers could manage risk better than the airport operator and therefore would it lead to an increase in risk overall;
- Whether the mechanism could be in place for multiple control periods; and
- Whether it could be suitably designed so as to perform as intended.

52. However at both the Q5 and Q6 review, we ultimately decided against debt indexation. At the Q6 review we said[10]:
"Having carefully considered the potential advantages and disadvantages, the CAA does not propose to introduce debt indexation for Q6. Debt indexation is the automatic update of the cost of debt within the control period for market movements. The CAA does not consider that the benefits of debt indexation for the regulated airport operators in Q6 are significant enough to outweigh the disadvantages, costs and risks."

53. By way of example, the chart below shows how market rates for the cost of debt have moved, when using as a proxy the same debt index as Ofgem, compared to the fixed allowance we determined in the three most recent price controls.

10 October 2013, technical appendix to our Final Proposals, paragraph 1.1: www.caa.co.uk/CAP1115



54. We use this chart to highlight a few of the key issues with indexation:

- An appropriate index must be chosen for the task at hand and it needs to be appropriately calibrated for its intended purpose. In the chart above we show the index used by Ofgem but this may not be the appropriate index for HAL. For example the 1 year average and 10 year average differ greatly and Ofgem were regulating a group of companies whereas in the H7 price control we are regulating only HAL;
- A change in regulatory policy, from fixed allowance to an index, will need to be considered at a time when interest rates are historically low. If debt costs were to increase dramatically then more costs may be passed through than otherwise might have been the case if we were to stick with our fixed allowance approach; and
- The ability of an index to mimic efficient debt costs will depend greatly on how the index is used (e.g. the trailing average period) as well as which index is chosen.

Adjustment mechanisms

55. In addition, we are also interested in stakeholder views on how to deal with any variance between HAL's actual cost of debt and the cost we

assume in the H7 price control, whether based on a fixed or indexed amount.

56. In previous price controls, the risk that debt costs were more (or less) than what we assumed when setting the fixed allowance in the price control, was fully taken by HAL. However, it may be more appropriate to share this risk more evenly between HAL and consumers by updating the allowance ex-post based on certain pre-defined criteria. For example, if we set a fixed allowance for H7 of say 3% (excluding inflation) and HAL's actual cost of debt turns out to be 2%, the variance of 1% could be shared between customers and HAL on a 50:50 basis.

57. This sharing of under-spends and over-spends is just one way of adjusting the allowance ex-post and can be referred to as an 'adjustment mechanism'. Adjustment mechanisms can work in a number of ways, and can include a number of features, such as for example being calibrated at an overall level of return on equity, or having caps and floors to limit the sharing to a certain predefined range. The intention of such a mechanism is to more accurately allocate risk to the party best placed to manage it. One of the considerations is that HAL only has a limited control over its debt costs and therefore it may be more appropriate that it only has limited exposure to the risk of variances.

58. However, such adjustment mechanisms can complicate the regulatory framework and introduce new risks if they are not properly constructed.

59. We are currently receiving advice from Cambridge Economic Policy Associates (CEPA) in a joint project with Ofwat, with regards to our policy options on this issue and we welcome any preliminary views that stakeholders might have. We intend to share CEPA's findings in due course by publishing their report on our website.

Inflation indices

60. Similar to previous price control reviews (and most other regulated sectors) we need to account for inflation in determining a price cap for HAL during H7.

61. For the wider UK economy, questions have been raised about how inflation is calculated, and in particular whether the Retail Prices Index (RPI) is fit for purpose.

62. The remainder of this section is structured as follows:

- Concerns with RPI;
- How RPI is used in HAL's price control; and
- Key issues arising.

Concerns with RPI

63. It is particularly important to revisit the regulatory approach to inflation because in January 2013 the National Statistician found that the formula used to calculate the RPI does not meet international standards[11].

64. In March 2013, RPI was de-designated as a national statistic by the UK Statistics Authority (UKSA)[12]. In May 2013 Sir Andrew Dilnot, Chair of the UKSA invited Paul Johnson, Director of the Institute of Fiscal Studies, to conduct a review of UK price indices.

65. Subsequently, (January 2015) the review by Johnson explained that: "the use of the Carli formula is statistically flawed and can result in an **upward bias** in recorded inflation"[13]. Mr Johnson went on to state that "it is not just the use of the Carli which is problematic in the construction of the RPI as a measure of consumer price inflation. Issues with the data source of the weights, population coverage and treatment of some goods… make the RPI less suitable as a measure of overall inflation."

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11 Archived: http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/rel/mro/news-release/rpirecommendations/rpinewsrelease.html

12 Paragraph 1.2.3 here: https://www.statisticsauthority.gov.uk/archive/assessment/assessment/assessment-reports/assessment-report-246---the-retail-prices-index.pdf

13 Page 13 here: https://www.statisticsauthority.gov.uk/wp-content/uploads/2015/12/images-ukconsumerpricestatisticsarevie_tcm97-44345.pdf

How RPI is used in HAL's price control

66. Three of the main ways that we use RPI for HAL's price control are: calculating returns for shareholders; inflating the Regulated Asset Base (RAB); and forecasting future price caps and future costs. Each of these is described in more detail in the subsections below.

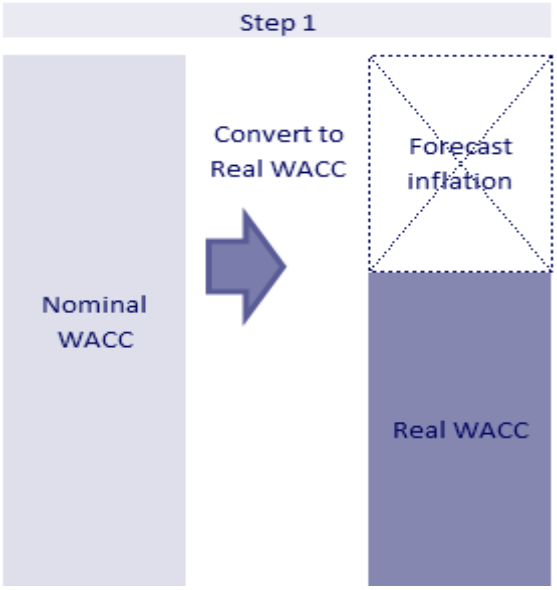
Calculating the allowed return / weighted average cost of capital

67. Firstly, inflation is used to calculate the WACC.

68. In order to attract investment, investors are paid a return on the money they invest in "real" terms, ie - investors are offered an inflation proof investment which insulates their investment against general inflationary pressure. Typically, the value of this return is based on the weighted average cost of capital (WACC), being the weighted average of debt and equity financing.

69. This "real" WACC is calculated by stripping out a forecast of inflation from the nominal WACC (ie the costs of debt and equity financing). The calculation is done in % terms.

Figure 1: How inflation is used to calculate the 'Real WACC'



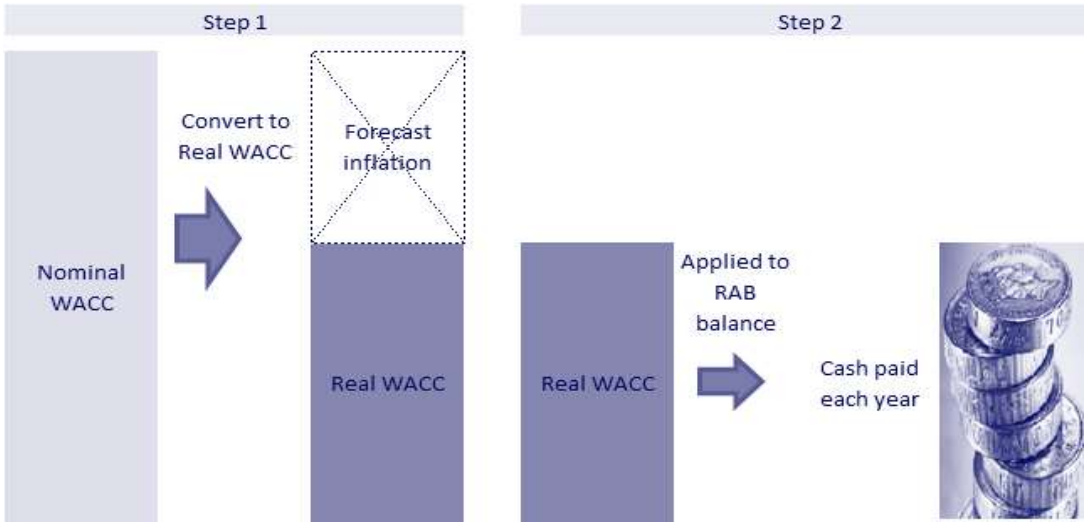
70. By way of example, if we were to assume a nominal WACC of 8% was required to attract debt and equity investment, and we were to assume a

forecast inflation value of 3%, the Real WACC can be calculated as follows:

- Real WACC = (1 + nominal WACC) / (1 + forecast inflation) – 1
- Real WACC = (1 + 8%) / (1 + 3%) -1
- Real WACC = 4.85%

71. The Real WACC is then applied to the RAB balance in order to calculate the cash paid to debt and equity investors each year.

Figure 2: The Real WACC is used to calculate the cash paid to investors each year.



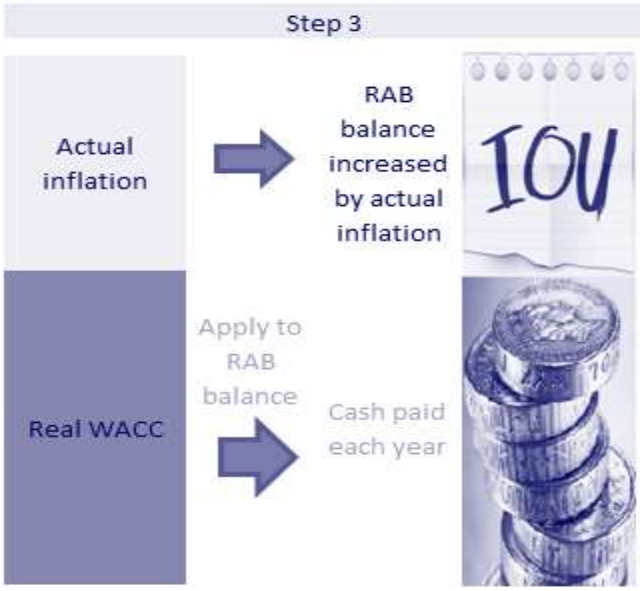
Inflating RAB

72. Secondly, inflation is used is to inflate the RAB balance each year.

73. From Figure 1 and Figure 2 it is clear that quite a chunk of the nominal WACC is still due to be paid to debt and equity investors. This is usually done by adding actual inflation to the RAB balance each year in arrears.

74. By adding actual inflation to the RAB balance, the amount due to investors is deferred into future periods in the form of an “I owe you” (IOU). This can be illustrated graphically as per Figure 3 below.

Figure 3: The total return paid to shareholders: an 'IOU' for actual inflation; and the Real WACC value paid in cash each year.



Forecasting future price caps and future costs

75. Thirdly, inflation is used for setting future price caps and costs.

76. The price cap is set using the 'RPI – X' approach. The higher inflation, the higher the price cap, and vice versa.

77. We also forecast costs in 'real' prices such that allowances are increased each year to account for general inflation. However, some regulators have also supplemented this with an adjustment for 'real price effects' which is an estimation of the actual inflationary pressure on the relevant costs. For example, if RPI inflation was forecast to be 3%, and the relevant costs in the price control were expected to move more in line with a construction index (e.g. COPI) of 2%, then the 'real price effect' adjustment would be roughly negative1% to account for the fact that RPI was not reflective of the relevant costs being forecasted.

Key issues arising

78. This section sets out the issues which seem to be most important to consider, at this stage, regarding the use of inflation indices during H7.

79. The key issues arising are set out below as follows:

- Stable cash flows and protecting economic value;

- Higher financing costs; and
- Next steps.

Stable cash flows and protecting economic value

80. Our primary concern when dealing with a change to a technical part of HAL's price control, such as an inflation index, will be to assess its relevance to cash flows and economic value.

81. In making any change we will seek to minimise the impact on both HAL and consumers absent any justification for doing otherwise.

82. One of the main alternatives to the RPI is the CPI. CPI typically results in lower levels of inflation than RPI. Although it may sound counter intuitive, using a lower inflation index such as the CPI, could increase charges in the short term, absent any other offsetting adjustments. This is because a lower measure of inflation wouldn't change the overall level of returns but simply increase the amount of returns paid via the real WACC and reduce the amount of the returns added to the RAB.

83. Therefore, , given that the use of inflation is mostly a timing issue between whether returns are paid in the shorter or longer term (as shown above at Figure 1, Figure 2 & Figure 3), we would not wish to distort the timing of cash flows when moving from one inflation measure to another. Therefore, any change to the inflation index may also need to be accompanied by changing the speed of other cash flows such that we do not overstate charges, or negatively affect intergenerational equity, over the short or longer term.

Higher financing costs

84. Over time, HAL has chosen to link outflows in the form of debt repayments to RPI in the form of 'indexed linked debt' noting that its cash inflows (the real WACC returns and the level of the price cap) are also linked to RPI.

85. This linkage provides two main benefits. Firstly, it allows a more predictable balance of inflows and outflows each year, because the risk

that inflation moves differently to nominal debt markets is reduced. Secondly, financeability ratios will be healthier, other things being equal, because there was less of a mismatch between high nominal debt costs and low (real WACC) annual returns.

86. This linkage has benefits in terms of stability and predictability because the effect of RAB inflation is mimicked by the associated debt.

87. Within this context, there would seem to be an issue about whether existing RPI linked debts should (or could) be refinanced to CPI linked debts. For example if a company had £10billion of debt and it cost 0.3% to refinance this debt (by using some type of financial instrument, such as a swap, for example), the company would need to judge if the linked benefits were worth a cost of £30million. In addition even if any CPI linked products were available they may be more expensive than the more readily available RPI linked debt products. At the time of writing, we understand that a CPI market is not readily available, either for bonds or swaps, although this could change in the future.

88. As noted in our strategic themes document, over 50% of HAL's debt is linked to RPI inflation. We will consider this further in our work on inflation indices and its relevance to this decision specifically.

Next steps

89. We would like to hear stakeholder views on the inflation issue including feedback on our analysis of the issue as set out above.

90. We are continuing to follow developments in other sectors and are discussing this matter with other regulators at the UK Regulators Network[14].

91. Lastly, we are following the progress of the UK Statistics Authority (UKSA) and their ongoing work on CPIH. We note that, on 9 March 2016, the National Statistician (John Pullinger) advised Sir Andrew Dilnot of the UK

14 http://www.ukrn.org.uk/

Statistics Authority “I am inclined to consider that CPIH should become the ONS preferred measure of consumer inflation and the focal point of ONS commentary in due course”[15]. We expect that the progress of the UKSA will be central to our ability to take a view on this issue.

15 https://www.statisticsauthority.gov.uk/wp-content/uploads/2016/03/Letter-from-John-Pullinger-to-Sir-Andrew-Dilnot-090316.pdf

Appendix A

HAL’s traffic and business performance

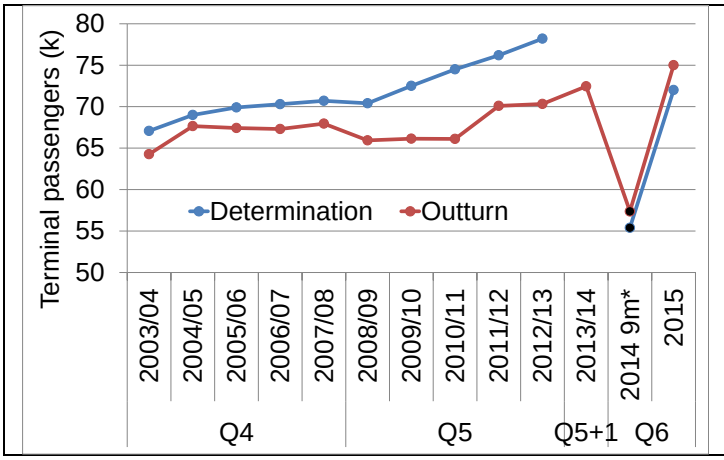
1. In section 2 of the main paper, we set out an overview of our proposed approach to assessing efficiency for the H7 review. To place this assessment in additional context, this Appendix presents a time series analysis of HAL's traffic and business performance against regulatory assumptions from 2003/04 to 2015. All the data are based on HAL's regulatory accounts and are in nominal prices (i.e. not adjusted by inflation). For Q5+1 (2013/14), no regulatory assumption was made and hence there is no comparison against the determination for that year. In all the charts below, "2014 9m*" refers to the period from April to December 2014.[16]

2. This appendix reviews traffic, regulatory operating profit, revenues and costs.

Terminal passengers

3. Actual numbers of terminal passengers were lower than forecast throughout Q4 and Q5. This has changed for Q6 where HAL carried 4% more passengers than forecast in 2014 and 2015.

16 The Q6 price review lasts for four years and nine months (different from the five-year duration of previous control periods), so that the regulatory years align with HAL’s financial year which is on a calendar year basis.

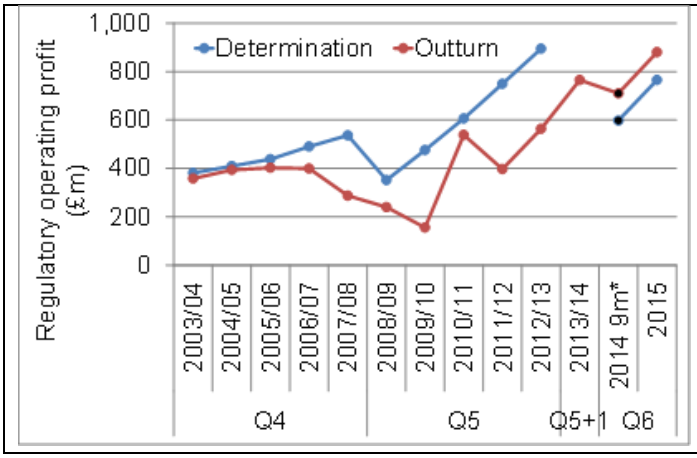


Outturn versus determination			
2003/04	-4%	Q4	-4%
2004/05	-2%		
2005/06	-4%		
2006/07	-4%		
2007/08	-4%		
2008/09	-6%	Q5	-9%
2009/10	-9%		
2010/11	-11%		
2011/12	-8%		
2012/13	-10%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+4%	Q6	+4%
2015	+4%		

Regulatory operating profit and return

Regulatory operating profit

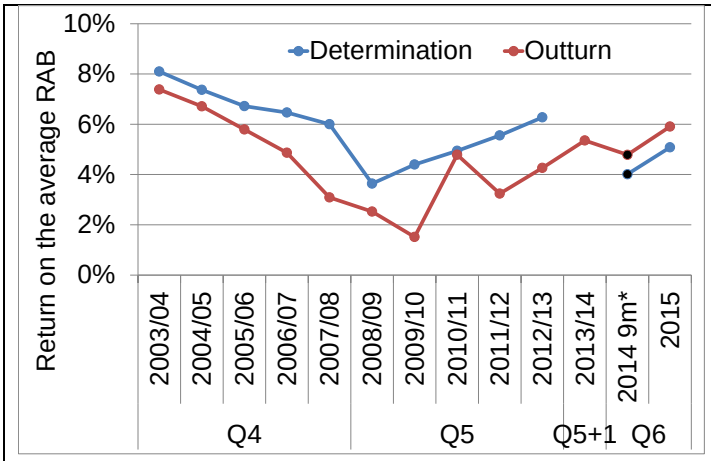
4. Regulatory operating profit is the difference between total revenue and total expenditure. During most of Q4 and Q5 regulatory operating profit was lower than forecast. Since Q6 began, HAL has achieved higher operating profit than forecast. 19% higher in 2014 and 15% higher in 2015.



Outturn versus determination			
2003/04	-6%	Q4	-18%
2004/05	-4%		
2005/06	-8%		
2006/07	-19%		
2007/08	-46%		
2008/09	-32%	Q5	-38%
2009/10	-67%		
2010/11	-11%		
2011/12	-47%		
2012/13	-37%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+19%	Q6	+17%
2015	+15%		

Return on average Regulatory Asset Base (RAB)

5. Return on average RAB is the regulatory operating profit divided by the average RAB value. Apart from in 2010/11 HAL's return on RAB was below forecast in Q4 and Q5. However, it has achieved a higher return than forecast in Q6.

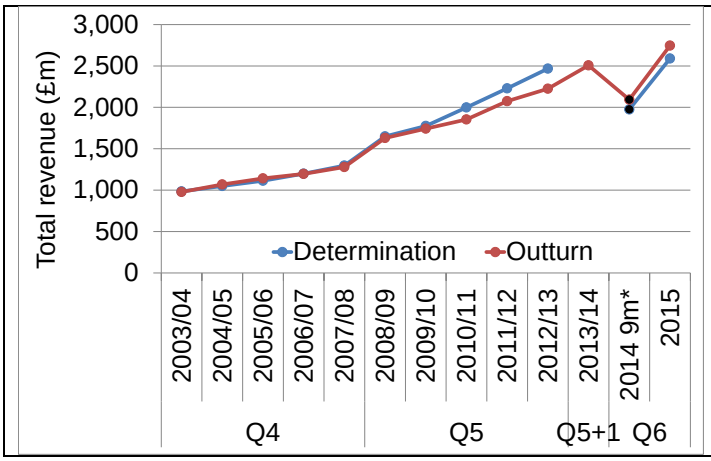


Outturn versus determination			
2003/04	-0.72%	Q4	-1.54%
2004/05	-0.66%		
2005/06	-0.93%		
2006/07	-1.60%		
2007/08	-2.91%		
2008/09	-1.11%	Q5	-1.73%
2009/10	-2.88%		
2010/11	-0.16%		
2011/12	-2.31%		
2012/13	-2.01%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+0.77%	Q6	+0.80%
2015	+0.83%		

Revenue

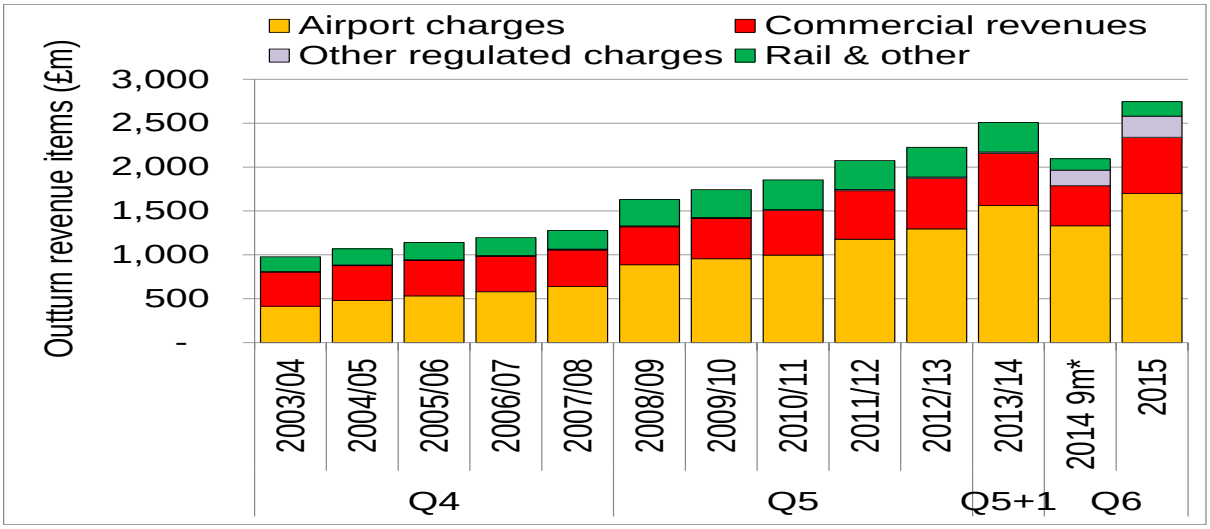
Total revenue

6. HAL's total revenue was broadly in line with our forecasts in Q4, although falling below forecast for every year during Q5. In Q6, it received 6% more revenue in both 2014 and 2015.



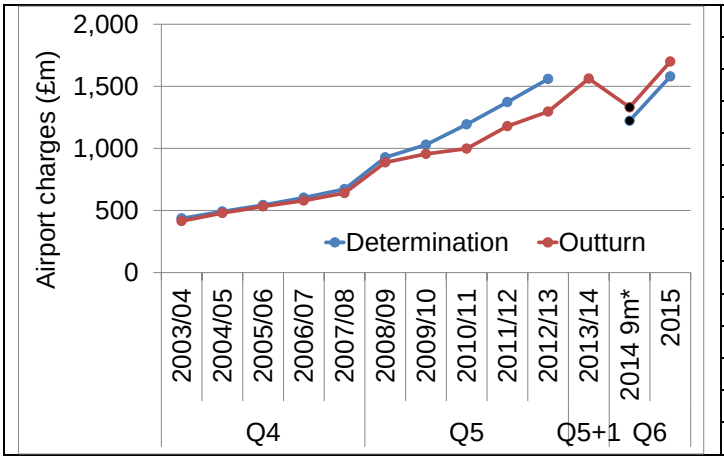
Outturn versus determination			
2003/04	-1%	Q4	0%
2004/05	+2%		
2005/06	+3%		
2006/07	0%		
2007/08	-1%		
2008/09	-1%	Q5	-6%
2009/10	-2%		
2010/11	-7%		
2011/12	-7%		
2012/13	-10%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+6%	Q6	+6%
2015	+6%		

7. HAL's revenue comprises of airport charges, commercial revenues, other regulated charges and rail and other. The overall trend of outturn revenue components is shown below.



Revenue component – airport charges

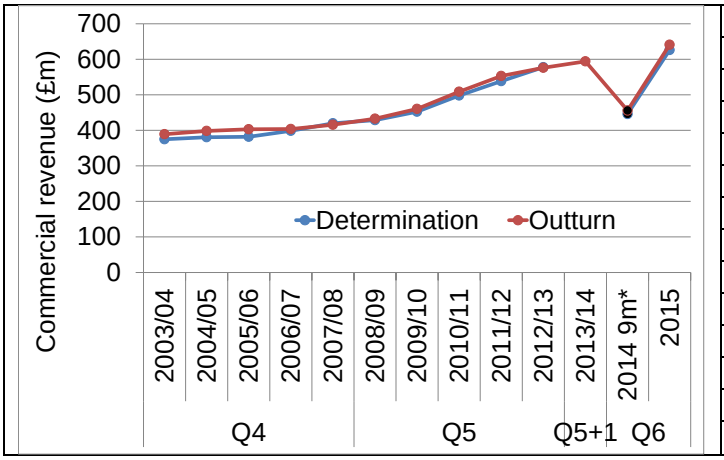
8. Airport charges remain the biggest source of revenue for HAL, with a contribution rising gradually from 42% in 2003/04 to more than 60% of total revenue in Q6. It fell below forecast for Q4, and was 13% below the level in the Q5 determination. In Q6, the situation improved, with outturn 8% higher than forecast.



Outturn versus determination			
2003/04	-5%	Q4	-4%
2004/05	-3%		
2005/06	-2%		
2006/07	-4%		
2007/08	-5%		
2008/09	-4%	Q5	-13%
2009/10	-7%		
2010/11	-16%		
2011/12	-14%		
2012/13	-17%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+9%	Q6	+8%
2015	+8%		

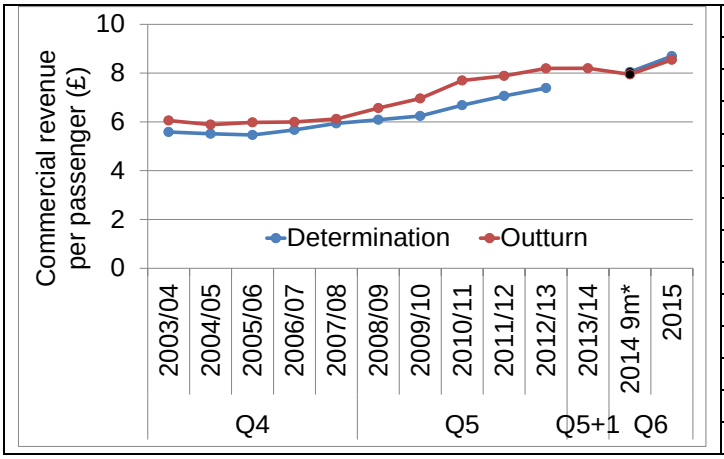
Revenue component – commercial revenue

9. HAL's commercial revenue consists of income from its retail business and property. Its increase has been less pronounced than the increase of airport charges, therefore the relative contribution to total revenue dropped from 40% in 2003/04 to 23% in 2015. HAL has achieved higher than expected commercial revenue from Q4 onwards.



Outturn versus determination			
2003/04	+4%	Q4	+3%
2004/05	+5%		
2005/06	+6%		
2006/07	+1%		
2007/08	-1%		
2008/09	+1%	Q5	+1%
2009/10	+2%		
2010/11	+2%		
2011/12	+3%		
2012/13	0%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+2%	Q6	+2%
2015	+2%		

10. On a per-passenger basis, HAL's commercial revenue has been increasing steadily, and was significantly higher than forecast for Q4 and Q5. As total commercial revenue has been broadly in line with projection, this favourable per passenger performance counteracted lower passenger traffic outturn. For Q6, total commercial revenue is 2% higher than the determination, but given the strong traffic performance, the per-passenger commercial revenue is 1% lower than forecast.



Outturn versus determination			
2003/04	+8%	Q4	+7%
2004/05	+7%		
2005/06	+9%		
2006/07	+6%		
2007/08	+3%		
2008/09	+8%	Q5	+11%
2009/10	+11%		
2010/11	+15%		
2011/12	+12%		
2012/13	+11%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	-1%	Q6	-1%
2015	-2%		

Revenue component – other regulated charges

11. For Q4 and Q5, charges for various regulated activities[17] were included under 'other revenue', which made up around 10% of the total revenue.

17 Other regulated charges comprises of baggage/check-in, fixed electrical ground power, utilities, passengers with reduced mobility, staff car parking and security documentation, and other income.

For Q6, these charges have been separated from 'other revenue' and shown separately as 'other regulated charges'.

Revenue component – rail

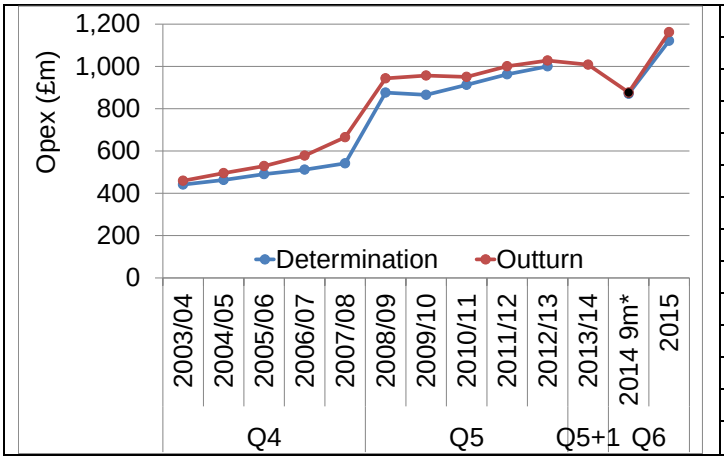
12. HAL's income generated from the Heathrow Express and Heathrow Connect services consistently made up of around 5-7% of the total revenues. Outturn revenue has been broadly in line with the forecasts throughout Q4, Q5 and the first two reporting periods of Q6.

Expenditure

Expenditure component – opex

Total opex

13. HAL's opex is on a rising trend and has been higher than forecast every year. The opex outturn was 11% more than forecast over Q4, and 6% more in Q5.



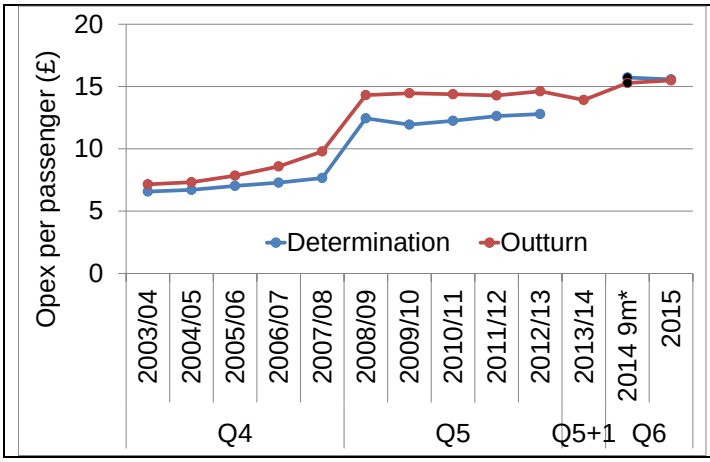
Outturn versus determination			
2003/04	+4%	Q4	+11%
2004/05	+7%		
2005/06	+8%		
2006/07	+13%		
2007/08	+23%		
2008/09	+8%	Q5	+6%
2009/10	+11%		
2010/11	+4%		
2011/12	+4%		
2012/13	+3%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+1%	Q6	+2%
2015	+4%		

14. The breakdown of opex (into staff costs, maintenance and equipment, rent & rates, utilities and other expenditure) was included in the regulatory accounts from 2005/06. These categories are analysed below.

15. HAL's total opex per passenger has been increasing gradually over Q4, and there has been a step change for Q5, linked to the opening of Terminal 5. HAL's total opex has been higher than forecast for Q4 and

Q5, as increased opex per passenger has outweighed the amount that passenger numbers fell below the level projected in the determination.

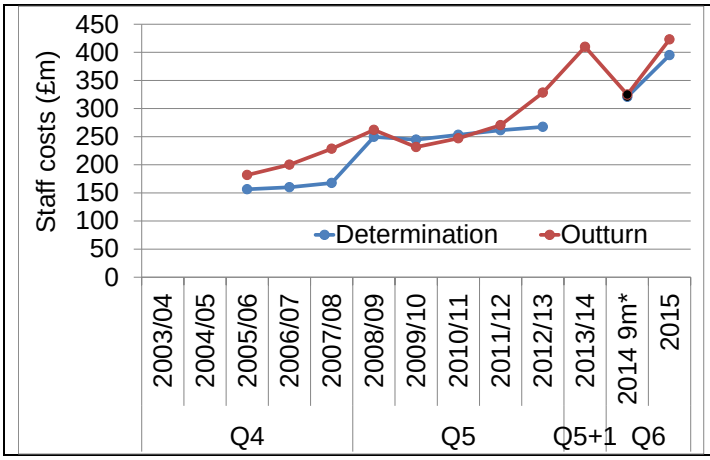
16. In Q6, opex spend has been 2% lower than the determination on a per passenger basis, but higher in total than projected due to stronger than expected traffic growth.



Outturn versus determination			
2003/04	+9%	Q4	+15%
2004/05	+9%		
2005/06	+12%		
2006/07	+18%		
2007/08	+28%		
2008/09	+15%	Q5	+16%
2009/10	+21%		
2010/11	+17%		
2011/12	+13%		
2012/13	+14%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	-3%	Q6	-2%
2015	0%		

Staff costs

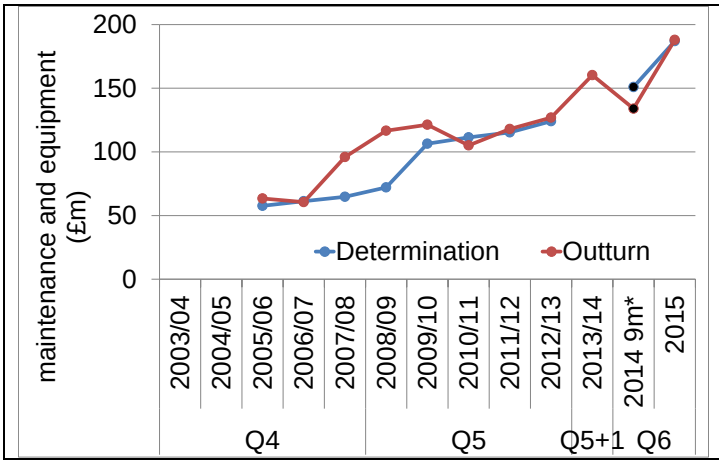
17. Staff cost consists of security, other operational staff, non-operational staff and pension costs. It is the biggest opex item consistently making up around one-third of opex. Over the last three years of Q4, HAL spent 26% more than forecast. Actual spending on staff in Q5 and the first two periods of Q6, in comparison, more in line with forecasts.



Outturn versus determination			
2003/04	N.A.	Q4	N.A.
2004/05	N.A.		
2005/06	+16%		+26%
2006/07	+25%		
2007/08	+36%		
2008/09	+5%	Q5	+5%
2009/10	-5%		
2010/11	-2%		
2011/12	+3%		
2012/13	+23%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+1%	Q6	+4%
2015	+7%		

Maintenance and equipment costs

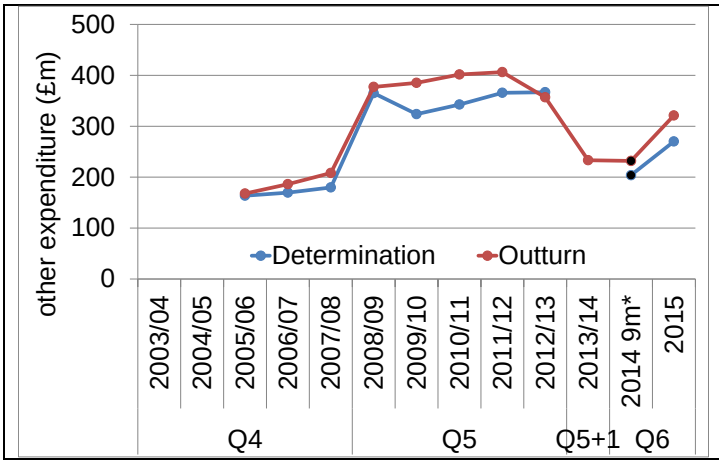
18. Maintenance and equipment costs can be classified into IT and computer, maintenance, and stores and equipment. They make up 10-16% of opex. Their share in opex increased with a much larger asset base to maintain since terminals 5 and 2 opened. HAL has spent more than forecast over Q4 and Q5. In 2014 and 2015, HAL's actual spend has been 5% lower than the Q6 determination.



Outturn versus determination			
2003/04	N.A.	Q4	N.A.
2004/05	N.A.		
2005/06	+10%		+20%
2006/07	-1%		
2007/08	+48%		
2008/09	+62%	Q5	+11%
2009/10	+14%		
2010/11	-6%		
2011/12	+2%		
2012/13	+2%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	-11%	Q6	-5%
2015	+1%		

Other expenditure

19. HAL's other expenditure include costs spent on police, rail, cleaning, intra group costs, passengers with reduced mobility, and air navigation services. The proportion of this cost in opex is around 30% but varied over the years. HAL spent higher than the regulatory assumptions in Q4, Q5 and the first two periods of Q6.



Outturn versus determination			
2003/04	N.A.	Q4	N.A.
2004/05	N.A.		
2005/06	+3%		+10%
2006/07	+10%		
2007/08	+16%		
2008/09	+3%	Q5	+9%
2009/10	+19%		
2010/11	+17%		
2011/12	+11%		
2012/13	-3%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	+14%	Q6	+17%
2015	+19%		

Rent and rates

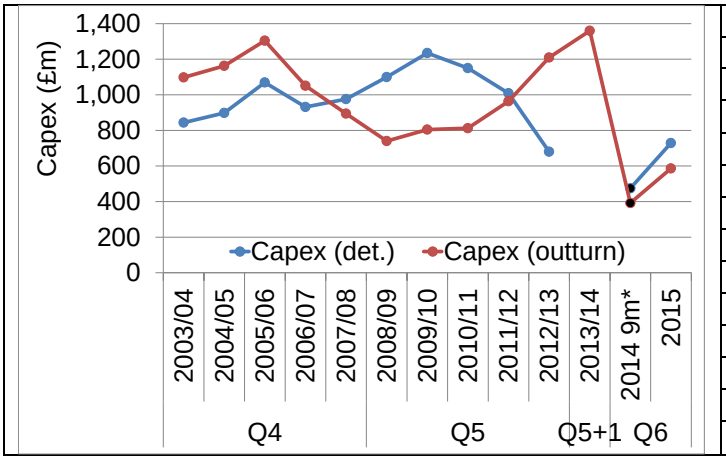
20. Every year 10-13% of opex went into rent and rates. Over Q4 HAL spent 11% lower than forecast, but in Q5 the outturn was 7% higher than expected. For the first two periods of Q6, the actual rent and rates have been 9% lower than forecast.

Utilities

21. HAL pays for electricity, water and sewerage, gas, waste and recycling and other utility charges to keep its business running. Overall utility charges have been around 8-12% every year. The outturn was 25% higher than forecast in Q4. However, over Q5 and Q6, actual utility charges have been 11% and 18% lower than the regulatory determinations respectively.

Expenditure component – capex

22. HAL's capex exceeded forecasts in Q4, but this was reversed in Q5. Since Q6 began, HAL's actual capital expenditure (capex) has been lower than our determination.



Outturn versus determination			
2003/04	+30%	Q4	+17%
2004/05	+30%		
2005/06	+22%		
2006/07	+13%		
2007/08	-8%		
2008/09	-33%	Q5	-12%
2009/10	-35%		
2010/11	-29%		
2011/12	-4%		
2012/13	+78%		
2013/14	N.A.	Q5+1	N.A.
2014 9m*	-17%	Q6	-19%
2015	-20%		

Appendix B

Priority studies for 2016

Opex efficiency benchmarking

To indicate the level of cost savings HAL might achieve by adopting relevant leading practice to improve cost efficiency. The work will involve:

- Understanding HAL's operating cost base and the regulatory framework within which HAL operates including the CAA's assessment of opex efficiency during the current control period (Q6).
- Reviewing HAL's performance relative to the Q6 determination including a detailed understanding of any variances from the CAA assumptions and the drivers of these.
- Identifying appropriate benchmarks for total opex and for disaggregated elements of opex including reasons to support the choice of benchmarks.
- Adjusting benchmarks to ensure comparability where appropriate and applying these to HAL's total and disaggregated elements of opex.
- Identifying, with support from the benchmarking evidence, the scope for efficiencies available to HAL.
- Developing an analytical framework against which the CAA can assess the scope the scope for future efficiency e.g. by separately identifying (a) frontier-shift efficiency improvements (b) catch-up efficiency improvements (c) economies of scale (d) real input price changes.
- Identifying the scope for further benchmarking to be undertaken and how this could be incorporated by HAL in its business plans and the CAA in the subsequent phases of the review.

The CAA expects a mixture of high level review combined with some detailed scrutiny and benchmarking where applicable, rather than an in-depth analysis of all items of operating costs.

Cost and revenue allocation

A study of HAL's revenue and cost allocation policies focusing on areas such as the objectivity with which HAL allocates expenditure between opex and capex and how it allocates costs between different revenue streams, such as airport charges, commercial revenues, other regulated charges and other revenues.

The objective of this study is to ensure that HAL's accounting policies (and practices) are consistent with best practice regulatory economic principles such that the outputs in the HAL business plan are appropriate and in line with the CAA's statutory duties.

The work will involve:

- Familiarisation with HAL's corporate structure and its accounting policies and practices.
- Understanding the regulatory framework within which HAL operates including the treatment of each of the cost and revenue items within the single till and the incentives created by these arrangements.
- Reviewing HAL's cost and revenue allocation policies, focusing on the objectivity with which HAL allocates these e.g. between the regulated business and any affiliated companies outside of the single till, between opex and capex, category a, b & c costs as they pertain to capacity expansion, other regulated charges etc.
- Reviewing the cost drivers and any other factors applied by HAL to allocate costs and revenues including an evaluation of HAL's cost and revenue allocation systems, both judged against both recognised commercial best practice and against the CAA's statutory duties governing its price control regulation.
- A review of HAL's cost and revenue allocation processes, focusing in particular on the efficiency and effectiveness with which HAL records costs and revenues.

This study could draw on any relevant audits conducted for HAL of its own accounting systems and practices.

This advice would include conclusions on the reliance which the CAA could place on HAL's cost and revenue allocation processes and systems as a basis on which to progress with its H7 work. Where relevant, the Contractor is expected to make recommendations for improvement, which should be prioritised and with some consideration given to implementation.

Commercial revenue

A study of commercial revenues to review performance relative to the regulatory assumptions as well as an assessment of the reasons for variances and the scope for improvements in the future.

This work will involve:

- Understanding HAL's business model with respect to generation of non-aeronautical revenues including any rules and restrictions about prices to consumers in its commercial arrangements with retail and other concessionaires Reviewing HAL's performance relative to the Q6 determination including a detailed understanding of any variances from the CAA assumptions and the drivers of these.
- Exploring the scope for HAL to increase net revenue from existing commercial uses.
- Exploring the scope for increasing net revenue by introducing additional commercial uses of a similar type, and the scope for introducing further types of cash-generating commercial development and/or improving the mix of commercial activities.
- Comparing , where relevant, the commercial revenue performance of HAL against suitable benchmarks, and explain the appropriateness of these benchmarks.
- Identifying the scope for further benchmarking / analysis to be undertaken and how this could be incorporated by HAL in its business plans and the CAA in the subsequent phases of the review.

Top-down benchmarking

The study will gather evidence and examine key headline metrics for Heathrow compared to relevant comparator airports (to be defined but could include European and global hubs).

This work will involve:

- Carrying out a literature review of previous top down benchmarking studies that have been carried out by the CAA, CC, international aviation regulators and other stakeholders to understand the availability of data and metrics to inform the study.
- Based on publicly available information, collating and analysing key headline metrics including (but not limited to) total and (where applicable) per passenger measures of the following:
    - airport charges,
    - passenger numbers,
    - aircraft movements,
    - total revenue,
    - aeronautical revenue,
    - non-aeronautical revenue,
    - operating profit,
    - operating expenditure, and
    - service performance.
- Identifying which comparator airports are most relevant and provide reasons to support the choice of these airports, cite the source of any potential data and any constraints on its use, and adjust benchmarks to ensure comparability where appropriate.
- Conducting both static analysis in a base year as well as time series over a number of years where data permits.

Regulatory treatment of capex

For Q6, the CAA established new arrangement at Heathrow Airport for the regulation of capital expenditure. Under these arrangements, capex is divided into ‘core’ and

‘development’. A new governance process through the capital portfolio board (CPB) has been established to oversee the transition from “development” to “core” involving airlines as well as the airport. An expert Independent Fund Surveyor has been jointly appointed by the airport and airlines to monitor projects and advise all parties on value for money.

This regime has been in place since April 2014 and the CAA would now like to commission an independent and objective review of how well the new arrangements are working. This work will involve:

- Understanding the regulatory framework within which HAL operates including the new arrangements for the regulation of capex described above.
- Conducting detailed interviews with HAL, HAL’s advisers, airlines represented on the CPB and the IFS to obtain a detailed understanding of the day-to-day functioning of the capex arrangements.
- Providing advice to the CAA on the effectiveness of the governance structure, including the core and development capex arrangement, the IFS and the use of capex triggers.
- Identifying any unintended consequences of the new arrangements which could potentially be incompatible with the CAA’s duties under the Civil Aviation Act 2012.
- Identifying the scope for improvements in these arrangements.

In due course, the CAA will also be looking to form a view on HAL’s current and prospective ability to delivery investment projects efficiently and effectively. Therefore, a key aspect of this study will be to develop a framework through which the CAA can undertake this assessment.

The consultant will be required to make recommendations to the CAA on the most appropriate approach to the assessment of capital efficiency that should be used to inform the CAA’s H7 price review including by identifying any further analysis that may be required to allow the CAA to discharge its duties in this area.