

A review of regulatory
decisions in relation to
cost-risk sharing of
capital projects

Final Report
22 September 2014

Commission for Aviation
Regulation

Our ref: 22739701





A review of regulatory
decisions in relation to
cost-risk sharing of
capital projects

Final Report
22 September 2014

Commission for Aviation
Regulation

Our ref: 22739701

Prepared by:

Steer Davies Gleave
28-32 Upper Ground
London SE1 9PD

+44 (0)20 7910 5000
www.steerdaviesgleave.com

Prepared for:

Commission for Aviation Regulation
3rd Floor, Alexandra House
Earlsfort Terrace
Dublin 2
Ireland

Steer Davies Gleave has prepared this work for Commission for Aviation Regulation. This work may only be used within the context and scope of work for which Steer Davies Gleave was commissioned and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this work without the express and written permission of Steer Davies Gleave shall be deemed to confirm their agreement to indemnify Steer Davies Gleave for all loss or damage resulting therefrom. Steer Davies Gleave has prepared this work using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

Contents

1	Executive summary	1
	Scope of work – questions and answers	1
	Summary of findings	2
2	Approach taken in regulated sectors	4
	Airports	4
	Rail	6
	Water	7
	Energy	9

Figures

Figure 1 Terminal 5 Triggers	16
------------------------------------	----

Tables

No table of figures entries found.

Appendices

A	Submission from UK CAA
----------	-------------------------------

1 Executive summary

- 1.1 Steer Davies Gleave was asked by the Commission for Aviation Regulation (CAR) to review regulatory decisions in relation to the cost-risk sharing of capital projects.
- 1.2 This document presents our final report based on a combination of desk-based research and interviews.
- 1.3 This executive summary presents our findings. The remainder of the report describes the approach taken in each of the main regulated sectors: airports, rail, water and energy (having reviewed the postal sector we found no relevant precedent). A supporting appendix with background analysis of the airports sector in the UK provided by the CAA is attached.

Scope of work – questions and answers

Current thinking

In March 2014 the UK Competition Commission published its findings in the Northern Ireland Electricity price determination. Their work included a review of the treatment of discrepancies in forecast capital expenditure and out-turn capital expenditure when rolling forward the RAB.

Since that decision, are there any regulatory decisions or announcements that might be relevant when considering the question of RAB roll forward?

- 1.4 Since March 2014, there have been a number of regulatory decisions in the UK, including the Draft price control determination in Water, and Draft determination for the Gas Distribution companies. In both cases, the regulators have confirmed their previous approach of using a total expenditure approach to regulation of costs combined with a RAB roll forward mechanism. This is combined with the use of a regulator determined base line level of expenditure and incentive mechanism for cost risk sharing where regulated companies spend more than their regulated cost allowance.

Recent decisions

Provide a summary of the magnitudes that have been at play in such exercises, i.e. what are the percentages by which a regulated company has over or underspent the allowance? Has this percentage been cited as a reason for a given approach?

- 1.5 There are a number of examples in the UK airport sector for specific projects (Heathrow T3 integrated baggage and Stansted SG2), where the regulator following an ex-post review has disallowed between 15% and 20% of project costs based on inefficiency of spend and lack of consultation with users. In the Rail, Water and Energy sectors, it is during the setting of the expenditure allowance where reductions have been found compared to company's business plans. During the review period (5-10 years), the incentive mechanism is known by the

regulated company and it takes decisions based on it bearing between 25% and 50% of the cost over-run risk.

Are there any examples where a regulatory determination has set an investment allowance for a given project, and that subsequently the regulated entity has concluded that it would not be able to deliver the project for the amount that has been allowed? In such circumstances, has the response of the regulated firm been (a) to not proceed with the investment, (b) to notify the regulator and seek a re-opening of the decision or (c) to proceed with the investment according to the revised budget and to seek an upward adjustment at the time of the next determination?

CAR would like brief details on the magnitudes involved (including in percentage terms), the regulatory response and any other relevant information (e.g. was the project an essential investment that had to be delivered by a certain date, or how soon after the determination the regulated firm revised its costing estimates).

- 1.6 There are no known examples which precisely match this description. However, there was a case in the Water industry in the UK where Thames Water, planned to build a reservoir for £1 billion, which was rejected by the 2011 enquiry as the company had failed to fully investigate alternatives. The reservoir has not been built.

Summary of findings

- 1.7 In dealing with capital cost risks a number of regulators across the rail, energy and water industries have moved to a similar approach which:
- Following review at the time of setting the price control, determines a based line capital spend – which is often lower than requested in the regulated company business plan; and
 - Provides an incentive mechanism to address capital overspend, where only a proportion of that spend is added to the RAB. The proportion of disallowance can be significant ranging from 25%-50% depending on the industry.
- 1.8 These mechanisms are often accompanied by ongoing monitoring of the capital programme, which allows unexpected requirements to be monitored and discussed with key stakeholders rather than waiting for surprises at the time of the next regulatory review.
- 1.9 The concept of efficient expenditure is often used, and usually a set of principles are used to define it. However, when reviewing the ex-post position, regulators are usually reliant on consultant engineers to review the efficiency of the capex using the principles agreed.
- 1.10 The UK CAA does undertake an ex-post review of actual expenditure and on occasions has, on the grounds of an assessment disallowed capex from entering the RAB. It has followed a set of principles which it publishes to make this assessment, with the assessment usually carried out by an independent consultant.
- 1.11 However, looking forwards to Q6, the CAA has also introduced a number of mechanisms which are designed for the stakeholders (airports, airlines, other stakeholders), to work together to agree the ongoing capital programme, approve changes to it, so as to limit the amount of ex-post review required at the next review, these include:
- Independent Fund surveyor: whose role is designed to ensure that airlines are fully consulted and the capital expenditure is determined as cost efficient on an ongoing basis.
 - Capital Transition Group: which applies the concept of core and development capex assessing development projects, which when approved become core or are rejected.

Where the projects are approved to become Core there is an implicit assumption they will move into the RAB.

2 Approach taken in regulated sectors

Airports

- 2.1 We have reviewed documentation and spoken to members of the economic regulatory team at the Civil Aviation Authority (CAA) in the United Kingdom. A detailed paper describing the approach to the regulatory treatment of Capex provided by CAA is attached as Appendix A.

Policy principles applied

- 2.2 When the CAA assesses actual capital expenditure compared to forecast spend, it determines that the following principles should be met for it to be included in the Regulated Asset Base (RAB):
- Adequate consultation with users has taken place (as specified in consultation guidance published by the CAA); and
 - Efficient management of the investment projects was undertaken.
- 2.3 The method for measuring efficiency is not prescribed but would include whether it has been brought to the attention of airlines and other users and whether the expenditure was reasonable and in the interest of passengers at the time it was undertaken.

Recent examples

Heathrow T3 integrated baggage

- 2.4 As a part of the review of Q5 and prospective Q6 capex, the CAA and its consultants Alan Stratford Associates reviewed the T3 Integrated Baggage project which had experienced significant cost over-runs. The CAA determined that the project had not been run efficiently and therefore removed £30 million from the spent capex and a further £35 million was disallowed for Q6 allowance for Heathrow Airport Limited (HAL). This is in the context of total project costs estimate of £435 million so represents around 15% of the costs. The review was based on detailed analysis by its consultants of the causes of overspend: those which were genuinely unforeseen and those that could be avoided and seen as inefficient.
- 2.5 When determining the efficiency of Q5 capex the CAA in particular considered cost benchmarks, risk allowances and the progress towards management of certain risks at a portfolio rather than project level. Inefficiencies found for Q5 were “*where a failure of process or poor judgement or use of resources occurred which was primarily due to HAL decision-making rather than exogenous factors*” Q6 Decision section 13.50.

Stansted SG2

- 2.6 Although this is more than 5 years ago, we use this example because of the magnitude of the capital expenditure. Stansted undertook significant expenditure in preparation for a new

runway and associated infrastructure. £313 million (2007/08 prices) was spent on planning, blight and project management costs. Airlines disputed the need and efficiency of the costs.

- 2.7 Following consideration, CAA (with one exception below) added the expenditure to the RAB with a return at the next review.
- 2.8 In supporting this decision the CAA pointed to the principles set out above that BAA had consulted with airlines as far as practicable and had followed best practice management consulting effectively with well-informed users and the expenditure was genuinely additional.
- 2.9 Following review by the Competition Commission, it assessed that £47 million of the project expenditure, related to consultancy, should be disallowed due to insufficient evidence of consultation and that results of studies were not shared with airlines. This amounted to some 15% of the costs incurred.
- 2.10 Across the examples considered, ongoing discussions with airlines have meant that expenditure has been incurred and then its inclusion in the RAB discussed at the time of the Regulatory review.

Other issues for consideration

Core vs development capex

- 2.11 As a part of its Q6 determination the CAA introduced the concept of core and development capex categories. A Capital Transition Group, including airlines is tasked with approving development projects, with the projects either becoming core or rejected. Where the projects are approved Core there is an implicit assumption they will move into the RAB.

Allowance of capital vs return on capital

- 2.12 The CAA is currently undertaking further thinking in this area in the context of the possible new runway in the south-east of England. The regulator has to consider the particular case in which capital spend that it had not approved, or was not consulted over, may be in the interest of users. In these circumstances, the CAA might include the capital in the RAB, but not allow it to earn a return on capital.

Independent fund surveyor

- 2.13 Another new feature of Q6 is the introduction of the concept of the Independent Fund Surveyor (IFS) whose role is to “provide an on-going assessment of the reasonableness of all key decisions made on key projects and, in undertaking Development projects the capital is being used effectively to deliver the outcomes determined by the business case.”
- 2.14 The IFS role is designed to ensure that airlines are fully consulted and the capital expenditure is determined as cost efficient.

France & Germany

- 2.15 For France, we reviewed documentation from the Directorate General of Civil Aviation (DGAC) and Directorate General for Competition, Consumption and Fraud Control (DGCCRF) and found no relevant evidence for the study.
- 2.16 For Germany, the industry is regulated at a state level. We studied the available information and found no relevant evidence for this study

Rail

- 2.17 We have reviewed documentation and spoken to members of the economic regulatory team at the Office of the Rail Regulator (ORR) in the United Kingdom.

Policy principles applied

- 2.18 The ORR operates an underspend/overspend mechanism whereby Network Rail carries 25% of the overspend risk provided that it has not been “manifestly inefficient”. This mechanism is applied to all renewals and most enhancement capex. The default position is that spend will be rolled forward in the RAB unless subject to this mechanism.
- 2.19 The definition of “manifestly inefficient” is provided in the ORR’s published regulatory accounting guidelines Chapter 4. However, in practice these have not been applied. In the event a project was found to be “manifestly inefficient” it is Network Rail who would bear 100% of the overspend.
- 2.20 Manifestly inefficient is defined as overspend that is not either:
- (a) within the scope of Condition 4.1 of the licence;
 - (b) within the scope of the High Level Output Statement requirements (if relevant);
 - (c) meeting a customer reasonable requirement; or
 - (d) adding economic value to the railway.
- 2.21 Over and above this mechanism, there is relatively tight governance of major projects with ORR’s enhancement team and the Department for Transport having regular meetings with Network Rail to review milestone achievement and levels of expenditure. Expenditure profiles often change year to year but providing the overall spend for the control period is about what should have been rolled forward (with underspend/ overspend subject to the 75%/25% mechanism). This process is designed to pick up the risk of overspend early rather than being surprised at the time of the regulatory review.

Recent examples

- 2.22 Details of the individual project under or over spend are provided in Network Rail’s Regulatory Financial Statements (statements 2a and 2b).
- 2.23 In the 2013 report Network Rail reports, £82 million of penalised overspend (25%) for renewals and £4 million for enhancements. This is in the context of a total renewals and enhancement programme of £5 billion in that year so represents a very small proportion of the overall programme.
- 2.24 The financial statements report examples of efficient overspend on the new national centre in Milton Keynes and ORBIS, a programme to improve asset management information, both of which will enable efficiency savings in CP5 and beyond. A capital allowance for these schemes was not included in the original PR08 and therefore only 75% of costs are included in the RAB.

Other issues for consideration

- 2.25 In addition, there is a separate mechanism for dealing with increases in input prices, based on the Infrastructure Output Price Index, this was originally requested by Network Rail. In practice the mechanism has resulted in a reduction in Network Rail’s funding as input prices have tended to fall rather than increase in recent years.

Water

- 2.26 We have reviewed documentation from at the Office of Water Regulator (OFWAT) in the United Kingdom and Commission for Energy Regulation (CER) in Ireland.

United Kingdom

Policy principles applied

- 2.27 OFWAT will be operating a total-expenditure approach to the assessment of costs for the 2015-2020 price review. This contrasts to previous price reviews where capital and operating expenditure were assessed separately. The change has been implemented as the previous method, in OFWAT's assessment, can lead to a bias towards capital intensive solutions and expenditure.
- 2.28 The regulatory approach continues to use the Regulatory Capital Value (RCV) as the basis of the price control. In a similar way to other regulated industries in the UK, OFWAT has encouraged water companies to work with stakeholders to build a business plan which is acceptable and has buy-in.
- 2.29 OFWAT incentivises efficient expenditure using an efficiency sharing factor. A company's sharing factor is based on the quality of each water company's business plan submitted at price control review stage. In exceptional circumstances cost items may be excluded if they are proved to be uncontrollable. It is the onus of the company to prove this and suggest alternative methods of regulation for these costs.
- 2.30 OFWAT is also in the process of introducing 'menu regulation' for the 2015-2020 price control period. This will enable companies to choose the method of regulation that suits their business model and should incentivise companies not to overspend.
- 2.31 In the 2010-2015 price control, OFWAT used a Capital expenditure Incentive Scheme (CIS). Under the CIS, each company recovered its actual expenditure plus or minus rewards or penalties that depend on the expenditure forecast it chooses and how actual expenditure compares to forecast. OFWAT calculated the ex-post rewards/penalties as the difference between the expenditure allowance and actual outturn expenditure multiplied by the incentive rate (the incentive rate is company specific), plus an additional element structured to ensure that a company secures the greatest benefit from submitting business plan forecasts that are realistic and aligned with the expected outturn level of costs. Any difference is then taken forwards to the next price control.
- 2.32 OFWAT and its consultants played a key role in setting the baseline level of capex to apply this CIS to during the 2009 review it allowed £22 billion of capex over the 2010-15 period as compared to the £24.1 billion in companies' business plans the differences came from OFWAT's views on efficiency, on the scope and scale of investment, and on how to deal with risks. The baseline was influenced by OFWAT's assessment of the companies' efficiency.

Recent examples

- 2.33 Details of the capital expenditure for individual water companies during the 2010-2015 price control period can be found in Annex 4 of the draft determinations for the 2014 price review.
- 2.34 For the 2015-2020 price control the draft determination results in the regulated capital value of the water industry in the UK being £360 million less than proposed in the 2014 company

plans. This compares to £42 billion total expenditure (capital plus operating costs) in the companies' business plans.

- 2.35 The 2014 draft determinations also show three water companies with cost proposals that are more than 20% greater than the OFWAT preliminary assessment.¹ One company included on this list is Thames Water, with £331 million more costs in their business plan for the Thames Tideway tunnel than OFWAT predict.
- 2.36 A similar example can be found in the 2009 review. In their 2009 plan Thames Water proposed to build a £1 billion reservoir, however this was rejected in a 2011 enquiry. The enquiry found that Thames Water had failed to fully investigate alternatives. A reservoir in the area is yet to be constructed.

Other issues for consideration

- 2.37 As described above, given deep investigation of the business plan at each review, OFWAT then leaves it to incentives to determine if companies choose to spend more than planned for between price controls. The incentives will mean that they do not recover all the value in the RCV at the next price control review. However the rate of recovery is published, known by stakeholders and therefore the companies can respond to the incentives accordingly.

Ireland

In Ireland the water industry has been regulated since 2014 by the CER.

Policy principles applied

Currently, the CER are forming the regulatory framework and have published principles which this will be based upon. The principles state that "investment by the utility and the respective plans will need to be justified to the CER to be included in the RAB." Moreover, that capital expenditure will "require IW [Irish Water] to implement effective short and long-term planning of investment in the water services infrastructure, investment that is correct, appropriate and fully justified."

Recent examples

There are no relevant examples as the price regulated water industry in Ireland is in its infancy.

¹ http://www.ofwat.gov.uk/pricereview/pr14/prs_web20140806wholesalecost.pdf

Energy

- 2.38 We have reviewed documentation from at the Office of Gas and Electricity Markets (OFGEM) in the United Kingdom and Commission for Energy Regulation (CER) in Ireland.

United Kingdom

- 2.39 The Gas and Electricity industries in the UK have price two regulated parts of the industry: the Transmission Network and the Distribution Network. The Transmission Network distributes electricity or gas from their source to the Distribution Network, which distributes the product to the end-user.
- 2.40 OFGEM regulate the companies who own, and operate, the Transmission Networks using the total-expenditure method. The current price control period for both gas and electricity runs from 2013-2021 and is named RIIO-T1. The total-expenditure allowance of a company for the control period is equal to 75% of OFGEM's interpretation of the efficient level of costs and 25% of the company's forecast costs.
- 2.41 OFGEM apply an Information Quality Incentive (IQI) to incentivise owners and operators to reveal their true costs and to reward those that submit cost forecasts that align with OFGEM's assessment of costs. One outcome of the IQI is the Efficiency Incentive Rate, which dictates what percentage of overspend or underspend, against expenditure allowed at price control review, is passed onto customers or borne by the regulated company. The Efficiency Incentive Rate varies for each company depending on business plans submitted and is usually around a 50:50 split.
- 2.42 OFGEM recognise that outputs may need to change during the 8 year price control period. OFGEM will undertake a mid-period review. The scope will be restricted to changes to outputs that can be justified by clear changes in government policy, or the introduction of new outputs that are needed to meet the needs of consumers and other network users.
- 2.43 The December 2012 Final Proposals for RIIO-T1 show the allowed capital and operational costs for Gas and Electricity Transmission Network owner and operators were £24.7 billion for the price control period. This was 15% less than those originally proposed in company business plans.
- 2.44 The Gas Distribution Network is regulated in the same way to the Transmission Network, with the same price control review period.
- 2.45 The Electricity Distribution Network will be regulated in the same way as the Transmission Network, with the price control period starting in April 2015 and ending in March 2023. Both Distribution networks will include a mid-period review.
- 2.46 The IQI for the Distribution Network companies also includes a Revenue Reward/Penalty. The Revenue Reward/Penalty gives an uplift or drop in revenue depending upon the accuracy of a company's cost forecasts in their proposal in comparison to the OFGEM forecast costs.
- 2.47 Uncontrollable costs may be excluded in exceptional circumstances in regulation of the Distribution and Transmission Networks.
- 2.48 The December 2012 Final Proposals for RIIO-GD1 show the allowed capital and operational costs for Gas Distribution Network Operators were £14.4 billion for the price control period. This was 18.6% less than those originally proposed in company business plans.

- 2.49 The July 2014 Draft Proposals for RIIO-ED1 show the allowed capital and operational costs for Gas Distribution Network Operators are £17.5 billion for the price control period. This is 10.3% less than those originally proposed in company business plans.

Recent examples

- 2.50 Details of the capital expenditure for individual Gas Distribution Companies during the 2010-2015 price control period can be found in Annex 4 of the draft determinations for the 2014 price review.
- 2.51 In the previous price control period of the Transmission Networks (TPCR4), there was an initial review of NGET as the National Grid Electricity System Operator by an external consultancy. The report found they had capital expenditure of £90 million against an initial £47 million budget allowance. The £42 million overspend was spread over six projects.
- 2.52 The review judged that the operator was replacing assets rather than realising their full life-cycle, undertaking works prior to when they were required and delaying projects therefore incurring extra cost.
- 2.53 The review recommended that the RAB should be reduced by £14.5 million for anticipatory expenditure and further reduced due to the extra cost from delays. In addition they recommended that the depreciation value on systems should be increased on those systems subject to frequent replacement.

Ireland

Policy principles applied

- 2.54 The electricity industry in Ireland is split in the same way as in the UK. The Transmission System Operator (TSO) operates the transmission system, the Transmission Asset Owner (TAO) owns the transmission system, and the Distribution Network is owned and operated by the Distribution System Operator (DSO). Regulation of the capital expenditure by these companies differs to the total-expenditure method used in the UK.
- 2.55 For the PR3 Price Review (2011-2015) CER assessed the capital expenditure by the TSO, TAO and DSO to ensure that the “correct, appropriate and fully justified level of network investment takes place”. The review may lead to the reduction of capex allowed by the TSO and TAO and to the deferral of projects that are found to be unnecessary in the price review period.
- 2.56 CER incentivise efficient spending by allowing regulated companies to retain the revenue (depreciation and return) associated with the unspent Capex for a period of five years. A reduction in capex due to a reduction of outputs is not increased efficiency of spending and these costs will be removed from the RAB.
- 2.57 In addition to the quinquennial review, CER have a capex monitoring programme of the TAO and TSO, where they are required to submit details of all capex on an annual basis. Each project is then approved through economic evaluation.
- 2.58 During the price control review CER assess historical capex. CER and its consultants analyse all expenditure for its efficiency. The review is undertaken on a project by project basis. Overspending that is not found to be efficient is not added to the RAB for the following control period.

- 2.59 The gas industry in Ireland is split in the same method as in the UK. Transmission System Operator (TSO) and Distribution System Operator (DSO) are Gaslink, a subsidiary of Bord Gáis Networks. The Transmission Asset Owner and Distribution Asset Owner is Bord Gáis Networks.
- 2.60 For the PR3 Price Review (2012-2017) CER assessed the capital expenditure for the DSO and TSO for the Irish gas system. CER regulate the gas industry with the same incentivisation mechanism and quinquennial review of efficient costs.

Recent examples

The Electricity TAO capital expenditure review of the PR2 price control period found an underspend of €78 million. This was on an initial allowance of €447 million. The lower costs were due to decreased output by the TAO. The underspend was therefore accounted for through a reduction in revenue.

The Gas Transmission Revenue review of the PR2 price control period found a €5.3 million overspend on IT and Facilities project that was originally forecast to cost €29.9 million. The consultants' review of the overspend found that €0.2 million of the €5.3 million should be excluded from the RAB for the following period.

A Submission from UK CAA

Note on the Regulatory Treatment of Capex

This note provides an explanation of the historical treatment of capex associated with major projects at Heathrow airport. The note is based on policy defined in the Q6 decision and precedents from examples of major projects including Heathrow Terminal 5 and the aborted second runway at Stansted (SG2).

Treatment of capex in Q6

The standard approach for the remuneration of capex at Heathrow (and until recently Gatwick) is through the use of a Regulatory Asset Base (RAB). Assets included in the RAB enjoy a form of 'regulatory contract' which protects the value of the investment through inflation linking. The RAB is also used - in conjunction with other forward looking elements of the airports business plan - to determine the revenues paid to the airport over each regulated period. This is achieved by calculating a Weighted Average Cost of Capital (WACC) which is multiplied by the RAB to estimate a fair return for the airport.

In summary, at each price review the CAA sets prices by forecasting:

- a) The opening RAB balance for the beginning of the first year of the control period, after reviewing the efficiency of historic capex
- b) The closing RAB balance for each year of the new control period – these balances are calculated by taking the opening balance from (a) and adding forecast capex and deducting forecast depreciation and disposals for each year of the control period.
- c) A fair return for the airports investment based on a WACC calculation.
- d) Other forward looking elements of the airports business plan including opex, commercial revenues, passenger numbers and depreciation.

The first step requires the CAA to review the actual capex in the previous regulatory period, making adjustments for efficiency. For capex to be included in the RAB it must meet two general criteria:

1. Adequate consultation with airport users, as specified in the CAA's Annex G consultation guidance (and the arrangements to be set out in Heathrow's forthcoming capex governance arrangements, which will supersede Annex G and be approved by the CAA).
2. Efficient management of the investment projects undertaken.

The method for the assessment of efficiency is not prescribed and the CAA may consider many factors. Typically the CAA will examine specific projects which have been brought to its attention by airlines and other users with the main assessment criteria being whether the expenditure was reasonable and in the interest of passengers at the time it was made (without the benefit of hindsight).

The CAA may consider a wide range of factors such as the level of consultation on the project, the effectiveness of the project plan, difference between planned and actual levels of expenditure, average prices etc. Even where the airport has failed to consult effectively, or made mistakes which have increased costs above a theoretical minimum, the expenditure may be allowed into the RAB if it was deemed reasonable or in the interests of air passengers as a whole at the time it was made. Where capex fails to meet these criteria, the CAA may exclude it from the opening RAB.²

In calculating the opening RAB the CAA also has to consider whether the airport is entitled to make a return on investment not forecast in the previous price control – this depends on the reason and case for the spending. This can be accounted for by adding a return on the capex investment to the opening RAB. Conversely, where the airport has invested less than forecast, the CAA may use an annuity charge to reduce revenues in the next period to account for lower investment.

In step b, a forecast of capex expenditure is made setting out the approximate level of capex investment by the airport in each year of the regulatory period. Higher or lower actual levels of capex during the regulatory period have no effect on charges within the period (with the exception of development capex described below). Any variance is accounted for through the calculation of the opening RAB calculation for the next control period as described above, although where the variance is very large due to unexpected circumstances there may be a case to re-open the settlement. There is no guidance on what level of variance would trigger the re-opening of the settlement, the decision is a regulatory judgment based on the relative merits of maintaining the existing price control.

This process gives the airport strong incentives to ensure that its capex is efficient whilst also ensuring that it has a reasonable expectation that it will be fairly remunerated for any investment made in the interests of passengers.

A feature of the RAB approach to economic regulation is that (excluding development capex) higher or lower capex relative to the forecast has no effect on prices within the regulatory period. The airport therefore has limited financial incentive to over spend on capex relative to the initial forecast because these costs will not be remunerated until the next period (and could be disallowed). The airport does have some financial incentive to delay or minimise capital expenditure until later in the period, as it will earn the same return on a lower amount of capital in NPV terms.

To ameliorate this incentive, the CAA applies capital triggers to major projects within the capex plan. Triggers are financial penalties for the late delivery of project outputs,

² For example, in the Q6 decision, the CAA excluded £30m from the opening RAB related to the T3 Integrated Baggage Project, which had experienced significant cost overruns. The CAA determined that the project had not been run efficiently, and therefore its costs would not be fully remunerated through the RAB.

which incentivise the airport to deliver projects to a specification and time agreed with airlines and / or the CAA. When calculating the opening RAB in each regulatory period, the CAA also accounts for the timing of capex to make HAL 'temporally indifferent'. This is achieved by adjusting the opening RAB so that the net present value of any under spending in each year of Q6 is taken into account in setting the RAB at the start of the next period.

Another possible adverse incentive of the RAB approach is that the airport may regard the capex allowance as granting 'carte blanche' to spend funds regardless of the benefits of the projects involved, as there tends to be a low aggregate risk that the regulator will remove such spending from the RAB as the ex-post review tends to be focussed on only the largest or most contentious projects.

This can be a particular issue where a major project is cancelled and the airport then seeks to substitute the capex allocation into other projects at a late stage in order to maximise its returns (assuming it has spare funds to invest). It is likely that such projects will be less well defined, 'gold-plated' and may provide less benefit than the original project for which the capex was earmarked.³ This risk is somewhat ameliorated by the need to consult with airlines.

Core and Development Capex

A new feature of the approach for Q6 is the use of Core and Development capex. This feature gives the airport greater flexibility over capex spending by allowing it to modify prices to reflect higher or lower levels of capex during the regulatory period. It also reduces the financial incentive for the airport to spend up to the cap where suitable projects may not be available.

At the start of Q6, prices are set with an assumed capex allowance. In the latter years of the period, this allowance is largely unallocated to specific projects and therefore the actual amounts spent could be higher or lower. The Core and Development capex feature allows the airport to modify prices each year based on an annual review of the actual levels of capex. In order to do this the airport must consult closely with the airline community to agree any changes to the capex programme.

The airport must submit Development projects for approval to the 'Capital Transition Group' (which includes airlines) on a case by case basis. These projects are then either approved becoming Core, or rejected. Whether prices are increased or reduced depends upon the net cumulative difference between the quantity of capex associated with new approved Core projects relative to the original forecast. Where projects are approved as Core there is an implicit assumption that the capex will move into the RAB at the next review, however this is still subject to the CAA's ex-post review.

³ For example in Q3, BAA had an allowance of £1,370 million for T5 costs. The project was delayed due to a public inquiry and total expenditure was actually only £343 million. Rather than reducing its capex to account for this, BAA spend much of the allowance in other areas including at Stansted and Gatwick on unrelated projects.

Significant Variance in Capex

Under the RAB approach a problem can occur where the level of actual capex is significantly different from that assumed at the start of the regulatory period. This causes three main problems:

- Firstly a discrepancy can arise between the levels of capex by the airport and the revenues being recovered. This could either cause financing issues for the airport (in the case of over spending), or result in airlines being overcharged (in the case of under spending). Whilst these discrepancies can be taken account of in the calculation of the RAB in the next period, where the discrepancies are large the airport and airlines may require more immediate alterations to the price control.
- Secondly, where higher levels of capex are required than assumed in the settlement, the airport may be wary of the risk that such expenditure may not enter the RAB. This problem could occur for example if the spending is being driven by some uncertain factor or risk where the CAA's decision to allow the capex into the RAB is uncertain. In this case the airport may be reluctant to invest and may face a higher cost of capital due to the greater regulatory risk.
- Thirdly, where large amounts of un-forecast capex are incurred in a short period and then included in the RAB for a new regulatory period, this can result in a sharp increase in prices for consumers, who may desire a smoother path of price increases.

Whilst the Core and Development capex feature can account for small variance in outturn capex investment, the process relies on securing agreement from the airlines via the CTG. This may not be possible for very large projects such as a new runway.

New runway cost were explicitly excluded from the Q6 decision for Heathrow, and therefore any capex spending related to a new runway at Heathrow could result in significant variance in capex relative to the Q6 forecast and could result in the problems described above.

The following sections provide a summary of the regulatory treatment of two major projects. This includes the treatment of Terminal 5 costs at Heathrow, and the treatment of costs related to the aborted second runway at Stansted.

Heathrow Terminal 5

In February 1993 BAA applied for planning permission to develop a fifth terminal at Heathrow airport. After a protracted public inquiry, the first construction phase commenced after government approval of the project in November 2001. The total eventual cost of the project was £3,133 million (2002 prices) spread over two phases, between 2002-2008 (the construction of the building), and 2007-2011 (gradual fit out of the terminal to meet demand). The terminal officially opened in March 2008.

From planning to completion the project spanned three regulatory periods (Q3, Q4 and Q5) becoming operational at the start of Q5. The project represented a significant increase in the airports RAB. The treatment of the capex and the recovery of these costs during Q4 was therefore an important issue for the CAA and CC. The decision for the CAA /CC was essentially how the spending on T5 should be remunerated and

whether passengers should contribute to the investment in Q4 before the terminal was operational or whether higher charges should be fully delayed until Q5.

BAA argued that without revenue advancement during Q4 it would experience financial difficulties and cause a sharp increase in prices when the terminal was eventually made operational in Q5. It questioned whether such significant increases in charges could be guaranteed to occur, given the potential impact on airlines. BAA argued this was a significant risk for the project which raised their cost of capital and deterred them from investing. The airlines argued that it was unfair for users to pay for assets which they may never benefit from and that in most businesses users are not expected to 'pre-finance' investment

After the consideration of numerous options including a multi-period price smoothing commitment, conditional increments in airport charges associated with growth in passenger numbers and revenue transfer from Q5 to Q4⁴, the eventual decision of the CAA / CC was to include a return on Assets in the Course of Construction (AICC) in the calculation of charges for Q4. The CAA / CC argued that not doing so would mean that in Q5 prices would have to increase very significantly to adjust for the airports investment during Q4 and that a smoother price profile was desirable. The CAA / CC also agreed that there was a regulatory risk with implementing much higher prices in Q5 and highlighted that the CAA could not legally bind its successor to any course of action at the Q5 price review, meaning that the airport could not fully rely on any commitment from the CAA to raise prices in Q5.

The CAA / CC also allowed for an increase in the cost of capital associated with the project, primarily due to the greater systemic risk to the business as a result of the project – specifically the greater sensitivity to demand risk that BAA would experience once the terminal was operational.⁵

Charges were also linked to milestones 'triggers'. These capex triggers are shown in the table below. The purpose of these triggers was to incentivise HAL to progress with the construction of the terminal, for which it was earning a return from passengers. Failure to achieve these outputs by the specified dates would result in a reduction in charges (equivalent to the return on the capex) until the output is achieved.

Figure 1 Terminal 5 Triggers

Date	Trigger
2003	Earthworks complete
2004	First four stands operational Rivers diverted
2005	Control tower completed

⁴ These options were rejected by the CC as it deemed that the CAA could not bind its successors to a price path. It also considered that there were significant risks in assuming a very large increase in prices in Q5 and that revenue transfers and condition changes in charge could create adverse investment incentives in later regulatory periods.

⁵ CC (2012) paragraph 2.327

2006	Terminal weather-tight Satellite weather-tight
2008	Terminal completed

Stansted SG2

At the time of the CAA's Q4 price control determination in 2003, there was considerable uncertainty over plans for new runway capacity in the South East of England. Stansted had begun planning for a new runway, but government policy was not yet finalised. As a result the Q4 price control determination excluded any costs related to new runway capacity.

The 2003 Air Transport White Paper (ATWP) subsequently identified Stansted as the airport where new capacity should be built as soon as possible (2011 or 2012). The ATWP also set out the need for BAA to consider remediation for the generalised planning blight caused by the announcement. Blight costs associated with the decision would not be covered by existing statutory measures, which only come into force upon the granting of planning permission.

As a result, Stansted undertook significant expenditure which was not forecast at the outset of the regulatory period. This capex amounted to £313 million (in 2007/08 prices) associated with planning, blight and project management costs.

This expenditure on preparatory work for the second runway was highly contentious with airlines disputing the necessity and efficiency of the majority of the costs. Subsequently as a result of a judicial review of the ATWP in December 2004,⁶ the precise location of the second runway set out in the ATWP had to be reconsidered, with the planning and blight costs incurred up to that point largely being written off by BAA.

The regulatory treatment of this expenditure was complex and guidance was not provided in a timely manner, which left BAA and passengers in a difficult position. In June 2004, the CAA issued a consultation document on the regulatory treatment of initial expenditure on new runway capacity. It put forward three options for the treatment of the 'preliminary' costs:

- Re-opening the price control
- Leave the price control unaltered – adding cost to the RAB at the next review but with no allowance for a return on such expenditure until the next review
- Adding preliminary expenditure to the RAB with a return of 7.75% at the next review.⁷

⁶ <http://stopstanstedexpansion.com/press157.html>

⁷ This is the same as the WACC recommended by the CC for Q4. The calculation of the WACC in Q4 was based upon the risk of Heathrow, Gatwick and Stansted as a group and took into account the higher levels of risk for the business at that time which included the T5 project, and the higher level of demand risk as a result of the September 11 attacks.

In the end the CAA endorsed the latter option. The CAA also specified safeguards on the capex including the requirement that BAA should consult users on the level of preliminary expenditure before it is incurred. The CAA also noted that in practice detailed consultation might be difficult to achieve because the ATWP had called for rapid action on the issue of planning blight.

In January 2005 the CAA published its decision on the treatment of the costs, confirming its initial proposals, but noting a difference of views over the purpose of consultation on capex projects. The CAA clarified that the obligation to consult did not mean that the agreement of all, or any predefined proportion of current airlines users was required prior to an investment being brought into the RAB.

This decision was then withdrawn following objections to give further consideration to the views of airlines. The CAA issued a new consultation document in July 2005 in relation to the need to consult airlines. This document stated that BAA must consult airlines more closely on the assumptions, costs and benefits of its proposals, and if having done so failed to secure their support, would face greater scrutiny in the validation of costs moving into the RAB.

The CAA finally issued a specific statement for the treatment of new runway spending in March 2006 stating that there was a case for allowing net preliminary expenditure into the RAB, with an annual rate of return of 7.75%, to be added to the Stansted RAB in Q5, having regard to the extent which:

- a) As far as practicable, BAA consulted users on the level of preliminary expenditure before it was incurred.
- b) BAA had followed best practice management and operated proactively the enhanced information disclosure and consultation agreement, consulting effectively with well informed users.
- c) The expenditure was genuinely additional and related to the development of new runway capacity, with any additional return being included in the Stansted RAB based on the excess of total out-turn capex over and above the projections made at the time of the last price control review, up to a maximum additional return equal to the return on net preliminary expenditure.

Throughout this period of consultation, BAA continued to spend significant sums without clear guidance from the CAA on how the investment would be treated. Airlines protested that the information provided by Stansted was insufficient for detailed consultation and the level of blight provision was excessive. The costs were reviewed by the CAA and CC, who eventually determined that whilst BAA may have gone further than was commercially necessary in providing for planning blight this was encouraged by government policy and there was no basis on which to exclude the costs from the RAB.

However in reviewing BAA consultancy spending the CC found that there was insufficient evidence of consultation, that the outputs of the studies were not shared with airlines, that BAA likely incurred too much cost, and that a higher proportion of the cost might have been shared with other organisations. On this basis £47 million of consultancy costs were excluded from the RAB (£16 million).

The result of this decision was that the RAB value was inflated above its true asset value, with airlines forced to pay higher charges to reimburse Stansted for capital investment, which they had protested against and which ultimately provided no-benefit to users.

References

House of Commons Transport Select Committee (2013), Aviation Strategy, Pre-funding of aviation infrastructure via charges

<http://www.publications.parliament.uk/pa/cm201314/cmselect/cmtran/78/78b18.htm>

CAA (2008), Economic Regulation of Heathrow and Gatwick Airports 2008-2013 CAA Decision -see Annex E paragraphs E44-49

https://www.caa.co.uk/docs/5/ergdocs/ccreport_appe.pdf

Economics Insights (2012) The use of actual or forecast depreciation in energy network regulation

http://www.economicinsights.com.au/reports/Economic_Insights_AEMC_Actual_vs_Forecast_Deprn_31May2012.pdf

Competition Commission (2002) A report on the economic regulation of the London airport companies

<https://www.caa.co.uk/default.aspx?catid=5&pagetype=90&pageid=1322>

CAA (2003) Economic Regulation of BAA London Airports 2003-2008

<http://www.caa.co.uk/docs/5/ergdocs/baadecision200308.pdf>

CAA (2002) Heathrow, Gatwick and Stansted Airports' Price Caps, 2003-2008: CAA Recommendations to the CC

<http://www.caa.co.uk/docs/5/ergdocs/baarecommendationsmar02.pdf>

CC (2008) Stansted Airport Ltd – Q5 Price Control Review

<http://www.caa.co.uk/default.aspx?catid=78&pageid=10232>

Stansted Opening Q5 Asset Base - CC

https://www.caa.co.uk/docs/5/ergdocs/ccreport_appe.pdf

Stansted Opening Q5 Asset Base - CAA

<https://www.caa.co.uk/docs/5/ergdocs/ccstanstedd.pdf>

Testing the Regulatory Model – The Expansion of Stansted Airport

<http://www.ifs.org.uk/fs/articles/0054a.pdf?origin=publicationDetail>

Control Sheet

Document Title

A review of regulatory decisions in relation to cost-risk sharing of capital projects

Document Type

Final Report

Client Contract/Project No.

SDG Project/Proposal No.

22739701

Issue history

Issue No.	Date	Details
1	12 09 2014	Draft Final Report
2	22 09 2014	Final Report

Review

Originator

Rosie Offord

Other Contributors

Simon Ellis, Robert Powell, Stephen Wainwright

Reviewed by

Stephen Wainwright

Distribution

Client

Steer Davies Gleave

Project Team



Our offices

Bogotá, Colombia

+57 1 322 1470

colombiainfo@sdgworld.net

Bologna, Italy

+39 051 656 9381

italyinfo@sdgworld.net

Boston, USA

+1 (617) 391 2300

usainfo@sdgworld.net

Denver, USA

+1 (303) 416 7226

usainfo@sdgworld.net

Leeds, England

+44 113 389 6400

leedsinfo@sdgworld.net

London, England

+44 20 7910 5000

sdginfo@sdgworld.net

Madrid, Spain

+34 91 541 8696

spaininfo@sdgworld.net

Mexico City, Mexico

+52 (55) 5615 0041

mexicoinfo@sdgworld.net

New York, USA

+1 (617) 391 2300

usainfo@sdgworld.net

Rome, Italy

+39 06 4201 6169

italyinfo@sdgworld.net

San Juan, Puerto Rico

+1 (787) 721 2002

puertoricoinfo@sdgworld.net

Santiago, Chile

+56 2 2757 2600

chileinfo@sdgworld.net

São Paulo, Brazil

+55 (11) 3151 3630

brasilinfo@sdgworld.net

Toronto, Canada

+1 (647) 260 4860

canadainfo@sdgworld.net

Vancouver, Canada

+1 (604) 629 2610

canadainfo@sdgworld.net