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# Market Returns and Cost of Capital: A Refresh

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Information Paper

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## I. About this document

In March 2013, the Joint Regulators Group, (JRG), the predecessor to the UK Regulators' Network (UKRN), published an information paper entitled *Cost of Capital and Financeability*.<sup>1</sup> The paper was one of a series of papers produced by the JRG on topics of common interest.

The purpose of this short information paper is to provide:

- a brief overview of the UKRN market returns and cost of capital project;
- an update of the JRG paper for:
  - new cost of capital proposals/determinations;
  - current legislation relating to regulators' financing duties;
  - regulated sectors/markets not covered by the JRG paper; and
- a summary of approaches by UKRN members to calculating the cost of capital when setting prices.

This paper is not intended to put forward policy statements on behalf of any of the contributing regulators and if there appears to be a conflict between the material contained herein and an individual regulator's relevant price control papers then the individual regulator's own papers take precedence.

While this paper is intended to provide information only, we do welcome comments. These can be emailed to Martyn Andrews at [martyn.andrews@ofwat.gsi.gov.uk](mailto:martyn.andrews@ofwat.gsi.gov.uk)

## About the UKRN

UKRN is a network formed by the UK's economic regulators:

- The Civil Aviation Authority (CAA)
- The Financial Conduct Authority (FCA), including the Payment Systems Regulator (PSR)<sup>2</sup>
- Office of Communications (Ofcom)
- Office of Gas and Electricity Markets (Ofgem)
- Water Services Regulation Authority (Ofwat)
- Office of Rail Regulation (ORR)
- Northern Ireland Authority for Utility Regulation (Utility Regulator)

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<sup>1</sup> The Joint Regulators Group (JRG) was an association of the UK's economic and competition regulators. It met four times a year to discuss and exchange learning on topics relevant to regulation within the UK. The JRG also organised cross regulator working groups, pooling resource and expertise to look at topics of specific interest. The JRG existed to support its members in delivering their own statutory remits, and to add value by visibly supporting the coherence of the UK system of economic regulation.

<sup>2</sup> Although it has competition and consumer protection functions, the FCA is not classed by HM Government as an economic regulator.



Monitor, the sector regulator for health, participates in the network and its projects as appropriate. The Water Industry Commission for Scotland (WICS) and Legal Services Board (LSB) are contributing members which generally participate in projects as observers.

## **Contributors to this paper**

Contributions to this paper have been made by:

- The Civil Aviation Authority (CAA)
- The Financial Conduct Authority (FCA), including the Payment Systems Regulator (PSR)
- Office of Communications (Ofcom)
- Office of Gas and Electricity Markets (Ofgem)
- Water Services Regulation Authority (Ofwat)
- Office of Rail Regulation (ORR)
- Northern Ireland Authority for Utility Regulation (NIAUR)

The FCA has not used the cost of capital to set price controls. Unless explicitly mentioned any reference in this report to “the regulators”, “we” or “us” relates to the other contributors listed above, excluding the FCA.

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## 2. Summary

### Price controls and cost of capital

- 2.1. As a key tool in economic regulation many members of the UKRN establish limits on the prices suppliers may charge so as to ensure that customers' bills in respect of essential services are kept as small as possible. Through economic regulation and specifically price controls, the interests of customers can in relevant markets or sectors be protected from the consequences of insufficiently developed competition.
- 2.2. In addition to our statutory duties to customers we may also be required to secure that companies can finance their functions by setting an appropriate rate of return on the capital utilised in providing the regulated services. The rate of return, provided by setting a cost of capital, is considered essential to facilitate continuing investment in the infrastructure which supports the well-being of both individual customers and the wider UK economy. In assessing whether a business is and will remain able to finance and deliver its regulated functions, the cost of capital forms a key component of our price control work.
- 2.3. We each calculate independently a forward looking cost of capital which we can then apply during a price control period. As such a cost of capital may and will vary between sectors and between price control periods, the length of which may also vary between regulated sectors. This is inevitable in sectors that differ in many respects – for example; the level of competition, the nature and economic life of the assets concerned, and the level of various types of risk. Our statutory duties also vary. In some regulated sectors, safety or other public service objectives may also be of critical importance and the associated duties may impact how we fulfil our duties, the influences on the level of the cost of capital and future trends.
- 2.4. Nevertheless the cost of capital may legitimately vary between the sectors we regulate, can we create better alignment in how we arrive at the cost of capital? Can we explain variations in the cost of capital between companies and sectors by reference to industry specific characteristics or in our legal duties? Or are differences the result of numerous teams of people taking alternative views of similar issues?

### Market returns and cost of capital project

- 2.5. The market returns and cost of capital project aims to consider these and other questions, and seek to address whether or not some or all of the UK's independent economic regulators can, through sharing best practice and developing a consistent and transparent approach to setting the cost of capital, carry out our duties more efficiently and effectively. Examples of how this might be done are set out below.
  - Comparing approaches across organisational boundaries, and enabling the sharing of best practice and the pooling of ideas on ways to improve the assessment of the cost of capital in each sector.
  - Drawing on the economies of scale available through utilising expertise on the cost of capital residing in our individual organisations, with a reduction in the costs of obtaining external advice, leading to a completion of individual cost of capital evaluations at a lower cost to all stakeholders.
  - Presenting a clearer and more consistent picture to increase the willingness of investors to allocate additional financial resources to regulated sectors, and reduce any perceived regulatory risk premium for all investors.

- Decreasing the likelihood that companies request a Competition and Markets Authority (CMA) referral in the expectation that the CMA may come to different view on the specific components of the cost of capital which fall under a common methodology framework.

- 2.6. While we consider there is evidence that the determination of the cost of capital could be approached collaboratively under a common methodology framework, we also recognise and need to consider in parallel the potential risks associated with following a common framework which may fetter an individual regulator's judgement in serving the interests of customers.
- 2.7. As a first step, we have therefore considered the approaches taken across regulated sectors and this information paper sets out the cost of capital employed in recent price controls (up to December 2014) along with several of the underlying elements to the cost of capital calculations. The paper also summarises factual matters about the varied approaches taken by us in setting the cost of capital when we set price limits and provides a comparison of the ring-fencing provisions in each regulated sector which have a bearing on the cost of capital.

## Comments

- 2.8. While this paper is intended to provide information only we do welcome comments. These can be emailed to Martyn Andrews at [martyn.andrews@ofwat.gsi.gov.uk](mailto:martyn.andrews@ofwat.gsi.gov.uk)

## Next Steps

- 2.9. Taking this paper as a foundation, comments received and future discussions with interested parties, (for example, credit rating agencies, market representatives and the CMA) we propose to examine, and, if considered of overall benefit to customers and investors, explore opportunities in working together as economic regulators to reduce the perceived level of regulatory risk when we set the cost of capital.

## 3. Setting the cost of capital

### Broad Approach

- 3.1. Whilst there are some differences in our duties (as set out in Appendix I), UK economic regulators use a cost of capital in the calculation of some, or all, of the price controls that we set for the business activities we regulate. The approaches we take in setting the cost of capital is broadly similar, although Ofcom and Ofgem take a different approach in a number of areas. The methods adopted and the differences that arise are discussed below and further detail on the parameters used in recent price controls can be found in the appendices. The classic building block diagram of how price controls work and where the cost of capital fits in is set out below. This example is taken from the CAA's paper *Review of price and service quality regulation at Heathrow, Gatwick and Stansted airports: Setting the Scene for Q6*, dated July 2011.<sup>3</sup>

#### How Q5 price controls were calculated

The price caps were calculated assuming a 'single till RAB model' as illustrated below and as endorsed by the Competition Commission (figure 6.1).

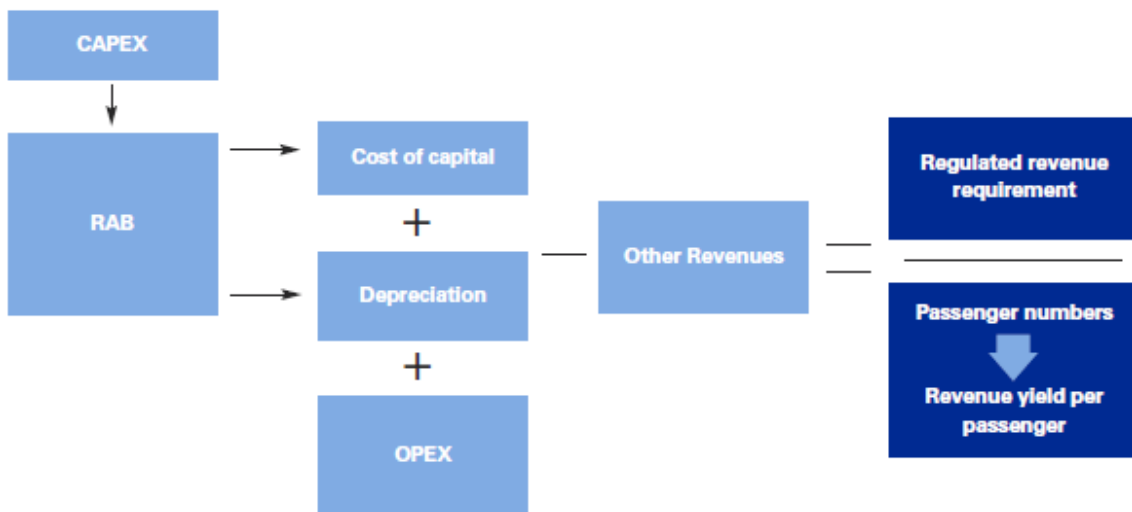


Figure 6.1 The standard regulatory building block approach  
Source: CAA

### Weighted Average Cost of Capital

- 3.2. All regulators adopt a weighted average cost of capital (WACC) approach representing the cost of a blend (the gearing) of debt and equity finance.
- 3.3. The WACC is derived for a company or part of a company (the 'regulated business') by way of a notional gearing which is often different to the actual gearing of the company or its group.

<sup>3</sup> [http://www.caa.co.uk/docs/2162/Consultation\\_Q6SettingScene.pdf](http://www.caa.co.uk/docs/2162/Consultation_Q6SettingScene.pdf)

- 3.4. The Capital Asset Pricing Model (CAPM) is used as the primary approach in estimating the cost of equity and has been reinforced by some regulators with other evidence including from the dividend growth model, transaction evidence and comparison with other regulated sectors.
- 3.5. All regulators have used a cost of capital expressed in real terms (which is applied for price control purposes to a Regulatory Asset Value (RAV)); although for some price controls Ofcom has used a nominal cost of capital while Ofgem utilises a modified approach to reflect the impact of a longer price control period.

## Cost of Equity

- 3.6. Under the CAPM approach, the cost of equity is estimated as the risk-free rate plus (equity beta x market risk premium). The risk-free rate and the market risk premium are general non-company specific market factors.
- 3.7. In considering the generic components of the cost of capital, regulators are very aware of the need for consistency of approach when estimating the components of WACC (for example the relationship between the risk-free rate, the market risk premium and the market return) and where appropriate, consistency over time, so that market timing effects have the opportunity to even out over price controls.

## Risk-Free Rate

- 3.8. The most recent risk-free rates used by regulators are reproduced below. While different rates have been used, there is a degree of consistency. Regulators tend to take a broadly similar approach to estimating the risk-free rate by examining yields on Gilts including index-linked Gilts. Common issues in the interpretation of Gilt yields for the purpose of setting the risk-free rate have historically included, for example, the effect of quantitative easing and pensions' regulation. Regulators have had to make judgements from the data, and consider historic, current and forecasts of risk-free rates as to the impact of these and other similar issues and this judgement will be affected by when the decision is taken and the analysis of the evidence available at that time.

**Figure 3.1: Real Risk-Free rate**

Decision year	2013	2014	2014	2014	2014	2014	2014	2014	2014
<b>Price control</b>	ORR CP5 (Network Rail)	Ofwat: PR14	CAA: Heathrow (Q6)	CAA: Gatwick (Q6)	CAA: NERL (RP2)	Ofcom: LLU WLR	Ofcom: WBA	Ofgem: RIIO ED1	NIAUR: PC15
<b>Risk-free rate</b>	1.75%	1.25%	0.50%	0.50%	0.75%	1.30%	1.30%	1.60%	1.50%
Note 1									

Note 1: This is Ofgem's long run estimate of the risk-free rate. Its cost of equity estimate is also informed by current market conditions as explained in its February 2014 decision on equity market return methodology

- 3.9. A longer time series is provided in Appendix 3.



## Market Risk Premium

- 3.10. Typically, we have taken a long term view on the appropriate market risk premium. Dimson, Marsh and Staunton are often cited as a key reference work in this area. However, there is no academic consistency on the appropriate values and we have to exercise judgement based on our analysis and the evidence available. As with the risk-free rate, we consider past, current and future rates and give appropriate weight to each of these depending on the circumstances. The judgement on the appropriate market risk premium to adopt is therefore affected to some extent by the wider financial conditions existing at the time each decision is made.
- 3.11. The inter-relationship between risk free rates and the market risk premiums (and the overall market return) also needs to be considered. This was examined in some detail for the JRG in 2004 by Smithers & Co. and still remains relevant.<sup>4</sup>

**Figure 3.2: Market risk premium**

Decision year	2013	2014	2014	2014	2014	2014	2014	2014	2014
<b>Price control</b>	ORR CP5 (Network Rail)	Ofwat: PR14	CAA: Heathrow (Q6)	CAA: Gatwick (Q6)	CAA: NERL (RP2)	Ofcom: LLU WLR	Ofcom: WBA	Ofgem: RIIO ED1	NIAUR: PC15
<b>Market risk premium</b>	5.00%	5.50%	5.75%	5.75%	5.50%	5.00%	5.00%	5.25%	5.00%
Note 2									

Note 2: This is Ofgem's long run estimate of the market risk premium. Its cost of equity estimate is also informed by current market conditions as explained in its February 2014 decision on equity market return methodology.

- 3.12. A longer time series is provided in Appendix 3.

## Betas

- 3.13. The equity beta is a company or sector-specific factor which describes the relative risk of the company or sector to the market as a whole, so variation between sectors is to be expected. The existence of directly measureable betas will depend on whether there are regulated companies with equity listings. In many cases, the regulated entity in question is not listed meaning alternative methods are required, including the use of proxies. Regulators need to exercise judgement and in general consider a wide range of data to reach their conclusions.

## Cost of Debt

- 3.14. In estimating the WACC, we typically estimate the cost of debt and determine an efficient level of gearing for the purposes of calculating the WACC. There are some consistent approaches to determining the cost of debt using a rate fixed for the duration of the price control period, drawing on evidence on historical yields, current yields and expected future yields over the period, but there are some significant variations. Market evidence can be based on specific bonds, specific companies and/or

<sup>4</sup> A Study into Certain Aspects of the Cost of Capital for Regulated Utilities in the U.K. Stephen Wright (Birkbeck College and Smithers & Co), Robin Mason (University of Southampton and CEPR) & David Miles (Imperial College and CEPR) on behalf of: Smithers & Co Ltd: [http://www.caa.co.uk/docs/2552/20030213\\_Cost\\_of\\_Capital\\_Study.pdf](http://www.caa.co.uk/docs/2552/20030213_Cost_of_Capital_Study.pdf)

specific benchmarks as appropriate. A number of us also take into account that an efficiently financed company would have a debt portfolio built up over a number of years (embedded debt), some of which may be at rates fixed in nominal or real terms.

- 3.15. Ofcom's usual approach, for example, to setting regulated charges involves a forecast of the costs of providing a service and it allows for the recovery of forward-looking efficiently incurred costs. Ofcom has not in the past reflected the cost of embedded debt in its calculation of the WACC for its price controls.
- 3.16. Ofgem on the other hand, has taken a different approach following its review of the RPI-X regime with a move to annual indexation of the cost of debt relative to a 10 year trailing average of published indices. Ofgem has done this in part because it is introducing longer (eight year) price controls and to set a fixed cost of debt assumption over such a period would present the companies with too much exposure or require too much headroom to the detriment of customers.

## Gearing

- 3.17. To date, all six UK economic regulators have set allowed returns using a notional financial structure. This approach is consistent with the principle of efficiency because the actual financing is a matter for the company and its investors and customers should not be expected to pay for an inefficient finance structure (i.e. one that bears too little or creates too much risk). Furthermore, customers should not be expected to pay for repairing an inappropriate capital structure.

## Corporation Tax

- 3.18. We have the choice of whether to include an allowance for corporation tax in the cost of capital or reflect it as a separate allowance. The choice arises because the interest expense (the cost of debt) is an allowable deduction in calculating the tax charge whereas dividends (cost of equity) are not. Hence, the cost of debt is normally expressed before tax, while the cost of equity is normally expressed after tax. This gives rise to two types of WACC which are used for price controls:
  - "Pre-tax", where the cost of equity is increased by the relevant tax rate to provide for the tax that must be paid, along with the pre-tax cost of debt; or
  - "Vanilla", where a separately calculated tax allowance is provided in addition to a pre-tax cost of debt and post-tax cost of equity.

## Financing Duties

- 3.19. Although the precise wording and status of the duty may differ, each of the following UK economic regulators has a form of 'financing duty':
  - CAA (for Air Traffic Control and Airports);
  - Ofgem (for gas and electricity);
  - Ofwat (for water & wastewater);
  - ORR (for rail infrastructure); and
  - NIAUR (for electricity, gas, and water & wastewater)

- 3.20. All five of the above regulators broadly interpret their financing duty (summarised in Appendix 1) alongside the efficiency and economy duty to mean that the price control will be set at a level which would allow an efficient company to finance its licensed activities.
- 3.21. Ofwat, for example, has a primary duty to secure that companies holding appointments as water and sewerage undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of their functions. Ofwat interprets the financing functions duty as applying to the ring-fenced regulated activities of the licenced appointee, and – consistent with their long held policies in respect of setting price limits – interpret this duty to require that they would need to ensure an efficient company can:
- earn a return at least equal to Ofwat’s allowed cost of capital; and
  - raise finance on reasonable terms.
- 3.22. Ofcom does not have a financing duty in respect of communications markets, but is required to have regard to, among other things, the desirability of encouraging investment and innovation in relevant markets. In contrast, in relation to regulating postal services, Ofcom’s primary duty to secure provision of a universal postal service includes a duty to have regard to the need for that service to be financially sustainable. However, at present, Ofcom has only imposed a safeguard price cap on a few universal service products to ensure that a basic universal service is available to all and protect vulnerable customers from ongoing price increases. The safeguard cap was put in place for 7 years, ending in March 2019, and it increases in line with inflation. The safeguard price cap has not been calculated using a RAV x WACC approach, and therefore Ofcom has not calculated a WACC in this regard.
- 3.23. The ring-fencing provisions in each regulatory sector is provided in an Appendix 2

## A comparison of WACCs

- 3.24. Figure 3.2 below sets out the vanilla WACCs from, or derived from, a number of recent reviews; a longer time series is provided in Appendix 3. We have shown these on a vanilla WACC basis for consistency, although it should be noted that this will not always be the rate used to generate price control revenue or prices as not all of us use this basis.

**Figure 3.2: Vanilla WACC (real)**

Decision year	2013	2014	2014	2014	2014	2014	2014	2014	2014
<b>Price control</b>	ORR CP5 (Network Rail)	Ofwat: PR14	CAA: Heathrow (Q6)	CAA: Gatwick (Q6)	CAA: NERL (RP2)	Ofcom: LLU WLR	Ofcom: WBA	Ofgem: RIIO ED1	NIAUR: PC15
<b>Vanilla WACC</b>	4.31%	3.74%	5.35%	5.70%	4.25%	3.88%	5.62%	3.76%	3.44%
						Note 3	Note 3		

Note 3: The charge control uses a pre-tax nominal WACC. The real vanilla WACC has been derived for the purposes of UKRN and is not used in the charge control

- 3.25. A longer time series is provided in Appendix 3

## 4. Appendices

### Appendix I: Financing Duty

	CAA		Ofcom	Ofgem		Ofwat	ORR	NIAUR		
Sector	Air Traffic Control	Airports	Communications	Gas	Electricity	Water & sewerage	Rail infrastructure	Water & sewerage	Electricity	Gas
Companies subject to price controls	1	2	5	9	17	19	2*	1	2	4
			(Companies subject to charge controls)	(Note 1)	(Note 1)	(Note 2)	(note 3)			
Primary Legislation	Transport Act 2000	Civil Aviation Act 2012	Communications Act 2003	Gas Act 1986	Electricity Act 1989	Water Industry Act 1991 as amended	Railway Act 1993 (plus amendments)	Water and Sewerage Services (NI) Order 2006	The Electricity (NI) Order 1992 & Energy Order (NI) 2003	The Gas(NI) Order 1996 & Energy Order (NI) 2003.
Structure of Duties	Primary and secondary duties	Primary duty, and 'have regards to ...'	Primary duty, and 'have regards to ...'	Primary duty, and 'have regards to ...'		4 Primary and 5 secondary duties	Statutory duties to funders, business and users and there is no hierarchy in our duties	Core duties (3 primary, 5 secondary duties plus general environmental and recreational duties) AND 'have regards to ...'	5 Primary duty, and 'have regards to ...'	Primary duty, and 'have regards to ...'
Primary duty(ies)	Highest level of safety. Has priority over other 'secondary' duties	Further the interests of users, where appropriate promote competition	Further the interest of citizens in relation to communication matters and to further the interests of consumers in relevant markets where appropriate by promoting competition	Further the principle objective:		Securing that a company is able (in particular by securing reasonable returns on its capital) to finance the proper carrying out of their functions	No primacy within ORR's duties.	Protection of consumer interests (wherever appropriate by facilitating effective competition)	Our principal objective in carrying out our electricity functions is to protect the interests of electricity consumers, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities, connected with, the generation, transmission, distribution or supply of electricity.	Our principal objective in carrying out our gas functions is to promote the development and maintenance of an efficient, economic and coordinated gas industry in Northern Ireland.
				the shipping, transportation or supply of gas conveyed through pipes;						
				the generation, transmission, distribution or supply of electricity;						
				and the provision or use of electricity interconnectors...		Protect the interests of consumers, wherever appropriate by promoting competition				
				where appropriate by promoting effective competition		Securing the long-term resilience of water supply and wastewater systems and that undertakers take steps to enable them, in the long term, to meet the need for water supplies and wastewater services		Ensuring undertakers are able to finance their functions		Our principal objective must also be pursued in a way that is consistent with the objectives defined in Article 40 of the Gas Directive, the most relevant of which – in the context of carrying out price controls – are promoting an efficient market, and protecting consumers.
						Performing our regulatory duties in the manner which we consider best calculated to promote economy and efficiency on the part of licensed undertaker in the carrying out of its functions		Ensuring undertakers carry out their functions properly as respects every area of N Ireland		In carrying out our gas functions, we are also required to further this principal objective in the best manner that we see fit whilst also having regard to a number of other considerations. The key relevant one being the need to ensure that licence holders are able to finance their licensed activities.
'Financing duty'?	Yes, secondary duty	Yes, must have regards to ...	No	Yes, must have regards to ...		Yes, one of the primary duties	Yes, it must act in a manner which it considers will not render it unduly difficult for licence holders to finance their activities	Yes, one of the primary duties	Yes, must have regards to the need to secure that licence holders are able to finance their statutory activities	Yes, Ensure the Company can Finance its activities
'Economy and/or efficiency duty'?	Yes, secondary duty	Yes, must have regards to ...	No	Must have regards to when carrying out its functions		Yes, one of the secondary duties	Yes	Yes, one of the secondary duties	Yes	Yes

## Appendix I: Financing Duty (cont.)

Note 1: Ofgem: Excluding independent gas transporters and independent electricity distribution network operators who are subject to relative price control

Note 2: Ofwat: The 19 licence holders referred to are the 10 regional companies that provide both water and sewerage services and the 9 regional companies that provide water services only. Each of these companies is subject to the full periodic review price determinations process. Ofwat also regulates, albeit with a lighter process; 6 local companies providing either water or sewerage services or both; and 7 water supply licensees offering water services to large use customers.

Note 3: As well as Network Rail, ORR conducts a periodic review of HS1 Ltd.'s charges. But HS1 is a concession and a different regulatory framework is used. In particular it is not in the scope of HS1's price control to calculate a return to shareholders as part of the revenue requirement calculation, so we have not included HS1 in this document but some of the issues involved with calculating a cost of capital do apply to HS1.

## Appendix 2: Ring Fencing

Sector	CAA		Ofcom	Ofgem		Ofwat	ORR	NIAUR			
	Air Traffic Control	Airports <sup>1</sup>	Communications	Gas	Electricity	Water & sewerage	Rail network	Electricity - SONI	Electricity - NIE	Gas <sup>2</sup>	Water & sewerage
Restrictions on disposal of assets	✓	x	X	✓	✓	✓	✓	✓	✓	✓/X	✓
Restrictions on activity and financial ring-fencing	✓	✓	X	✓	✓	✓	✓	✓	✓	✓/X	✓
Requirement to annually provide certification of availability of resources and at each dividend declaration	✓	✓	X	✓	✓	✓	✓	✓	✓	✓/X	✓
Ultimate holding company undertakings	✓	✓	X	✓	✓	✓	✓	Licence Paragraphs suspended so long as the state owned EirGrid PLC remain legal owners of SONI	✓	✓/X	N/A
Requirement to maintain an investment grade credit rating	✓	x	X	✓	✓	✓	✓	X	✓	✓/X	Deferred given deferral of domestic charging
Restrictions on indebtedness	✓	x	X	✓	✓	X	✓	X	✓	✓/X	Guidelines provided but no restrictions as such
Independent licensee directors				✓	✓	✓					
Restrictions on granting of security over network assets	✓	x	X	✓	✓	✓	✓	X	✓	✓/X	N/A
Insolvency	Special Admin	No Special Admin. Standard insolvency rules	No special Admin. Standard insolvency rules	Special Admin		Special Admin	Special Admin	Special Admin Regime applies	✓	Special Admin	Special Admin

<sup>1</sup> Airport licences for Heathrow Airport Limited and Gatwick Airport Limited issued by CAA in Feb 2014, taking effect on 1 April 2014.

<sup>2</sup> Dependant on the ownership structure (Private or Government owned) of the licensed business, which is currently under review

## Appendix 3: Price Controls 2006-2014

**Table 3.1: risk-free rates used in recent price controls**

Decision year	2010	2010	2011	2011	2011	2011	2012	2012	2012	2012	2012	2012	2013	2014	2014	2014	2014	2014	2014	2014
Price control	CAA: NATS	NIAUR: PC10	Ofcom: MCT	SONI	Ofcom: WBA	Ofgem: TPCR4 Rollover	Ofgem: RIIO T1/GD1	NIAUR: PNG	NIAUR: BGE	NIAUR: RP5	NIAUR: PC13	ORR CP5 (Network Rail)	Ofwat: PR14	CAA: Heathrow (Q6)	CAA: Gatwick (Q6)	CAA: NERL (RP2)	Ofcom: LLU WLR	Ofcom: WBA	Ofgem: RIIO ED1	NIAUR: PC15
Risk-free rate	1.75%	2.00%	1.50%	2.00%	1.40%	2.00%	2.00%	NA	2.00%	1.50%	2.00%	1.75%	1.25%	0.50%	0.50%	0.75%	1.30%	1.30%	1.60%	1.50%
Note 7																				

**Table 3.2: market risk premia used in recent price controls**

Decision year	2010	2010	2011	2011	2011	2011	2012	2012	2012	2012	2012	2012	2013	2014	2014	2014	2014	2014	2014	2014
Price control	CAA: NATS	NIAUR: PC10	Ofcom: MCT	SONI	Ofcom: WBA	Ofgem: TPCR4 Rollover	Ofgem: RIIO T1/GD1	NIAUR: PNG	NIAUR: BGE	NIAUR: RP5	NIAUR: PC13	ORR CP5 (Network Rail)	Ofwat: PR14	CAA: Heathrow (Q6)	CAA: Gatwick (Q6)	CAA: NERL (RP2)	Ofcom: LLU WLR	Ofcom: WBA	Ofgem: RIIO ED1	NIAUR: PC15
Market risk premium	5.25%	5.40%	5.00%	4.75%	5.00%	5.00%	5.25%	NA	NA	5.00%	5.00%	5.00%	5.50%	5.75%	5.75%	5.50%	5.00%	5.00%	5.25%	5.00%
Note 4																	Note 7			

**Table 3.3 – Vanilla WACC (real)**

Decision year	2010	2010	2011	2011	2011	2011	2012	2012	2012	2012	2012	2012	2013	2014	2014	2014	2014	2014	2014	2014
Price control	CAA: NATS	NIAUR: PC10	Ofcom: MCT	SONI	Ofcom: WBA	Ofgem: TPCR4 Rollover	Ofgem: RIIO T1/GD1	NIAUR: PNG	NIAUR: BGE	NIAUR: RP5	NIAUR: PC13	ORR CP5 (Network Rail)	Ofwat: PR14	CAA: Heathrow (Q6)	CAA: Gatwick (Q6)	CAA: NERL (RP2)	Ofcom: LLU WLR	Ofcom: WBA	Ofgem: RIIO ED1	NIAUR: PC15
Vanilla WACC	5.70%	4.80%	4.50%	4.70%	5.06%	4.75%	4.3%-4.8%	8.55%	5.83%	4.10%	4.09%	4.31%	3.74%	5.35%	5.70%	4.25%	3.88%	5.62%	3.76%	3.44%
Note 6			Note 5			Note 8			Note 5								Note 5		Note 7	

<b>CAA</b>	
Note 4	NERL price control is part of a wider EU performance scheme. The WACC determination formed part of the UK-Ireland FAB Performance Plan for RP2 (2015-2019). The Plan has been developed by the CAA (and Irish equivalent) and approved by the State (UK DfT and Irish equivalent). On 27 June 2014 the Plan was submitted to the European Commission for approval.
<b>OFCOM</b>	
Note 5	The charge control uses a pre-tax nominal WACC. The real vanilla WACC has been derived for the purposes of UKRN and is not used in the charge control
Note 6	This charge control uses a pre-tax real (RPI) WACC. The real vanilla WACC has been derived for the purposes of UKRN and is not used in the charge control
<b>OFGEM</b>	
Note 7	All data shown is taken from Ofgem's slow track final determinations published in November 2014. The information is as for the first year of the control period, 2015-16, and is thereafter subject to cost of debt indexation.
Note 8	Relates to 2013-14 only. Pursuant to the RIIO methodology the cost of capital is annually adjusted by way of an indexation of the cost of debt