



CEPA review of 'CAA Economic regulation of capacity expansion at Heathrow: policy update and consultation,' (CAP1610) – cost of capital issues

For the Heathrow Airline Operators Committee (AOC), February 2018¹

Summary

CEPA have been appointed by the AOC at Heathrow to provide advice on the setting of the Weighted Average Cost of Capital (WACC) for the upcoming decision for the H7 price control. This document reviews and discusses two aspects of the CAA policy update and consultation (CAP1610)², namely:

- the development of the overall regulatory and commercial framework for Heathrow; and
- a detailed discussion on individual cost of capital parameters.

We note that our views are based on information known about the H7 price control at present. As more information becomes available on the price control, especially the third runway (R3), the underlying assumptions and the impact this has on the cost of capital will need to be revisited.

Regulatory and commercial framework

Before discussing the individual cost of capital parameters, we look at the overarching regulatory and commercial framework. There are four topics we consider:

1. *the rollover of the Q6 determination into H7* – as evidence on the cost of capital shows, regulatory estimates of the WACC have fallen since the Q6 determination, consequently any cost of capital for any rollover period would be significantly lower than for Q6. We consider that this is neither complex, nor resource intensive given the approach set out by PwC and the CAA in CAP1610. The lower cost of capital should lead to a significant fall in charges during the rollover period³.
2. *the establishment of a premium over the WACC to account for construction risk* – we do not consider there to be the need for an additional premium above the risk already captured in the cost of capital range – this position is supported by the case studies presented by PwC.

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² This includes the associated PwC cost of capital study appended to the CAA policy update.

³ In our view a reduction in charges for any rollover period is more appropriate than an adjustment to the level of regulatory depreciation in the H7 period.



3. *risk-sharing mechanisms on the cost of debt* – we do not consider that a risk-sharing mechanism on the actual cost of debt (given the introduction of indexation to account for market movements) is beneficial; this is because the cost of debt is just one aspect of treasury management and there are potential perverse incentives.
4. *use of competitive tendering* – we are supportive of options that can utilise competitive benchmarks to set revenue allowances, including determining a cost of capital that reflects required returns.

At a high level, as further work is required to define the programme of capacity expansion at Heathrow, we consider it to be prudent for the CAA to keep its options open and choose the solution that is best suited to the tasks required.

Cost of capital parameters

We have also provided analysis on the more detailed WACC parameter methodology set out in the policy update. Key points from this review include:

- *Cost of embedded debt*: we consider that using a notional approach is appropriate for estimating the cost of debt and that the 10-15yr iBoxx non-financial corporate A and BBB rated indices are the most relevant indices for H7. We consider that embedded debt should be considered over the price control rather than a fixed point in time; this approach leads to a material reduction in the cost of embedded debt.
- *Cost of new debt*: the introduction of indexation for new debt is a positive step and we consider that the same notional indices are used as with embedded debt.
- *Weight on new debt*: taking a 12.5yr average tenor and a smooth issuance profile, would imply 20% weight on new debt in the 'as is' case. A better estimate of the weight for new debt with R3 will be possible once further information is available on the H7 investment programme.
- *Risk-free rate*: the approach taken on the risk-free rate (using a spot rate and forward adjustments) gives a similar result to use of the expected trailing average yield over H7. The former approach is more subject to volatility and this supports the level set.
- *Total Market Return (TMR)*: we broadly support the approach set out by PwC on this parameter. Evidence from competitive benchmarks indicate that the current TMR is below the long-run historical average.
- *Beta*: our estimates of Fraport and ADP asset betas using local indices point to an asset beta range of 0.33 to 0.44. These two comparators are considered by PwC to have greater systematic risk than Heathrow and there are additional factors to those noted by PwC why the two comparators should be considered higher risk than Heathrow. We consider the comparators to be an appropriate starting point for estimating beta.



The recommended changes on the cost of debt would lead to a reduction in the vanilla WACC of c.50bps for the H7 'as is' scenario, with the proposed beta range leading to an additional fall in the vanilla WACC of up to c.40bps. As noted regarding the appropriate framework, we reject the use of any WACC premium beyond the cost of capital range for R3.



FRAMEWORK FOR H7

In this chapter, we discuss broader issues around the H7 determination and the regulatory regime; the next chapter focuses on the estimation of individual cost of capital parameters. We consider that at this stage of the determination process, these regulatory and commercial framework questions are essential for being able to set an appropriately calculated cost of capital.

1.1. Cost of capital for the rollover of the Q6 determination into H7

The real vanilla WACC range proposed by PwC under the H7 'as is' scenario (3.0% to 3.9%), is lower than the Q6 price control WACC set for Heathrow Airport (4.65%). This reflects the evidence pointing to a fall in market parameters across the cost of debt and cost of equity.

We assume that any rollover period would be no more than two additional years. A cost of capital set for the rollover period alone would be materially lower than the Q6 determination. It is also likely to be lower than the PwC H7 'as is' range due to the following factors:

- currently PwC use forward adjustments to October 2022 – with a rollover period ending before this date, the extent of any forward adjustment on the risk-free rate and cost of debt will be less than assumed for the H7 'as is' case.
- with equity only being raised for a short period of time, it is more defensible to utilise prevailing evidence more heavily; over a longer time horizon,
- as the rollover period would involve a shorter time period, there should be less rationale for aiming up as the period before any reset is more limited.

CAP1610 set out that a one percentage point change in the WACC equates to a 10% decrease (or £2 per passenger) in airport charges. If we were to assume that the lower bound of the PwC H7 'as is' range was selected as the cost of capital for the rollover period, there would be a fall of 165bps on the real vanilla WACC. Based on the CAA calculations, this would imply a 16.5% fall in airport charges (or £3.30 per passenger), all other things remaining equal.

The CAA notes their concern around the complexity of undertaking a full determination for the rollover period and consider that any decision should be proportionate. With a full cost of capital study completed for the H7 'as is' scenario, we consider that there is limited additional burden to update the cost of capital. If the CAA were to adopt a 3.0% real vanilla WACC for a two-year rollover period, we estimate customer savings of £450m⁴.

⁴ This is based on an assumed RAB of £13.5bn and a reduction in the WACC of 165bps. All other factors are assumed to remain constant.



The cost of capital is not the only source from which we would expect reductions in airport charges. One example of this is traffic volumes in excess of what was assumed at the Q6 determination. Moody's expect continued positive demand growth at Heathrow airport. If the CAA were to revise traffic forecasts for a given level of total allowed revenues, the impact would be a further reduction in individual passenger charges⁵. CAP1610 also discusses passing through some of the efficiency gains witnessed in Q6 through to passengers.

1.2. Establishment of WACC adjustment for R3 decision

The cost of capital for the R3 decision is 25-100bps higher for the cost of capital than for the H7 'as is' case. The use of a separate adjustment makes comparison across price controls easier. We have therefore considered what the impact would be if we removed the WACC adjustment and increased the asset beta to achieve the same overall cost of capital:

- a 25bps increase in the WACC equates to an increase of 0.04 in the asset beta; and
- a 100bps increase in the WACC equates to an increase of 0.15 in the asset beta⁶.

This would give a high-end post-tax cost of equity estimate of 9.6% for H7 R3⁷. As a point of comparison, Ofwat's PR19 Final Methodology post-tax cost of equity is 4.0%⁸. The discrepancy between returns in these two regulated sectors should provide a clear indication that the adjustment for risk for H7 R3 is overly generous and will lead to inflated customer charges.

When assessing asset betas we need to ensure that we are being consistent on the use of debt betas, otherwise figures will not be comparable. The PwC estimate uses a debt beta of 0.05. We show below how we arrive at an effective asset beta of 0.43 to 0.64 for H7 R3, based on PwC's analysis.

Table 1: Asset beta estimate for H7 R3 produced by PwC

Parameter	Asset beta	
	Low	High
PwC quoted H7 'as is' beta (debt beta = 0.05)	0.42	0.52
Adjustment for R3 WACC adjustment	+0.04	+0.15
Adjustment to a zero debt beta	-0.03	-0.03
Effective PwC H7 R3 beta (zero debt beta)	0.43	0.64

Source: CEPA analysis, PwC, CAA

⁵ Moody's (2017) Airports Europe: 2018 outlook positive as traffic growth remains strong, but with downside risks, 29 November 2017

⁶ We assume that the adjustment is captured fully in the asset beta.

⁷ The real post-tax cost of equity with the smallest adjustment is 5.6-7.7%, while it is 7.4-9.6% for the upper part of the range.

⁸ This is at the same level of gearing (60%).



A measure of systematic risk typically considered by UK regulators in setting the asset beta is investment intensity, proxied by capex to RAB ratios. We do not have this evidence available for Ofwat and PR19, but a comparison of this ratio for H7 R3 and the RIIO-T1 price control in energy shows broadly similar results.

Capex to RAB ratios

With R3, the expected capex to RAB level over H7 is expected to be 17% based on the PwC study. PwC find a capex ratio of 27% for SHETL under RIIO-T1 and 13% for NGET. H7 R3 therefore sits between these two cases (and is closer to NGET).

Ofgem has also recently published its minded-to-position on the cost of capital for new assets. This considers a cost of capital for the construction phase of a project. We consider that the construction phase of a project is likely to have a higher degree of systematic risk than for an operational-only phase (all other things being equal). The Competition Proxy model is assumed to be for a single project with no existing RAB. This compares to H7 R3, which has a mix of construction and operational phases, a portfolio of projects and a RAB of c.£13.5bn.

Table 2: Summary of capex to RAB and asset beta determinations⁹

Company & determination	Capex to RAB	Asset beta
Heathrow, H7 R3	16.8%	0.43 to 0.64
NGET, RIIO-T1	13%	0.38
SHETL, RIIO-T1	27%	0.43
Competition Proxy (Construction phase)	No existing RAB	0.45 to 0.55

**Note: asset beta for H7 includes WACC uplift of 0.04 to 0.15*

We understand that capex to RAB is not the only consideration in setting the asset beta. Evidence on the asset beta may have changed such that these references are no longer valid or there may be differences in the regulatory regime.

The Competition Proxy asset beta represents a contemporary reference. Ofgem are expected to release a consultation on the RIIO-2 price controls in March 2018, with further details on the cost of capital, which could update the relevant asset beta comparison.

Relative risk between determinations

The regulatory regimes are not identical between energy and airports, so it is appropriate to consider relative risk. One factor may be volume risk that exists under a price cap, compared to a revenue cap.

While the CAA has continued to aim up on revenue cap determinations to account for this volume risk, there is international regulatory precedent that points to such an adjustment not being supported. The New Zealand Commerce Commission reviewed the impact of the form of control in detail ahead of finalising their 2016 Input Methodologies for the cost of

⁹ Assuming a zero debt beta.



capital. The regulator considered that there was insufficient evidence available to make an adjustment¹⁰.

There may be areas where systematic risk in energy is higher than for airports. As an example, the incentives around capex efficiency are more muted in aviation for Heathrow relative to the cost sharing factors used in the RIIO price controls in energy.

Airlines have also argued that the allocation of volume risk is unfair, paying for the downside risk, for example through a higher WACC and the estimation of demand forecasts.

Recommendation

In light of other regulatory determinations, it is unclear why there is the need to include a further WACC adjustment beyond the range quoted for the asset beta. The difference in the range for the asset beta is currently 0.10 between low and high estimates in the H7 'as is' case; this should be sufficient to reflect additional risk faced with the R3 investment programme.

We discuss the asset beta in Section 1.7 and the approach for estimating the WACC premium in Section 1.8.

1.3. Risk-sharing mechanisms on the cost of debt

The CAA has referenced introducing a risk-sharing mechanism on the cost of debt. Limited information is available as to what is envisaged; our interpretation is that the CAA are thinking about a pain-gain share type mechanism where differences in actual cost relative to the notional allowance set are shared between Heathrow and consumers.

With indexation of the cost of new debt, we consider that the benefits of such a mechanism are reduced as the allowance changes with movements in yields. We consider that there are likely to be practical issues that cause difficulties around introducing such a mechanism.

Ofwat for PR19 rejected the use of such a mechanism, noting the potential for perverse incentives and gaming of a mechanism by regulated companies. Companies could look to adopt capital structures, tenors of debt and types of debt that permits a financial reward within the price control period itself, rather than adopt the optimal financing strategy in the absence of such incentives.

1.4. Use of competitive tendering

The CAA raises the question of competitive tendering with respect to the cost of capital. We consider that in principle market testing of the cost of equity is a viable model. Although this exact approach would be relatively novel, UK regulators are increasingly drawing upon competitive benchmarks to set the cost of capital and overall allowances.

¹⁰ New Zealand Commerce Commission (2016) Input methodologies review decisions: Topic 4 Cost of Capital, paragraphs 321-332.



The intention behind market testing of the cost of equity would be to benefit from competition around financing, with the Thames Tideway Tunnel (TTT) and the OFTO regime in energy examples of costs of capital below regulatory precedent in price control decisions. Evidence from Market Asset Ratios show the premium equity investors are willing to pay above the RAB value.

These competitive benchmarks can at a minimum be used as a cross-check for any figures determined by the CAA. The use of the Competition Proxy model for the transmission grid upgrade for Hinkley is an example of competitive benchmarks being used more explicitly. Market testing of equity would involve the direct use of a competition.

There are two variants of a potential market testing model that we can consider, although other options exist. The first involves the use of an Infrastructure Provider (IP) model, similar to the approach used for TTT. There would be an equity funding competition for investment into the IP, with the SPV potentially merged into the overall Heathrow group when construction is completed. The second option would involve a less fundamental change to the regulatory regime and would involve Heathrow running a competition for new equity required for financing capacity expansion, possibly through a book building exercise.

A well-designed IP model is likely to be more robust than the Heathrow-run equity competition and we consider that greater weight could be placed on the results of this approach.

There are questions the CAA would need to address before adopting any model. These questions could include:

- What would the commercial and regulatory framework be and are changes from the current regime needed?
- How are the results of the competition translated into allowances?
- What deliverability issues (e.g. legal ability to enforce an option) are there? And
- What are the trade-offs versus the existing approach?

By understanding the answers to these questions for different models, it may be that model variants could help deliver market testing of equity. In Annex A, we set out an indicative alternative model that involves the creation of a new instrument that we term a 'price control period equity-linked investment'. This represents a straw person option at this stage, but think it is prudent for the CAA to analyse potential models for the market testing of equity.

There can clear benefits from the market testing of equity, with the CAA able to be more confident that the cost of capital strikes the correct balance between ensuring financeability and minimising consumer charges.



ESTIMATING WACC PARAMETERS

In this chapter, we provide a more detailed review of individual cost of capital parameters for the cost of debt and cost of equity. We support the reduction in the cost of capital since the Q6 determination and the use of a notional approach on the cost of debt, however there are some methodological choices that we disagree with at this stage.

We note that the cost of capital depends on other elements of the regulatory determination, and a decision needs to be taken holistically e.g. with respect to the approach for cost assessment and cost recovery¹¹.

1.5. Cost of Debt

Within the cost of debt, PwC has separated the cost of debt into the cost of embedded debt and the cost of new debt. We consider each of these in turn, noting that there is some uncertainty around the choice of the notional index proposed between the PwC study and CAP1610. The use of a notional approach is something that we support and this places clear incentives on Heathrow to pursue an efficient financing strategy. The use of actual debt costs can also lead to moral hazard, where the regulated company knows that it is protected from costs that are ultimately imposed on another party.

1.5.1. Cost of Embedded Debt

We consider the following methodology is appropriate for estimating the cost of embedded debt i.e. debt incurred prior to the start of the price control over the H7 period:

- An average of A and BBB rated GBP non-financial corporates indices of 10-15yr maturity is appropriate as the benchmark for the cost of both embedded and new debt¹².
- This means that 10-15yr trailing averages are an appropriate starting point for estimating the cost of embedded debt.
- The cost of embedded debt should reflect the average cost of embedded debt over the price control period, not just the starting cost of embedded debt. This approach reflects that debt drops off over the course of the price control and means the timing of any determination has a muted impact on the cost of debt.
- As per Ofwat's PR19 final methodology, if the CAA considers there has been outperformance of the notional indices due to fundamental characteristics of the business, the added reflectivity should outweigh any concern over reduced

¹¹ Indexation of new debt has the potential to reduce systematic risk and hence this can be reflected in the asset beta.

¹² Our rationale is discussed further in CEPA (2016) Alternative approaches to the cost of debt



transparency¹³. For our estimate of embedded debt, we have not included any outperformance.

The estimates of embedded debt based on this methodology are set out below; we present both 10yr and 15yr trailing average periods, and include different timing options for the H7 determination.

Table 2: Cost of embedded debt estimates based on rolling averages of embedded debt

		2020-24	2021-25	2022-26
Embedded debt	10yr trailing average	0.39%	0.24%	0.17%
	15yr trailing average	1.28%	1.02%	0.80%

Source: Markit, Bloomberg, CEPA analysis. Note: these are based on notional indices, rather than HAL's actual debt costs.

For 2020-24 estimates, taking the mid-point of 10yr and 15yr trailing averages gives a cost of embedded debt of **0.84%**¹⁴. This compares to the 1.80% proposed by PwC.

1.5.2. Cost of New Debt

As noted previously, we support the indexation of new debt by the CAA and highlight the following points:

- As the adjustment is in the form of an end-of-period true-up, the initial estimate for the cost of new debt does matter for charges.
- We do not consider there to be any compelling rationale to change from use of the iBoxx GBP A and BBB rated non-financial corporates 10-15yr indices. The use of A and BBB credit ratings is consistent with the approach taken by Ofgem and Ofwat.
- We consider that a three-month average with use of expected movements in yield derived from forward curves is broadly appropriate to make this estimate.
- As with embedded debt, if there is expected systematic outperformance against the chosen indices, we would expect this to be reflected through a downwards adjustment to the index¹⁵.
- Heathrow have used international debt markets as part of their financing strategy; we understand that the use of international markets has been used to obtain more cost effective rates and we would expect this to be the case going forward. As per the PwC statement on the depth of the market, we do not consider there to be a need to adjust the cost of new debt for the depth of the market.

¹³ We do not consider that an evidence-based adjustment to an index should be associated with reduced transparency.

¹⁴ This falls if the start of the H7 price control is delayed, based on current evidence.

¹⁵ As Heathrow has an A- credit rating from S&P and Fitch, some 'on the day' outperformance could be expected relative to the average of a broad A and BBB rated index. Ofwat has included a 15bps downwards adjustment in their PR19 Final Methodology.



The current expected value derived under this approach would now be **0.45%**, within the 0.15% to 0.65% range quoted by PwC in their cost of capital analysis.

1.5.3. Weight on New Debt

The weight for embedded debt proposed by PwC in the 'as is' case assumes a 20yr trailing average for debt, with equal weights afforded to each year. Over the five-year price control, the average weight on new debt is 12.5% based on the PwC approach.

Taking a tenor of debt consistent with the 10-15yr indices selected would mean a greater weight on new debt based on the same methodology. This gives **20%** weight on new debt rather than 12.5% quoted by PwC¹⁶.

For the weight on embedded debt, our preferred approach would be to estimate the expected proportion of new debt required to finance the new runway. We understand this is what has been done by PwC and the CAA to arrive at the 60% weight.

With the adoption of the true-up mechanism for the timing and weight of new debt, we do not propose at this point any changes for the R3 estimate.

1.6. Risk-free rate and Total Market Return

The approach on the risk-free rate uses spot rates on index-linked gilts, together with expected changes in forward rates. There is a further 40bps upwards adjustment for uncertainty and regulatory precedent.

We note that the expected ten-year trailing average of ten year index-linked gilts across the H7 price control are within the -1.0% to -1.4% range, therefore the two approaches give similar answers. The use of a longer trailing term average gives greater stability and predictability, while still drawing upon expectations of prevailing market rates. We would be cautious of using an approach that locks in aiming up on market evidence for the risk-free rate, given that we would expect future expectations to be priced into yields by market participants.

We support the approach used by PwC of considering the Total Market Return (TMR) to imply an Equity Risk Premium, and the types of approach used. However, we consider that MAR analysis of water companies is likely to only be useful at most as a cross-check on the TMR, rather used directly in this case.

Of particular relevance are the Dividend Discount Model (DDM) estimates derived by PwC, where we consider that the specification of model used (with five years of short-term data, before reverting to a GDP-growth based long-term dividend growth forecast) is appropriate. Ofwat, in their PR19 final methodology documentation, further discuss why this approach is

¹⁶ An assumption of amortising debt rather than use of a bullet payment would increase the weight placed on new debt beyond the 20% figure adopted here.



more appropriate than using an analyst forecast based growth estimate, as used in other DDM estimates, such as those published by Bloomberg and the Bank of England¹⁷.

1.7. Beta

The approach adopted by PwC is broadly consistent with the approach adopted for Q5 and Q6 price controls. PwC recommended selecting a point estimate from the lower part of the range. We consider that the top end of the asset beta range quoted is unlikely to be suitable for H7 under the 'as is' scenario. We have previously noted the linkages between the R3 WACC adjustment and the asset beta.

- We consider that the approach used by PwC is the correct basis for de-levering and re-levering beta. We use gearing based on the same time horizon as our estimates i.e. as we consider two-year rolling beta estimates, therefore use two-year rolling gearing estimates¹⁸.
- Our analysis takes into account the trailing average results of these rolling average beta estimates, as there is generally some volatility in beta estimates over time.
- We propose to use the local indices under which Fraport and ADP are listed, rather than the MSCI European indices chosen by PwC.
- While PwC reference a Blume adjustment, they do not apply this and we would not consider such an adjustment to be appropriate.
- We agree with PwC that Fraport (Frankfurt) and ADP (Charles de Gaulle) are appropriate comparators to focus on and agree that the two comparators face higher (systematic) risk than Heathrow.
- Our beta estimates for Fraport and ADP produce a lower number than the range proposed by PwC. The table below presents our estimates for both airports under different approaches for the two comparators, as of 17 January 2018.

Table 3: Beta estimates for Fraport and ADP

	Spot (17/1/18)	1yr average	2yr average	5yr average
Fraport				
2yr daily estimates	0.39	0.36	0.34	0.35
2yr weekly estimates	0.31	0.37	0.38	0.38
2yr monthly estimates	0.12	0.28	0.30	0.40
ADP				
2yr daily estimates	0.48	0.47	0.47	0.40

¹⁷ Ofwat (2017) PR19 Final Methodology, Appendix 12: Aligning risk and return

¹⁸ This is consistent with the approach taken by PwC. Our gearing estimates are based on market capitalisation measures of equity and use of net debt. We note that 2yr monthly estimates are based on a limited number of data points and so are likely to be less robust than daily or weekly beta estimates presented above.



	Spot (17/1/18)	1yr average	2yr average	5yr average
2yr weekly estimates	0.40	0.45	0.46	0.41
2yr monthly estimates	0.24	0.55	0.55	0.35

Source: Bloomberg

- The average (mean) beta estimates for Fraport and ADP under these approaches is 0.33 and 0.44 respectively¹⁹. In light of HAL being considered to have less systematic risk than these two comparators, use of a 0.42 to 0.52 range for the asset beta under the H7 'as is' case appears high.

We also note that ADP and Fraport have a range of activities that may be considered as riskier investments than HAL's undertakings, on top of the points raised by PwC. For example, Fraport operate airport terminals in Peru and Turkey, plus have ground handling operations, amongst other activities.

The PwC study finds that use of a pan-European index rather than local indices leads to a slightly higher asset beta. Given the higher systematic risk of these comparators relative to HAL, we consider that the 0.33 to 0.44 range is appropriate as the estimate for H7 'as is' case.

1.8. WACC adjustment

The PwC study finds an absence of evidence in academic literature for modifying the cost of capital for large-scale investment programmes, noting that the directional impact on beta/systematic risks is unclear. PwC consider six case studies to inform their analysis, used to make an adjustment to the WACC.

In our view, these case studies are supportive of aiming up within the range for asset beta, but do not support an explicit adjustment beyond the upper bound of this range – we discuss these in turn below:

- CAA Q4 determination: the CAA chose to aim up within the range for investments related to the construction of Terminal 5, rather than use a specific uplift²⁰.
- Ofgem RIIO: Ofgem chose a point towards the upper end of the asset beta range for SHETL, rather than an additional uplift.
- Thames Tideway Tunnel: as noted by PwC *"TTT therefore indicates that an uplift to the underlying cost of equity of the wider regulated business may not be required."*²¹

¹⁹ Our approach utilises local indices and assumes a zero debt beta for the purpose of calculating the asset beta (as per the CMA 2015 Bristol Water determination). The impact of the asset beta should be limited when re-levering at the notional gearing level.

²⁰ PwC also reference the Competition Commission's recommendation that a 0.25% increase in the WACC (0.33% when applied to Heathrow only), however this was not adopted.

²¹ PwC (2017) Estimating the cost of capital for H7



- Offshore Wind: PwC refer to a WACC uplift of 0.6 percentage points, however we note that this i) reflects the lack of maturity associated with offshore wind, ii) is relative to a point estimate on the cost of capital, and iii) was not used for the purpose of setting revenues.
- OFTOs: in their latest publication on Interest During Construction²², Ofgem have removed the separate construction uplift, previously noted to be 0.91 percentage points by PwC.
- Hinkley: the comparison used here focuses on the risk from different regulatory regimes, rather than the additional premium required for the operational phase, which would appear to have very limited relevance.

With the updated Ofgem methodology, four of the five case studies quoted by PwC indicate selecting an asset beta from within a range rather than include a specific uplift, while the fifth case study is not relevant to the issue at hand.

1.9. Cost of Capital parameters – Summary

Using a cost of new debt of 0.45%, a cost of embedded debt of 0.84% and a weight on new debt of 20% gives an all-in cost of debt for H7 'as is' of **0.86%** with 10bps allowed for transaction costs. This compares to a cost of debt of 1.69-1.76% based on the PwC approach. This would reduce the vanilla WACC by c.50bps.

The proposed changes on the asset beta lead to a fall in the H7 post-tax cost of equity of c.82-98bps to **3.96-6.26%**. This would similarly reduce the vanilla WACC by c.33-39bps.

We consider that the H7 R3 case does not require an additional uplift to the asset beta and the existing range should be sufficient to cover the additional systematic risk from the new runway.

²² CEPA (2018) CEPA report on Cost of Capital Ranges for New Assets within Ofgem Networks Division



ANNEX A STRAW PERSON OPTION - MARKET TESTING OF EQUITY

In this annex we set out a straw person model for how the CAA might look to test the market cost/ value of equity.

A.1. Price control period equity-linked investment

A challenge of interpreting market-to-asset ratios is accounting for distortions in making an assessment for the price control period itself.

One option to finesse this problem, which we invite consideration of here, is the creation of a new instrument, which we term a “price control period equity-linked instrument”. The idea is to construct a financial instrument with cash flow uncertainty that reflects that of the underlying company, but has a limited duration. This instrument would provide dividends that matched those of the shares of the underlying equity, and be redeemed at the end of the price control period at a value that reflects the regulatory asset value and the achieved cash flows of the underlying business through that price control.

Key features of the instrument:

- Issued at a price determined by the market - could be issued through a book build process.
- Issued in advance of the start of a price control period
- During the price control period, instrument holders will receive the same dividends per unit as shares in Heathrow Airport Holdings Limited.
- At the end of the price control period the instrument units would be redeemed at a price determined by a formula.
- The formula for the redemption price per unit would be expressed as:
 - Regulatory asset value per HAL share
 - *Less* Book value of debt per HAL share
 - *Plus* the value of nominated non regulated asset owned by HAL per HAL share
- In the event of a share repurchase by HAL, the “per share” values would be based on the new (lower) share count.
- In the event of a rights issue, instrument holders would be obliged to acquire new units on the same terms as shareholders in HAL acquire shares. Redemption of all units (including new units) on a formula in the same way as the base units.



This instrument might be structured through a trust structure²³, or with an underlying share with a call and put option for the purchaser to sell back the shares to HAL at a price based on the formula.

This model would similarly involve the need to address questions about its implementation; for example, by limiting the equity holdings to the length of the price control, there may be tensions between short-term and long-term decision making.

As noted in Section 1.4 of the report, we consider that there are benefits from market testing of the cost of equity and discussion of different options for achieving this would be a positive step.

²³ Under this share trust model, shares would be transferred into a trust, under which unit holders get rights to the dividends and a formula based redemption. Unit holders would not be eligible for votes.