

Appendix C: Summary of response to Commission's logic chain for the implicit asset beta adjustment¹

Commission's logic chain for implicit asset beta adjustment	Commission's initial assessment of the evidence provided by Auckland Airport	Auckland Airport comment / evidence summary
Auckland Airport's forecast capital expenditure for PSE3 is above historical levels	✓ Auckland Airport's RAB is forecast to almost double over PSE3, due to its large capital expenditure programme.	We note that the increase in capital expenditure is not limited to the assets that will be commissioned into the RAB in PSE3. Over half of the forecast capital expenditure programme will not be commissioned into the RAB in PSE3 and has no impact on forecast costs or revenues for this pricing period – at the same time as it is contributing to a significant increase in outward cashflows and therefore exposure to risk.
This capital expenditure will increase Auckland Airport's proportion of fixed costs relative to variable costs (operating leverage)	✓ We agree that Auckland Airport's operating leverage is likely to increase. However, the magnitude of the expected increase is unclear.	<p>NERA provides evidence of the historical and forecast aeronautical capex ratios for Auckland Airport²</p> <p>NERA analysis and commentary from rating agencies and equity analysts are consistent with the conclusion that the scale of Auckland Airport's capital programme will lead to materially higher operational leverage than in the previous pricing period.</p> <p>NERA provides economic analysis and regulatory precedent which shows that the selection of an appropriate empirical measure should be guided by a focus on cashflow based measures of operating leverage that accounts for capex.³</p> <p>NERA demonstrates that Auckland Airport has high and increasing operating leverage over PSE3⁴. NERA conclude that based on cashflows measures like Operating Cashflow/Revenues, Free Cash Flow/Revenues and Capex/RAB AA's operating leverage is expected to increase by approximately 14-20% over the course of PSE3 and that forecast operating leverage is higher than the historic comparator sample average.</p>
Auckland Airport's operating leverage over PSE3 is expected to be materially higher than the average of our asset beta comparator sample	<p>✗ Auckland Airport relies primarily on capex-based measures to conclude that its operating leverage is higher than the average of a sub-set of our comparator sample (and notes that the gap is expected to grow over PSE3). However:</p> <ul style="list-style-type: none"> • Relatively high capex over a short period does not by itself demonstrate that Auckland Airport has higher operating leverage than companies in the sample • Data on EBIT growth divided by revenue growth – a recognised measure in the literature – suggests Auckland Airport is similar to the average of the sample • It is unclear whether the assumption that operating leverage for the comparators will not change materially is appropriate 	<p><u>NERA's report responds to the Commission's criticism it has conflated increasing capex and higher operating leverage with further analysis which demonstrates that Auckland Airport has higher operating leverage than the comparator sample.</u></p> <p>Auckland Airport is about to engage on an unprecedented period of intensive capital expenditure, and that capital expenditure is highly committed in PSE3 bar a fundamental shift in demand. Assessing operating leverage using cash flow based measures which account for capex shows that Auckland Airport will have higher operating leverage over PSE3 than the current values for the comparator sample. So while we agree that Auckland Airport's capex cannot be relied upon in isolation, a comparison against the comparator sample shows that Auckland Airport's operating leverage is indeed higher than the comparator sample.</p> <p>NERA concludes that based on cashflows measures like Operating Cashflow/Revenues, Free Cash Flow/Revenues and Capex/RAB AA's operating leverage is expected to increase by approximately 14-20% over the course of PSE3 and that forecast operating leverage is likely higher than the historic comparator sample average.⁵</p> <p><u>The Bloomberg operating leverage measure is not fit for purpose in the present context</u></p> <p>NERA summarises the relevance of operating leverage measures for capex driven risks and concludes that Capex to RAB (used by Ofgem) and FCF to revenues (a variant on the measures used by the CMA and the CRE) are the two measures of operating leverage that are best capable of appropriately approximating the impact of capex on operating leverage.⁶</p>

¹ We note that this summary does not replace the views set out in Auckland Airport's submission on the draft report, and the expert reports from NERA Economic Consulting and First Economics – and should be read in conjunction with those reports.

² NERA – A peer review of Auckland Airport's approach to WACC and target return for aeronautical pricing – March 2017, Figure 2.1, p4.

³ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Section 2.

⁴ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Figures 2.4 and 2.5, pp 19-20.

⁵ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Figures 2.4 and 2.5.

⁶ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Section 2.2.1 and Table 4.1, p 34.

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		<p>NERA sets out the fundamental shortcomings of the Bloomberg / accounting based measures of operating leverage:⁷</p> <ul style="list-style-type: none"> • this measure fluctuates across companies and over time within companies; • suffers from a host of missing entries; and • does not capture the cashflow impact of capex (which is not a P&L item reflected in EBIT) <p>NERA goes on to note that both regulators and rating agencies alike have used operating leverage measures that capture capex and the fixity of <i>cash flows</i> more generally to recommend uplifts to the cost of capital, rather than the approach taken in the Draft report.</p> <p>NERA further explains that the relevance of using a cashflow-based metric for measuring operating leverage becomes particularly pertinent when capex programmes do not enter the asset base until completion of the whole phase or project.⁸ This is particularly relevant for Auckland Airport given approximately 50% of our forecast circa \$2 billion aeronautical capex programme during PSE3 will remain in works under construction (and hence not incur depreciation, or interest costs) until those assets are commissioned in PSE4.</p> <p>In the context of assessing the impact of the increasing capex programme on operating leverage in PSE3, NERA raises concerns about the liquidity and comparability of some companies in the NZCC sample potentially biasing downward the sample mean.</p> <p>Forecasting future operating leverage for the comparator sample is not necessary</p> <p>It would be very difficult for Auckland Airport to forecast operating leverage for the sample group, but this is not necessary. As NERA explains, whether the operating leverage of firms in the comparator sample is expected to increase or not is irrelevant to the current exercise – the question at hand is whether Auckland Airport's forward looking beta is higher than the historical beta of the comparator sample on which the reference value is built to assess the industry wide systematic reference point. Evidence that Auckland Airport's operating leverage is on average higher than today's sample average is provided.⁹</p>
Conceptually, an increase in operating leverage increases Auckland Airport's exposure to systematic risk (ie higher asset beta)	✓ We agree that, conceptually, there is likely to be a positive relationship between operating leverage and asset beta for airports. This link is supported by several empirical studies cited by NERA.	<p>In addition to the evidence provided by NERA ahead of price setting, NERA sets out recent regulatory precedent for operating leverage adjustments and plots the relationship of operating leverage and asset beta in Ofgem's decisions.¹⁰ Based on analysis of the relationship between the operating leverage and the asset beta for the Ofgem sample, NERA estimate that in that case a 13% increase in capex to RAB, was associated with a 9 basis point beta uplift.</p> <p>NERA considers Ofgem's approach to assessing relative risks across network operators based on the relative magnitude of their capex programs (capex/RAB) and emphasising the role of cashflow risks provides strong support for the use of capex/RAB as a measure of operating leverage for Auckland Airport, and provides guidance on the size of plausible beta adjustments associated with differences in operating leverage</p>
An asset beta adjustment is consistent with good regulatory practice, and the link between operating leverage and asset beta is not weakened by airports' approach to setting prices in New Zealand	? Auckland Airport has not discussed whether the link between operating leverage and beta would be affected by features of its approach to setting prices. For example: Could its approach to setting prices and/or its ability to reset prices partially mitigate the risks to earnings from higher operating leverage?	<p>NERA provides further evidence on the nature of the positive relationship between operating leverage and asset beta based on regulatory practice.</p> <p>The scale of investment proposed by Auckland Airport during PSE3 is unprecedented in our history. The building block methodology has resulted in a flat price path because many assets are not commissioned until the end of the period, or early in PSE4. During the period Auckland Airport is exposed to cash flow risks – as the capital outlay is relatively fixed (but comes with procurement cost risk) and the pricing through the period is unitised and</p>

⁷ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Section 2.4.

⁸ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, p7.

⁹ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Figures 2.5 and 2.6.

¹⁰ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Figures 2.2, p14.

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		<p>has a relatively flat price path. There are risks to demand, in particular that price has been set following a sustained high growth period and that the domestic market is reliant on the health of only two major domestic carriers. Once Auckland Airport commences projects its ability to stop the projects is limited. Given the lead time to deliver the projects the airport is also likely to be reluctant to stop mid-project.</p> <p>In addition, although Auckland Airport has a theoretical ability to reset prices more often than every five years, even in the case of an adverse event it is unlikely that this could be done quickly, or that any re-pricing would help it mitigate adverse economic events. The reality of New Zealand's pricing and regulatory regime is that price-setting is an extremely intensive and resource-hungry two and a half-year process. For example, price-setting for PSE3 involved at least six months of internal preparation, at least 12 months of consultation with customers before we set prices, and will involve at least 12 months of a regulatory process to review our prices after they were set. The practicalities of the pricing and consultation process, as well as the intensive time and cost requirements for both management (including pulling staff away from their normal duties, hiring additional full-time staff on fixed term contracts through the pricing process, significant drain on the leadership team, Chief Financial Officer and Chief Executive) and the Board in this time of considerable change means that any decision to reopen pricing would not be taken lightly. Although there are some circumstances in which that decision would be made, we do not consider that this would mitigate the risks to Auckland Airport's earnings from higher operating leverage. As we have demonstrated in the past, intra-period price resets are extremely uncommon. To date any price changes mid-period have been unfavourable to the airport and not involved a price re-consultation. The primary example of this was during the GFC when Auckland Airport's planned price increases were not implemented.</p> <p>When making asset beta adjustments in the past, the Commission has acknowledged that some factors may be impacted by the particular economic regulatory context – but has acknowledged that this will not necessarily be sufficient to rule out the relevance of the factor or to undermine the rationale for an uplift. For example, when deciding to make an uplift for systematic risk when estimating the asset beta for gas pipeline services, the Commission acknowledged the context of economic regulation was relevant, but did not consider it would completely remove the effect in question.¹¹</p> <p>NERA concludes that an asset beta higher than the simple average of the Commission's comparator sample is further supported by (i) consideration of regulatory precedent, which includes decisions that have allowed larger uplifts for high operating leverage, (ii) the measurement of Auckland Airport's own beta (which is above the value implicit in Auckland Airport's target rate of return) and (iii) concerns about the liquidity and comparability of some companies in the Commission sample potentially biasing downward the sample mean.</p> <p>NERA undertakes further analysis of the comparator sample, in the context of the issue at hand, rather than to suggest that the selected airports should be excluded from the comparator sample for ID. These results show that the average asset beta for the entire comparator sample seems to be dragged down by airports with regulatory regimes that are different to the Auckland Airport's as well as by data irregularities in terms of insufficient liquidity.</p>
<p>The materiality of Auckland Airport's increase in operating leverage is sufficient to justify an asset beta increase of 0.08</p>	<p>* Auckland Airport relies on estimates of its own asset beta to capture the expected impact of its increase in operating leverage. However, we consider that asset beta estimates for a single company are unreliable – there is a significant risk of estimation error when focussing on the observed beta for an individual company.</p>	<p>It was not predictable to Auckland Airport that the Commission would dismiss airport specific evidence on asset beta. Both NERA and First Economic conclude there is insufficient support for the Commission's claim that Auckland Airport's own empirical beta estimate cannot be used on grounds of insufficient statistical reliability.</p> <p>Chorus's asset beta was rejected against the advice of the Commission's consultants on the grounds of a short trading history. It would not be reasonable for Auckland Airport to extrapolate that to mean its own beta is unreliable given it has a long a trading history.</p>

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		<p>First Economics' analysis of the empirical evidence leads them to conclude that:</p> <ul style="list-style-type: none"> - the wide dispersion of betas in the sample is likely to be the function of differing systematic risk; it must also be the case that some of the dispersion is due to sampling error, but it would be wrong to think that noise is the only factor; - the sample mean cannot be regarded as a low-variance estimate of the Auckland Airport beta. The Auckland Airport beta stands out as the only data point that can be said to be an observation of the "true" Auckland Airport beta. It would therefore seem natural and obvious that the Auckland Airport beta should have a different, unique status in any exercise to estimate Auckland Airport's cost of capital; - there are steps that can be taken to minimise any estimation error and associated concerns about relying too heavily on the Auckland Airport beta – by using a range of sampling windows and time periods (which we note that Auckland Airport has done); - concerns about sampling error also have to be weighed against the scope for introducing other sources of error – particularly by introducing a range of comparators that contain less information about Auckland Airport's systematic risk; <p>In the context of assessing operating leverage and systematic risk, NERA also provides evidence of some comparator companies not being representative for Auckland Airport's business due to differences in the regulatory regimes or because they produce unreliable estimates due to low trading liquidity¹².</p> <p>Together the evidence set out indicates it is not without precedent for a company specific asset beta to be used its beta estimates as the most directly relevant piece of information about investors' perceptions of the riskiness of a business – as Auckland Airport has done.</p> <ul style="list-style-type: none"> - First Economics notes that the Competition Commission in 2007 expressly disallowed BAA's proposal to move away from its own single company historic data to a sample set of comparable companies for the purpose of calculating Heathrow Airport's and Gatwick WACCs. In 2014 the CAA still determined to use the historical BAA asset beta data from seven years earlier (post de-listing) rather than a sample of alternative comparable airport asset beta data that is available today because other airports have different risk profiles.¹³ - First Economics find that a company specific asset beta estimate sits squarely in line with UK regulatory methodology more generally, for UK price-regulated businesses that have a UK stock market listing. These regulators sought to deal with the problem of "noise" by assembling a history of evidence, comprising different beta statistics calculated over differing time periods, and making an overall judgement as to where beta(s) appear to sit based on that evidence. (We note that this is what Auckland Airport did when exercising judgement to select its target return). - First Economics considers it is reasonable for Auckland Airport in these circumstances to rely first and foremost on the direct evidence available from the investor perceptions of AIA as embodied in its listed stock, with global comparator evidence playing a secondary, sense checking role¹⁴. A key reason for this is that for AIA there is extant and current information stock market evidence on the riskiness of its airport business, and the really quite marked differences between airport businesses (reflected in beta divergence) make a global average a distinct second best when there is such direct evidence available. - First Economics is clear that a simple averaging of the comparator sample group's betas will therefore only by coincidence tell an interested party anything about the beta of any individual airport within the group.

¹² NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Section 3.1, pp24-28.

¹³ First Economics – Auckland Airport's Estimate of Beta, May 2018, pp13-14.

¹⁴ First Economics do not suggest as a matter of principle that comparator evidence should always be of secondary importance. In other more homogeneous sectors, or in the absence of a company-specific beta, there may be more of a role for the sort of broad-based sample deployed in the Commission's IM – though even then there is likely to be a case for examining reliance on the closest possible comparator as a first port of call.

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		<p>NERA expresses a similar view. In its report, NERA provides evidence that Auckland Airport's beta provides the only direct measure of Auckland Airport's riskiness and advises that there is no evidence that Auckland Airport's beta estimate is less reliable than the comparator sample when considering liquidity.¹⁵</p> <p>As further explained in our main submission, Auckland Airport considers that it was fair and reasonable for Auckland Airport to rely on estimates of its own asset beta when setting prices. We consider that empirical evidence about Auckland Airport's systematic risk is reliable airport-specific evidence that should inform the Commission's assessment of whether our pricing approach was reasonable.</p> <p>As set out earlier, NERA find that measures like Free Cash Flow/Revenues, Capex/RAB and Operating Cashflow/Revenues have shown to be most appropriate for measuring operating leverage in the present regulatory context. According to these measures, Auckland Airport's operating leverage is expected to increase materially over the course of PSE3.</p> <p>NERA provide evidence that the materiality of Auckland Airport's increase in operating leverage is sufficient to justify an asset beta increase of 0.08 from the industry average reference point. NERA consider that an uplift of roughly 0.03 may account for differences in regulatory regimes and data impurities. Therefore, to get to Auckland Airport's implied asset beta uplift of 0.08 would require a further uplift to account for operating leverage of 0.05, which is a smaller operating leverage uplift than seen in regulatory precedent. NERA find that the projected changes in operating leverage are at least of similar magnitude as the changes calculated by the CMA in 2010/2015 (6-9% in the CMA determinations vs. 14-20% for the two cashflow-based metrics in Table A4 of the NZCC's Draft Report). NERA consider these differences are indeed material and that of an even lesser magnitude led the CMA to apply beta uplifts of 13-18%.¹⁶</p> <p>Overall NERA also provides evidence that regulatory authorities and rating agencies apply uplifts of about 60 bps on WACC and / or 9% to 26% on the asset beta. NERA concludes that an asset beta uplift of 8 basis points (13%) would be consistent in terms of both relative and absolute magnitude with the adjustments applied by regulators in case of differences in operating leverage.¹⁷</p>

¹⁵ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Section 3.1.2, p26.

¹⁶ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, Table 2.1.

¹⁷ NERA – Response to the NZCC's View on Auckland Airport's Asset Beta, May 2018, p36.