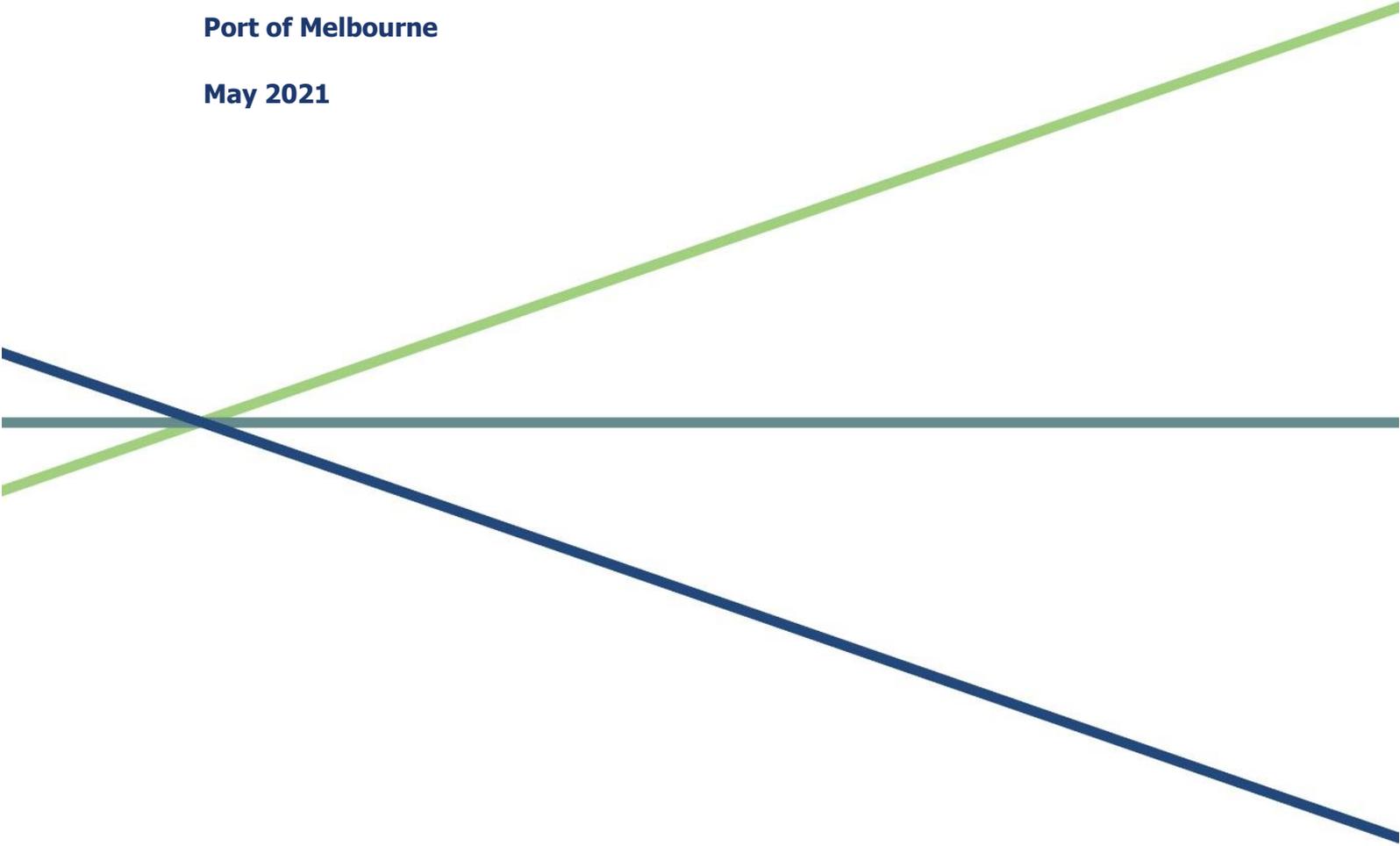


Options for structuring the return of capital for the Port of Melbourne

Port of Melbourne

May 2021



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1. Introduction and summary

1.1 Scope of work

1. My name is Jeffrey John Balchin of Unit 1, 19-35 Gertrude Street, Fitzroy, Victoria. I am an economist with over 25 years of experience in relation to economic regulation matters. My full curriculum vitae is attached to this report as Appendix C. I have been asked to provide an opinion on the options that are available to the Port of Melbourne (the “Port”) to depreciate its assets for pricing purposes, within the relevant provisions of the Port Pricing Order (the “Order”). The specific questions that I have been asked are set out below, and my letter of instruction is attached to this report as Appendix D.
2. The focus of the analysis is both on the period during which the Tariff Adjustment Limit (“TAL”) applies, as well as the period after the TAL has ceased (the first year of which is the financial year ending June 2038).

1.2 Summary of findings

3. The specific questions that I have been asked are set out in Figure 1.

Figure 1 – Questions in my letter of instruction

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| <p>(a) Whether the approaches to depreciation adopted by PoM in its tariff compliance statements submitted between 1 July 2016 and 30 June 2021 are alternatives to the straight-line depreciation methodology described in clause 4.4.1 of the Pricing Order, including the following elements of those approaches:</p> <ul style="list-style-type: none">(i) setting the building block allowance for the return of the capital base (under clause 4.1.1(b) of the Pricing Order) to zero; and(ii) carrying forward undepreciated capital in the capital base. <p>(b) Whether there are alternative depreciation methodologies (i.e. alternatives to straight-line depreciation) that are reasonably likely to reduce the variance in the expected annual percentage changes in the level of Prescribed Services Tariffs through to the end of the Port Lease, including in periods where:</p> <ul style="list-style-type: none">(i) the Tariffs Adjustment Limit prevents PoM from recovering any straight-line depreciation in the relevant Financial Year; and(ii) the Tariffs Adjustment Limit prevents PoM from recovering some part of straight-line depreciation in the relevant Financial Year. <p>(c) Whether there is any regulatory precedent for the methodologies or approaches described in questions (a) and (b) above.</p> <p>(d) How does the application of the methodologies or approaches described in questions (a) and (b) above compare to the application of the straight-line depreciation methodology described in clause 4.4.1 of the Pricing Order over the term of the Port Lease.</p> |
|---|

4. Turning first to the Port’s approach to depreciation to date, in my view applying straight-line depreciation in combination with carrying-forward the unrecovered depreciation is an alternative depreciation method within the requirements of clause 4.4.2. In my view, the Port’s method meets the requirements of clause 4.4.2. That said, however, I suggest some improvements that could be made during the period the TAL operates.

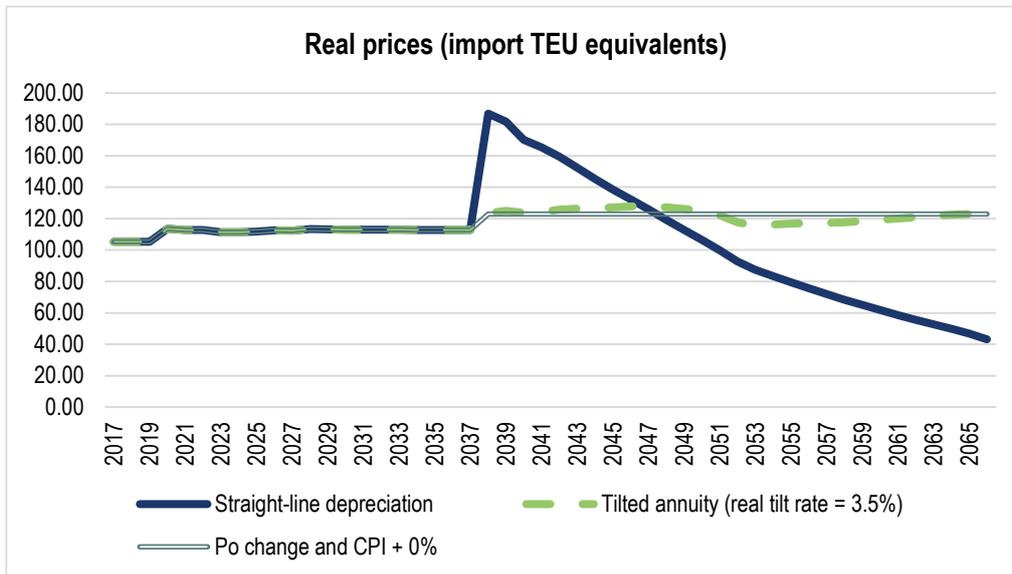
- a. First, in my view, the unrecovered depreciation should be established into a separate financial asset (the “unrecovered depreciation asset”) rather than added back to the values of the underlying physical assets. This is the simplest and most transparent way to account for the “unrecovered” return of capital contemplated by clause 4.4.2(a).
 - b. In addition, in my view the unrecovered depreciation asset should be assigned a remaining life equal to the remaining term of the port lease.¹ Applying the maximum life to this financial asset will simplify the task of choosing a depreciation method for the post-TAL period that minimises the variance referred to in clause 4.4.2(b), and will also promote greater certainty with respect to pricing for the Port’s customers.
 - c. Having very low – and even zero – depreciation for an asset in the nature of the port is not an unusual or unexpected outcome, but rather is likely to be an outcome whereby cost recovery is spread over time in a manner that maximises the utilisation of the asset.
5. Turning now to the approach to depreciation over the remaining term of the port lease, in my view switching to tilted annuity depreciation immediately after the cessation of the TAL is likely to reduce the variance referred to in clause 4.4.2(b) and so meet the requirements of that clause.
- a. Tilted annuity depreciation is a method whereby it is possible to derive depreciation such that a target rate of growth (the “tilt rate”) in the “capital charge” (being the sum of the return on, and the return of, capital) can be selected.
 - b. By careful selection of this tilt rate, it is possible to create a price path that is both reasonably smooth (and so promote clause 4.4.2(b) of the Order) and that remains reasonably constant in real terms (and so promote the expressed wishes of the Port’s customers).² I find that, on both of these criteria, the tilted annuity depreciation method is preferable to the application of the standard straight-line depreciation. The long-term price path that is projected under straight-line depreciation and tilted annuity depreciation after the expiry of the TAL is shown in Figure 2.³ I also show for comparison the CPI-indexed price path that would be consistent with recovering forecast costs.

¹ I observe in the body of the report that an alternative approach would be to treat the “unrecovered depreciation asset” as an asset that is fully recoverable in the next year (and so fully recoverable once the TAL has expired). I do not favour this approach because it would generate an unnecessary degree of uncertainty about future tariffs, and so be potentially detrimental to both the Port and its customers.

² I prefer the use of tilted annuity depreciation to simply calculating the constant real price. This is because the use of a well-defined depreciation method (like tilted annuity) will provide greater certainty to customers as to how prices will change as costs and other inputs evolve. The use of a well-defined depreciation method will also deal automatically with practical issues, such as how depreciation should adjust in response to differences between forecast and actual capital expenditure.

³ The assumptions applied in this figure are described in section 4.2.2. What I refer to as my base-case WACC scenario has been applied. Prior to the cessation of the TAL, it is assumed that assets are depreciated on a straight-line basis, but the unrecovered depreciation is placed into a separate financial asset with a remaining life equal to that of the port lease (i.e., as discussed in para.4).

Figure 2 – Comparison of straight-line and tilted annuity depreciation



c. It can be observed from this figure that switching to tilted annuity depreciation immediately after the cessation of the TAL will avoid much or all of the material increase in price that would be expected if straight-line depreciation was simply applied.⁴

6. In relation to regulatory precedent, I observe that:

a. *Dealing with unrecovered depreciation during the TAL period* – the calculation of the return of capital as the residual that is able to be recovered under a particular revenue stream is equivalent to the “recovered capital method” of asset valuation that applies to non-scheme gas pipelines under Part 23 of the National Gas Rules. This method of carrying-forward a RAB value is also substantially similar to the method that is being applied at the present time to establish the opening RAB for Chorus NZ’s telecommunications fibre business.

b. *Minimising the variance until the end of the port lease* – tilted annuity depreciation has been used by a NZ airport (which is regulated in a similar manner to the Port) to create a more desirable time path of prices.⁵ Tilted annuity depreciation has also been used extensively by regulators in the telecommunications sector as part of “total

⁴ Whether prices would be expected to increase, remain approximately the same, or fall after the cessation of the TAL is sensitive to the assumptions adopted in the analysis.

⁵ Tilted annuity depreciation has been applied by Christchurch International Airport Limited (CIAL) for price setting and information disclosure purposes. CIAL had recently completed a new terminal and tilted annuity depreciation was applied in order to generate a time path for prices that was expected to be more constant in real terms (i.e., avoiding the artificially high price in the early years that straight-line depreciation would have generated). The Commerce Commission has endorsed CIAL’s use of tilted annuity depreciation.

service long run incremental cost” (TSLRIC) access price setting (although the objective of tilted annuity is different in this case).⁶

⁶ The TSLRIC method involved setting prices on the assumption that a new asset was constructed at each price review. The tilted annuity method was applied to ensure that the regulated prices set for any period factored in the expected inflation in construction costs that would flow through to future regulated prices (with the tilt factors in this case set with reference to input price inflation).

2. Regulatory framework and its economic interpretation

2.1 Relevant provisions

7. The main guiding principles in relation to regulatory depreciation are found in clause 4.4 of the Order, which are set out in the following figure.

Figure 3 – Requirements of the Port Pricing Order

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|---|
| <p>4.4 Return of Capital</p> <p>4.4.1 Subject to clauses 4.4.2 and 4.4.3, for the purposes of clauses 4.1.1(b), depreciation must be determined so that each asset or group of assets used to provide the Prescribed Services is depreciated using a straight-line methodology over a period that is:</p> <ol style="list-style-type: none">(a) no shorter than the reasonable economic life of the relevant asset or the remaining term of the Port Lease (whichever is shorter); and(b) no longer than the remaining term of the Port Lease, (Depreciation Period); and(c) only once, meaning that the amount by which the asset or group of assets is depreciated over the Depreciation Period does not exceed the value of the asset or group of assets at the time of its or their inclusion in the capital base. <p>4.4.2 The Port Licence Holder may only use an alternative to the straight-line methodology to be applied under clause 4.4.1 if:</p> <ol style="list-style-type: none">(a) the application of clause 3.1.1 means that the return of capital derived using a straight-line depreciation methodology is not capable of being recovered in the applicable Financial Year; or(b) the alternative depreciation methodology is reasonably likely to reduce the variance in the expected annual percentage changes in the level of Prescribed Services Tariffs through to the end of the Port Lease. <p>4.4.3 The return of capital allowance in any Financial Year must not be below zero.</p> |
|---|

8. The key requirements of this clause can be stepped out as follows.
 - a. The default method of depreciation is straight line depreciation, and a number of further principles apply to the calculation of straight-line depreciation, including that:
 - i. depreciation is calculated for each asset or group of assets
 - ii. the remaining lives used in the calculation are the lesser of the economic life and the life of the lease, and
 - iii. assets are depreciated only once.
9. Using an alternative to the default method is permitted for one of two reasons:

- a. where, during the operation of the TAL, it is not possible to “recover” the straight-line depreciation amount in any financial year, or
 - b. there is an alternative method that is reasonably likely to “reduce the variance in the expected annual percentage changes” in the level of port prices through to the end of the lease.
10. Under either straight-line depreciation methodology, or an alternative depreciation methodology, the return of capital allowance (referring here to the aggregate amount) in any financial year cannot be a negative amount.
11. I observe here that, as the clause is structured, the further principles specified in clause 4.4.1(a)-(c) apply only where the default method of straight-line depreciation is applied. In my view, limiting the principles in 4.4.1(a) and (b) only to the case of straight-line depreciation is sensible as there may be suitable alternative depreciation methods that cannot be easily expressed in terms of an amount that can be allocated to individual assets, and equally that depends on the remaining lives of individual assets. However, I observe that clause 4.4.1(c) essentially is a global check on the depreciation calculation, with the condition that assets are depreciated once (but only once) equivalent to saying that an NPV=0 outcome results.⁷ Economic principles, in light of the broader context of this provision,⁸ would suggest that this last principle is relevant to any depreciation method that is derived for the Port’s assets.

2.2 Implications for the Port of Melbourne’s choice of depreciation methods

12. There are two distinct issues facing the Port.
- a. during the TAL period, when the revenue under the TAL is not expected to permit a recovery of straight-line depreciation, and
 - b. after the TAL period, when the use of the default depreciation method is likely to give rise to a time-path for prices that neither the Port nor the port customers would see as desirable.
13. These two issues are addressed in sections 3 and 4, respectively.

⁷ NPV=0 results where assets are depreciated only once, and that depreciation and the full return on assets are able to be recovered through prices each year.

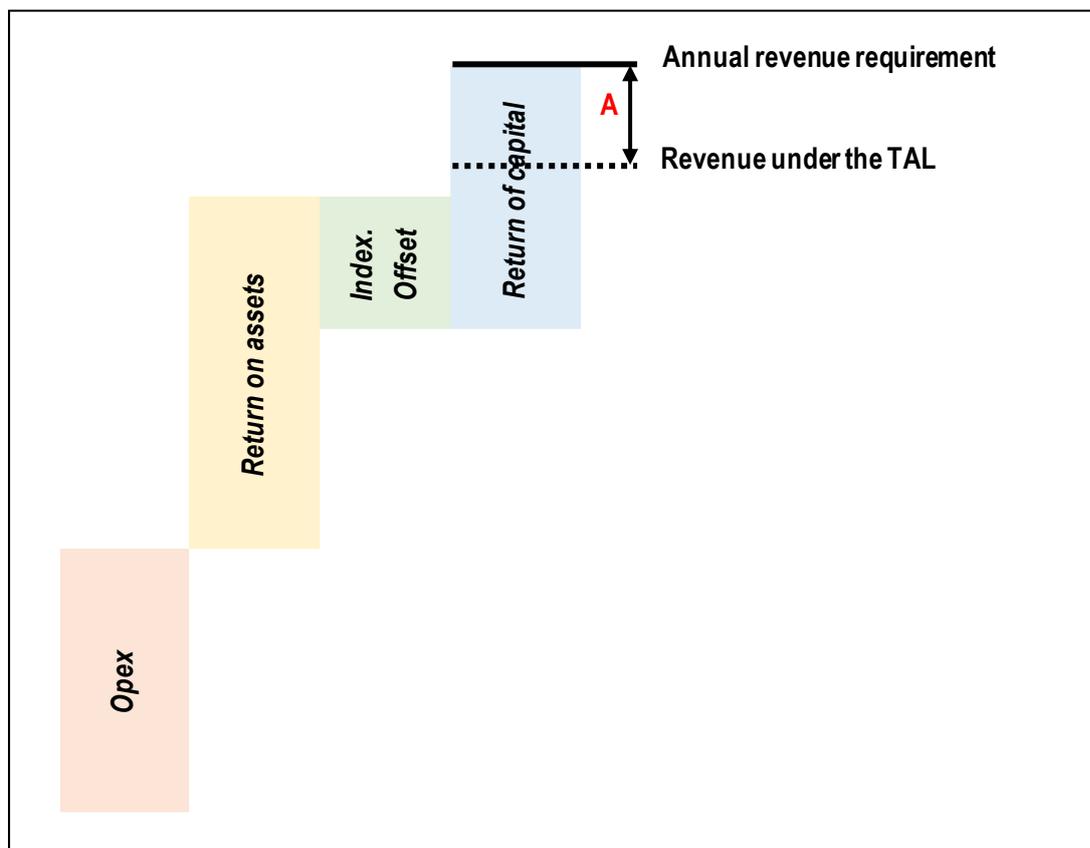
⁸ For example, clause 2.1.1(a).

3. Options for depreciation during the TAL period

3.1 “Not capable of being recovered”

14. The Order sets out detailed principles for the calculation of the annual cost of providing the prescribed port services. This annual cost, in turn, is referred to as the annual revenue requirement, meaning that this provides the amount of revenue that would be required in order to allow a recovery of these prescribed annual costs.
15. It follows that the reference in clause 4.4.2(a) to the amount of depreciation that could not be recovered is envisaging a situation where the revenue as capped by the TAL falls short of the annual revenue requirement when the latter is calculated using straight-line depreciation. The reference to the return of capital in this context implies an implicit assumption that the TAL-constrained revenue is first used to recover operating expenses and the return on assets, and then any residual is assumed to provide a return of capital. Thus, if there is a shortfall of revenue compared to the annual revenue requirement when straight-line depreciation is applied, the return of capital needs to be adjusted downwards. Reducing the return of capital in this manner means that the Port would be shielded from bearing what otherwise would be a loss. That is, the return in annual income as a consequence of the TAL would be offset by an increase in the RAB (via the reduced return of capital), and so keep the Port whole.
16. This process is illustrated in Figure 4, where the effect of the indexation offset is also included. Distance “A” in Figure 4 refers to the unrecovered depreciation.

Figure 4 – Unrecovered return of capital



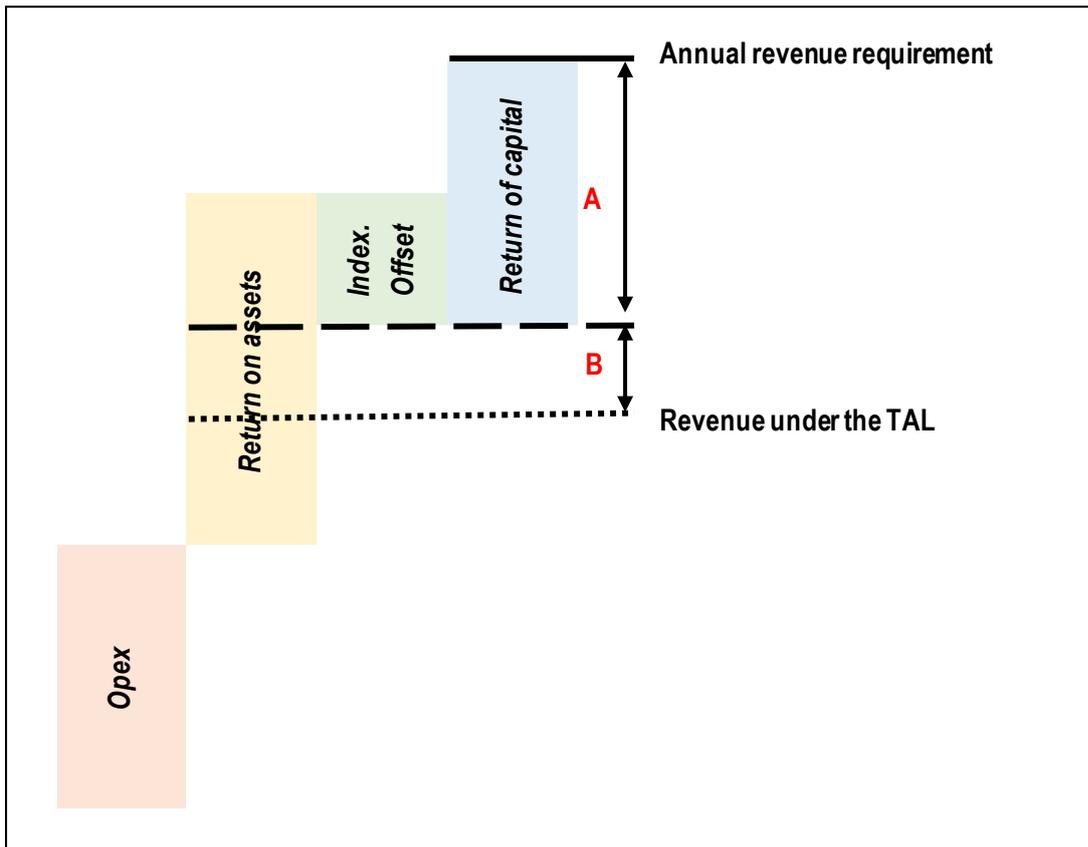
17. In my experience, treating the return of capital as the residual in this manner is quite conventional when undertaking regulatory cost calculations. Some examples of this are as follows.
- a. The concept of return of capital being the residual after the recovery of operating expenses and a reasonable return on capital is a central concept of the “recovered capital method” of asset valuation as applies in the context of non-scheme gas pipelines.⁹ Unlike the situation under the Order, however, there is no restriction against a negative depreciation amount being calculated in any period.
 - b. Chorus NZ (which is the NZ equivalent of NBN Co) is currently transitioning into a standard building block regulatory regime for its fibre assets (the initial construction of the fibre-to-the-home network was undertaken under a contract with the Crown whereby a price and service obligations were set). The initial regulatory value is to be set using an application of the recovered capital method.¹⁰

⁹ National Gas Rules, Part 23 (see AER, 2017, Non-scheme pipeline financial reporting guideline – explanatory statement, December, chapter 4).

¹⁰ For Chorus NZ, its initial RAB will be set at its accounting book value **plus** a calculated level of financial losses, where the financial losses will be calculated in a way that will be equivalent to the difference between the accounting book value and the RAB that would be calculated according to the recovered capital method.

18. Clearly, however, the revenue that is permitted under the TAL may be sufficiently low to fully exhaust the straight-line depreciation amount and be insufficient to even permit a recovery of the return on assets component of the annual revenue requirement. This possibility is illustrated in Figure 5.

Figure 5 – Unrecovered return of capital and return on capital



19. In this situation, clause 4.4.3 of the Order prescribes that the maximum that the return of capital can be reduced is to zero (distance “A”), which means that the additional under-recovery – distance B – would be borne by the Port and, in this case, the Port would not be kept whole.
20. Lastly, I note that one outcome of the approach to depreciation that I discussed above is that there may be zero depreciation recorded for a number of years, and very low depreciation generally for an extended period. In my view, however, this outcome should not be seen as unusual or unexpected, but is merely the foreseeable consequence of structuring the recovery of capital over the term of the port lease that optimises the use of the asset. I discuss this point in greater detail in Appendix B.

3.2 Alternative depreciation methods for the TAL period

21. As noted above, once the trigger specified in clause 4.4.2(a) has been met, the Port has flexibility as to how the reduction to the return of capital is implemented. There are a range of alternatives, which include:

- a. continuing the structure of straight-line depreciation, and allocating the unrecovered depreciation in some manner back to the physical assets
 - b. continuing the structure of straight-line depreciation, but forming the unrecovered depreciation into a separate financial asset that has a deemed remaining life equal to the term of the lease, or
 - c. deriving a different depreciation method that results in an annual revenue requirement that is at or below the TAL-constrained revenue.
22. In terms of the **last of these options**, provided the TAL still binds, then changing depreciation methods (and putting any unrecovered depreciation under the new method into an unrecovered asset account) will not alter the RAB, but rather will just change the composition of the RAB. I discuss this matter further in section 4.5, and observe that if a more back-ended depreciation method is applied prior to the expiry of the TAL, then there is likely to be a greater share of the RAB in the shorter asset life categories, which I conclude will make the task of smoothing prices after the expiry of the TAL more difficult. I therefore recommend applying the straight-line method with the under-recovered depreciation asset while the TAL continues to apply.¹¹
23. In terms of the **remaining two options**, by far the simplest to implement – and the one that I recommend – is to continue with the structure of straight-line depreciation and to pair this with a separate financial asset that essentially parks for the future the portion of straight-line depreciation that could not be recovered under the TAL. I refer to this option below as the “straight-line depreciation with an unrecovered depreciation account” to distinguish it from standard straight-line depreciation. I observe that, in relation to this option:
- a. there is no obvious legal bar to creating a new financial asset – the unrecovered depreciation account – given that substantial flexibility is provided for the formation of an alternative depreciation method, and
 - b. the outcome of treating the unrecovered capital as a separate financial asset – and assigning a remaining life equal to the life of the port lease as I also recommend – is that the unrecovered depreciation would have a long remaining life, which in turn makes the task of managing the trajectory of prices after the cessation of the TAL much easier to manage (I discuss this issue further in section 4.5, below). Assigning the maximum life to this asset will also provide the Port’s customers with the greatest certainty as to how future prices would be set.¹²

¹¹ There is some potential that, with a different depreciation method, the conditions under which the Port could apply for an early withdrawal of the TAL may apply, although this outcome will be sensitive to the evolution of costs and interest rates over the remaining maximum TAL term. This is an issue the Port may wish to keep under review.

¹² I note that one alternative would be to assign a 1 year life to the unrecovered depreciation balance, and hence able to be recovered as soon as the regulatory settings permit. In my view, such an approach to the unrecovered depreciation asset would generate unnecessary uncertainty to the Port’s customers as to how prices would be determined after the expiry of the TAL, which would not be in the interest of either the Port’s customers or the Port itself.

4. Options for depreciation after the TAL period

4.1 Objective – minimising the variance in annual price changes

24. As discussed earlier, the second reason for applying an alternative depreciation method is if that alternative is reasonably likely to result in a lower variance in the expected annual changes in prices from that time forward until the end of the lease, with the important terms emphasised.
25. The annual changes in prices is defined in the Order as the percentage change in prices from one year to the next. The movement in the weighted average price – which is captured in the composite demand measure that I refer to in section 4.2.2 – would be the most appropriate measure of this.
26. The term variance I assume is a reference to the statistical term, which is a measure of the dispersion (or volatility) in an item around its mean. The formula for the variance of a population is as follows:

$$Var(\tilde{x}) = \sum_{i=1}^n (x_i - \bar{x})^2 / n$$

27. Whilst the variance of a series of values is a measure of the dispersion of an item around its mean, an important feature of this measure is that the implicit penalty for being away from the mean will increase with the square of the distance from the mean (rather than, for example, simply reflecting the absolute distance from the mean). Accordingly, under this measure, a price trajectory with one or more large price movements compared to the mean would be expected to be inferior to a price trajectory with more but smaller divergences from the mean.
28. Another measure of dispersion that is closely related to the variance is the standard deviation, which is simply the square root of the variance. This mechanical link means that if one price trajectory has a variance in annual changes that is lower than another, then the standard deviation of the first will also be lower. In the discussion below, I report on the standard deviations rather than the variances. I do this because the standard deviation is in the same order as the annual changes and so is easier to explain and conceptualise. That is, if the annual changes in prices are in the order of a few percentage points, then the standard deviation will also be expressed in the order of percentage points, whereas the variance will be in order of 1/100^{ths} of percentage points.
29. Lastly, I observe that the focus on the variance of annual price changes suggests that the only feature of a price trajectory that is relevant is whether the trajectory is constant, so that a CPI-10% price trend and CPI price trend would otherwise be equivalent. In my view, this is an overly narrow focus as the trajectory of prices over time may influence the efficiency with which the asset is used. The efficiency of use of the Port's assets is likely to be advanced by a price trend that is approximately constant in CPI-adjusted terms,¹³ rather than one that is either steeply upwards or downwards sloping, as this

¹³ An exception to this is where there is an efficiency justification for a changing price trajectory, such as an increasing (short run) marginal cost, which does not appear relevant in the case of the Port.

avoids the potential artificially to dissuade use of the assets that may occur if prices either start or finish at much higher levels than the average. I also note that the Port’s customers have also expressed a wish for stability in the Port’s charges to the extent this is possible.

4.2 Modelling approach

4.2.1 Options considered

30. I have modelled the effects of two depreciation methods for the post-TAL period. I assume in all of my calculations that the straight-line method with the unrecovered depreciation asset is applied unto the end of the TAL period (with the unrecovered depreciation accruing into a separate asset), and then a switch in depreciation methods is contemplated after that point.
 - a. *Straight-line depreciation* – under which the default straight line depreciation method is simply applied to the “physical” port assets, over their remaining lives as at the end of the TAL period. The financial asset representing the accumulated unrecovered depreciation would also be depreciated on a straight-line basis, over the remaining term of the lease.
 - b. *Tilted annuity depreciation* – which is a depreciation method whereby the growth rate in the capital charge (i.e., the combination of the return on capital and return of capital) in respect of each asset can be specified. In the simplest of all cases – where a firm comprises a single asset – if the tilt rate is set equal to the growth in demand, then a constant price would be determined (at least in relation to capital costs). In practice, the process of assets being depreciated and new capital expenditure occurring means that the relationship between the tilt rate and price profile will not be perfect; however, if applied practicably, this is a good method for aligning capital costs with demand.¹⁴ The formula for deriving the tilted annuity depreciation allowance is set out in Appendix A.

31. A further implicit depreciation method that could be applied is simply to select a price path (for example, as a constant real price) that generates an NPV=0 outcome over the remainder of the lease. The depreciation in each period would then be backed-out as the residual cash flow after recovering operating expenses and the return on capital. However, whilst this method of depreciation may meet the requirements of clause 4.4.2(b), implementing this method of depreciation faces material practical challenges.

¹⁴ A further depreciation method that could have been tested is units of production, whereby the depreciation allowance is spread in proportion to each period’s forecast of total lifetime demand. Moreover, whilst I did not model the outcomes of this depreciation method, I would expect the units of production method to generate a lower variance in annual price changes than straight-line depreciation and so be compliant with clause 4.4.2(b). However, the units of depreciation method only smooths the return of capital element of cost rather than the combination of return on and return of capital, and so is less effective at achieving a particular target trajectory for price than the tilted annuity method, and so I have focussed on the latter.

- a. Under this method, the depreciation allowance in each period is a function of forecasts of demand, expenditure, and the WACC over the remainder of the lease. As such, the depreciation method can be seen as unpredictable in its operation as the depreciation in any period will be a function of forecasts over the period until the end of the port lease.¹⁵
 - b. In addition, where depreciation is backed-out of a total revenue stream, there is no simple means of adjusting the depreciation for a period to account for a variation in capital expenditure against the forecast.
32. That said, however, a simple CPI (or $CPI \pm X$) price path provides a useful point of comparison with the price path that is produced by the other depreciation methods, and so I report the outcomes of a simple CPI price path in the results below.

4.2.2 Assumptions

33. In the modelling results I present in this section, I assume that the “straight-line depreciation with an unrecovered depreciation account” method is applied until the expiry of the maximum TAL period, and then a change in method is contemplated from that time forward.
34. The calculations below assume the following:
- a. The Port of Melbourne’s opening regulatory asset base and capital expenditure, operating expenditure and demand (actual results or forecasts, as relevant) spanning the term of the port lease.¹⁶
 - b. Each year of unrecovered depreciation during the TAL period is treated as a separate asset, which then starts to depreciate immediately, with a remaining life equal to the remaining term of the lease. Thus, the unrecovered depreciation from FY2017 starts being depreciated from FY2018 with a 49 year life, whereas the unrecovered depreciation from FY2033 starts being depreciated from FY2034 with a 33 year remaining life.
 - c. Under tilted annuity depreciation, the potential exists for negative depreciation to be calculated for a particular year or group of years.¹⁷ As the Order states that depreciation cannot be negative, the model sets depreciation to zero when calculating the revenue requirement for the year or years in question, and uses the unrecovered depreciation account again to ensure that the aggregate depreciation recorded against

¹⁵ This was a criticism made by the New Zealand Commerce Commission and major airport users against Christchurch International Airport’s use of implied depreciation in its 2012 price-resetting. In light of these criticisms, Christchurch International Airport switched to tilted annuity depreciation in its 2017 price resetting, and this was welcomed by the airport’s major customers and the Commerce Commission.

¹⁶ These data were provided to me as an attachment to my letter of instruction.

¹⁷ This outcome is more likely if a very high tilt rate is selected. Material negative depreciation is not generated after the TAL period for the tilt rates that I adopt for the results presented in this report.

the RAB is consistent with the depreciation that flows into the annual revenue requirement.¹⁸

- d. The demand value that I have applied is a composite demand index, where all output quantities are captured and assigned a weight in proportion to their price relative to a numeraire product. For the numeraire I have assumed to be an imported (full) TEU. Thus, the charts show the expected time profile of prices for an imported (full) TEU after having taken into account sales of all prescribed services, and further that the time trend of any other product can be derived by multiplying the numeraire price by the relevant tariff relativity.

35. The last of the inputs that I have required an assumption for is the cost of capital for the port assets. In relation to this, I have applied the following assumptions.

- a. For inflation, in all cases I have derived forecasts for the first two years of the forecast (for financial years 2023 and 2024) from the RBA's latest forecasts of inflation. I have then assumed a linear transition in annual inflation to reach the mid-point of the RBA's target range of 2.5 per cent in the fifth year of the forecast, and assumed that this rate holds for the remainder of the port lease.¹⁹
- b. I have applied the Port's estimate of the WACC spanning the periods ending with the 2022 financial year (i.e., ending with the estimate the Port proposes to apply in the tariff compliance statement that is due at the end of May 2021).
- c. In subsequent years I have retained the structural inputs that the Port applied for 2022, but have applied differing scenarios for the future trajectory of the risk free rate of return and the debt risk premium. The scenarios that I have applied are as follows.
 - i. My base case results show the effect whereby the risk free rate of return reverts to 4 per cent and the debt risk premium to 2 per cent over a 20 year period.²⁰ I selected these values on the basis of assumptions that I have seen applied by equity analysts when doing company valuations.

¹⁸ For example, if the depreciation is calculated under the tilted annuity method to be -50, but a zero value is applied in the revenue requirement, then the RAB is calculated using the tilted annuity calculation (i.e., at -50, implying an appreciation), but an unrecovered depreciation asset of -50 is created to offset that asset appreciation. In this case, the financial asset would be an "over-recovered depreciation asset". Again, it is simpler and more transparent to impose this global limit to depreciation via a global adjustment (i.e., the over-recovered depreciation asset) rather than attempting to embed the global limit into the calculation of depreciation for each individual asset.

¹⁹ I have applied these assumptions to derive the indicative results of the different depreciation methods only. I am aware that there are live questions at the present time as to whether it is reasonable to assume that inflation will revert to the midpoint of the RBA target range (rather than, say, the lower point of the range) and how long it is reasonable to assume that such a transition should take. The assumptions that I make here to derive the indicative figures should not be interpreted as expressing a view on those matters.

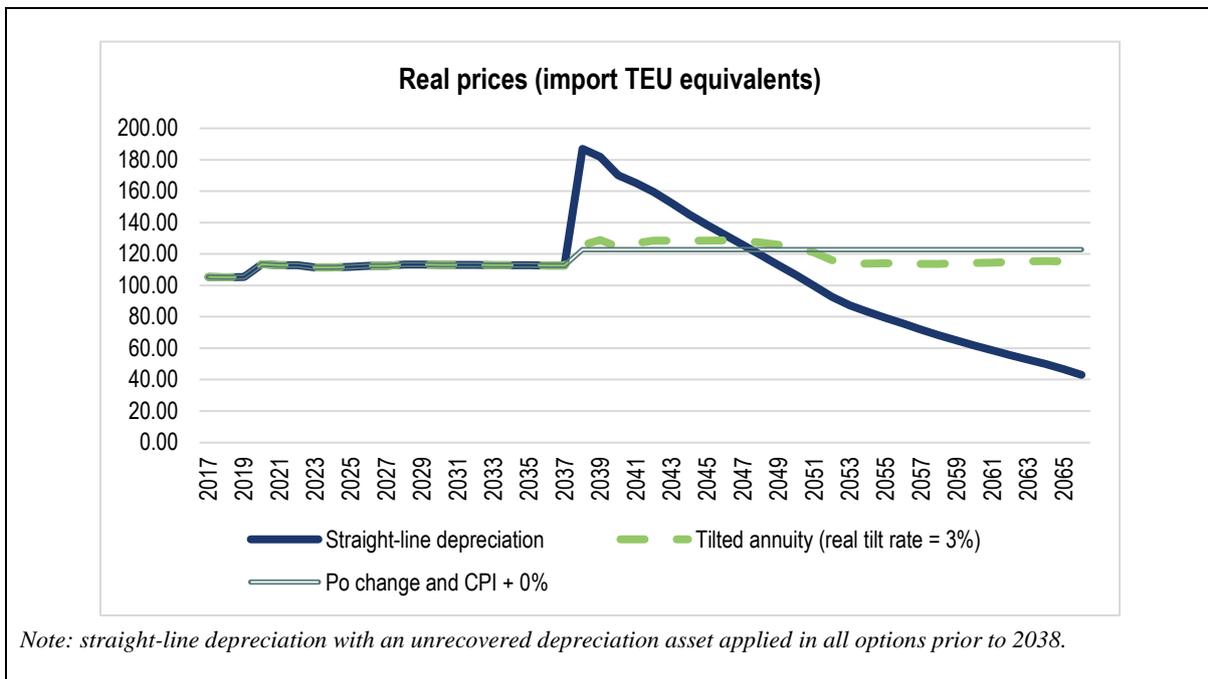
²⁰ I use this scenario as a base case because the 2022 risk free rate and debt risk premium are both some distance from long term averages (with the risk free rate very low and the debt risk premium being elevated).

- ii. I have also shown the outcomes for future prices under the assumption that the risk free rate of return reverts to 3 per cent over 20 years, with the debt risk premium assumption as above.
- iii. Finally, I have shown the effect of a continuation of the 2022 WACC.

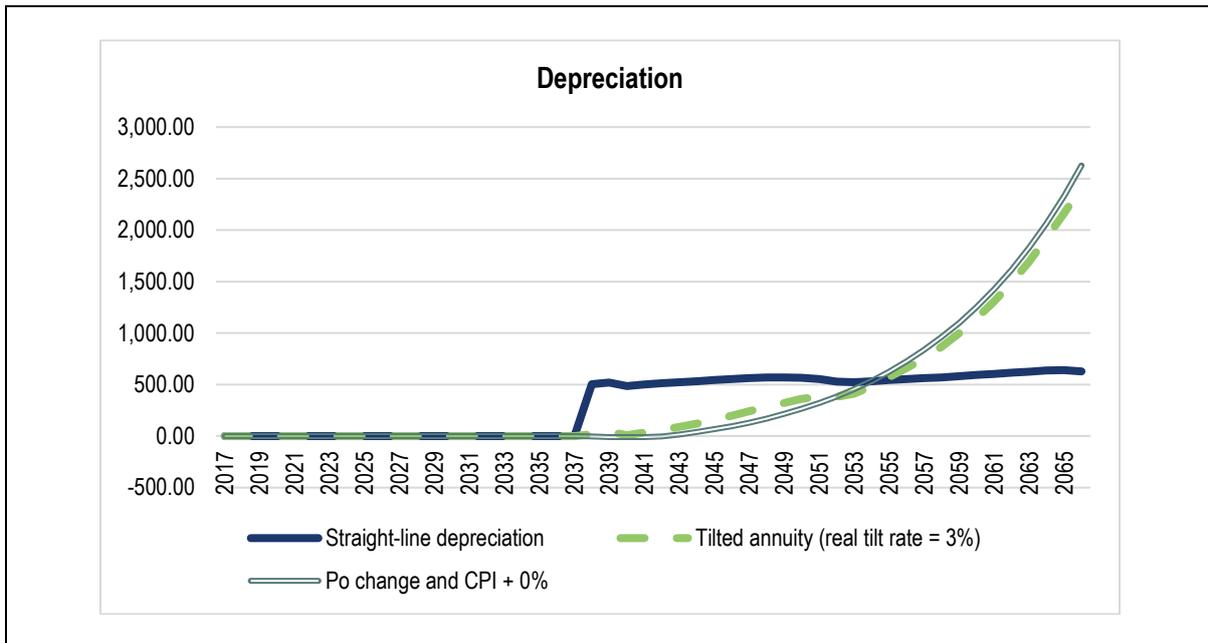
4.3 Results under the base case WACC assumption

- 36. As noted above, selecting the “tilt rate” for the tilted annuity method is a practical exercise. Whilst, in principle, a tilt rate that is close to the forecast growth in demand should generate a reasonably smooth price profile, the fact that new assets are being created and fully depreciated, as well as the effect of other components of the revenue requirement (namely operating expenditure) means that a slight modification may be desirable,²¹ which I describe in paragraph 39 below.
- 37. Figure 6 shows the trajectory of prices over the term of the port lease if tilted annuity is applied after the expiry of the TAL with a (real) tilt rate of 3 per cent, which is only marginally higher than the forecast growth in (composite) demand. This is compared to the price trajectory from straight line depreciation, and the annual depreciation that is implied by the different options is also provided.

Figure 6 – Trajectory of prices and depreciation under different post-TAL options

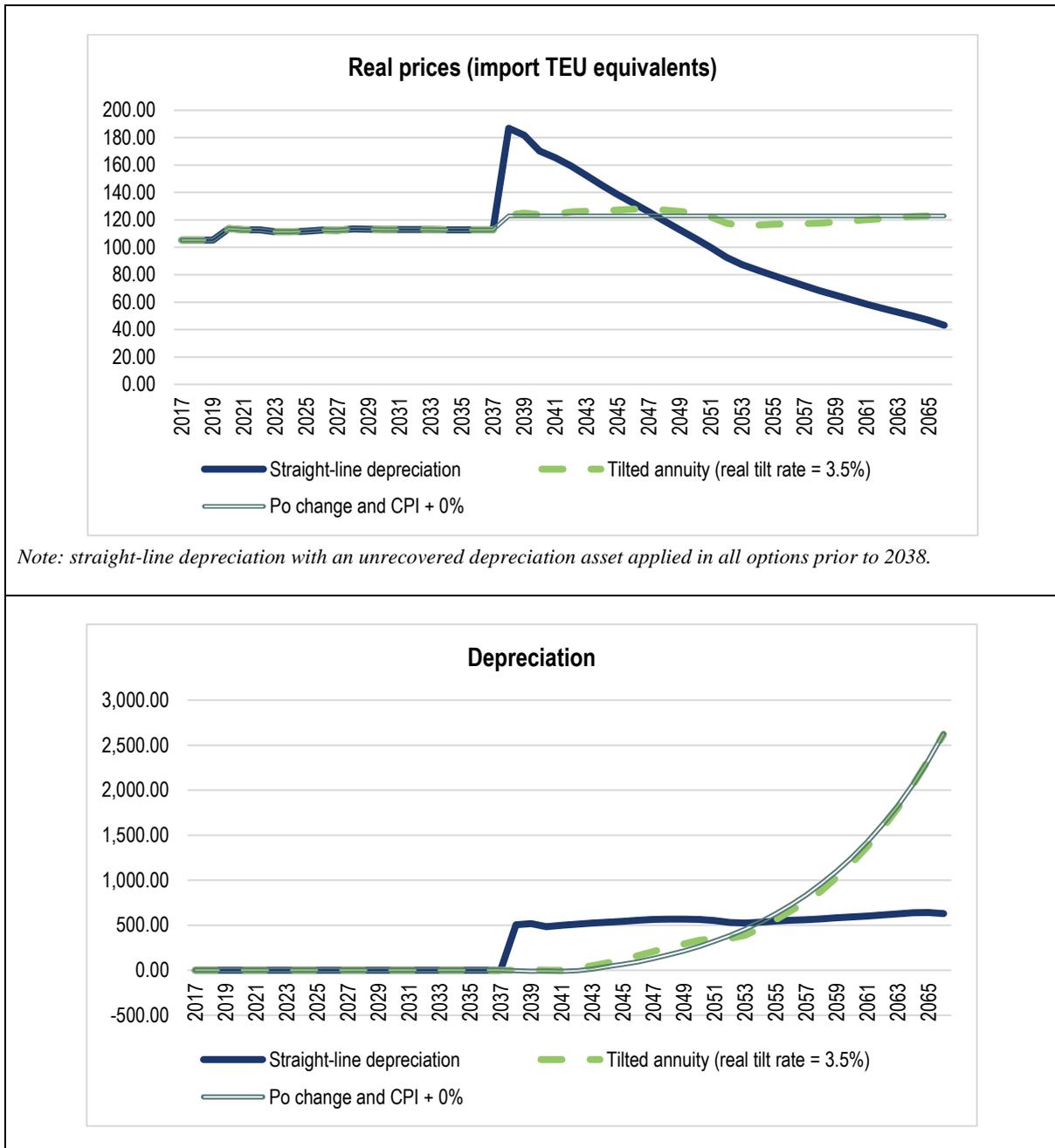


²¹ Specifically, by raising the tilt rate slightly, a slight upward trajectory in the capital cost per unit associated with the long-lived assets is created, which can offset the downward trajectory in the annual revenue requirement per unit that is caused by the shorter lived assets becoming fully depreciated and from operating costs per unit falling in real terms.



38. It is clear from this figure that switching to tilted annuity depreciation after the expiry of the TAL method would result in a preferable trajectory in prices than the application of the standard straight-line depreciation.
- a. Whereas straight-line depreciation would imply a forecast increase in real prices of 66 per cent after the expiry of the TAL, tilted annuity would reduce this real price change to 12 per cent (for comparison, implementing the CPI price path after the TAL would imply a 9 per cent real price increase). Thus, whereas straight line depreciation would imply a very large price increase, the price increase under tilted annuity – whilst not immaterial – certainly would be easier for the Port and/or customers to manage.
 - b. In addition, straight-line depreciation would result in prices that would be expected to fall at a fast rate in real terms over the remainder of the lease, having the potential to dissuade use early in the post-TAL period, whereas tilted annuity would result in a price that hovers around a CPI price path.
 - c. Most relevantly, in terms of the defined criteria for selecting depreciation methods, while straight-line depreciation would imply a standard deviation of annual price changes over the period until the end of the port lease of 13 per cent, tilted annuity would imply a standard deviation of 3 per cent, and so is far preferable against the metric.
39. As foreshadowed in paragraph 36, my analysis suggests that, under the assumptions I have adopted, increasing the tilt rate slightly may improve upon the outcomes of applying this method further. Figure 7 shows the effects of raising the tilt-factor from 3 per cent to 3.5 per cent.

Figure 7 – Trajectory of prices and depreciation under different post-TAL options (higher tilt)



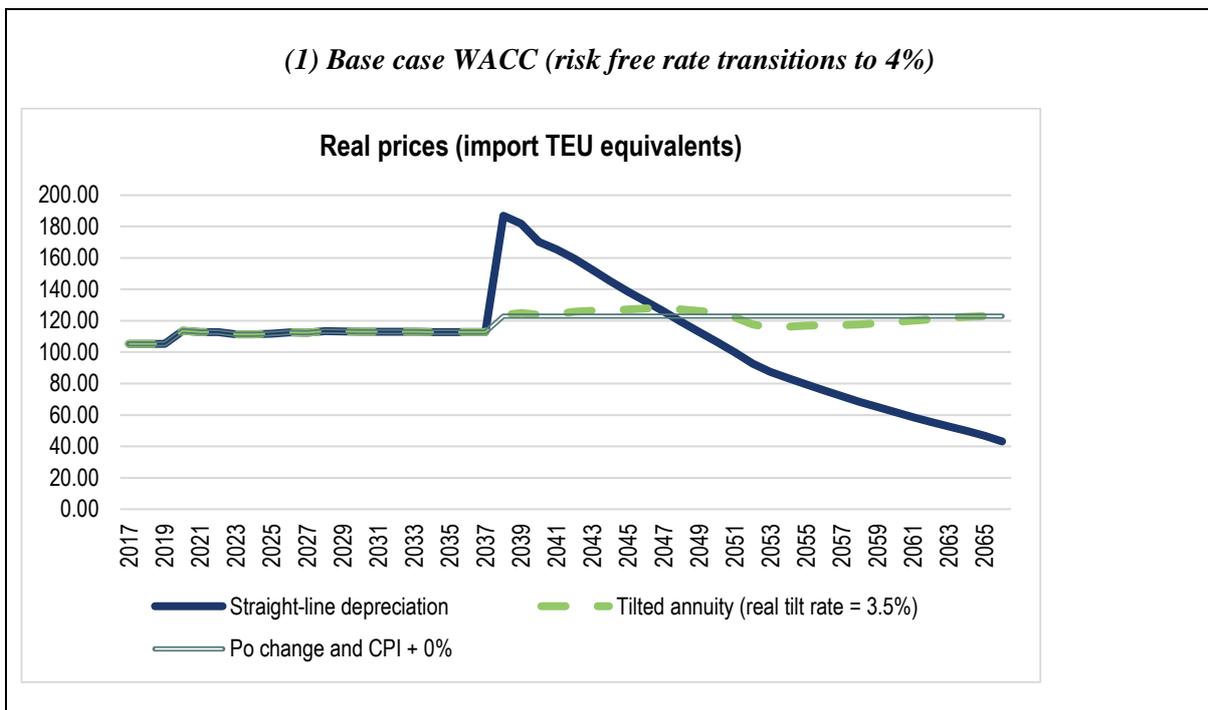
- 40. Under this option, the real price increase after the expiry of the TAL would reduce to 10 per cent, and the standard deviation of annual price changes would decline to approximately 2 per cent. Thus, applying the higher tilt factor would appear to be preferred.
- 41. I note, however, that the price trajectory after the TAL expires will depend materially on a number of matters, including the rate of return that is assumed in the analysis. As there is still some time until the TAL expires, it would not be prudent, in my view, to lock into

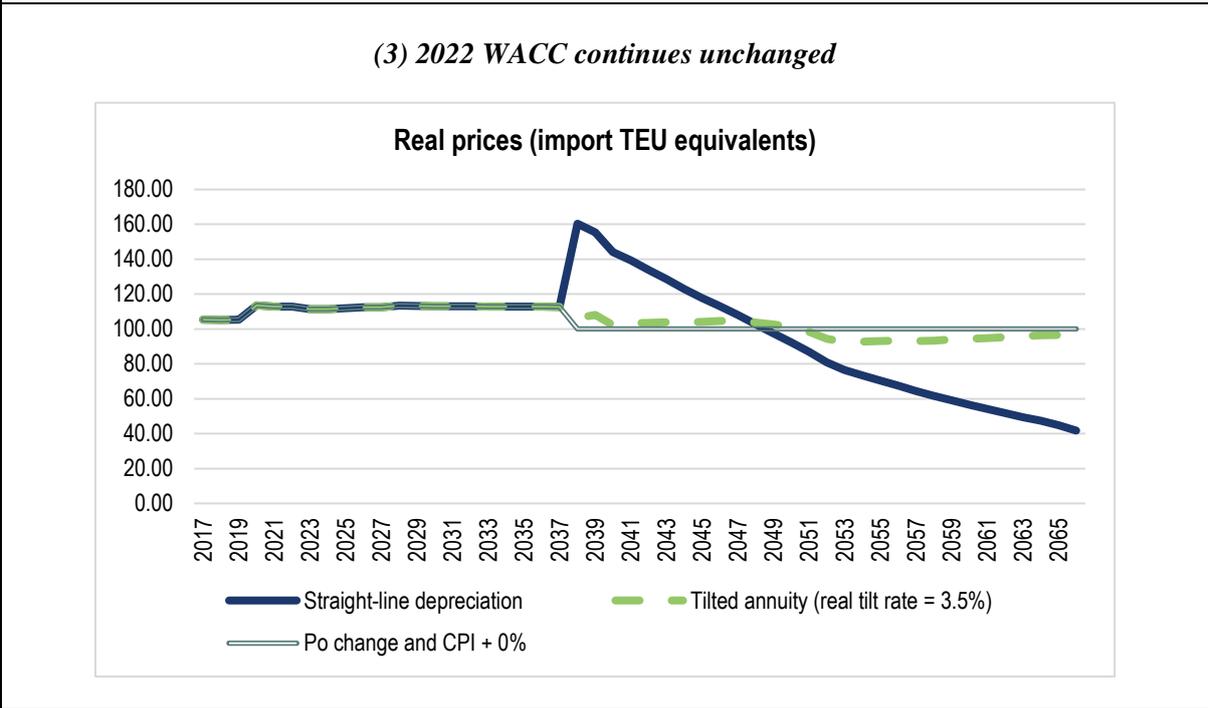
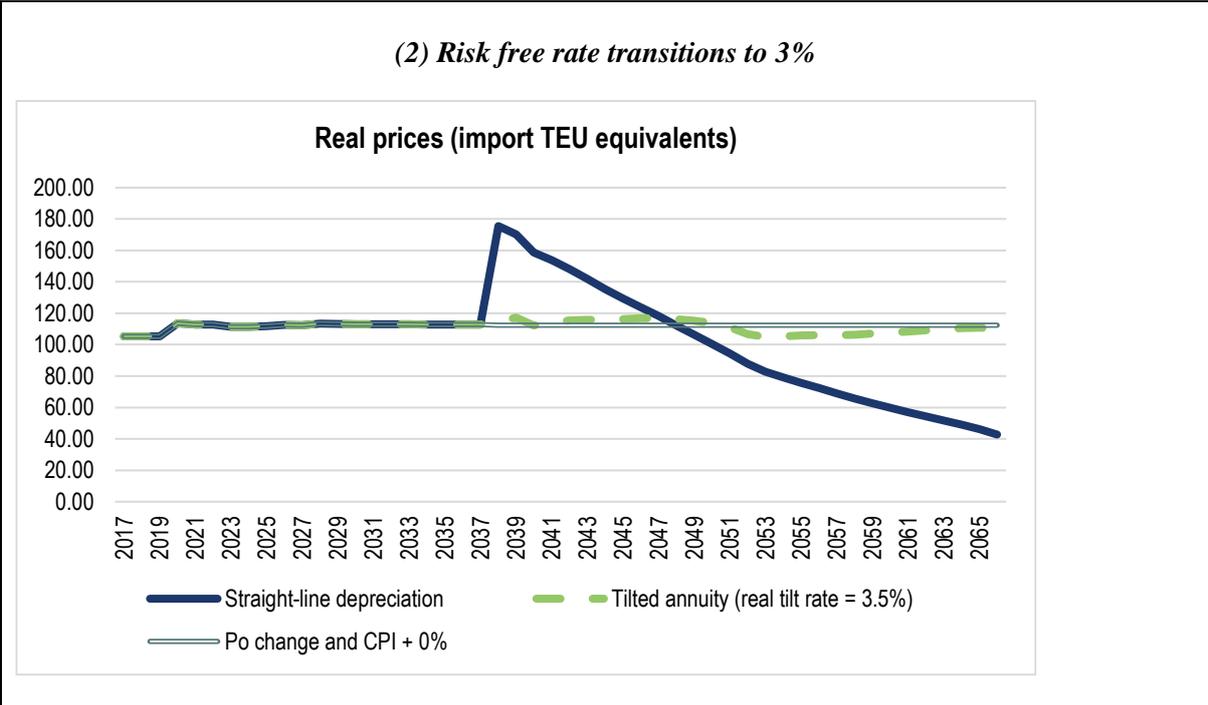
in any specific settings (i.e., the tilt factor) for the tilted annuity method for the post TAL period, but rather to consider further the effects of different tilt factors closer to the time.

4.4 Results under alternative WACC assumptions

42. The implications of the different WACC scenarios for the expected time path of prices under the different depreciation options are set out in Figure 8. For these figures, I have applied a tilt rate of 3.5 per cent, and applied all of the non-WACC inputs described in section 4.2.2.

Figure 8 – Effect of different WACC scenarios





43. The clear inference to be drawn from these different figures is that, under all scenarios for the WACC, the application of tilted annuity depreciation from the time the TAL ceases to apply will avoid the very large increase in prices that would otherwise occur if the standard straight-line depreciation was instead applied. That is, while the height of the price increase under straight-line depreciation would differ across WACC scenarios, in all cases it would be material. In contrast, with tilted annuity depreciation, if the risk free rate settles on 3 per cent over the long term, prices would remain largely unchanged

in real terms after the expiry of the TAL, whereas a continuation of the current rates would lead to a modest reduction in real prices after the expiry of the TAL.²²

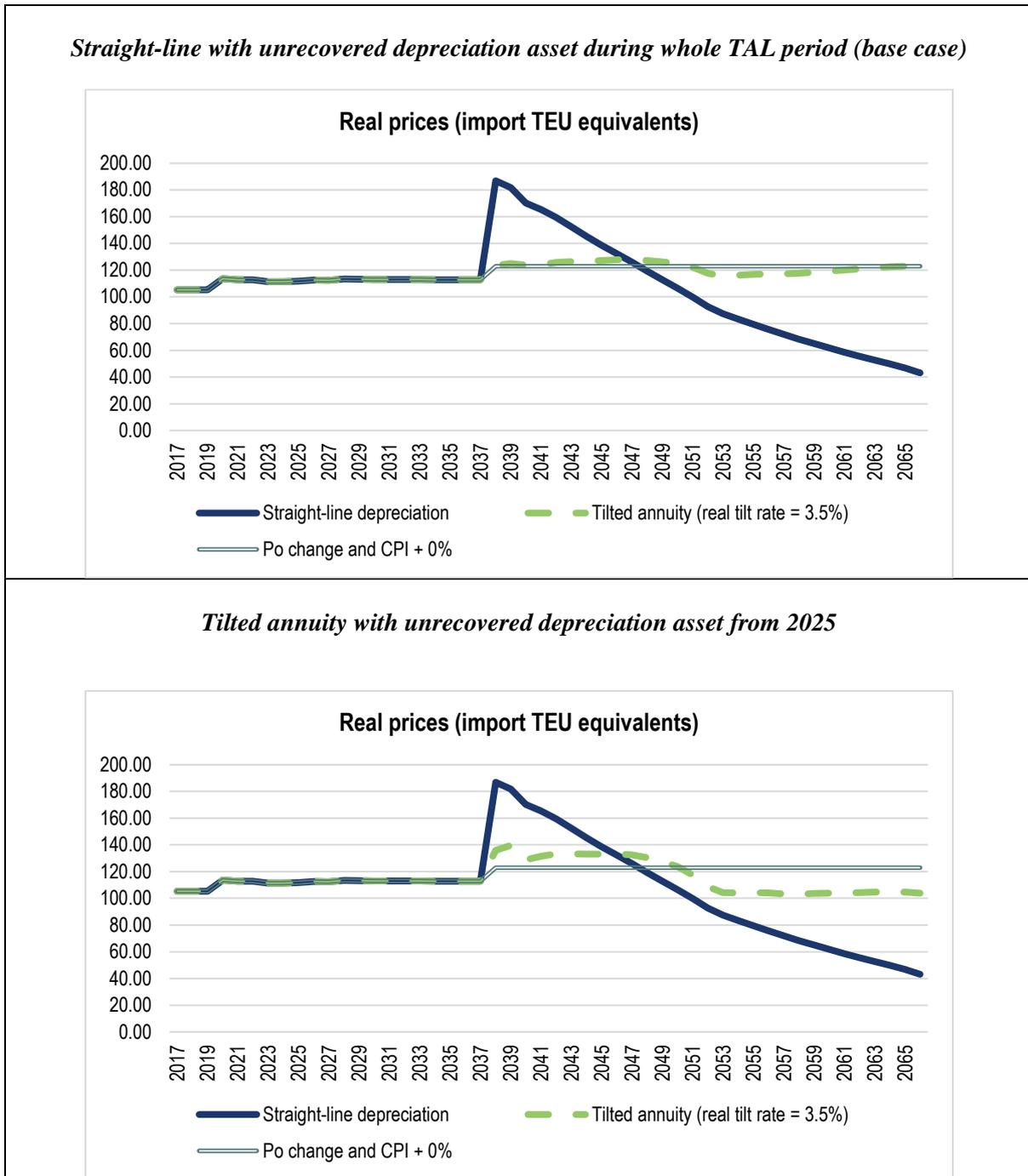
4.5 **Should there be a switch of depreciation methods prior to the expiry of the TAL?**

44. As discussed in section 3.2, one option for the Port would be to switch from straight-line depreciation combined with an unrecovered depreciation asset to tilted annuity combined with an unrecovered depreciation asset prior to the expiry of the TAL. I observed that there were practical advantages with applying straight-line depreciation with the unrecovered depreciation account prior to the TAL ceasing – rather than switching to the alternative – in terms of managing the volatility of future prices. Specifically, I observed that:
- a. changing the underlying depreciation method will not alter the RAB at the end of the TAL period, but merely the distribution of asset lives for those assets, and
 - b. if straight-line depreciation is replaced with tilted annuity as the underlying method prior to the expiry of the TAL, then there will be more asset value associated with shorter lived assets, which in turn will make it more difficult to manage the trajectory of prices after the expiry of the TAL.²³
45. I demonstrate this proposition in Figure 9. The top panel repeats the results reported above that assume straight-line depreciation with the unrecovered asset account prior to the expiry of the TAL, and the second assumes that tilted annuity with the unrecovered asset account is applied instead from 2025. In both cases, tilted annuity is applied as discussed earlier after the cessation of the TAL.

²² Note, however, that if the current interest rates are maintained over the long term, then it would imply that negative real interest rates would apply for a very long period, the realism of which could be questioned.

²³ This reflects the fact that I conclude that it is appropriate to assign a remaining life for the unrecovered depreciation asset equal to the remaining term of the port lease, and so the more unrecovered depreciation that is calculated, the greater proportion of the RAB that has the maximum remaining life.

Figure 9 – Long term trajectory of prices if tilted annuity is applied prior to the TAL expiry



46. It is obvious from the figure that applying tilted annuity prior to the cessation of the TAL (combined with an unrecovered depreciation asset) would result in a less constant price trend, which is reflected in the higher standard deviation of annual price changes from the period after the cessation of the TAL to the end of the lease term (4.7 per cent compared to 2.1 per cent). Accordingly, I conclude that there would be practical disadvantages from switching to tilted annuity depreciation with an unrecovered depreciation asset in the period prior to the cessation of the TAL relative to continuing to

apply straight-line depreciation with an unrecovered depreciation asset whilst the TAL applies.

47. However, as noted above, whilst not expected under the base case WACC scenario, it is possible that a switch to tilted annuity depreciation during the TAL period may, at some time, satisfy the conditions required for the Port to apply for an early cessation of the TAL. To the extent the Port considers this option to have value, this is a matter the Port may wish to keep under review.

5. Declarations

48. I have read and agree to comply with the Supreme Court of Victoria's Expert Witness Code of Conduct and the Practice Note of Victorian Civil and Administrative Tribunal.
49. I have made all of the inquiries that I believe are desirable and appropriate (save for any matters identified expressly in the report) and no matters of significance that I regard as relevant have, to my knowledge, been withheld from the report.
50. The opinions expressed in this report are based wholly or substantially on specialised knowledge arising from my training, study and experience as an economist.



Jeffrey John Balchin

27 May 2021

A. Formulae for the tilted annuity depreciation method

51. The outcome of tilted annuity depreciation is that the depreciation allowance is derived such that the sum of the return on assets and depreciation component for each asset grows over time at a pre-set rate. The pre-set rate can then be derived in order to target a particular objective.
52. Of most relevance to the Port, by selecting a tilt rate that is related to the growth in freight volumes, a particular objective for the revenue per unit of freight can be generated. For example, by selecting a tilt rate that is equal to the growth rate of freight plus inflation then the revenue stream that is approximately equivalent to prices being maintained in real terms across time would be delivered.
53. The tilted annuity formula is often stated as one that generates a total capital charge (i.e., ROA plus depreciation); however, it is straightforward to derive the formula for the depreciation component as a separate item, and so apply the formula in a standard building block application.
54. The standard formula for the rate of depreciation in year i under the tilted annuity method is as follows:

$$Dep_i = 1 - \left(\frac{(1+R)^{L-1} + (1+T)^{L-1}}{(1+R)^L + (1+T)^L} \right) \times (1+R) \times (1+T)$$

where T is the selected tilt-rate, R is the discount rate and L is the remaining life of the asset as at the beginning of year i . In the normal specification, a nominal discount rate and tilt factor are applied. Depreciation for a particular year is derived by multiplying this rate by the opening written down RAB for that year.

55. However, with a minor amendment, the tilted annuity depreciation method can be made compatible with a CPI indexed RAB, as follows:

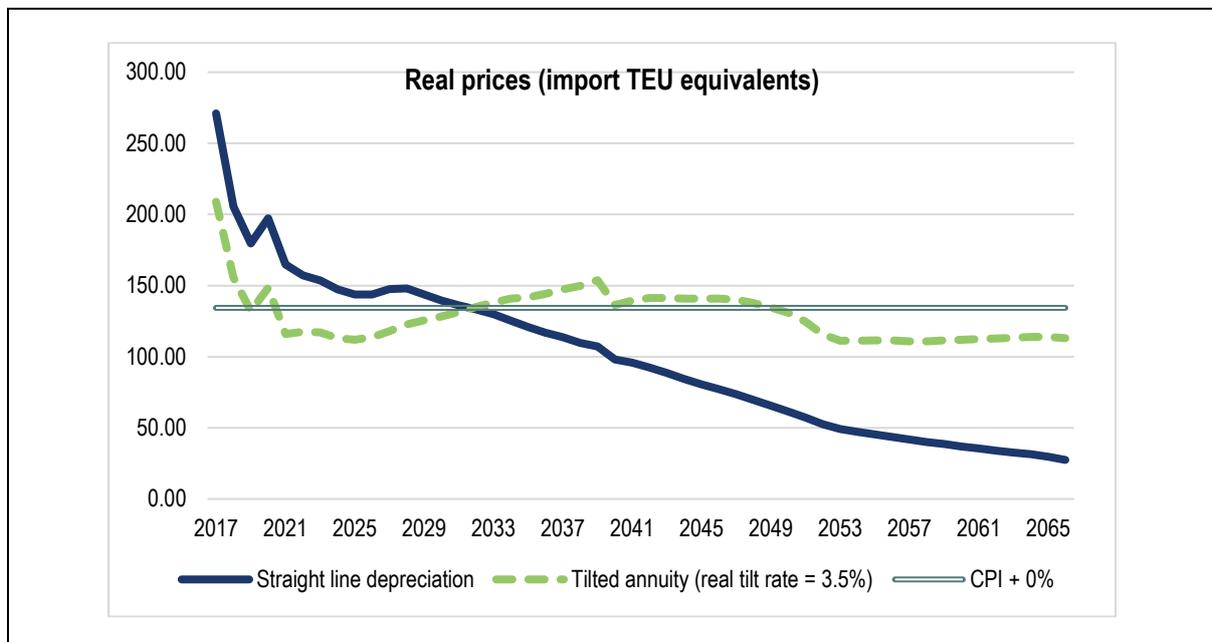
$$Dep_i = \left(1 - \left(\frac{(1+r)^{L-1} - (1+t)^{L-1}}{(1+r)^L - (1+t)^L} \right) \times (1+r) \times (1+t) \right) \times (1 + CPI_i)$$

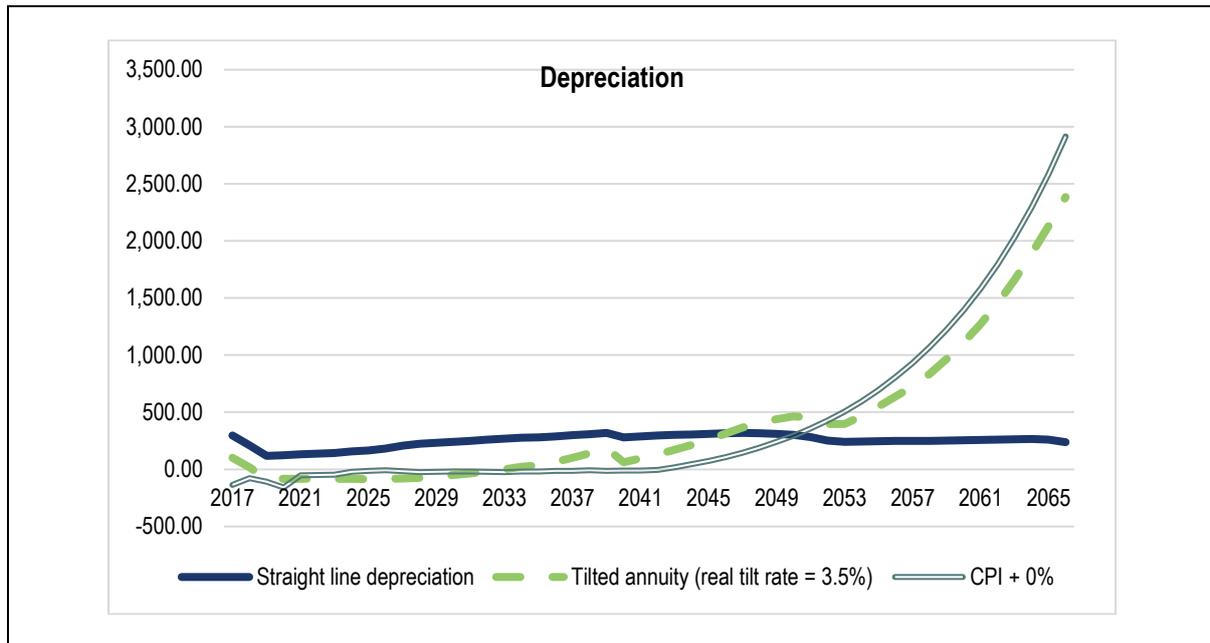
where r and t are now the real discount rate and tilt factor, and CPI_i is CPI inflation (forecast or actual) for year i . Again, depreciation for a particular year is derived by multiplying this rate by the opening written down RAB for that year. Given that the RAB under the Pricing Order is escalated for CPI inflation this second formula is the one that is relevant.

B. Efficient time-profile of charges for the Port

56. In this section I assume that the TAL did not operate and instead that the prescribed service tariffs were set to recover the annual building block revenue requirement in each year starting with financial year 2017. I compare how the depreciation methods that I have discussed in this report would have operated in terms of:
- a. the time-profile of prices that would result, and
 - b. the depreciation that would have been calculated for each year.
57. The three depreciation methods are:
- a. the standard straight-line method
 - b. tilted annuity, and
 - c. a simple CPI price path, which means that an NPV=0 price path would first be determined, and with the implied depreciation then calculated.
58. For this analysis, I have applied a tilt rate of 3.5 per cent, my base-case scenario with respect to future interest rates, and the remaining assumptions are as described in section 4.2.2. The outcomes for real prices and depreciation are shown in Figure 10 below.

Figure 10 – Real prices and depreciation if the TAL did not apply





59. The key observations that I would draw from the figures above are as follows.
- a. First, if prices had been set to recover the calculated straight-line depreciation in each year then the prices in the early years after the privatisation of the Port would have been very high (more than double the average prices implied by the TAL), but the prices would have then fallen in real terms at a fast rate. Thus, the time profile of prices that would have been implied by this depreciation profile would have implied a substantial risk of artificially dissuading use of the Port in the early years.
 - b. Secondly, aside from in the very early years, the use of tilted annuity depreciation would have generated a far more desirable time profile of prices, with these prices hovering around the level that would have been implied by a price that was simply fixed in real (CPI adjusted) terms. Importantly, the tilted annuity depreciation method would have implied very low depreciation until about 2040, indeed being negative in some years.
 - c. Thirdly, the above observations about the level of depreciation that would be consistent with an efficient time profile of prices is borne out by the comparison to the simple constant real price path. Under this option, the implied depreciation would be very low – and, indeed, negative in some years – until the mid 2040s.
60. Thus, it can be seen from the above that having zero depreciation recorded against the port assets for an extended period should not be seen as an unusual or unexpected outcome. Rather, such a time-profile of depreciation is entirely consistent with an efficient recovery of the cost of the port assets over the duration of the port lease.

C. Curriculum vitae of Jeffrey John Balchin

Jeff Balchin

Managing Director

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Telephone: W: +61 3 8514 5119; M: +61 412 388 372

Overview

Jeff is the Managing Director of Incenta Economic Consulting. Jeff has over 25 years of experience in relation to economic regulation issues across the electricity, gas, ports, airports, rail, water and telecommunications sectors in Australia and New Zealand. He has advised governments, regulators and major corporations on issues including the development of regulatory frameworks, regulatory price reviews and issues around the introduction and measurement of competition (including franchise bidding). His particular specialities have been on the application of finance principles to economic regulation, the design of incentive compatible regulation and efficient tariff structures and the drafting and economic interpretation of regulatory instruments.

In addition, Jeff has substantial experience with the application of economic and finance principles to pricing and investment appraisal and associated commercial disputes in unregulated infrastructure and non-infrastructure markets. He has also assisted with applying economic principles to transfer pricing.

Jeff has undertaken a number of expert witness assignments.

Past positions

Jeff previously was a Principal at PwC in its economics and policy team for almost 4 years, prior to that a director and partner at the Allen Consulting Group for over 13 years, and prior to that he held a number of policy positions in the Commonwealth Government. In this latter role, he was on the secretariat of the Gas Reform Task Force (1995-1996), where he played a lead role in the development of the National Gas Code.

Relevant experience

A. Economic regulation of network / monopoly activities

Assistance to parties during price reviews/negotiations

- Asset beta for a major container terminal (Client: Port of Melbourne, 2020) – provided an expert opinion about the asset beta (and equity beta) for the Port of Melbourne as an input into its annual pricing submissions, which was based on an extensive analysis of the empirical evidence.
- Economic regulation of ultrafast broadband (Client: Chorus NZ, 2016-ongoing) – have been advising Chorus on a range of issues associated with transitioning its ultrafast broadband activities from one that is regulated via a concession contract to a building block approach, including the valuation of assets, cost of capital issues including the treatment of stranded asset risk, treatment of its concessional government financing, issues with forecasting expenditure and the design of incentive schemes, and financial modelling issues.
- Price review for aeronautical services (Client: Christchurch International Airport Limited, 2015-18) – provided economic advice on a range of economic issues associated with setting infrastructure prices, including appropriate depreciation methods, acceptable rate of return and calculation of implied returns, techniques for forecasting expenditure and tariff structures. I was also responsible for the overall financial modelling that fed into the calculation of prices.

- Compliance with new regulatory regime for non-scheduled pipelines (Client: Epic SA, 2017-18) – assisted Epic SA to respond to the new regulatory regime for non-scheduled pipelines, which included advice on the economic meaning of the new regulatory requirements, modelling of an initial regulatory asset value that best complied with the regime requirements, advice on the weighted average cost of capital and assistance with determining a price that best complied with the regime requirements.
- Regulatory valuation of telecommunications local loop assets (Client: Chorus NZ, 2014) – prepared a report advising on the appropriate valuation of local loop assets for the purpose of deriving a TSLRIC price for unbundled local loop access and provided subsequent ongoing advice on the application of different methods.
- Cost allocation (Client: BHP, 2014-2016) – prepared two reports on the economic principles behind allocating costs between regulated and unregulated services during the review of tariffs for the Goldfields Gas Pipeline.
- Depreciation and financeability (Client: AGN, 2015-16) – prepared a series of reports on the use of depreciation to manage financeability issues, and its justification within the relevant legal instruments. Also advised in relation to the acceleration of depreciation for “replaced” assets.
- Depreciation and risk management (Client: ENA, 2015) – prepared a report on how depreciation could be used as a stranding-risk management tool, which included a discussion of regulatory precedents and articulation of how this role for depreciation is consistent with economic principles and the relevant legal instruments.
- AER WACC Review (Client: ENA, 2011-12) – prepared expert reports on a range of matters, including the appropriate term of the risk free rate, the appropriate term of debt and a critical assessment of the ERA’s (then) method for deriving the debt risk premium.
- Design of incentives for operating expenditure efficiency (Client: ElectraNet, 2012-13) – provided expert advice on the detailed application of the incentive arrangements for operating expenditure, including the link between the incentive scheme and the forecasting method.
- Regulatory depreciation (Client: APA, 2012-13) – provided expert reports on the economic principles relevant to the depreciation method that is applied to set gas transmission charges.
- Regulatory cost of debt (Clients: Powerlink, ElectraNet and Victorian gas distributors 2011-2012) – provided a series of reports addressing how the benchmark cost of debt should be established pursuant to the National Electricity Rules and on the appropriate benchmark allowance for debt and equity raising costs.
- Real cost escalation (Client: Energex, 2009-10) – advised Energex on appropriate escalators to apply to forecasts of operating and capital expenditure over the regulatory period.
- Strategic advice, Victorian electricity distribution review and NSW gas distribution review (Client: Jemena Electricity Networks, 2009-2011) – retained as strategic adviser during the review and also provided advice on a range of technical regulatory economic issues, including on regulatory finance matters, service incentives, party contracts, allocation of costs between regulated and unregulated activities and forecasting of expenditure.
- Regulatory cost of debt (Client: Powercor Australia Limited, 2009-2010) – provided a series of reports addressing how the benchmark cost of debt should be established pursuant to the National Electricity Rules.

- Service incentive scheme (Client: Powercor Australia Limited, 2010) – assisted Powercor to quantify the financial effect that would have flowed if the former service performance incentive scheme had continued. Also prepared an expert report pointing to a material inconsistency in how the AER intended to close out the old scheme and the parameters for the new service performance incentive scheme, which was accepted by the AER.
- Input methodologies for NZ regulated businesses (Clients: Powerco NZ and Christchurch International Airport, 2009-2012) – advised in relation to the Commerce Commission’s development of input methodologies, focussing asset valuation, the regulatory cost of capital, the use of productivity trends in regulation and the design of incentive-compatible regulation. Also assisted in briefing counsel in subsequent reviews.
- Commercial negotiation of landing charges (Client: Virgin Blue, 2009-2012) – economic advice to Virgin Blue during its commercial negotiation of landing charges to a number of major and secondary airports.
- Equity Betas for Regulated Electricity Transmission Activities (Client: Grid Australia, APIA, ENA, 2008) – Prepared a report presenting empirical evidence on the equity betas for regulated Australian electricity transmission and distribution businesses for the AER’s five yearly review of WACC parameters for these industries. The report demonstrated the implications of a number of different estimation techniques and the reliability of the resulting estimates. Also prepared a joint paper with the law firm, Gilbert+Tobin, providing an economic and legal interpretation of the relevant (unique) statutory guidance for the review.
- Economic Principles for the Setting of Airside Charges (Client: Christchurch International Airport Limited, 2008-2013) – Provided advice on a range of economic issues relating to its resetting of charges for airside services, including the valuation of assets and treatment of revaluations, certain inputs to the cost of capital (beta and the debt margin) and the efficiency of prices over time and the implications for the depreciation of assets and measured accounting profit.
- Treatment of Inflation and Depreciation when Setting Landing Charges (Client: Virgin Blue, 2007-2008) – Provided advice on Adelaide Airport’s proposed approach for setting landing charges for Adelaide Airport, where a key issue was how it proposed to deal with inflation and the implications for the path of prices over time. The advice also addressed the different formulae that are available for deriving an annual revenue requirement and the requirements for the different formulae to be applied consistently.
- Application of the Grid Investment Test to the Auckland 400kV Upgrade (Client: Electricity Commission of New Zealand, 2006) - As part of a team, undertook a review of the Commission’s process for reviewing Transpower’s proposed Auckland 400kV upgrade project and undertook a peer review of the Commission’s application of the Grid Investment Test.
- Appropriate Treatment of Taxation when Measuring Regulatory Profit (Client: Powerco New Zealand, 2005-2006) - Prepared a series of statements on how taxation should be treated when measuring realised and projected regulatory profit.
- Application of Directlink for Regulated Status (Client: Directlink, 2003-2004) – Prepared advice on the economic efficiency of the conversion of an unregulated (entrepreneurial) interconnector to a regulated interconnector and how the asset should be valued for pricing purposes.
- Principles for the ‘Stranding’ of Assets by Regulators (Client: the Independent Pricing and Regulatory Tribunal, NSW, 2005) - Prepared a report discussing the relevant economic principles for a regulator in deciding whether to ‘strand’ assets for regulatory purposes (that is, to deny any further return on assets that are partially or unutilised).

- Principles for Determining Regulatory Depreciation Allowances (Client: the Independent Pricing and Regulatory Tribunal, NSW, 2003) - Prepared a report discussing the relevant economic and other principles for determining depreciation for the purpose of price regulation, and its application to electricity distribution. An important issue addressed was the distinction between accounting and regulatory (economic) objectives for depreciation.
- Methodology for Updating the Regulatory Value of Electricity Transmission Assets (Client: the Australian Competition and Consumer Commission, 2003) - Prepared a report assessing the relative merits of two options for updating the regulatory value of electricity transmission assets at a price review - which are to reset the value at the estimated 'depreciated optimised replacement cost' value, or to take the previous regulatory value and deduct depreciation and add the capital expenditure undertaken during the intervening period (the 'rolling-forward' method). This paper was commissioned as part of the ACCC's review of its Draft Statement of Regulatory Principles for electricity transmission regulation.
- Application of Murraylink for Regulated Status (Client: Murraylink Transmission Company, 2003) – Prepared advice on the economic efficiency of the conversion of an unregulated (entrepreneurial) interconnector to a regulated interconnector and how the asset should be valued for pricing purposes.
- Proxy Beta for Regulated Gas Transmission Activities (Client: the Australian Competition and Consumer Commission, 2002) - Prepared a report presenting the available empirical evidence on the 'beta' (which is a measure of risk) of regulated gas transmission activities. This evidence included beta estimates for listed firms in Australia, as well as those from the United States, Canada and the United Kingdom. The report also included a discussion of empirical issues associated with estimating betas, and issues to be considered when using such estimates as an input into setting regulated charges.
- Treatment of Working Capital when setting Regulated Charges (Client: the Australian Competition and Consumer Commission, 2002) - Prepared a report assessing whether it would be appropriate to include an explicit (additional) allowance in the benchmark revenue requirement in respect of working capital when setting regulated charges.
- Pricing Principles for the South West Pipeline (Client: Esso Australia, 2001) - As part of a team, prepared a report describing the pricing principles that should apply to the South West Pipeline (this gas transmission pipeline was a new asset, linking the existing system to a new storage facility and additional gas producers).
- Likely Regulatory Outcome for the Price for Using a Port (Client: MIM, 2000) - Provided advice on the outcome that could be expected were the dispute over the price for the use of a major port to be resolved by an economic regulator. The main issue of contention was the valuation of the port assets (for regulatory purposes) given that the installed infrastructure was excess to requirements, and the mine had a short remaining life.
- Relevance of 'Asymmetric Events' in the Setting of Regulated Charges (Client: TransGrid, 1999) - In conjunction with William M Mercer, prepared a report (which was submitted to the Australian Competition and Consumer Commission) discussing the relevance of downside (asymmetric) events when setting regulated charges, and quantifying the expected cost of those events.

Major roles for regulators

- Review of financeability test (Client: IPART, 2018) – provided advice to IPART in relation to the financial metrics and target ratios that IPART proposed to use as part of its financeability test, which was released to stakeholders during the consultation process.

- Aurizon Network price review (Client: Queensland Competition Authority, 2018-19) – advised the QCA on the appropriate rate of return (discount rate) for the Aurizon Network business as in the previous review, and also advised the QCA with respect to the assessment of financeability for a regulated business and the appropriate measures to ameliorate financeability concerns.
- Aurizon Network price review (Client: Queensland Competition Authority, 2013-2014) – advised the QCA on the appropriate rate of return (discount rate) for the Aurizon Network business, which included an assessment of the relative risk of Aurizon Network compared to other infrastructure sectors, advice on the appropriate benchmark gearing level and on the benchmark debt interest rate.
- Victorian Gas Distribution Price Review (Client: the Essential Services Commission, Vic, 2006-2008) - Provided advice to the Essential Service Commission in relation to its review of gas distribution access arrangements on the treatment of outsourcing arrangements, finance issues, incentive design and other economic issues.
- Envestra Gas Distribution Price Review (Client: the Essential Services Commission, SA, 2006) - Provided advice on several finance related issues (including ‘return on assets’ issues and the financial effect of Envestra’s invoicing policy), and the treatment of major outsourcing contracts when setting regulated charges.
- DBCT price review (Client: QCA, Qld, 2004-2006) – advice on a number of finance related issues, including the calculation of IDC for a DORC valuation, cost of debt and equity beta.
- Victorian Electricity Distribution Price Review (Client: the Essential Services Commission, Vic, 2003-2005) - Provided advice to the Essential Service Commission on a range of economic issues related to current review of electricity distribution charges, including issues related to finance, forecasting of expenditure and the design of incentive arrangements for productive efficiency and service delivery. Was a member of the Steering Committee advising on strategic regulatory issues.
- Victorian Water Price Review (Client: the Essential Services Commission, Vic, 2003-2005) - Provided advice to the Essential Services Commission on the issues associated with extending economic regulation to the various elements of the Victorian water sector. Was a member of the Steering Committee advising on strategic regulatory issues, and also provided advice on specific issues, most notably the determination of the initial regulatory values for the water businesses and the role of developer charges.
- ETSA Electricity Distribution Price Review (Client: the Essential Services Commission, SA, 2002-2005) - Provided advice on the ‘return on assets’ issues associated with the review of ETSA’s regulated distribution charges, including the preparation of consultation papers. The issues covered include the valuation of assets for regulatory purposes and cost of capital issues. Also engaged as a quality assurance adviser on other consultation papers produced as part of the price review.
- Victorian Gas Distribution Price Review (Client: the Essential Services Commission, Vic, 2001-2002) - Economic adviser to the Essential Services Commission during its assessment of the price caps and other terms and conditions of access for the three Victorian gas distributors. Was responsible for all issues associated with capital financing (including analysis of the cost of capital and assessment of risk generally, and asset valuation), and supervised the financial modelling and derivation of regulated charges. Also advised on a number of other issues, including the design of incentive arrangements, the form of regulation for extensions to unreticulated townships, and the principles for determining charges for new customers connecting to the system.

- ETSA Electricity Distribution Price Review (Client: the South Australian Independent Industry Regulator, 2000-2001) - As part of a team, prepared a series of reports proposing a framework for the review. The particular focus was on the design of incentives to encourage cost reduction and service improvement, and how such incentives can assist the regulator to meet its statutory obligations. Currently retained to provide commentary on the consultation papers being produced by the regulator, including strategic or detailed advice as appropriate.
- Dampier to Bunbury Natural Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 2000-2002) - Provided economic advice to the Office of the Independent Regulator during its continuing assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft decision, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Represented the Office on these matters at a public forum, and provided strategic advice to the Independent Regulator on the draft decision.
- Goldfield Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 2000-2004) - Provided economic advice to the Office of the Independent Regulator during its continuing assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft decision, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Represented the Office on these matters at a public forum, and provided strategic advice to the Independent Regulator on the draft decision.
- Victorian Electricity Distribution Price Review (Client: the Office of the Regulator General, Vic, 1999-2000) - Economic adviser to the Office of the Regulator General during its review of the price caps for the five Victorian electricity distributors. Had responsibility for all issues associated with capital financing, including analysis of the cost of capital (and assessment of risk generally) and asset valuation, and supervised the financial modelling and derivation of regulated charges. Also advised on a range of other issues, including the design of incentive regulation for cost reduction and service improvement, and the principles for determining charges for new customers connecting to the system.
- Victorian Ports Corporation and Channels Authority Price Review (Client: the Office of the Regulator General, Vic, 2000) - Advised on the finance related issues (cost of capital and the assessment of risk generally, and asset valuation), financial modelling (and the derivation of regulated charges), and on the form of control set over prices. Principal author of the sections of the draft and final decision documents addressing the finance related and price control issues.
- AlintaGas Gas Distribution Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 1999-2000) - Provided economic advice to the Office of the Independent Regulator during its assessment of the regulated charges and other terms and conditions of access for the gas pipeline. This advice included providing a report assessing the cost of capital associated with the regulated activities, overall review of all parts of the draft and final decisions, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Also provided strategic advice to the Independent Regulator on the draft and final decisions.
- Parmelia Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 1999-2000) - Provided economic advice to the Office of the Independent Regulator during its assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft and final decisions, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset

valuation and financial modelling. Also provided strategic advice to the Independent Regulator on the draft and final decisions.

- Victorian Gas Distribution Price Review (Client: the Office of the Regulator General, Vic, 1998) - Economic adviser to the Office of the Regulator General during its assessment of the price caps and other terms and conditions of access for the three Victorian gas distributors. Major issues addressed included the valuation of assets for regulatory purposes, cost of capital financing and financial modelling. Principal author of the draft and final decision documents.

Development/Review of Regulatory Frameworks

- Pricing principles for non-scheduled pipelines (Client: Gas Market Reform Group, 2017) – provided advice to the Group on the range of principles that could be specified for an arbitrator if called to arbitrate a dispute on a non-scheduled pipeline, and the relative merits of the different options.
- Review of the Australian energy economic regulation (Client: Energy Networks Association, 2010-2012) – assisting the owners of energy infrastructure to engage in the current wide-ranging review of the regime for economic regulation of energy infrastructure. Advice has focussed in particular on the setting of the regulatory WACC and on the regime of financial incentives for capital expenditure efficiency, and included strategic and analytical advice, preparation of expert reports and assistance with ENA submissions.
- Review of the Australian electricity transmission framework (Client: Grid Australia, 2010-2013) – assisting the owners of electricity transmission assets to participate in the wide-ranging review of the framework for electricity transmission in the national electricity market, covering such matters as planning arrangements, the form of regulation for non-core services and generator capacity rights and charging. Has included analytical advice on policy choices, facilitation of industry positions and articulation of positions in submissions.
- Implications of greenhouse policy for the electricity and gas regulatory frameworks (Client: the Australian Energy Market Commission, 2008-2009) – Provided advice to the AEMC in its review of whether changes to the electricity and gas regulatory frameworks is warranted in light of the proposed introduction of a carbon permit trading scheme and an expanded renewables obligation. Issues addressed include the framework for electricity connections, the efficiency of the management of congestion and locational signals (including transmission pricing) for generators and the appropriate specification of a cost benefit test for transmission upgrades in light of the two policy initiatives.
- Economic incentives under the energy network regulatory regimes for demand side participation (Client: Australian Energy market Commission, 2006) – Provided advice to the AEMC on the incentives provided by the network regulatory regime for demand side participation, including the effect of the form of price control (price cap vs. revenue cap), the cost-efficiency arrangements, the treatment of losses and the regime for setting reliability standards.
- Implications of greenhouse policy for the electricity and gas regulatory frameworks (Client: the Australian Energy Market Commission, 2008) - Provided advice to the AEMC in its review of whether changes to the electricity and gas regulatory frameworks is warranted in light of the proposed introduction of a carbon permit trading scheme and an expanded renewables obligation. Issues addressed include the framework for electricity connections, the efficiency of the management of congestion and locational signals for generators and the appropriate specification of a cost benefit test for transmission upgrades in light of the two policy initiatives.

- Application of a ‘total factor productivity’ form of regulation (Client: the Victorian Department of Primary Industries, 2008) - Assisted the Department to develop a proposed amendment to the regulatory regime for electricity regulation to permit (but not mandate) a total factor productivity approach to setting price caps – that is, to reset prices to cost at the start of the new regulatory period and to use total factor productivity as an input to set the rate of change in prices over the period.
- Expert Panel on Energy Access Pricing (Client: Ministerial Council on Energy, 2005-2006) - Assisted the Expert Panel in its review of the appropriate scope for commonality of access pricing regulation across the electricity and gas, transmission and distribution sectors. The report recommended best practice approaches to the appropriate forms of regulation, the principles to guide the development of detailed regulatory rules and regulatory assessments, the procedures for the conduct of regulatory reviews and information gathering powers.
- Productivity Commission Review of Airport Pricing (Client: Virgin Blue, 2006) - Prepared two reports for Virgin Blue for submission to the Commission’s review, addressing the economic interpretation of the review principles, asset valuation, required rates of return for airports and the efficiency effects of airport charges and presented the findings to a public forum.
- AEMC Review of the Rules for Setting Transmission Prices (Client: Transmission Network Owners, 2005-2006) - Advised a coalition comprising all of the major electricity transmission network owners during the new Australian Energy Market Commission’s review of the rules under which transmission prices are determined. Prepared advice on a number of issues and assisted the owners to draft their submissions to the AEMC’s various papers.
- Advice on Energy Policy Reform Issues (Client: Victorian Department of Infrastructure/Primary Industries, 2003-2009) - advice to the Department regarding on issues relating to the transition to national energy market arrangements, cross ownership rules for the energy sector, the reform of the cost benefit test for electricity transmission investments and the scope for light handed regulation in gas transmission.
- Productivity Commission Review of the National Gas Code (Client: BHPBilliton, 2003-2004) - Produced two submissions to the review, with the important issues including the appropriate form of regulation for the monopoly gas transmission assets (including the role of incentive regulation), the requirement for ring fencing arrangements, and the presentation of evidence on the impact of regulation on the industry since the introduction of the Code.
- Development of the National Third Party Access Code for Natural Gas Pipeline Systems Code (Client: commenced while a Commonwealth Public Servant, after 1996 the Commonwealth Government, 1994-1997) - Was involved in the development of the new legal framework for the economic regulation of gas transmission and distribution systems, with advice spanning the overall form of regulation to apply to the infrastructure and the appropriate pricing principles (including the valuation of assets for regulatory purposes and the use of incentive regulation), ring fencing arrangements between monopoly and potentially contestable activities, and whether upstream infrastructure should be included within the regime.

Licencing / Franchise Bidding

- Competitive Tender for Gas Distribution and Retail in Tasmania (Client: the Office of the Tasmanian Energy Regulator, 2001-2002) - Economic adviser to the Office during its oversight of the use of a competitive tender process to select a gas distributor/retailer for Tasmania, and simultaneously to set the regulated charges for an initial period.

- Issuing of a Licence for Powercor Australia to Distribute Electricity in the Docklands (Client: the Office of the Regulator General, Vic, 1999) - Economic adviser to the Office during its assessment of whether a second distribution licence should be awarded for electricity distribution in the Docklands area (a distribution licence for the area was already held by CitiPower, and at that time, no area in the state had multiple licensees). The main issue concerned the scope for using ‘competition for the market’ to discipline the price and service offerings for an activity that would be a monopoly once the assets were installed.

Assessments of the degree and prospects for competition / need for regulation

- Assessment of the merits of the coverage test in the gas regulatory regime (Client: AEMC, 2015) – advised the AEMC on whether the test contained in the gas regime for determining whether pipelines should be regulated is fit for the intended purpose, which included a detailed review of the coverage / declaration decisions to date.
- Pilbara electricity networks (Client: Public Utility Office, 2014) – provided advice to the Office on whether the applications for declaration of the Pilbara electricity networks would meet the coverage test.
- Transmission connection assets (Client: Grid Australia, 2012) – prepared an assessment of the degree of competition in the provision of transmission connection assets, which included advice on the market within which the service is provided and an assessment of the degree of rivalry (including the prospects for entry) in that market.
- South East network (Client: Kimberley Clarke, 2011) – advised whether the gas pipeline from which it is supplied would pass the threshold for regulation.
- Pilbara rail access (Client: BHP Billiton) – assisted in the preparation of expert evidence on whether the Pilbara rail infrastructure passed the test for declaration of essential infrastructure, with specific focus on the analysis of whether there would be a promotion of competition in other markets from the granting of access.
- Need for regulation of gas transmission pipelines (Client: SA Government) – advised as to whether the Moomba to Adelaide pipeline was likely to pass the threshold required for regulation under the Gas Code, focussing upon an assessment of the degree of competition for its services.

B. Pricing in non-infrastructure markets

Assessment of competition in energy retail markets

- Assessment of retail competition in Victoria and South Australia (Client: Australian Energy Market Commission) – assisted the Commission to quantify and interpret information on margins for retailers and to draw inferences about the level of competition. Also provided a peer review of the Commission’s overall assessment of the level of competition, including the Commission’s overall analytical framework and the other indicators it considered.

Default/transitional regulated prices for retail functions

- ACT transitional tariff review (Client: ICRC, ACT, 2010) – advised the regulator on an appropriate method to derive a benchmark wholesale electricity purchase cost for an electricity retailer, including the relationship between the wholesale cost and hedging strategy.
- South Australian default gas retail price review (Client: the Essential Services Commission, SA, (2007-2008) – derived estimates of the benchmark operating costs for a gas retailer and the margin that should be allowed. This latter exercise included a bottom-up estimate of the financing costs incurred by a gas retail business.

- South Australian default electricity retail price review (Client: the Essential Services Commission, SA, 2007) - estimated the wholesale electricity purchase cost for the default electricity retail supplier in South Australia. The project involved the development of a model for deriving an optimal portfolio of hedging contracts for a prudent and efficient retailer, and the estimate of the expected cost incurred with that portfolio.
- South Australian default gas retail price review (Client: the Essential Services Commission, SA, 2005) - As part of a team, advised the regulator on the cost of purchasing gas transmission services for a prudent and efficient SA gas retailer, where the transmission options included the use of the Moomba Adelaide Pipeline and SEAGas Pipeline, connecting a number of gas production sources.

Market Design

- Options for the Development of the Australian Gas Wholesale Market (Client: the Ministerial Committee on Energy, 2005) - As part of a team, assessed the relative merits of various options for enhancing the operation of the Australian gas wholesale markets, including by further dissemination of information (through the creation of bulletin boards) and the management of retailer imbalances and creation of price transparency (by creating short term trading markets for gas).
- Review of the Victorian Gas Market (Client: the Australian Gas Users Group, 2000-2001) - As part of a team, reviewed the merits (or otherwise) of the Victorian gas market. The main issues of contention included the costs associated with operating a centralised market compared to the potential benefits, and the potential long term cost associated with having a non-commercial system operator.
- Development of the Market and System Operation Rules for the Victorian Gas Market (Client: Gas and Fuel Corporation, 1996) - Assisted with the design of the ‘market rules’ for the Victorian gas market. The objective of the market rules was to create a spot market for trading in gas during a particular day, and to use that market to facilitate the efficient operation of the system.

Transfer pricing

- Application of a netback calculation for infrastructure under the Minerals Resource Rent Tax (Client: BHPB, 2011-2013) – advised on how the arms-length price for the use of downstream infrastructure should be determined, including the valuation of assets, weighted average cost of capital and on the implications for the price of incentive compatible contracts.

Pricing strategy

- Pricing for telephone directory services (Sensis, 2012) – as part of a team, advised on how margins could be maximised for the telephone directory business in the context of falling print advertising and a very competitive digital market, informed by the application of econometric techniques.
- Effectiveness of promotional strategies (Target, 2011-2012) – as part of a team, applied econometric techniques to assess the effectiveness of Target’s promotional strategies, with tools developed for management to improve profitability.
- Optimal pricing (Client: Coles, 2011-2012) – applied econometric techniques to assist Coles to set relativities of prices within “like” products and developed a method to test the effectiveness of promotional strategies.

C. Regulatory due diligence and other finance work

- Sale of Port of Melbourne (Client: a consortium of investors, 2014-16) – Prepared a regulatory due diligence report for potential acquirer of the asset, including a review of the financial modelling of future pricing decisions.
- Sale of TransGrid (Client: a consortium of investors, 2011-12) – Prepared a regulatory due diligence report for potential acquirer of the asset, including a review of the financial modelling of future pricing decisions.
- Sale of the Sydney Desalination Plant (Client: a consortium of investors, 2011-12) – Prepared a regulatory due diligence report for potential acquirer of the asset, including a review of the financial modelling of future pricing decisions.
- Sale of the Abbot Point Coal Terminal port (Client: a consortium of investors / debt providers, 2010-11) – Prepared a regulatory due diligence report for potential acquirer of the asset, including a review of the financial modelling of future pricing decisions.
- Private Port Development (Client: Major Australian Bank, 2008) - Prepared a report on the relative merits of different governance and financing arrangements for a proposed major port development that would serve multiple port users.
- Sale of Allgas gas distribution network (Client: confidential, 2006) – Prepared a regulatory due diligence report for potential acquirer of the asset.
- Review of Capital Structure (Client: major Victorian water entity, 2003) - Prepared a report (for the Board) advising on the optimal capital structure for a particular Victorian water entity, taking account of the likely impact of cost-based regulation.

D. Expert Witness Roles

- Tax consequences of customer contributions (Client: VPN, 2017-19) – Provided expert evidence about the regulatory treatment of customer contributions and related matters for a dispute in the Federal Court with the Tax Commissioner about whether these contributions should be assessed as income.
- Goldfields gas pipeline price review (Client: BHP, 2017) – Provided expert evidence to the judicial review on the economic principles around whether a “true-up” is permitted when there is a delay in the commencement of a regulatory period under the National Gas Rules.
- Goldfields gas pipeline price review (Client: BHP, 2014) – Provided an expert report on economic principles associated with the allocation of costs between regulated and unregulated assets.
- Kapuni gas contract dispute (Client: Vector, 2013-2015) – Provided expert evidence for the arbitration addressing a number of economic issues with determining a fair and reasonable price for the (raw) Kapuni gas, including the overall economic interpretation of the bargain, an appropriate netback price for gas processing, retail margins, value of gas flexibility and interpretation of discovered gas supply arrangements.
- Abbot Point Coal Terminal Pricing Arbitration (Client: Adani, 2013) – Prepared a number of expert reports for the arbitration on economic issues arising from the application of the cost-based formula in the pricing agreement, including the economic meaning of key terms, the valuation of assets (and specifically the role and calculation of interest during construction), the quantification of transaction costs of raising finance and the calculation of the required rate of return (most notably, the benchmark cost of debt finance).

- New Zealand Input Methodologies (Clients: Powerco and Christchurch International Airport Limited, 2009-2012) – Prepared expert report for both clients on a range of economic issues, including the valuation of assets, weighted average cost of capital, cost allocation, the regulatory treatment of taxation and interpretation of the new purpose statement in the Commerce Act. Appeared as an expert before the Commerce Commission in the key conferences held during the review. Also assisted the clients in their subsequent merit reviews of the Commission’s decision.
- Victorian gas market dispute resolution panel (Client: VENCORP, 2008) – Prepared a report and was cross examined in relation to the operation of the Victorian gas market in the presence of supply outages.
- Consultation on Major Airport Capital Expenditure Judicial Review (Client: Christchurch International Airport, 2008) - Prepared an affidavit for a judicial review on whether the airport consulted appropriately on its proposed terminal development. Addressed the rationale, from the point of view of economics, of separating the decision of ‘what to build’ from the question of ‘how to price’ in relation to new infrastructure.
- New Zealand Commerce Commission Draft Decision on Gas Distribution Charges (Client: Powerco, 2007-2008) - Prepared an expert statement about the valuation of assets for regulatory purposes, with a focus on the treatment of revaluation gains, and a memorandum about the treatment of taxation for regulatory purposes and appeared before the Commerce Commission.
- Sydney Airport Domestic Landing Change Arbitration (Client: Virgin Blue, 2007) - Prepared two expert reports on the economic issues associated with the structure of landing charges (note: the evidence was filed, but the parties reached agreement before the case was heard).
- New Zealand Commerce Commission Gas Price Control Decision – Judicial Review to the High Court (Client: Powerco, 2006) - Provided four affidavits on the regulatory economic issues associated with the calculation of the allowance for taxation for a regulatory purpose, addressing in particular the need for consistency in assumptions across different regulatory calculations.
- Victorian Electricity Distribution Price Review – Appeal to the ESC Appeal Panel: Service Incentive Risk (Client: the Essential Services Commission, Vic, 2005-2006) - Prepared expert evidence on the workings of the ESC’s service incentive scheme and the question of whether the scheme was likely to deliver a windfall gain or loss to the distributors (note: the evidence was filed, but the appellant withdrew this ground of appeal prior to the case being heard).
- Victorian Electricity Distribution Price Review – Appeal to the ESC Appeal Panel: Price Rebalancing (Client: the Essential Services Commission, Vic, 2005-2006) - Prepared expert evidence on the workings of the ESC’s tariff basket form of price control, with a particular focus on the ability of the electricity distributors to rebalance prices and the financial effect of the introduction of ‘time of use’ prices in this context (note: the evidence was filed, but the appellant withdrew this ground of appeal prior to the case being heard).
- New Zealand Commerce Commission Review of Information Provision and Asset Valuation (Client: Powerco New Zealand, 2005) - Appeared before the Commerce Commission for Powerco New Zealand on several matters related to the appropriate measurement of profit for regulatory purposes related to its electricity distribution business, most notably the treatment of taxation in the context of an incentive regulation regime.
- Duke Gas Pipeline (Qld) Access Arrangement Review – Appeal to the Australian Competition Tribunal (Client: the Australia Competition and Consumer Commission, 2002) - Prepared expert evidence on the question of whether concerns of economic efficiency are relevant to the non price

terms and conditions of access (note: the evidence was not filed as the appellant withdrew its evidence prior to the case being heard).

- Victorian Electricity Distribution Price Review – Appeal to the ORG Appeal Panel: Rural Risk (Client: the Office of the Regulator General, Vic, 2000) - Provided expert evidence (written and oral) to the ORG Appeal Panel on the question of whether the distribution of electricity in the predominantly rural areas carried greater risk than the distribution of electricity in the predominantly urban areas.
- Victorian Electricity Distribution Price Review – Appeal to the ORG Appeal Panel: Inflation Risk (Client: the Office of the Regulator General, Vic, 2000) - Provided expert evidence (written and oral) to the ORG Appeal Panel on the implications of inflation risk for the cost of capital associated with the distribution activities.

Qualifications and memberships

- Bachelor Economics (First Class Honours) University of Adelaide
- CEDA National Prize for Economic Development

D. Letter of instruction

JOHNSON WINTER & SLATTERY

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25 May 2021

Mr Jeff Balchin
Managing Director
Incenta Economic Consulting
Unit 1, 19-35 Gertrude Street
FITZROY VIC 3065

BY EMAIL

Dear Mr Balchin

Port of Melbourne

We act for the Port of Melbourne (**PoM**) in relation to the preparation of its Tariff Compliance Statement (**TCS**) for 2021-22 for submission to the Essential Services Commission of Victoria (**ESC**) by 31 May 2021. The TCS is required to be provided to the ESC pursuant to a Pricing Order made under the *Port Management Act 1995 (Vic)* (**PMA**).

PoM wishes to engage you to prepare an expert report in connection with the TCS. This letter sets out the matters which PoM wishes you to address in your report and the requirements with which the report must comply.

1 Background and framework

PoM is subject to a form of “compliance” regulation under a Pricing Order made by the Governor in Council under section 49A of the PMA. A copy of the Pricing Order is enclosed with this letter. Terms defined in the Pricing Order have the same meaning when used in this letter.

The ESC is responsible for overseeing a number of economic regulatory functions applicable to PoM, including monitoring and reporting on PoM’s compliance with the Pricing Order.

Clause 2.1.1(a) of the Pricing Order provides that Prescribed Services Tariffs are to be set so as to allow the Port Licence Holder (that is, PoM) a reasonable opportunity to recover the efficient cost of providing all Prescribed Services, determined by application of an accrual building block methodology. Prescribed Services provided by PoM include shipping channels, wharves and berthing facilities.

Pursuant to clause 4.1.1 of the Pricing Order, the accrual building block methodology applied by PoM must comprise:

- (a) an allowance to recover a return on its capital base, commensurate with that which would be required by a benchmark efficient entity providing services with a similar degree of risk as that which applies to PoM in respect of the provision of the Prescribed Services;

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- (b) an allowance to recover the return of its capital base; and
- (c) an allowance to recover its forecast operating expenses, commensurate with that which would be required by a prudent service provider acting efficiently; less
- (d) an indexation allowance.

Clauses 4.4.1 and 4.4.2 of the Pricing Order require (amongst other things) that, in determining a return of capital for the purposes of clause 4.1.1(b), each asset or group of assets must be depreciated using a straight-line methodology unless:

- (a) the application of the Tariffs Adjustment Limit (under clause 3.1.1 of the Pricing Order) means that the return of capital derived using a straight-line depreciation methodology is not capable of being recovered in the applicable Financial Year; or
- (b) the alternative depreciation methodology is reasonably likely to reduce the variance in the expected annual percentage changes in the level of Prescribed Services Tariffs through to the end of the Port Lease.

In addition to the requirements of clauses 4.4.2(b) of the Pricing Order, PoM's consultations with Port Users and other stakeholders have revealed (and you may assume for the purposes of your report) that Port Users and other stakeholders have a preference for approaches to depreciation and pricing that reduce price shocks and provide price stability.

Clause 4.4.3 specifies that the return of capital allowance must not be below zero in any Financial Year.

In its previous TCSs, PoM has adopted a depreciation approach that:

- has not recovered any depreciation from Prescribed Services Tariffs during the period from 1 July 2016 to 30 June 2021; and
- will therefore result in a closing capital base at 30 June 2021 that has not been adjusted downwards for any amount of depreciation in the roll forward process over that period.

PoM's current approach to depreciation is described in more detail in section 9.2.4 of PoM's 2020-21 TCS, a copy of which is enclosed with this letter.

The objectives of the regulatory regime, as set out in section 48 of the PMA, are:

- (a) to promote efficient use of, and investment in, the provision of prescribed services for the long-term interests of users and Victorian consumers; and
- (b) to protect the interests of users of prescribed services by ensuring that prescribed prices are fair and reasonable whilst having regard to the level of competition in, and efficiency of, the regulated industry; and
- (c) to allow a provider of prescribed services a reasonable opportunity to recover the efficient costs of providing prescribed services, including a return commensurate with the risks involved; and
- (d) to facilitate and promote competition—
 - (i) between ports; and
 - (ii) between shippers; and
 - (iii) between other persons conducting other commercial activities in ports; and
- (e) to eliminate resource allocation distortions by prohibiting a State sponsored port operator from providing a relevant service at a price lower than the competitively neutral price for that service.

As set out in section 8 of the *Essential Services Commission Act 2001* (Vic) (**ESC Act**):

- (a) in performing its functions and exercising its powers, the objective of the ESC is to promote the long term interests of Victorian consumers (the **objective**); and
- (b) in performing its functions and exercising its powers in relation to essential services, the ESC must, in seeking to achieve the objective, have regard to the price, quality and reliability of essential services.

2 Terms of Reference

Having regard to background and regulatory framework discussed above, PoM wishes to engage you to prepare an expert report which provides your opinion on:

- (a) Whether the approaches to depreciation adopted by PoM in its Tariff Compliance Statements submitted between 1 July 2016 and 30 June 2021 are alternatives to the straight-line depreciation methodology described in clause 4.4.1 of the Pricing Order, including the following elements of those approaches:
 - (i) setting the building block allowance for the return of the capital base (under clause 4.1.1(b) of the Pricing Order) to zero; and
 - (ii) carrying forward undepreciated capital in the capital base.
- (b) Whether there are alternative depreciation methodologies (i.e. alternatives to straight-line depreciation) that are reasonably likely to reduce the variance in the expected annual percentage changes in the level of Prescribed Services Tariffs through to the end of the Port Lease, including in periods where:
 - (i) the Tariffs Adjustment Limit prevents PoM from recovering any straight-line depreciation in the relevant Financial Year; and
 - (ii) the Tariffs Adjustment Limit prevents PoM from recovering some part of straight-line depreciation in the relevant Financial Year.
- (c) Whether there is any regulatory precedent for the methodologies or approaches described in questions (a) and (b) above.
- (d) How does the application of the methodologies or approaches described in questions (a) and (b) above compare to the application of the straight-line depreciation methodology described in clause 4.4.1 of the Pricing Order over the term of the Port Lease.

For the purposes of your analysis, you may rely on the enclosed forecasts, which include PoM's current forecasts of demand and expenditure for the term of the Port Lease (to 2066) along with the inflation rates and return on capital applied in past years and to be included by PoM in its 2021-22 TCS. The forecasts are merely that – forecasts, covering a period of 45 years, provided for the purposes of your analysis. No other reliance should be placed on the forecasts.

You should make your own assumptions as to the future return on capital and inflation rate to be used in your analysis and modelling for the balance of the Port Lease.

It is intended that your report will be submitted to the ESC with PoM's 2021-22 TCS. The report may be provided by the ESC to its own advisors. The report may also be considered by an appeal body, court or tribunal in the event that a relevant proceeding is commenced under the ESC Act.

The report will be reviewed by PoM's legal advisers and will be used by them to provide legal advice as to its respective rights under the Pricing Order and the PMA.

3 Compliance with the Expert Witness Code of Conduct

Enclosed are copies of:

- Form 44A to the *Supreme Court (General Civil Procedure) Rules 2015*, the Expert Witness Code of Conduct (**Code of Conduct**); and
- Victorian Civil & Administrative Tribunal Practice Note – PNVCAT2, *Expert Evidence* (**Practice Note**).

Please read and familiarise yourself with the Code of Conduct and the Practice Note and comply with them at all times in preparing your report and in the course of your engagement by PoM. Your report should contain a statement to the effect that the author of the report has read the Code of Conduct and the Practice Notice and agreed to be bound by them.

Your report must also clearly state your opinion(s) and the reasons for them and include the information and declarations required specifically by clause 3 of the Code of Conduct and clause 11 of the Practice Note.

Please also attach a copy of this letter of instruction to the report.

Yours faithfully

A handwritten signature in blue ink that reads "Johnson Winter & Slattery". The signature is written in a cursive style with a long, sweeping tail on the final letter.