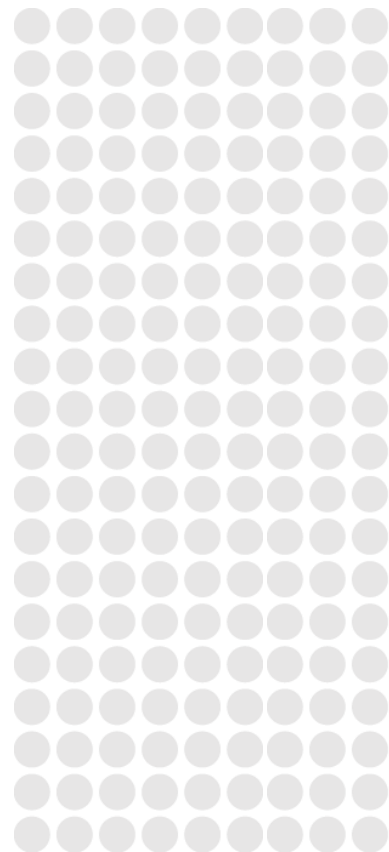




29 June 2017

regulatory treatment of inflation

**APA submission in response to AER
consultation.**



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Contents

1	This submission	1
2	Appropriate compensation for inflation?	4
2.1	Nominal regulatory depreciation	5
2.2	Forecast inflation in the PTRM, actual inflation in the RFM	7
3	VTS Access Arrangement revisions proposal	9
4	APA's responses to the AER's questions	12
4.1	Question 1	12
4.2	Question 2	12
4.3	Question 3	13
4.4	Question 4	13
4.5	Question 5	14
4.6	Question 6	14
4.7	Question 7	15
4.8	Question 8	15
4.9	Question 9	15
4.10	Question 10	16
4.11	Question 11	16
4.12	Question 12	17
4.13	Question 13	18
4.14	Question 14	18
4.15	Question 15	18



1 This submission

The way in which the Australian Energy Regulator (AER) treats inflation in its determinations has significant implications for the prices consumer pay for electricity and gas network services, and for the revenues earned by the providers of those services. As a major provider of gas transportation services, and as an owner and operator of electricity transmission assets, APA Group (APA) appreciates the opportunity to make this submission on the regulatory treatment of inflation.

Service providers have, the AER advises, raised two broad questions concerning the regulatory treatment of inflation. These are:

- Does the current method of estimating expected inflation produce the best estimate?
- Is there appropriate compensation for inflation in the framework of the AER's post tax revenue model (PTRM) and the asset base roll forward model (RFM)?

APA has raised, and sought to address, these questions in its recent revision proposals for the access arrangements for Roma to Brisbane Pipeline and the Victorian Transmission System.

APA's starting point has been its view that the current framework, comprising the RFM, the PTRM and the tariff variation mechanism in an access arrangement (price control mechanism in a revenue determination), delivers the approximately correct compensation for inflation when (and, indeed, only when) each of the following is equal to the actual inflation for which compensation is provided through the tariff variation/price control mechanism:

- the expected inflation thought to be embedded in the rates of return on equity and debt used in the PTRM to calculate the projected return on the RAB
- the forecast of inflation used in the PTRM to calculate the nominal regulatory depreciation
- the forecast of inflation used in the PTRM to calculate nominal capital and operating expenditures

regulatory treatment of inflation

APA submission in response to AER consultation.

- the forecast of inflation used in the smoothing process of the PTRM.

The compensation for inflation is, in these circumstances, approximately correct because the revenue earned by the service provider:

- delivers a return on equity at a rate which is approximately equal to the rate of return on equity component of the allowed rate of return¹
- delivers a return on debt at a rate which is equal to the rate of return on debt component of the allowed rate of return
- recovers, over the life of the regulated asset (assuming a single asset with a defined economic life), the investment in – the original cost of – that asset
- recovers projected operating and maintenance costs
- recovers the service provider's estimated cost of tax
- is the allowed revenue that was forecast using the PTRM.

If any of the estimates or forecasts of inflation made for application of the PTRM is not equal to the actual inflation used in the RFM and the tariff variation/price control mechanism, then there is a risk that the correct compensation for inflation will not be provided.

Better methods of estimating or forecasting inflation – the substance of the AER's first question – will, in APA's view, reduce the extent of any under-compensation or over-compensation for inflation arising from use of the current framework.

However, APA doubts whether any simple, mechanical approach to estimating or forecasting inflation (like those examined in ACCC/AER

¹ The return on equity delivered by the current framework is only approximately equal to the return on equity component of the allowed rate of return because the cost of tax in the allowed revenue calculation is not the same as the cost of tax on the revenue stream delivered by the tariff variation/price control mechanism (even when estimated and forecast inflation are the same, and are the same as actual inflation). Typically, the current framework of the PTRM and the tariff variation/price control mechanism biases downward the return on equity delivered to the service provider. This is not apparent from the PTRM, in which the delivered return on equity is calculated from the allowed revenue, and not from the revenue stream actually delivered to the service provider. If, as in the PTRM, the "delivered" rate of return on equity is calculated using the allowed revenue, and not the revenue actually delivered, the return on equity appears to be delivered at the equity component of the allowed rate of return.

regulatory treatment of inflation

APA submission in response to AER consultation.

Working Paper No. 11, *Best estimates of expected inflation: comparative assessment of four methods*, will consistently provide better estimates.

In APA's view, the regulatory treatment of inflation should rely less on estimates or forecasts made for extended periods, and more on mechanisms which adjust forecasts to "actuals" as those "actuals" are observed. In this way, the compensation for inflation will track more closely changes in prices as they occur.

APA's submission comprises two parts. In the first, APA sets out its view of a more pragmatic approach - the approach of its January 2017 proposal for revisions to the Access Arrangement for the Victorian Transmission System. In the second part of the submission APA responds to each of the 15 questions set out in the AER's April 2017 discussion paper *Regulatory treatment of inflation* (Discussion Paper).



2 Appropriate compensation for inflation?

The effects of inflation are explicitly taken into account in three parts of the AER's framework for determining the revenues earned by providers of regulated electricity and gas network services. They are the RFM, the PTRM and the tariff variation/price control mechanism.

The RFM "rolls forward" the regulatory asset base (RAB) from the beginning of the current regulatory period to the beginning of the next. Depreciation to be deducted when rolling forward the regulatory asset base is input into the RFM. It is to be in real terms – at the prices prevailing in the year immediately preceding the first year of the current regulatory period. The RFM then adjusts the real depreciation for each year of the current regulatory period using a measure of actual inflation.

The output of the RFM – the opening regulatory asset base at the start of the next regulatory period – is a key input into the PTRM. The PTRM essentially models a forecast of the revenue to be allowed to the service provider during the next regulatory period. In the allowed revenue calculation of the PTRM:

- expectations of inflation are embedded in the nominal rates of return on equity and on debt used to calculate the return on the projected RAB
- a forecast of inflation is used in the calculation of nominal regulatory depreciation
- capital expenditure (CAPEX) and operating expenditure (OPEX) forecasts, which are initially in real terms (prices in the year preceding the first year of the regulatory period for which the model is being applied), are re-expressed at current prices using an explicit forecast of inflation
- a forecast of inflation is used to smooth the allowed revenue stream.

The revenue which the service provider is allowed to earn in the first year of the next regulatory period is the smoothed revenue from the PTRM. The allowed revenue in the second year is then the allowed revenue in the first year adjusted by a smoothing factor X , and by actual inflation. The allowed revenue in each subsequent year is similarly calculated by adjusting the allowed revenue in the preceding year by the smoothing factor for that year, and by actual inflation.

In the regime of the National Electricity Law and the National Electricity Rules, these adjustments by the smoothing factor, and by actual inflation, precede annual tariff determination. In the regime of the National Gas Law and the National Gas Rules, the smoothed revenue from the PTRM is used to determine a reference tariff, which is then adjusted, for the second and subsequent years of the regulatory period, by the relevant X factor and by actual inflation.

As noted above, this framework has the potential to deliver the approximately correct compensation for inflation when the estimates or forecasts of inflation in the PTRM are equal to the actual inflation for which compensation is provided through the tariff variation/price control mechanism.

2.1 Nominal regulatory depreciation

The effects of inflation in the current framework are obfuscated by the use of a depreciation schedule which incorporates a form of indexation. The nominal regulatory depreciation of the PTRM has the effect of shifting depreciation across time, deferring the return of capital when inflation is high, and accelerating the return of capital when inflation is low.

If the method used to calculate regulatory depreciation in the PTRM incorporates a forecast of inflation, and the inflation used to roll forward the RAB is the same as that forecast, then it does not matter too much whether forecast of inflation used to calculate depreciation is higher, or lower, than:

- the expectations of inflation thought to be embedded in the nominal rates of return used in the PTRM
- the explicit forecasts of inflation used elsewhere in the PTRM
- the actual inflation used in the tariff variation/price control mechanism.

If these measures of inflation align, then, over the life of the regulated asset, the revenue delivered to the service provider:

- recovers the original cost of the asset
- delivers rates of return on equity and on debt which are (approximately in the case of equity) the equity and debt components of the allowed rate of return
- recovers projected OPEX

- recovers the service provider's estimated cost of tax.

This, of course, is nothing more than the well-known invariance principle that, if the service provider is allowed to earn its actual rate of return on the depreciated original cost of its investment, and if actual earnings equal allowed earnings, then the net present value of the investment is zero for any method of calculating depreciation.²

APA's conclusion here is qualified: it does not matter if the forecast of inflation used in regulatory depreciation calculations is "somewhat" higher or "somewhat" lower. The forecast used affects the depreciation profile, and the allowed revenue. If there is a large difference between the forecast of inflation used in the depreciation calculations and the other rates of inflation, the allowed revenue will be significantly higher or lower, in the next regulatory period (but lower or higher in subsequent regulatory periods), and this will have consequences for the level of tariffs and, in consequence, for the welfare of users of regulated services across time.³ It will also have consequences for the service provider.

The service provider's risk that the investment in the asset might not be recovered is reduced if depreciation is accelerated. This is why the depreciation method adopted in most commercial settings is straight line (effectively providing, in an inflationary environment, the maximum acceleration of capital recovery).

There is a trade-off between the cost of the additional risk born by the service provider when capital recovery is deferred, and the higher consumer surplus initially available when prices are set using a depreciation schedule which defers capital recovery. This trade-off has never been made explicit in the context of the depreciation method used in the PTRM. From an economic perspective, that method, based as it is on inflation adjustment of straight line depreciation, is as inherently arbitrary as the straight line depreciation on which it is based.

² See, for example, Richard Schmalensee (1989), "An Expository Note on Depreciation and Profitability under Rate-of-Return Regulation", *Journal of Regulatory Economics*, 1: pages 293-298.

³ See Timothy J Brennan (1991), "Depreciation, Investor Compensation, and Welfare Under Rate-of-Return Regulation", *Review of Industrial Organization*, 6: pages 73-87.

The depreciation calculation in the PTRM requires consistency in the treatment of inflation for depreciation purposes. It does not require that the inflation assumptions made for the depreciation calculations match other inflation assumptions made when applying the current framework.

2.2 Forecast inflation in the PTRM, actual inflation in the RFM

The use of forecast inflation in the PTRM and, subsequently, the use of actual inflation in the depreciation calculations of the RFM for the regulatory period for which the PTRM was applied will, if the actual inflation differs from the forecast, result in a difference between the recovery of capital built into allowed revenue and tariffs, and the recovery of capital assumed for roll forward of the regulatory asset base.

If actual inflation during a given regulatory period is less than the forecast of inflation previously made when using the PTRM to determine the allowed revenue for that period, the depreciation in the RFM will be higher than the planned recovery of capital built into allowed revenues and tariffs.

Conversely, if actual inflation is higher than the forecast of inflation made when using the PTRM, the depreciation in the RFM will be lower than the total depreciation planned to be recovered via tariffs determined from the allowed revenue of the PTRM.

Two possibilities arise:

- higher depreciation in RFM, lowering the RAB at the start of the next regulatory period below the level consistent the capital recovery which has previously been planned through use of the allowed revenue and tariffs of the PTRM, thereby precluding the service provider from recovering the original cost of its investment
- lower depreciation in the RFM, increasing the RAB at the start of the next regulatory period above the level consistent the capital recovery which has previously been planned through use of the allowed revenue and tariffs of the PTRM, thereby effecting recovery from users of an amount greater than the original cost of the service provider's investment.

Neither of these possibilities – potential under-recovery or over-recovery of the service provider's investment - is corrected through the operation of the tariff variation/price control mechanism.

regulatory treatment of inflation

APA submission in response to AER consultation.

When actual depreciation is lower than the forecast previously used in the PTRM, the service provider potentially under-recovers its investment. This under-recovery might be compensated through the operation of the tariff variation/price control mechanism but, given the way that mechanism is usually designed, it delivers a lower revenue when inflation is lower when it should be delivering a higher revenue because lower inflation has the effect, through the RFM, of bringing forward capital recovery.

When actual inflation is higher than forecast, the tariff variation/price control mechanism acts to raise the revenue earned by the service provider when it should have been lower to appropriately compensate the service provider for the lower required capital recovery effected by the deferral of depreciation in the RFM.

The practice of using a forecast of inflation when calculating nominal regulatory depreciation for the purpose of determining the total revenue for each regulatory year of an access arrangement period, but using actual inflation in the roll forward of the capital base from one access arrangement period to the next, is likely to lead to over-recovery or under-recovery of a service provider's investment in its pipeline system. Neither over-recovery, nor under-recovery, is conducive to efficient investment in the pipeline system, or to the efficient operation and use of the system; neither is it in the long term interests of consumers of natural gas.

This is an issue which APA has raised in its recent access Arrangement revisions proposal for the Roma to Brisbane Pipeline (RBP) and the Victorian Transmission System (VTS).



3 VTS Access Arrangement revisions proposal

To establish a sound basis for proceeding, irrespective of what had occurred in the past, APA used, in the RFM which was part of the access arrangement revisions proposal for the VTS (submitted to the AER on 3 January 2017), the forecast of regulatory depreciation made using the PTRM when that model was applied by the AER for its March 2013 Final Decision on the previous VTS revisions proposal. APA effectively set the “actual” inflation of the RFM equal to the forecast of inflation which had been used in the PTRM for the regulatory period 2013 to 2017.

In this way, APA sought to establish an approximately correct value of the VTS asset base at the start of the access arrangement period expected to commence on 1 January 2018.

Having established the approximately correct RAB at the commencement of the next access arrangement period, APA then proposed to:

- use, in the PTRM, for calculation of the total revenue for the access arrangement period, a forecast of inflation which is equal to actual inflation immediately prior to the start of the period
- annually update this forecast of inflation during the access arrangement period, using actual inflation, and progressively incorporate the effects of the changes in depreciation in reference tariffs through changes to the Scheduled Reference Tariff Variation Mechanism of the VTS access arrangement
- apply actual inflation in the RFM to establish the VTS asset base at the start of the next access arrangement period.

In effect, APA has proposed a method for the treatment of inflation which does not rely on difficult-to-make estimates or forecasts of inflation but, instead, seeks to use a limited and easily made forecast (actual inflation immediately prior to the start of the period), and to update that forecast to the “actual” annually.

APA's forecast of inflation would, initially, be applied in each year of the access arrangement period. In the process of reference tariff variation (in accordance with the Scheduled Reference Tariff Variation Mechanism of the VTS access arrangement revisions proposal), this forecast would be

regulatory treatment of inflation

APA submission in response to AER consultation.

updated for the second regulatory year of the access arrangement period. The updated forecast, to be used in varying the reference tariffs for (calendar) 2019, would be the year-on-year change in the June quarter CPI in 2018.

Tariff variation in subsequent regulatory years would use the year-on-year change in the CPI for the June quarter of the year preceding the year in which the varied reference tariffs are to apply.

The AER's post tax revenue model now incorporates the functionality required for annually updating the return on debt and for determining the effect of the updated return on total revenue and on reference tariffs (via updated X factors). APA has proposed to simply include actual and forecast inflation in the updating mechanism.

In the current version of the PTRM, the inflation forecast in cell G424 of the worksheet *PTRM input* is transferred to row 6 of the *Assets* worksheet, where it is used to calculate indexed straight line depreciation, and to index the capital base. These calculations can be made, with an updated forecast of inflation, by removing the link to input cell G424 and replacing it with links to a new series of inflation forecasts to be provided as inputs in the worksheet *PTRM input*.

The input of the new series of inflation forecasts can be via the currently empty cells of row 431 in the worksheet *PTRM input*, as shown in Figure 1 below.⁴ As these cells are currently empty, there is no need to insert a new row, and to risk compromising the integrity of the model.

Figure 1 - Proposed PTRM Input worksheet

ABCD	E	F	G	H	I	J	K
422	Cost of Capital						
423			2018-22				
424	Inflation Rate - WACC	f	2.00%				
425	Return on Equity	Re	8.50%				
426	Value of Imputation Credits (gamma)	γ	25%				
427	Proportion of Debt Funding	D/V	60%				
428							
429			2018	2019	2020	2021	2022
430	Trailing Average Portfolio Return on Debt		7.47%				
431	Inflation rate - Assets		2.00%	2.00%	2.00%	2.00%	2.00%
432							
433							

The trailing average portfolio return on debt and out turn inflation must be entered

⁴ The screen shots below are taken from the version of the PTRM lodged as part of APA's VTS Access Arrangement revisions proposal.

regulatory treatment of inflation

APA submission in response to AER consultation.

The inflation forecast in PTRM input cells G431:K431 would be linked, year by year, to the row 6 of the Assets worksheet, as shown below:

Figure 2 – Proposed link from PTRM input to Assets

	A	B	C	D	E	F	G	H	I	J	K
4		Year				2017	2018	2019	2020	2021	2022
5											
6		Inflation Assumption (CPI % increase)					2.00%	2.00%	2.00%	2.00%	2.00%
7		Cumulative Inflation Index (CPI end period)				100.0%	102.0%	104.0%	106.1%	108.2%	110.4%

Over the access arrangement period, the inflation figures in row 431 of *PTRM Input* would be progressively updated in a way similar to the updating of the return on debt in row 430.

In each year preceding the year for which the reference tariffs are to be varied, the forecast of inflation from the previous year (or, in the case of the first regulatory year of the access arrangement period, the forecast from the post-tax revenue model used to determine the initial revised reference tariffs for the period), is replaced by actual inflation for that year. The actual inflation (measured as the year-on-year change in the June quarter CPI for the year preceding the year for which reference tariffs are to be varied) would also be the forecast of inflation required, in the PTRM, for the remainder of the access arrangement period.

In the calculation of total (or allowed) revenue, the PTRM uses a forecast of OPEX. As noted earlier in this submission, that forecast is provided as an input in real terms and, within the model, it is re-expressed at current prices using an explicit forecast of inflation made prior to the start of the regulatory period. Subsequent to submitting its proposed revisions to the VTS Access Arrangement, APA has advised that the OPEX forecast might also be updated annually, using the most-recent forecast of inflation for the remainder of the access arrangement period, rather than leaving it escalated by the made prior to the start of the regulatory period.

These are, in APA's view, simple and transparent changes to the PTRM which would better account for inflation in the regulatory process.

4 APA's responses to the AER's questions

4.1 Question 1

Explain why you agree or disagree that the RBA inflation target method is more likely to provide best estimates of expected inflation than swap-implied estimates and bond breakeven estimates.

None of the RBA inflation target method, the use of data from inflation swaps, and the bond breakeven method appears to provide a better estimate of expected inflation than either of the other two methods.

The RBA inflation target method provides a "rough estimate" because it assumes, for eight of the 10 years of the period over which the inflation estimate is made that the RBA is targeting the mid-point of its target band.

If inflation is low in the target band, there is no implication that monetary policy settings must be changed to increase inflation and, in particular, move future inflation to the midpoint of the band. Inflation may remain low in the target band for an extended period.

If inflation is at the upper end of the target band, then changes to monetary policy settings can be expected to prevent inflation expectations from accelerating. The RBA can be expected to adjust its policy settings to lower inflation and depress inflationary expectations, but not to drive inflation below the lower limit of the target band, which might risk economically damaging deflation. Again, there is no implication that policy will be directed to achieving inflation at the midpoint of the target band.

4.2 Question 2

Explain why you agree or disagree that inflation swaps are a more robust and congruent market-based estimate of expected inflation than bond breakeven estimates.

The analysis presented in ACCC/AER Working Paper No. 11 suggests that inflation estimates made using inflation swap data may be more robust than bond breakeven estimates. However, APA is concerned that not much seems to be known about the market for inflation swaps in Australia. The analysis of the Working Paper is informed by research undertaken in the UK and US financial markets.

Furthermore, no consideration is given, in the Working Paper, to the question of whether estimates of inflation derived from inflation swaps, which are tied to changes in the CPI, measure the same underlying construct as bond breakeven estimates.

Little is known about expectations of inflation embedded in nominal asset prices, or about the ways in which those expectations are formed. In these circumstances, “congruence” cannot provide an ordinal ranking of estimators. APA finds the notion of “congruence” used in the Working Paper to be of little value in assessing alternative methods of estimating expected inflation.

4.3 Question 3

Do you agree that we should not rely on swap-implied estimates or bond breakeven estimates. Should we place some weight on each of the four methods?

As a substantial literature attests, the forecasting of inflation has proven difficult. APA sees no reason to expect that a relatively simple method might be found for the task of estimating the expectations of inflation embedded in nominal asset prices.

Some weight may need to be placed on each of the four methods of estimation which the AER has identified, but those weights will, themselves, be subjective estimates which may well change over time as economic conditions change.

4.4 Question 4

Do you consider that monetary policy has (or is perceived to have) lost its effectiveness in influencing economic activity and as a result inflation expectations?

APA is unable to offer a view on the effectiveness of monetary policy. How the effectiveness of monetary policy might be assessed, and the making of such assessments, are matters on which there are differing views among macroeconomists whose research focuses on monetary theory and policy.

4.5 Question 5

In the light of potential anchoring of long term inflation expectations to the RBA's target band, explain whether you consider we should simply estimate expected inflation based solely on the RBA target band, without adjusting for the RBA's short-term (2 year) inflation forecasts?

The RBA inflation target method provides a simple method of estimating inflation expectations using data which are publicly available. The simplicity of the method, and easy access to the data required for its application, make it a strong candidate for estimating inflation expectations for regulatory purposes.

The fact that long term inflation expectations appear to be anchored in the RBA's target band provides additional support the method. However, the extent of this support must be assessed carefully. The research which reports the anchoring of expectations in the target band reports only that inflation expectations lie within the range of 2% to 3%, and continue to lie within this band even when there are observed "inflation shocks". It does not indicate that those expectations are distributed around the mid-point of the band. It does not support an argument for simply estimating expected inflation as the midpoint of the band.

Adjustment using the RBA's short term inflation forecasts provides some information on where, in the band, expected inflation might be reasonably be expected to lie.

If the RBA target band is to continue to inform the forecasting of inflation for regulatory purposes, then, in APA's view, the RBA's short-term inflation forecasts must be taken into account.

4.6 Question 6

Provide reasons as to whether or not you agree that the RBA's short-term (2 year) forecasts are likely to outperform private-entity forecasts? If our approach is to continue to combine short term inflation forecasts with the target band, should we use the RBA's 2-year forecasts or use other survey estimates instead and why?

APA has not made any assessment of whether the RBA's short-term forecasts are likely to outperform private entity forecasts.

4.7 Question 7

Do you consider that swap-implied estimates are materially affected by various risk premia and biases? If so, do you consider that those biases and premia can be estimated robustly and removed from the swap-implied estimates?

The literature to which the ACCC/AER Working Paper No. 11 refers suggests that swap-implied estimates of inflation may be affected by various premiums and biases. However, that literature does not indicate to APA that the premiums and biases which may be present can be estimated robustly, and removed, as a matter of routine regulatory activity.

4.8 Question 8

Do you consider the limited tenors of indexed CGS are likely to result in the swap-implied forward inflation curve better reflecting the decomposition of market-implied forward inflation rates than the bond breakeven-implied forward inflation curve?

The availability of swap prices at more tenors than is the case for indexed CGS may result the swap-implied forward inflation curve better indicating inflation rates than the bond breakeven-implied forward curve.

However, as noted above, APA is concerned that swap-implied estimates of inflation may be affected by various premiums and biases, about which not a great deal is known at the present time, and these premiums and biases may be difficult to remove. APA is also concerned that swap-based estimates of inflation may not be measuring the same construct as bond breakeven estimates.

4.9 Question 9

Do you consider that bond breakeven estimates are materially affected by various risk premia and biases? If so, do you consider that those biases and premia can be estimated robustly and removed from the bond breakeven estimates?

APA is of the view that bond breakeven estimates are affected by various risk premiums and biases incorporated into bond yields.

A brief examination of the "risk premiums" literature referred to in ACCC/AER Working Paper No. 11 leads us to the view that the premiums and biases

which may be present in bond yields cannot be estimated robustly, and removed, as a matter of routine regulatory activity.

That said, bond breakeven estimates provide an indication of the expectations of inflation held by financial market participants.

4.10 Question 10

Should we consider survey-based estimates of 10-year inflation, even if the data cannot be publicly reported?

Survey-based estimates should be considered even if the data cannot be publicly reported, but only if the way in which those estimates are made can be made transparent as part of the regulatory process.

4.11 Question 11

Is there an adjustment to the PTRM that could be made to remove the incentive to insert bias in to the inflation expectation? Does this adjustment still achieve the same inflation compensation outcomes?

If the forecast of inflation used in the PTRM is lower than the expectation of inflation believed to be embedded in the allowed rate of return on equity then, other things being equal, the PTRM will deliver a return on equity higher than the allowed rate of return.

Conversely, if the forecast of inflation used in the PTRM is higher than the expectation of inflation believed to be embedded in the allowed equity return then, other things being equal, the PTRM will deliver a rate of return on equity lower than the allowed rate of return.

If the forecast of inflation used in the PTRM is the same as the expectation of inflation believed to be embedded in the allowed rate of return on equity then, other things being equal, the PTRM will deliver the allowed return on equity.

APA does not see here a problem which calls for an adjustment to the PTRM to remove incentives to the bias inflation expectations or forecasts used in the model. However, as discussed earlier in this submission, APA is of the view that relatively minor changes can be made to the PTRM to reduce the impact of unavoidable error in forecasting inflation.

A forecast of inflation is required which should, among other things, match the expectation of inflation embedded in the (nominal) allowed return on equity. That expectation of inflation embedded in equity returns is not observable, and ascertaining whether a particular forecast of inflation is either too low, or too high, will always be difficult.

4.12 Question 12

Should inflation compensation be set in real or nominal terms? Should inflation compensation be set in real or nominal terms at the regulatory asset base level or at the equity and debt level? Explain why your selection is preferable.

The current framework of the RFM, the PTRM and the tariff variation/price control mechanism provides a nominal return on an original cost asset base.

If the forecast of inflation used matches the expectations of inflation embedded in the allowed rate of return, and is subsequently realised, the framework returns the original cost of the service provider's investment plus a return on investment at the allowed – nominal – rate. There is approximately correct compensation for inflation.

APA sees little gain from changes which would attempt to set inflation compensation on a real base. The issues would shift from the treatment of inflation in the current framework to the treatment of inflation in the estimation of base real rates of return.

Rates of return on debt used to determine allowed rates of return are nominal rates embedding lenders' expectations of inflation over 10 years. Removing those expectations, and adding back some form of inflation compensation, will unnecessarily complicate the regulatory process. The estimation of an allowed nominal rate of return on equity is already problematic. Estimating real rates of return on equity will significantly compound the problems.

4.13 Question 13

Are there preferable changes to achieve the appropriate inflation compensation that have regard to the relevant items in the NER, minimise impact to other building blocks and do not reduce regulatory stability and certainty?

See the discussion of APA's VTS Access Arrangement revisions proposal in section 3 of this submission.

4.14 Question 14

Are there changes to the inflation lag approaches that can be made that ensure appropriate matching of inflation periods? If so, how are they materially better?

The inflation lag approach carries the risk of introducing error into the compensation for inflation provided by the scheme of the RFM, the PTRM and the tariff variation/price control mechanism.

However, the use of lagged inflation recognises the reality that commonly used measures of inflation are published no more frequently than quarterly.

The use of lagged inflation is yet another instance of the need for a pragmatic approach to the regulatory treatment of inflation.

4.15 Question 15

If changes are made to reduce inflation risk, should the median credit rating or the equity beta be adjusted in the short term? Are there other parameters that also should be adjusted?

The risk that a service provider is not appropriately compensated for inflation within the framework of the RFM, the PTRM and the price control mechanism is, in APA's view, a risk which arises not from exposure to inflation per se, but from the possibility of error in regulatory treatment of inflation. It is not a systematic risk requiring an adjustment to the beta used in establishing the allowed rate of return on equity.

APA doubts whether correction of any errors in the regulatory treatment of inflation – which would be limited to effects, either negative or positive, on service provider revenues – would be sufficient to lead to a change in the median credit rating of relevant benchmark entities.