Review of Irrigation Prices

Form of Regulation

SunWater Submission

January 2011

Contents

Summary

The QCA has published a paper by NERA examining the form of regulation to be applied to irrigation pricing. Essentially, the options are for a price cap or a revenue cap.

Since the release of the issues paper, the QCA Ministers have issued a revised referral notice to the QCA, which requires the Authority to recommend prices that recover efficient operating, maintenance, administrative and renewals costs (lower bound costs). The QCA is also required to recommend regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with recovering lower bound costs that are outside the control of SunWater.

SunWater submits that the demand for water from its customers is a risk that is beyond its control, and appropriate regulatory arrangements must therefore be set.

In responding to this risk, SunWater's preference is for tariffs to be set so that the consumption charge recovers costs that vary with the volume supplied – that is electricity costs of pumping.

SunWater's submission also considers the issues of review triggers and price review mechanisms as they are significant in terms of SunWater's overall regulatory regime and need to be considered given the requirements of the revised referral notice.

SunWater submits that price review triggers should apply where foreseeable but uncertain events occur, and also where unforeseen events occur. There is also a need to implement specific regulatory arrangements to respond to actual changes to electricity prices over the regulatory period, given these prices are set annually, are difficult to predict and are outside SunWater's control.[1]

[1] This situation arises because franchise tariffs are the lowest-cost option for electricity procurement, however these tariffs are subject to annual review by the QCA.

1. Introduction

The Queensland Competition Authority (QCA) is to recommend prices for SunWater's irrigation customers. The QCA has released an issues paper prepared by NERA Economic Consulting (NERA). The issues paper is titled 'Form of Price Control: SunWater Water Supply Schemes'.

Since the release of the issues paper, the QCA Ministers have issued a revised referral notice to the QCA, which require the Authority to recommend prices that recover efficient operating, maintenance, administrative and renewals costs (lower bound costs). The QCA is also required to recommend regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with recovering lower bound costs that are outside the control of SunWater.

SunWater's proposed approach for tariff structure is to set consumption charges to recover the variable costs of supply (ie electricity for pumping), with the balance of fixed costs recovered in a fixed charge. Under this approach, the form of regulation becomes less relevant as the tariff structure itself deals with demand risk. This was noted by NERA:[2]

> *If a firm's tariff structure was perfectly aligned with its cost structure, then under a price cap a change in demand would be perfectly offset by its change in costs. Likewise, if demand could be accurately predicted then the regulated entity could always recover its costs with precision... In the absence of either of these conditions being met it is necessary to consider the form of price control as one means of providing greater certainty for a firm's revenues (net of variable costs).*

SunWater's submission is predicated on the QCA accepting SunWater's proposed approach for tariffs. If this is not accepted, then a revenue cap should be adopted.

This submission is structured as follows:

- Section 2 discusses the risk allocation issues raised by NERA;
- Section 3 summarises the pricing efficiency aspects of SunWater's proposed tariff structure;
- Section 4 addresses the revenue adequacy issues raised in the NERA report;
- Section 5 examines the incentive mechanisms raised by NERA;
- Section 6 sets out SunWater's proposals for review triggers; and
- Section 7 concludes the report.

.

[2] NERA (2010). p13.

2. Allocating Risk

There are three types of risk to consider in relation to the form of regulation:

- demand risk – namely the variability in customer demand (water usage);
- supply risk[3] – the variability in the amount of water available to individual WAE holders (ie the announced allocation) ; and
- forecasting risk – the risk of variation between actual and expected sales.

It is also important to consider the asymmetry of volume risks in the case of SunWater. These matters are considered below.

2.1 Demand Risk

Demand risk refers to the risk of customer demand being different from forecast, or in other terms the variability in customer demand.

NERA's issues paper acknowledged the ability of irrigation customers to manage their own demand-supply balance:[4]

> *…SunWater's customers appear to have relatively greater scope to manage demand by holding excess entitlements, using temporary trade markets or sourcing additional supplies (eg, groundwater). Customers also have some ability to manage risk by altering crop type and quantity. Alternatively some irrigators have capacity to diversify into several crop types including some that require little water. … Compared to SunWater, it may therefore be more appropriate for SunWater's customers to bear more demand forecast risk in the form of a revenue cap.*

Furthermore, demand for irrigation water is heavily influenced by climatic conditions. For example, seasons with higher local rainfall will usually lead to lower demand for irrigation water. Some customers also have a range of other sources available to them, such as unregulated entitlements for groundwater or flood harvesting.

Separate consideration of demand risk may be warranted in relation to spare capacity, particularly where the business has invested in spare capacity in anticipation of major demand growth. NERA considered this scenario (albeit in relation to supply risk)[5]:

> *If SunWater anticipates that greater demand may be met by future customers and there is the hydrological capacity available, SunWater may invest in scheme expansion. If the demand associated with this investment is underestimated then adequate infrastructure capacity will not be available and customers may seek alternative sources of supply.*
>
> *Where demand is overestimated, SunWater may be left with substantial excess capacity until the demand forecast materialises. Given that SunWater has a comparative advantage in estimating new demand, this risk, which could characterised as supply risk, should be borne by SunWater.*

However, this is not relevant to SunWater, as all WAE in its water supply schemes have been allocated. In a few schemes, SunWater holds a portion of the WAE issued, in which case SunWater submits that it should be treated no differently to other WAE

---

3 In the context of the supply regime between WAE holders and dam owner, supply risk relates to the risk of water being available to the WAE holder under their entitlement.

4 NERA (2010)., p 29.

5 NERA (2010), p29.

holders in so far as cost allocation and tariffs. This means that SunWater will bear the holding costs of its WAE in the same manner as all other users. Hence SunWater (as a WAE holder) bears the demand risk for its own WAE as do all other WAE holders in the scheme.

Furthermore, existing customers do not bear the costs of investment in additional capacity. That is, SunWater bears the holding costs of the WAE generated from any new storage development. [6]

In summary, SunWater endorses NERA's conclusions that:

> *In the irrigation sector, SunWater's customers, rather than SunWater, are responsible for managing their supply-demand balance and have greater means of altering consumption compared to SunWater. In this case, it may not be appropriate for SunWater to bear greater demand risk than its customers.*

However, as noted by NERA, this need not mean that a revenue cap is required if tariffs are structured so that consumption charges recover the variable costs of supply only.

2.2 Supply Risk

Under the existing supply regime, customers are responsible for managing their demand-supply balance and sourcing water according to their needs.

History has shown that irrigators can expect variability in the volume of water available under their WAEs. Indeed, the water planning processes that formally established these entitlements accounted for such variation when setting water allocation security objectives (WASOs).

As noted above by NERA, WAE holders are responsible for managing the risks associated with variable water availability under their entitlements.

SunWater's role is to store and transport the water available to customers under these entitlements, and as such should not bear the risk of water availability. This is consistent with the broader policy position on the assignment of supply risks to entitlement holders, under the National Water Initiative:[7]

> *Water access entitlement holders are to bear the risks of any reduction or less reliable water allocation, under their water access entitlements, arising from reductions to the consumptive pool as a result of:*
>
> *(i) seasonal or long-term changes in climate; and*
>
> *(ii) periodic natural events such as bushfires and droughts.*

SunWater should therefore not be expected to bear supply risks as these are clearly risks to be managed by the holders of water entitlements. Furthermore, SunWater does not actively manage to mitigate future supply risks nor incur costs or charge customers in relation to such measures. For example, SunWater does not develop contingency supply plans in order to manage the demand-supply balance through a drought. Nor does SunWater develop drought management plans under the *Water*

---

6 This is set out in more detail in SunWater's separate submission on its service framework, referenced earlier.

7 Intergovernmental Agreement on a National Water Initiative, 2004, paragraph 48.

Supply (Safety and Reliability) Act 2008[8]. *Indeed that Act* specifically exempts these plans applying to water access entitlement holders, [9] consistent with the notion that WAE holders are individually responsible for managing their supply risks.

SunWater does not have a role in demand management, as entitlement holders are responsible for managing their individual demand-supply balance.[10] Hence these are not relevant considerations for determining the appropriate form of regulation.

2.3 Forecasting Risk

The variability in demand and supply generates significant difficulties for demand (water use) forecasting. There can be major changes in supply conditions over a regulatory period given the variability of inflows to storages. Similarly, demand conditions can change substantially regardless of the water storage position due to the timing, location and extent of local rainfall on irrigated cops.

The difficulties are evidenced by the variation between actual and forecast demand over the period of the current price paths. Figures 1 and 2 provide an overview of the volumes delivered in SunWater's schemes as an average over the four of the five years to date compared to the forecast average used for the current price paths, and show significant variation from forecast. Importantly, this variation is mostly on the downside, with deliveries well below that assumed for pricing purposes.

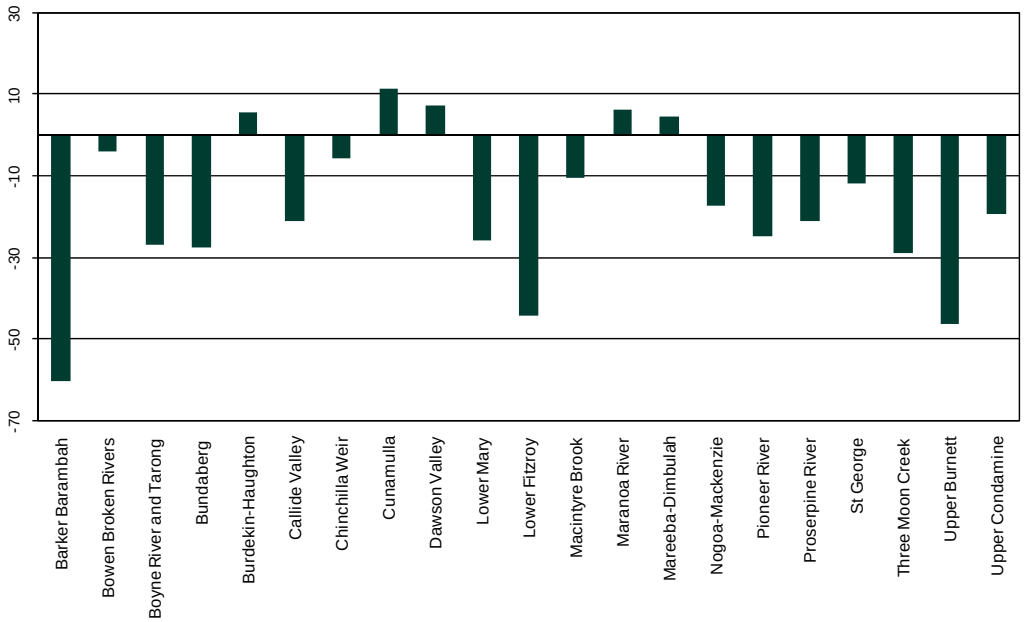
Figure 1 % Variance to price path forecasts for distribution systems (2006/7 – 2009/10)

8 This is different to critical water sharing arrangements under Resource Operations Plans, which are concerned with water sharing rather than managing a demand-supply balance through a period of restricted supply.

9 Refer to S122(a) in particular.

10 Demand management should not be confused with the application of water sharing rules under a Resource Operations Plan. Demand management is primarily aimed at maintaining a demand-supply balance at least cost. The water sharing rules are a statutory instrument to assign water in accordance with entitlements. Moreover, SunWater does not set nor control water sharing rules, but is responsible for applying them under its Resource Operations Licence.

Figure 2 % Variance to price path forecasts for bulk water tariff groups (2006/7 – 2009/10)



Under the current tariffs, where consumption charges are typically set to recover 30% of lower bound costs regardless of the underlying cost structure,, lower demands than forecast mean that lower bound costs will not be recovered. Under a price cap regime, which currently exists in most SunWater schemes, this situation clearly has implications for cost recovery and overall financial viability.

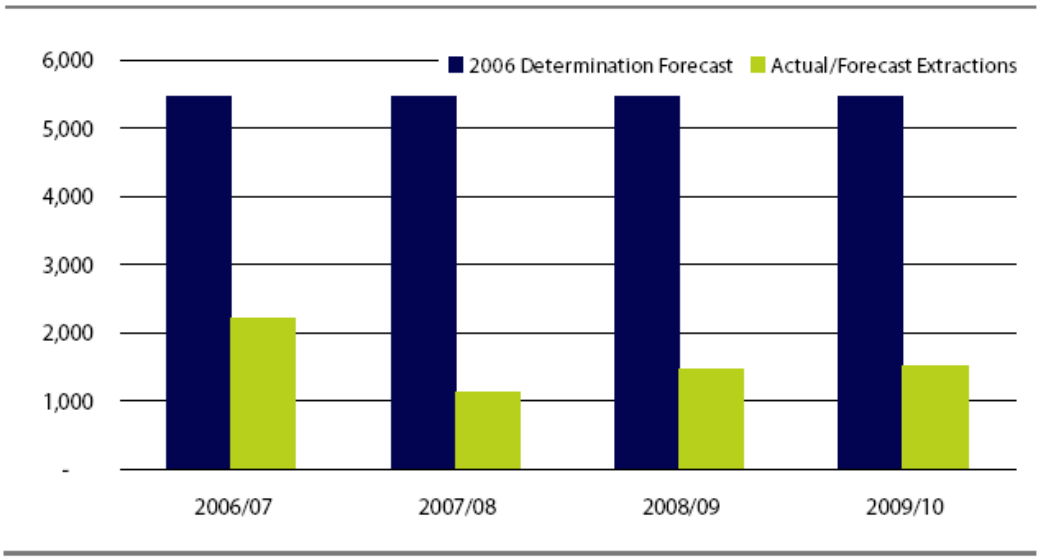
This forecasting environment makes the QCA's task of reviewing or setting demand extremely difficult and in turn exposes both SunWater and customers to significant risk of regulatory error should a price cap be adopted. Indeed, NERA's issues paper highlighted the Essential Services Commission's (ESC) similar concerns[11]:

> *... the ESC noted that potential revenue volatility in the rural sector was high and so there were benefits to ensuring that a business "did not unduly gain or suffer as a result of actual sales being materially different from forecasts".*

The Independent Pricing and Regulatory Tribunal (IPART) has also experienced difficulties in forecasting irrigation water demand. For example, IPART adopted a long-run average using a hydrologic model to forecast demand. Actual demand was only 28% of this forecast, over the regulatory period (refer below).

[11] NERA (2010), p36.

Figure 3 IPART forecasts versus actual extractions – 2006 Determination (GL)



Note: Actual for 2009/10 is forecast.

Data source: State Water Corporation submission to IPART 2010 Pricing Determination, p 9-1, September 2009.

Source: IPART. Review of Bulk Water Charges for State Water Corporation, from 1 July 2010 to 30 June 2014. Draft determination and draft report, March 2010.

It is important to note that the risk of forecasting error does not arise under SunWater's proposed tariff structure. For example, if consumption charges recover the variable cost of supply only, then fixed (and variable) costs will be recovered regardless of actual demand. In turn, no windfall gains or losses will arise due to forecasting error under this regime.

2.4 Risk Asymmetry

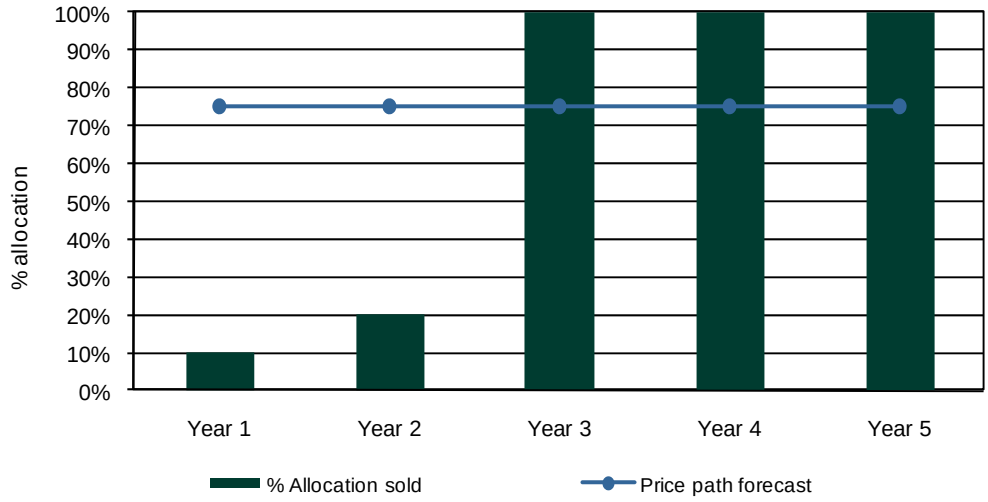
There are of course both upside and downside consequences from a regulated business bearing volume risk. For example, there is potential upside from sales reaching above forecast which, it might be argued, compensates for the business bearing such risk under a price cap. However, volume risk is asymmetric for SunWater as water sales are capped in accordance with users' entitlements, as no more than 100% of the nominal WAE can be made available in any year.

Consider the scenario where, for a scheme in which the price paths are based on a demand forecast of 75% of WAE, and drought conditions result in only 10% and 20% of total entitlements being supplied to customers in the first 2 years of the 5 year pricing period. Even if SunWater is able to supply 100% of entitlements to customers over the remaining 3 years, the total volume supplied will be below the forecasted volume on which the price path was based. [12]

This will result in SunWater failing to recover its efficient costs for this scheme. This scenario is demonstrated in Figure 4.

[12] It should be noted that even where 100% of WAE is available, water use can be well below this level in any case. For example, water use in the Mareeba-Dimbulah water supply scheme is typically well below 100% of WAE, despite the fact that those WAE have never been restricted.

Figure 4 Example of the limitations on SunWater's upside under a price cap



This example demonstrates that SunWater's potential upside is significantly constrained due to demand and supply characteristics. As a result, SunWater is not sufficiently compensated for the volume risk to which it is subject under a price cap.

SunWater's position

SunWater submits that the holders of WAE are clearly responsible for managing their own demand-supply balance, and in doing so are responsible for supply risks. Furthermore, SunWater cannot control customer demand and the referral notice requires the QCA to consider appropriate regulatory arrangements to manage this risk and ensure lower bound costs are recovered.

This risk should be dealt with through appropriate tariff structures, as proposed by SunWater, which will meet the revenue adequacy objectives of the referral notice while also sending efficient price signals to irrigators. SunWater's rationale is set out in more detail in its submission on tariff structure.

However, if SunWater's proposed tariff regime is not accepted by the QCA, and instead consumption tariffs are set to recover some portion of fixed costs, then a revenue cap should apply.

3. Pricing Efficiency

Pricing efficiency relates to whether prices are cost-reflective and whether there is flexibility in pricing design.

SunWater has proposed a tariff structure that signals to irrigators the variable costs arising from their demand decisions. As set out in SunWater's submission on tariff structure, this approach has also been adopted by the Australian Competition and Consumer Commission (ACCC) in recommending regulatory arrangements for water supply in the Murray-Darling Basin.:[13]

> *The value assigned to an additional ML of water consumed by a bulk water customer within the basin reflects the market price of water (assuming that*

[13] ACCC. *Issues Paper. Bulk Water Charge Rules* (July 2008). pp45-46

customer can trade their water) plus the cost of the storage and delivery services at the margin. Hence, the variable component of the bulk water charge should be set with reference to the marginal cost of storage and delivery.

As a result, the structure of delivery charges should reflect the underlying cost of providing the service, that is, volumetric charges should recover variable costs and fixed charges should recover fixed costs…

A pricing structure where the volumetric charge exceeds the actual variable cost of supply will generally result in under utilisation of the service, since the price for delivery of an additional unit (ML) of water exceeds the marginal cost of delivery. The scarcity value of water is established through water markets and water resource efficiency is promoted by the efficient functioning of water markets.

NERA's issues paper considered that while a cost-reflective tariff structure represents the optimal way to achieve efficient prices, there may be constraints that prevent the alignment of tariff and cost structures. In this case, NERA states that the provision of revenue certainty should be the main factor in relation to the choice of the form of price control. This implies that where cost and tariff structures cannot be aligned, a revenue cap is the more appropriate form of regulation.

Nonetheless, SunWater's proposed tariff regime achieves the requirements for pricing efficiency.

SunWater's position

SunWater submits that pricing efficiency is best achieved under its proposed tariff regime.

4. Revenue Adequacy

Where the regulated entity has limited ability to either increase or decrease sales, the revenue adequacy becomes a key consideration for determining the form of regulation.

NERA also noted the implication of lower bound pricing in terms of financial risks:[14]

> *Revenue adequacy is particularly important for SunWater, which has a history of lower bound pricing. Since lower bound pricing does not provide for a specific return on assets, there is little margin to continue operations if revenues are less than costs for a sustained period.*

As set out above, SunWater has no control over the level of sales and consequently revenues.

A revenue cap accords with this lack of control over sales, and is necessary to deliver revenue stability and address the risks associated with variability in demand. This was supported by NERA's issues paper, which noted that while revenue caps also hold the disadvantage of not incentivising the regulated entity to make additional sales, this was less applicable to SunWater given its inability to respond to incentives to increase or decrease output[15].

However, concerns about revenue adequacy due to demand risks are not relevant under SunWater's proposed tariff structure, as costs will be recovered regardless of actual demand.

5. Incentive Mechanisms

Incentive mechanisms are implemented to provide regulated entities with incentives to reduce costs by increasing operational efficiency. Typically, the incentives for a regulated entity to improve operational efficiency fall in the later years of the regulatory period as the entity is able to improve its operating position by deferring efficiency improvements until the next regulatory period, where it is able to benefit from the efficiency improvements over a longer time period.

This lack of uniformity in terms of the incentives provided to the regulated entity over the regulatory period was highlighted as a major issue in NERA's issues paper. It was proposed by NERA that this issue be addressed through the implementation of an "efficiency carry-over" mechanism. This allows the regulated entity to retain efficiency savings for a fixed period of time, rather than for the remaining time left in the regulatory period.

SunWater's position

SunWater supports the application of an 'efficiency carry-over' mechanism to its operating expenditure.

[14] NERA (2010), p29.
[15] NERA (2010), p 30.

6. Review Triggers

During the regulatory period, it is plausible that unforseen events may occur that have material cost implications. Also, there are a number of cost risks that are foreseeable, but uncertain.

SunWater submits that the regulatory arrangements should allow for a price review trigger in these situations, and its proposals are set out below.

6.1 Unforseen Events

It is common regulatory practice to establish review mechanisms in response to unforseen events, such as changes in law or regulation. For example, the ESC allowed such a provision for rural water businesses, including Goulburn-Murray Water in its 2008 price review[16].

6.2 Identified But Uncertain Events

SunWater has identified a number of cost risks during the regulatory period that are outside of its control. These include:

- annual changes to franchise to electricity tariffs (discussed further below);
- the possible removal of regulated electricity tariffs[17] which could have a significant impact on the cost of electricity;
- the introduction of regulatory measurement standards that require upgrades to meters;
- the introduction of water planning and management charges in respect of SunWater's distribution loss entitlements for channel systems[18];
- damage to SunWater's assets, to the extent that such damage is not recoverable under insurances;
- the ongoing availability of key chemicals for channel weed control;
- impacts from the basin-wide water plan for the Murray Darling Basin, in relation to SunWater schemes captured under that plan; and
- the schemes relating to the reduction of greenhouse gases that may have implications for electricity prices.

An allowance for these risks could be incorporated into the cost forecasts used for pricing. However, while these events are possible, they may not emerge. Moreover, their timing and cost implications are difficult to predict. Hence including these costs into forecasts and prices will be speculative, and is likely to produce windfall gains or losses. These events are also set out in various Network Service Plans.

---

16 ESC. 2008 Water Price Review . Goulburn-Murray Water Determination 1 July 2008 – 30 June 2013. (June 2008). p13.

17 As recommended in: Queensland Competition Authority. *Review of Electricity Pricing and Tariff Structures – Stage 1.* (September 2009). p6.

18 National Water Commission. Australian Water Reform 2009. Second Biennial Assessment of progress in implantation of the National Water Initiative. (September, 2009) p178.

6.3 *Price review mechanism – changes to electricity costs*

SunWater currently procures electricity through franchise tariffs. These tariffs present the lowest cost option for SunWater's pumping installations used for irrigation water supply.

These franchise tariffs are subject to annual review by the QCA. The change in price has historically been above inflation, and has varied significantly between years. Accordingly it is very difficult to forecast changes in franchise tariffs with any precision.

Furthermore, SunWater is not able to manage or control the risks of changes to electricity prices, except if it procured energy from the contestable market under long-term contracts. In this instance, only the energy price component could be secured, with network charges still subject to periodic regulatory review. In any case, changing to the contestable market is an irreversible decision and would result in far greater electricity costs compared to franchise tariffs.

SunWater submits that the best approach is to establish review triggers that allow for prices to reflect actual electricity prices, in order to avoid windfall gains or losses arising from forecasting errors of franchise tariffs. This accords with the requirements upon the QCA under the referral notice to recommend appropriate regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with lower bound costs outside the control of SunWater.

6.4 *Other Price Review Mechanisms*

In general, it is proposed that the regulatory arrangements allow for a pass through of costs arising from:

- an unforseen event occurring; or
- pre-approved events occurring such as those set out above.

In relation to a materiality threshold, SunWater submits that:

- the threshold is applied for each bulk water and distribution system;
- for the pre-approved events above, no threshold is applied;
    - for unforseen events, no threshold is set given prices only recover the basic (lower bound) costs of supply and to set a threshold above this level will result in these costs going unrecovered, which is contrary to the requirements of the referral notice.

7. Conclusion

SunWater has proposed a tariff regime that aligns fixed and variable costs to fixed and consumption tariffs.

SunWater notes that the NERA issues paper supports the allocation of demand risk to customers, rather than SunWater. SunWater's proposed tariff regime is consistent with this allocation of risk, and also sends appropriate price signals to customers. Adopting SunWater's tariff approach removes the need to consider a revenue cap in order to assign demand risk to customers, and also avoids the difficulties of having to

forecast demand to set a revenue cap. However, if SunWater's tariff proposal is not accepted by the QCA, then a revenue cap should be adopted.

It is also important that the regulatory arrangements enable SunWater to recover lower bound costs and that it is not exposed to risks that it cannot control. SunWater's proposed tariff regime goes some way to achieving these outcomes.

In addition, price review arrangements should be implemented that deal with risks outside the control of SunWater, including risks that are foreseeable but difficult to predict, including changes in franchise electricity tariffs. Accordingly, the regulatory arrangements should include price review mechanisms for these and other, unforseen risks.