SunWater

MAKING WATER WORK

Background paper

Cost forecasting assumptions

January 2011

Introduction

In order to produce the cost forecast presented in the Network Service Plans (NSPs) SunWater has made assumptions about the prices of inputs. The purpose of this paper is to outline these assumptions and the basis upon which they have been made.

General approach

SunWater's general approach for forecasting the cost of inputs has been to adopt the Consumer Price Index (CPI) as an indicative, objective measure of price growth. In doing so, SunWater has adopted the mid-point of the target range set for the Reserve Bank of Australia, being 2.5%. This is consistent with the Queensland Competition Authority's (QCA) approach for the Gladstone Area Water Board (GAWB), where CPI (at 2.5%) was adopted as the general approach to cost escalation.[1]

However, for some inputs there is clear evidence that the rate of price change will be different to the CPI. These inputs are:

- Labour;
- Electricity; and
- Contractors and materials.

The balance of this paper sets out the assumptions used for these input costs and the rationale for a different escalation factor to CPI in the case of labour, contractors and materials.

Labour

These are the direct labour costs associated with operations, corrective and preventative maintenance activities. Labour costs do not include support labour costs such as asset management, scheduling, purchasing and so on. These costs are booked directly to jobs within each activity.

Salaries and wages are projected to increase in nominal terms at 4% per annum until the completion of SunWater's current Enterprise Bargain Agreement (EBA) in June 2012.

After that time, the expenditure forecasts assume that salaries and wages will rise in line with inflation. Any wage increases above inflation have been assumed to be offset through productivity improvements.

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[1] Queensland Competition Authority. *Final Report: Gladstone Area Water Board: Investigation of Pricing Practices* (June 2010). pp141-142

Electricity

These are the direct electricity costs associated with operating activities including pumping costs. Rather than introduce forecasting risk in relation to electricity SunWater has projected electricity costs using an indicative assumption that electricity prices will increase at the CPI. These forecasts have been made on the premise that electricity prices are a factor beyond the control of SunWater and, that adjustments will be required to account for the actual changes in electricity prices.

SunWater's NSPs and submissions relating to Form of Regulation and Tariff Structures raise this issue. In these documents SunWater proposes that tariffs be cost reflective to mitigate volume risk and that consumption charges recover the variable costs of supply, namely electricity costs for pumping. The consumption tariffs would then be adjusted each year to refect the impact of changes to the retail electricity prices.

In some bulk water schemes, electricity costs do not vary with demand and hence would not be recovered through consumption charges. For example, costs associated with pumping into offstream storages do not bear a relationship to water taken. In cases where it is not practical to make an annual adjustment to the electricity component of the variable tariff, SunWater proposes to maintain a running balance across the price path with a revenue neutral 'unders and overs' adjustment applied to prices for the next price path to account for difference between forecast and actual electricity costs. These costs will vary not only with changes to electricity prices, but also in accordance with changes in year-on-year pumping into offstream storages, which will depend upon streamflow events during each year.

SunWater has not included any real electricity price increases on the basis that the above risk sharing arrangements are implemented

It is important to note that SunWater has no control over electricity prices, as it currently utilises Franchise Tariffs as these represent the lowest cost arrangements for its bulk water schemes and distribution systems. Even if it were to move to the contestable market, it would only have limited control over the energy component to prices, through prudent procurement practices, and would still bear the risks of changes to network charges. Indeed, the QCA acknowledged this situation when accepting GAWB's forecast increases for electricity costs by GAWB.[2] .

As discussed above, SunWater procures electricity through franchise tariffs, which are subject to annual change at the Benchmark Retail Cost Index (BRCI). In recent years, the BRCI has been well above the consumer price index, as increases in the underling

[2] Queensland Competition Authority. *Final Report: Glastone Area Water Board: Investigation of Pricing Practices* (June 2010). p156

costs of electricity have been greater than the rate of inflation. Indeed, the QCA's draft decision for the BRCI for 2011-12 is 5.83%.[3]

It is also important to note that charges are to be set to recover the minimum, lower bound costs.[4] If actual costs rise materially above forecast then revenues will not be adequate to recover these lower bound costs. While regulated businesses should bear cost risk to the extent they can manage those risks, there is clearly a case to adopt a reasonable (and conservative) approach in relation to costs that cannot be controlled, particularly in a lower bound cost recovery environment. The referral notice to the QCA also requires it to recommend charges that enable SunWater to recover electricity costs, and to recommend regulatory arrangements that include price review triggers to manage the risks associated with these and other allowable costs. SunWater proposes that an adjustment is made against actual and forecast electricity costs over the regulatory period.

Given that changes to the BRCI are difficult to predict, SunWater has adopted a forecast of electricity price increases from 2010-11[5] at 2.5% per annum on the basis that an adjustment for the actual changes in price (as an uncontrollable cost) is made, on an annual basis where practical or in the subsequent regulatory period.

Materials and contractors

Materials costs are direct costs associated with operations, corrective and preventative maintenance activities. Materials include pipes, fittings, concrete, chemicals and plant & equipment hire, contractor costs and so on. These costs are booked directly to jobs within each activity.

The prices of these inputs have been forecast to rise in nominal terms by 4% per annum. The detailed rationale for this assumption is set out in Attachment 1.

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3 Queensland Competition Authority. *Draft Decision. Benchmark Retail Cost Index for Electricity: 2011-12.* (December, 2010).

4 This occurs given the asset base is set at $zero, and hence there is no return on assets.

5 This means that the QCA draft decision for the BRCI at 5.83% has not been applied to 2011-12 costs.

Attachment 1. Materials and Contractors Cost Forecasts

The purpose of this attachment is to outline SunWater's rationale for adopting a cost escalator of 4% per annum (nominal) for its materials and contractor costs. These costs include pipes, fittings, concrete, chemicals, plant and equipment hire, and contractor costs.

In the QCA's issues paper on pricing principles and tariff structures, the authors of the paper, PricewaterhouseCoopers, noted that there are several common methods that are used to escalate costs (including CPI, the Labour Price Index, Producer Price Indexes and commodity-specific indexes). In developing its nominal materials and contractor costs escalator of 4% per annum, SunWater has used several of these methods, in addition to publicly available information on forward-looking costs.

Regulatory precedent

The QCA has previously endorsed the application of a cost escalator other than the CPI. In its 2009 Draft Access Undertaking, QR Network proposed to index its maintenance costs by a specially constructed index rather than CPI on the basis that it better reflected input price changes in central Queensland. The QCA accepted this approach, stating that:[6]

> The Authority does not believe that the proposal to escalate costs by an index other than CPI is extraordinary.

The QCA required QR Network to amend the weightings to be used in the index to be more reflective of the composition of its maintenance costs. It also endorsed the application of indices collated by third parties.
SunWater is not proposing to construct a specific index to escalate its costs. Instead, it is proposed to use a range of publicly available information to inform its assumptions. This is explored in more detail below.

SunWater also notes the QCA's decision to reject GAWB's proposal to escalate its operations, maintenance and chemicals costs based on three year (2007-2009) historical averages for specific producer price indexes. The QCA considered that using a 3 year historical average did not provide a reliable indication of cost escalation over the regulatory period. It was subsequently proposed by the QCA to adopt the CPI as the escalator for these costs.

[6] Queensland Competition Authority (2010). Draft Decision: QR Network 2009 Draft Access Undertaking, p.183.

In making its decision on GAWB's cost escalators, the QCA stated that more attention needed to be given to a more appropriate forward looking approach in determining the escalators for operations, maintenance and chemicals costs.[7] SunWater has taken this into consideration in developing its own cost escalators by undertaking an assessment of publicly available information on industry forecasts for cost indexes relevant to its materials and contractor costs. While historical data has also been considered, the relevant indexes have been assessed over a long period of time and have been used to complement the information obtained from the review of cost forecasts rather than as the basis for SunWater's cost escalators.

Analysis

There are two sources of data that can be used to assess the escalation factor that is appropriate for a cost category:

- forecasts
- historical data.

Forecasts use currently available information to predict future movements in costs while historical data can be used to assess past trends to provide an indication of future cost movements. The following sections present the relevant information in relation to both of these data sources and the implications for SunWater's future materials and contractor costs.
While this information is not being used to estimate construction costs, many of the materials used in construction are also used in operating and maintaining SunWater's assets. It will therefore be competing for the same or similar resources. Information on non-residential construction costs is considered particularly relevant.

Forecasts
While the publicly available information on cost forecasts for non-residential construction materials is limited, the information that is available suggests that the recent downward trend in construction costs is coming to an end and that costs are expected to resume their long-term upwards direction in the short to medium term. However, CostWeb, a company that provides up to date construction cost information, have noted that Queensland and Western Australia are expected to experience a further one or two quarters of negative growth in non-residential costs before these costs resume their long-term trends.[8]

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7 Queensland Competition Authority (2010). Final Report: Gladstone Area Water Board – Investigation of Pricing Practices, p 142.

8 Construction Costs Turning the Corner. CostWeb News, 30 Apr. 2010. Web. 19 Oct. 2010. <http://www.costweb.com.au/news/?story=172>.

This prolonged negative growth in Queensland and Western Australia can be attributed to the heavy investment that occurred in these states during the resources boom. This has resulted in several large projects still being completed, which is likely to result in a small lag before any significant growth in new investment occurs. However, once this lag effect has subsided, it is anticipated that Queensland and Western Australia will resume their positions as cost leaders, with plans for high levels of resource construction, particularly in coal and Liquefied Natural Gas in Queensland.[9] This in turn will put upward pressure on costs as projects compete for limited resources. These pressures will continue to be added to by the significant investments in infrastructure that are planned or in progress in South East Queensland.

One of the most detailed and comprehensive sources of cost forecasts available is Macromonitor's 'Australian Construction Cost Trends 2010' report.[10] This report forecasts that construction costs will increase steadily over the next three years, with the following growth rates predicted:

- construction costs are forecast to grow by 4.5% in 2010, above 5% in 2011 and at around 6% in 2012; and
- engineering construction costs are forecast to escalate at 4.9% in 2010/11 and 6% in 2011/12.[11]

These upward cost pressures are anticipated across a range of construction inputs including labour, metals and other materials, fuel, and plant and equipment hire costs. It is anticipated that Queensland will experience the highest rate of construction cost increases.

However, while the report predicts strong growth in construction costs in the short to medium term, it is also anticipated that there will be a slowdown in construction works around the middle of the decade, resulting in a reduction in cost inflation rates. The report predicts that the low point for cost inflation will occur in 2014/15.

Historical data

Historical price indexes can also be examined. In addition, investment activity can be looked at because this can be expected to be a leading indicator of future trends in costs.
The producer price indexes generated on a quarterly basis by the Australian Bureau of Statistics (ABS) represent the most relevant sources of historical data for movements

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9 Construction Costs Turning the Corner. CostWeb News, 30 Apr. 2010. Web. 19 Oct. 2010. <http://www.costweb.com.au/news/?story=172>.

10 Macromonitor is an Australian-based industry research and forecasting company that specialises in providing unique business information tailored to meet the planning needs of industry. One of Macromonitor's main activities is producing industry reports that focus on specific aspects of business activity in each industry, such as cost and price data.

11 Macromonitor (2010), Australian Construction Cost Trends 2010.. Web. 19 Oct. 2010. <http://www.macromonitor.com.au/index_files/Page570.htm>.

in costs associated with construction materials. Table 1 presents the annual values and growth rates for the ABS building construction and non-residential building construction indexes for Queensland for the June quarters between 2000 and 2010.

Table 1 ABS Building construction indexes – Queensland, 2000-2010

Quarter	Building construction index (QLD)	% growth	Non-residential building construction index (QLD)	% growth
June 2000	104.5	-	103.5	-
June 2001	99.9	-4.4%	96.6	-6.7%
June 2002	105.6	+5.7%	103.5	+7.1%
June 2003	113.9	+7.9%	110.6	+6.9%
June 2004	128.3	+12.6%	125.3	+13.3%
June 2005	139.6	+8.8%	141.0	+12.5%
June 2006	148.4	+6.3%	153.3	+8.7%
June 2007	157.0	+6.1%	161.6	+5.4%
June 2008	166.9	+5.8%	169.9	+5.1%
June 2009	165.3	-1.0%	162.0	-4.7%
June 2010	162.8	-2.0%	151.1	-4.3%

Note: Index is reported on a quarterly basis.

Source: ABS (2010). Non-residential building construction index – Queensland.

The Queensland building construction and non-residential building construction indexes increased by annual compound growth rates of 4.5% and 3.9% respectively over the previous ten years. These rates incorporate the negative growth experienced over the past two years resulting from the Global Financial Crisis.

The annual compound growth rates for other comparator indexes over this same period are as follows:

- Manufacturing Division index – positive growth of 3.5%
- Basic Chemicals index – negative growth of 4.0%
- Cement products (Brisbane) index – positive growth of 3.0%
- Machinery and equipment index – negative growth of 0.1%.[12]

These growth rates compare to an annual compound growth rate of +3.4% over the past ten years for Brisbane's Consumer Price Index.

Activity levels can also be useful in assessing likely future movements in costs as changes in levels of various activities are often correlated with movements in cost levels (noting that any change in costs can be expected to operate with a lag). In relation to the cost of materials and contractors used by SunWater, expected non-residential construction activity is considered to be most relevant. Table 1Table 2 presents the ABS indexes for the value of non-residential work approved but not

[12] This growth rate was calculated over the eight year period from June 2002 to June 2010 as ABS data was not available for this index from before 2002.

commenced and the value of non-residential building work in the pipeline for Queensland since 2003.

Table 2 ABS indexes for value of non-residential work approved but not commenced and value of non-residential work in the pipeline – Queensland, 2003-2010

Quarter	Value of non-residential work approved but not commenced ($000)	% growth	Value of non-residential work in pipeline ($000)	% growth
June 2003	160,621	-	1,245,024	-
June 2004	210,823	+31.3%	1,457,116	+17.0%
June 2005	201,649	-4.4%	2,175,472	+49.3%
June 2006	247,035	+22.5%	2,895,455	+33.1%
June 2007	367,985	+49.0%	3,635,987	+25.6%
June 2008	417,225	+13.4%	4,244,620	+16.7%
June 2009	1,884,554	+351.7%	6,763,659	+59.3%
June 2010	908,976	-51.8%	6,497,662	-3.9%

Source: ABS. Producer price indexes, statistical release, June 2010.

As can be seen from the above table, both of these indexes have experienced significant growth over the past seven years, with the value of non-residential work approved but not commenced recording annual compound growth rates of 24.2% and the value of non-residential work in the pipeline recording a rate of 22.9%.

The relationship between these construction activity indexes and the cost of materials can be assessed using correlation analysis. However, it is important to note that while correlation demonstrates the relationship that exists between two variables, it is not sufficient, on its own, to justify causation.
Table 3 presents the results from the correlation analysis performed in relation to the two construction cost indexes and two construction activity indexes included in the previous tables. As noted previously, the impact of any growth in expected construction activity could be expected to operate with a lag. The correlation analysis has therefore been undertaken using data in the same year, as well as a one and two year lag.

Table 3 Correlation between ABS indexes

Correlation variables	Correlation (same year)	Correlation (1 yr lag)	Correlation (2 yr lag)
Building construction index and Value of non-residential work approved but not commenced	0.593	0.433	0.703
Building construction index and Value of non-residential work in pipeline	0.858	0.773	0.846
Non-residential building construction index and Value of non-residential work approved but not commenced	0.450	0.090	0.188
Non-residential building	0.704	0.477	0.382

Correlation variables	Correlation (same year)	Correlation (1 yr lag)	Correlation (2 yr lag)
construction index and Value of non-residential work in pipeline			

Note: A correlation calculation of 1 implies absolute linear correlation between the two variables while a calculation of 0 implies no correlation and a calculation of -1 implies absolute non-linear correlation.

Source: ABS (2010). Producer price indexes, statistical release, June.

The strongest correlations are observed between the cost indexes and the value of non-residential work in the pipeline. The latter variable has demonstrated a continuing increasing trend over the past seven years and after a slowdown in 2009/10, it is anticipated that this will again occur from 2011 onwards, particularly in Queensland and Western Australia (based on industry information presented in the previous section on forecasts).

Conclusions

Based on the information presented in the previous sections, it is considered reasonable for SunWater to adopt a materials and contractor cost escalator that is greater than the assumed CPI growth rate of 2.5% p.a. It is also concluded that, based on an assessment of construction cost forecasts and historical growth rates for the relevant ABS indexes, an escalator of 4% p.a. represents a conservative estimate of the likely future increases in SunWater's materials and contractor costs.