

## **QCA review of irrigation prices**

### **Supplementary submission Bulk water price differentiation**

February 2011

## Contents

QCA review of irrigation prices .....	1
1 Introduction .....	3
2 Previous approach.....	3
3 Pricing principles and regulatory application.....	4
3.1 PWC issues paper.....	4
3.2 QCA – .....	4
3.2.1 Review of Gladstone Area Water Board (2010) .....	4
3.2.2 Regulatory Pricing Principles (2000).....	4
3.3 IPART .....	5
4 SunWater’s proposed approach and justification .....	6
4.1 Capital costs .....	6
4.2 Operating costs.....	6
4.3 Outcomes.....	9
5 Conclusion.....	11

# 1 Introduction

The Queensland Competition Authority (QCA) is currently investigating irrigation prices to apply in 22 bulk water schemes and 8 distribution systems owned by SunWater.

SunWater's bulk water schemes service industrial and urban water users, as well as irrigators. These industrial and urban water users typically hold high priority water access entitlements (WAE) while irrigators usually hold medium priority WAEs.

The extent to which prices should differ for high and medium priority WAE is an important issue for the QCA's review.

SunWater has presented its proposals in its submission to two issues papers prepared by PricewaterhouseCoopers (PWC) and published by the QCA in relation to:

- pricing principles and tariff structures (the PWC tariff paper)<sup>1</sup>; and
- capital cost allocation (the PWC capital cost allocation paper).<sup>2</sup>

The purpose of this supplementary submission is to provide more detail and further explanation about SunWater's proposed approach.

## 2 Previous approach

The current price paths are based on medium priority WAE being assigned a lower proportion of both capital and operating costs than high priority. This proportion was determined using converted nominal allocation (CNA) factors for each scheme to arrive at an equivalent amount of medium priority WAE for the scheme as a whole.<sup>3</sup>

The current price paths were developed in consultation with irrigators, who were represented by the Tier 1 Working Group. This Group examined a range of pricing issues including the approach to setting prices and allocating costs between medium and high priority WAE.

At the conclusion of the price path process, the Tier 1 group recommended that the CNA approach be reviewed:<sup>4</sup>

*Tier 1 has accepted the methodology used in the current price review to allocate scheme lower bound costs to water allocations of different priority based on estimated water entitlement conversion factors. However, Tier 1 recommends that this approach be reviewed for the next price path.*

SunWater has reviewed the approach for allocating costs to WAE in part in response to this request, but also amidst its own concerns that the CNA approach was overly simplistic and did not properly reflect the differentials in cost in servicing different

---

<sup>1</sup> PricewaterhouseCoopers. *Pricing Principles and Tariff Structures for SunWater's Water Supply Schemes. Issues Paper prepared for the Queensland Competition Authority by PricewaterhouseCoopers* (September 2010).

<sup>2</sup> PricewaterhouseCoopers. *Allocating capital costs of bulk water supply assets. An Issues Paper prepared for the Queensland Competition Authority by PricewaterhouseCoopers* (September 2010).

<sup>3</sup> This approach was described in detail in the PWC capital cost allocation paper (refer section 3.2) and has not been repeated here.

<sup>4</sup> SunWater. *Statewide Irrigation Pricing Working Group. Tier 1 Report* (April 2006). P76

priority WAEs. Moreover, developments in hydrologic modelling since 2000 enable a more sophisticated approach to be adopted.

### **3 Pricing principles and regulatory application**

The issue of charging different prices for classes or WAE was briefly considered by PWC, and has also been considered by the QCA and IPART.

#### **3.1 PWC issues paper**

The PWC tariffs issues paper examined principles for differential pricing by customer groups or entitlement holders, and concluded that:<sup>5</sup>

*In principle, prices should reflect the actual costs of providing a service and cross subsidies between customers classes should be removed. However, the decision to adopt differential pricing for customer groups / entitlement holders will also depend on whether the actual costs of supplying to different customers are sufficiently different. Where cost differences are considered material, within the context of the overall costs for water supply, there may be justification for further price differentiation.*

The emphasis of cost differentials as the basis for differential pricing for different service quality has also been adopted by the QCA, as indicated below.

#### **3.2 QCA**

##### **3.2.1 Review of Gladstone Area Water Board (2010)**

The QCA examined the issue of differential pricing in the context of different service quality offerings to customers in its 2010 investigation of GAWB's prices. The QCA recommended that "as a general principle, prices should reflect service quality to extent that this involves cost differentials."<sup>6</sup>

##### **3.2.2 Regulatory Pricing Principles (2000)**

In its statement of regulatory pricing principles for the water sector published in 2000, the QCA noted that medium and high priority water entitlements consumed different proportions of storage and consequently asset value:<sup>7</sup>

*The sharing of infrastructure value will also need to recognise differences in the specification of services provided. For example, the irrigation sector typically receives medium reliability water while urban and industrial customers receive high reliability supplies. The provision of higher reliability supplies requires a greater share of storage capacity and, by inference, a greater share of asset value.*

---

<sup>5</sup> PricewaterhouseCoopers. *Pricing Principles and Tariff Structures for SunWater's Water Supply Schemes. Issues Paper prepared for the Queensland Competition Authority by PricewaterhouseCoopers* (September 2010).

<sup>6</sup> Queensland Competition Authority. *Final Report. Gladstone Area Water Board: Investigation of Pricing Practices June 2010*. p48

<sup>7</sup> Queensland Competition Authority. *Statement of Regulatory Pricing Principles for the Water Sector December 2000*. p77

The Authority went on to conclude that operating costs would differ between medium and high priority water entitlements.<sup>8</sup>

*... fixed and operating costs will vary between customer groups where the water product, specifically the reliability of supply, differs. The allocation of costs between customer groups for pricing purposes will need to be on the basis of equivalent product, such as standard reliability, based on available hydrological information.*

This observation, made in 2000, aligned with the pricing practices of the time for rural water price paths, and assumed that fixed operating costs did in fact vary between water product (medium and high priority WAE). Notably, this observation has not been tested in any QCA regulatory review since these initial pricing principles were published.

Regardless, it is important to note that the QCA's principles remained premised on cost differences being the pre-requisite for differential prices for medium and high priority WAEs.

### **3.3 IPART**

The PWC capital cost allocation issues paper examined the approach adopted by Independent Pricing and Regulatory Tribunal (IPART) for differentiating prices between entitlement types in its review of prices for State Water Corporation (SWC).

IPART's approach was referenced to the expected differences in water availability under different priority entitlements. Unlike the approaches described above, PART set price differentials based on the relative value of each product, rather than any difference in the underlying costs.<sup>9</sup>

*Our decision is to incorporate a high security premium within the calculation of the high security entitlement charge. The introduction of a high security premium to the calculation of entitlement charges will increase the value of the high security entitlement charge and lower the value of the general security entitlement charge.*

*This means that the charges will better reflect the values of each type of entitlement.*

IPART also noted the need for changes to its approach from its earlier determination to better account for the differences in water availability. Again, differentials in terms of value were central to IPART's considerations:<sup>10</sup>

*The high and general security entitlement charges established under the 2006 Determination do not adequately reflect how likely it is that each of these groups*

---

<sup>8</sup> Queensland Competition Authority. *Statement of Regulatory Pricing Principles for the Water Sector December 2000*. p78

<sup>9</sup> Independent Pricing and Regulatory Tribunal. *Review of bulk water charges for State Water Corporation from July 2010 to June 2014*. Water- Final Report (June 2010). P146

<sup>10</sup> Independent Pricing and Regulatory Tribunal. *Review of bulk water charges for State Water Corporation from July 2010 to June 2014*. Water- Final Report (June 2010). P144

*will receive their full entitlements of water. This is particularly evident in light of the substantial value of high security water on the spot market in times of low water availability, and from the strong demand from general security licence holders to convert to a high security entitlement.*

Notably, IPART did not differentiate prices based on an examination of cost differentials between supplying medium and high priority entitlements.

SunWater's proposed approach is set out below, and focuses on the cost differentials associated with storing and delivering high and medium priority WAEs.

## **4 SunWater's proposed approach**

SunWater's approach focuses on the cost differentials of supplying each WAE priority group. This is considered superior as the past approach simply adopted a crude measure of hydrologic equivalence between the two priority groups, without allowing for any underlying differences in the costs.

In essence, SunWater's approach differentiates between storage capacity, and consequently capital costs, which are directly affected by WAE priority, and operating costs, which are not. The approach to capital costs and operating costs is set out further below.

### **4.1 Capital costs**

SunWater has proposed that prices for high and medium priority WAEs be differentiated to the extent that they consume different proportions of storage capacity. The basis for this differentiation is hydrologic utilisation factors (HUFs), which are percentages that specify the proportion of storage headworks dedicated to medium and high priority WAE in each scheme.

In its submission to the QCA, SunWater described the HUFs as follows:<sup>11</sup>

*A Headworks Utilisation Factor does not represent a priority group's proportional share of a scheme's overall "hydrologic yield" nor reflect any proportional demand for - or usage of - operational services. In general, the HUF allocates a greater proportion of capital costs to high priority due to a more detailed assessment of the storage required to service high priority entitlements.*

In the context of the Ministerial referral notice for the QCA's investigation, SunWater has proposed that the HUF only applies to the renewals annuity component of irrigation prices.<sup>12</sup>

### **4.2 Operating costs**

In its submission on the PWC tariffs paper, SunWater described the various operating activities involved in bulk water supply, and concluded that these did not vary between WAE type.

---

<sup>11</sup> SunWater. *Headworks Utilisation Factors. Technical Paper* (September 2010) P5

<sup>12</sup> The HUF would normally apply to a return on assets where this was incorporated into users' prices. This is not the case given the terms of the Ministerial referral notice for irrigation prices.

This is presented below, followed by a more detailed discussion on each item.

**Table 1. Operating activities**

Element	Item	Activity
<b>Service Provision</b>	Water delivery	Releasing water to meet customer demand, and other license requirements, flow surveillance, metering etc.
	Customer service and account management	Manage account transactions, billing, customer enquiries etc.
<b>Compliance</b>	Resource operations licence	Administer water sharing rules, water quality monitoring, flow and quality reporting, flow event management etc
	Dam safety	Routine dam safety inspections and audits, regulatory reporting
	Environmental management	Manage environmental risks, implement mitigation measures and reporting procedures (eg fish death)
	Land management	Weed and pest control, managing access and trespass, rates and land tax
	Workplace health and safety	Implement appropriate procedures / work practices. Conduct audits and reviews
	Financial reporting and taxation	Comply with statutory reporting requirements, tax reporting, GST compliance, debt management etc
<b>Other</b>	Corporate	Human resource management, procurement, legal services, CEO and board, IT etc,

These operating costs and level of each operational activity are not affected by the type of WAE in a scheme, and are incurred regardless of whether there is a greater or lesser proportion of high or medium priority WAE. For example:

- while on average more water will be available under a high priority WAE, the incremental cost of releasing water from storages is negligible (or in most cases nil).<sup>13</sup> Hence in times of severe drought, the fact that deliveries can still be made to high priority WAE will not impose additional costs on the scheme. Indeed, during times of severe shortage the intensity of operational effort is often increased in relation to medium priority WAE, as best use is made of limited supplies for medium priority (eg through pumping dead storage or taking measures to minimise river transmission losses);
- customers' water accounts must be managed in the same way, regardless of whether they hold medium or high priority WAE. Indeed, the intensity of customer account management often increases for medium priority WAE in times when restrictions apply, through increased trading, requests for account balances etc;
- the reporting requirements of Resource Operations Licenses (ROLs) also require that water use is accounted for periodically (eg quarterly) regardless of water availability or the mix of high and medium priority WAE in each scheme. Other compliance obligations under the ROL (eg water quality monitoring, streamflow reporting etc) also apply regardless of the WAE priority mix and the availability of water under those entitlements;

---

<sup>13</sup> Except to the extent that water is supplied via pumping, such as in the Upper Condamine (North Branch) and Barker-Barambah (Redgate Relift) in which case SunWater's proposed tariff regime will capture these costs and recover in the consumption charge.

- routine dam safety inspections and related activities are required for a given dam structure, regardless of the type or mix of WAE supplied from that dam;
- environmental, land and workplace health and safety activities relate to the nature of the asset and the potential environmental hazards they present. This bears no relationship to WAE type or the mix of WAE in a particular scheme; and
- corporate costs, including financial reporting and taxation obligations clearly have no relationship to the type or mix of WAE held at water supply schemes.

Simply put, if a bulk water scheme were to go from servicing 100% of medium priority WAEs to 100% of high priority WAE (ie an equivalent, lesser nominal amount of high priority WAE), there would be no change in operating costs.<sup>14</sup>

The Burdekin-Haughton schemes provides a good illustration of the absence of any relationship between the mix of priority WAE and operating costs, given a significant amount of medium priority WAE has been converted to high priority WAE recently.

The outcomes from this conversion, made under the Resource Operations Plan and approved by DERM<sup>15</sup>, and effective from the 2010-11 year are set out in the table below.

**Table 2. Burdekin-Haughton WAE before and after conversion**

	<b>High Priority (ML)</b>	<b>Medium Priority (ML)</b>
Pre-conversion	26,839	1,109,081
Post-conversion	99,998	979,594

This conversion resulted in a significant increase in high priority WAE, and a 12% decrease in the amount of medium priority WAE. High priority WAE increased from being only 2.4% of all WAE, to nearly 9.3%.

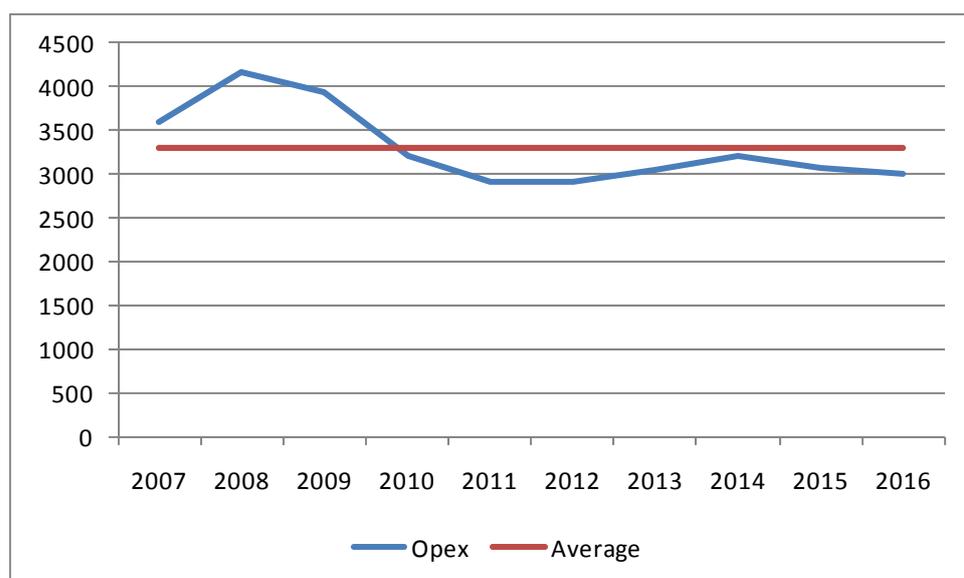
However, SunWater has not forecast any changes to its operating costs as a result of this conversion, and indeed operating costs are forecast to fall over the regulatory period. This is reflected in the historic and forecast operating costs for bulk water supply, as indicated in the table below.

---

<sup>14</sup> All other things being equal (eg no change to the number of customer offtakes etc)

<sup>15</sup> Department of Environment and Resource Management.

**Figure 1. Burdekin-Haughton Water Supply Scheme - operating costs**



Source: SunWater's NSP for Burdekin-Haughton Water Supply Scheme

### 4.3 Outcomes

SunWater's proposed approach will result in a greater proportion of operating costs being allocated to medium priority (and consequently the irrigation sector), and a lesser proportion of capital costs (renewals) compared to the past CNA approach. This is demonstrated in the table below, which compares the CNA percentages (determined from the conversion factors used for the current price paths) to SunWater's proposed HUF, and medium priority WAE as a percentage of total WAE in the scheme without any adjustment (that is, as a percent of all WAE).

**Table 3. Medium priority shares expressed as CNA, HUF and all WAE**

Scheme	Medium priority (CNA) %	Medium priority (HUF) %	Medium priority (% of all WAE) %
Barker Barambah	85%	75%	96 <sup>1</sup> %
Bowen Broken	8%	0%	15%
Boyne R & Tarong	13%	9%	26%
Bundaberg	84%	82%	90%
Burdekin-Haughton	85%	79%	89%
Chinchilla Weir	55%	12%	71%
Callide Valley	61%	10%	82%
Cunnamulla Weir	100%	100%	100%
Dawson Valley	65%	70%	91%
Eton	91%	80%	94%
Lower Fitzroy	6%	7%	11%
Macintyre Brook	96%	87%	98%
Mareeba			
Dimbulah	90%	46%	93%
Maranoa River	100%	100%	100%
Lower Mary	89%	42%	95%
Nogoa Mackenzie	63%	40%	81%
Pioneer River	51%	44%	61%
Proserpine River	50%	27%	63%

Scheme	Medium priority (CNA) %	Medium priority (HUF) %	Medium priority (% of all WAE) %
St George	93%	94%	96%
Three Moon Creek	89%	60%	96%
Upper Burnett	90%	18%	95%
Upper Condamine	69%	11%	90%

Note1: The medium priority WAE % (adjusted for free water) is incorrectly reported in the Barker Barambah WSS NSP at 98%. The number reported the NSP used an incorrect volume of free WAE. The correct volume of free WAE is 1,038 ML and results in 96%.

SunWater has prepared a comparison of the costs allocated to medium priority using the CNA approach for both the renewals annuity and operating costs (being the previous approach), compared to SunWater's proposed approach of applying the HUF to the renewals annuity, and assigning operating costs to medium priority without any adjustment. Overall, the change from using the CNA to SunWater's proposed approach will result in a 2.5% (\$457k) increase in costs being assigned to medium priority, using the 2011/12 year as an example.

However, there are some significant changes within each water supply scheme.

The table below provides a summary:

**Table 4. Impact of change from CNA to SunWater's proposed approach (2011-12 cost data)**

Scheme	Scheme Opex	Scheme Renewals Annuity	MP Share (CNA)	MP Share (SunWater's proposed approach)	Difference (\$)	Difference (%)
Barker Barambah	\$ 691,000	\$273,000	\$820,944	\$868,110	\$47,166	5.7%
Bowen Broken	\$976,000	\$ 406,000	\$108,670	\$142,301	\$33,631	30.9%
Boyne R & Tarong	\$351,000	\$ - <sup>1</sup>	\$43,962	\$92,523	\$48,561	110.5%
Bundaberg	\$1,056,000	\$640,000	\$1,418,682	\$1,471,897	\$53,215	3.8%
Burdekin-Haughton	\$ 2,914,000	\$978,000	\$3,316,467	\$3,366,080	\$49,613	1.5%
Chinchilla Weir	\$65,000	\$10,000	\$41,484	\$47,498	\$6,013	14.5%
Callide Valley	\$ 868,000	\$ 445,000	\$796,906	\$757,500	(\$39,406)	(4.9%)
Cunnamulla Weir	\$32,000	\$9,000	\$41,000	\$41,000	\$-	0.0%
Dawson Valley	\$904,000	\$14,000	\$597,829	\$832,234	\$234,404	39.2%
Eton	\$1,410,000	\$595,000	\$1,814,865	\$1,798,520	(\$16,345)	(0.9%)
Lower Fitzroy	\$272,000	\$ 46,000	\$19,745	\$33,140	\$13,395	67.8%
Macintyre Brook	\$841,000	\$362,000	\$1,156,929	\$1,138,097	(\$18,831)	(1.6%)
Mareeba Dimbulah	\$929,000	\$3,000	\$839,262	\$866,639	\$27,378	3.3%
Maranoa River	\$30,000	\$8,000	\$38,000	\$38,000	\$-	0.0%
Lower Mary	\$273,000	\$2,000	\$243,949	\$259,524	\$15,575	6.4%
Nogoa	\$2,120,000	\$547,000	\$1,681,288	\$1,936,075	\$254,788	15.2%

Scheme	Scheme Opex	Scheme Renewals Annuity	MP Share (CNA)	MP Share (SunWater's proposed approach)	Difference (\$)	Difference (%)
Mackenzie						
Pioneer River	\$874,000	\$837,000	\$866,733	\$898,174	\$31,441	3.6%
Proserpine River	\$627,000	\$207,000	\$420,729	\$453,277	\$32,548	7.7%
St George	\$933,000	\$760,000	\$1,582,402	\$1,614,297	\$31,895	2.0%
Three Moon Creek	\$323,000	\$136,000	\$410,005	\$392,227	(\$17,778)	(4.3%)
Upper Burnett	\$673,000	\$190,000	\$779,755	\$666,820	(\$112,935)	(14.5%)
Upper Condamine	\$934,000	\$724,000	\$1,136,842	\$920,240	(\$216,602)	(19.1%)
<b>TOTAL</b>	<b>\$18,096,000</b>	<b>\$7,192,000</b>	<b>\$18,176,452</b>	<b>\$18,634,174</b>	<b>\$457,723</b>	<b>2.5%</b>

Note1: The NSP presents an annuity at (\$13k). For the purpose of this table which is a comparative analysis, an annuity of \$0 has been adopted.

Operating and renewals costs allocated to medium priority will increase significantly in relative terms in Bowen Broken, Boyne River and Tarong, Dawson and Lower Fitzroy schemes. At the same time, costs allocated to Upper Condamine and Upper Burnett fall considerably.

However, those schemes facing large increases in relative terms translate to relatively small increases in terms of \$/ML of medium priority WAE. For example:

- Bowen-Broken faces the highest increase of \$5.93/ML;
- Lower Fitzroy, Boyne-River Tarong and Dawson Valley are below \$5/ML impact (\$4.32/ML, \$4.19/ML and \$4.16 respectively);
- Chinchilla Weir is less than \$3/ML (\$2.09/); and
- Nogo Mackenzie, which has the largest increase in absolute terms, faces a modest \$1.33/ML increase.

SunWater expects that the impacts on schemes experiencing the largest increases would be considered as part of the QCA's overall deliberations for price paths as contemplated in the Ministerial Referral Notice.

## 5 Conclusion

SunWater has proposed a more sophisticated approach to differentiating prices between medium and high priority, based on cost differentials. This is consistent with regulatory practice when dealing with an asset providing multiple service standards. .

In doing so, SunWater has assessed that medium priority WAE should, in general, receive a far lower proportion of capital costs than suggested by the previous CNA approach. This is because medium priority WAE generally consume a lower proportion of storage capacity than implied by the CNA.

In contrast, scheme operating costs would be no different if there was relatively more (or less) high priority or medium priority WAE in that scheme. Accordingly, there is

no differential in operating cost relating to a medium or high priority WAE and there is no need to assign costs differently between the two.

In overall terms, there is very little difference in the aggregate renewals and operating costs allocated to medium priority under the previous CNA approach, compared to SunWater's proposal. In some schemes, the costs assigned to medium priority fall. However in some schemes there are large relative increases, although in \$/ML terms the impact is small. If required, such increases could be dealt with as part of the QCA's broader considerations of the need to implement price paths, as required under the Minister's Referral Notice.