

Minutes

Date: Wednesday 16 October 2019

Time: 5pm

Location: Inglewood Bowls Club

Attendees John Kelly, SunWater Area Manager, Goondiwindi
Chris Mann, Storage Supervisor, Coolmunda Dam
Andrew Hooker, IAC Member
Jino Destefani, IAC Member
Rick McDougall, IAC Member
Kieran Bosnjak, IAC Member
Darli Doljaniin, IAC Member
Anthony Doljanin, IAC Member
Matthew Oxenford, IAC Member

Apologies:

Chair: John Kelly

Minutes: John Kelly

Item No.	Item	Presenter
1.	Welcome and Introductions	Chair
2.	Apologies	Chair
3.	Review of Previous Minutes	Chair
4.	Business Arising from Previous Minutes	Chair
	Agenda Items	Chair
5.	Water Storage Update	John K
6.	Scheme Budget to 30 Sept 2019	John K
7.	R&E Program for 2019	John K
8.	QCA Irrigation Price Review – Draft Report	John K
9.	Network Service Plan 19/20 – 23/24	John K
10.	DNRME Metering Consultation Report	John K
11.	General Business	All

1. Welcome and Introductions

The Chair opened the meeting at 5:10pm and welcomed the IAC members and thanked them for their attendance.

2. Apologies

Nil

3. Review of Previous Minutes

The minutes from the previous meeting held on 7 August 2019 were reviewed and accepted as a true and accurate record.

4. Business Arising from Previous Minutes

There was no business arising from the previous minutes.

5. Water Storage Update

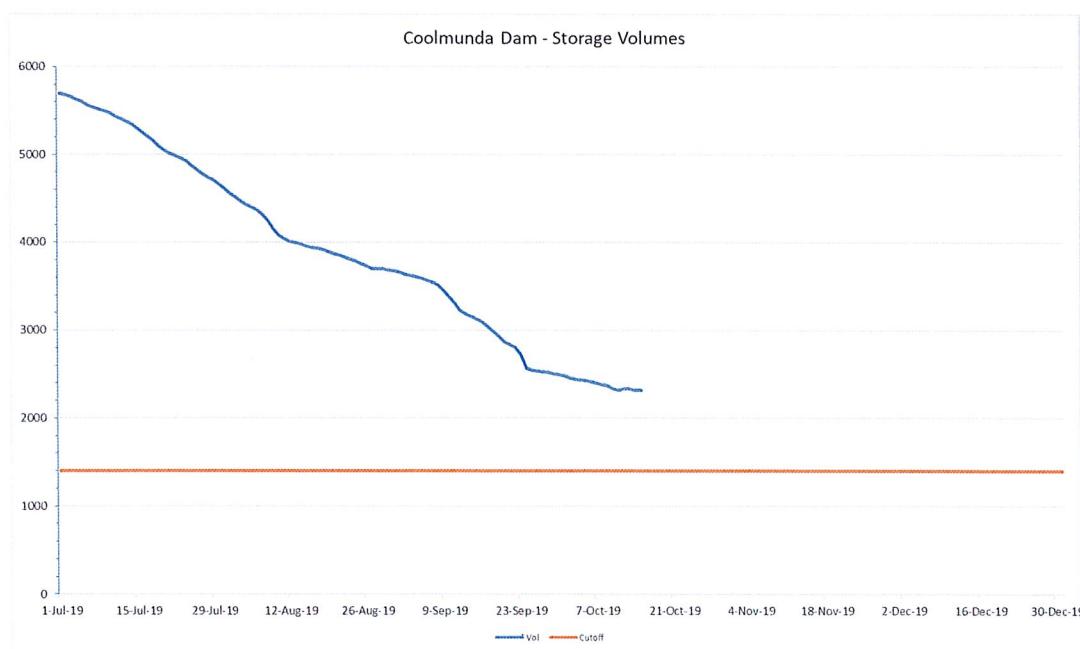
Coolmunda Dam: 2,302ML or 3.3%

Whetstone Weir: 352ML or 69.5%

Ben Dor Weir: 364ML or 52.0%

Sunwater advised that it expected the decline in storage volume to flatten out as Medium Priority (MP) water is used as there is approximately 1,800ML of High Priority (HP) water in the dam which will be utilised at a much slower rate.

Sunwater further advised that the cutoff rule (at approx. 1400ML) would have to remain as DNRME modellers advised it was required to ensure HP reliability can be met. Sunwater further advised that given the volume of HP water in the dam it was unlikely that the cut off level (approximately 1,400ML) would be reached in October as currently predicted.



6. Scheme Budget

Sunwater provided the IAC with the P&L report for the scheme to 30 September 2019. Of note:

- Revenue is essentially on budget at \$325k
- Operating expenses are below budget at \$364k
- Operating profit is ahead of budget at -\$39k
- Total routine costs (Ops, Preventative and Corrective) are below budget at \$335k

The full P&L is provided as an attachment to the minutes.

7. R&E Program for 2019

Sunwater provided an update on the capital works (R&E) program for the year. A copy of the program with expenditure to 30 Sept is provided as an attachment to the minutes.

8. QCA Irrigation Price Review – Draft Report

Sunwater advised the IAC that the Qld Competition Authority (QCA) had released its draft report on the irrigation prices for 2020-2024. Sunwater advised that customers can make a submission to the QCA on the draft pricing in writing or on line by 4 November 2019 with the final report to Government due on 31 Jan 2020.

Sunwater provided the IAC with the QCA Information Sheets including one specific to the MacBrook Water Supply Scheme. These are provided as attachments to the minutes.

9. Network Service Plan 19/20 – 23/24

Sunwater provided the IAC with the 2019/20 – 2023/24 Network Service Plan, being essentially the business plan for the scheme for the next 5 years. This is provided as an attachment to the minutes.

10. DNRME Metering Consultation Report

Sunwater advised the IAC that DNRME had issued its consultation paper on “Proposals for strengthening non-urban water measurement” with submissions due on 29 November 2019. Sunwater pointed out the particular requirements being proposed in relation to real time metering including data loggers and telemetry. The consultation paper is provided as an attachment to the minutes.

11. General Business

There was no general business raised for discussion.

Operations Financial P&L Snapshot - September

Mth-Yr **Sep-2019** Bus Unit **South** Region **Goondiwindi** Srv Ctrct **Macintyre Brook Supply**

Financial P&L	Actual \$'000s	Sep-19 Budget \$'000s	Variance \$'000s	Actual \$'000s	YTD Budget \$'000s	Variance \$'000s	FY Forecast \$'000s	FY Budget \$'000s
Revenue								
External Contracts	0	0	0	0	0	0	0	0
Distribution	0	0	0	0	0	0	0	0
Bulk Water	108	110	(2)	325	330	(6)	1,315	1,321
Commercial Pipelines	0	0	0	0	0	0	0	0
Other Revenue	0	0	0	0	0	0	0	0
Operating Revenue	108	110	(2)	325	330	(6)	1,315	1,321
Expenses								
Salaries	0	0	0	0	0	0	0	0
Salaries O/T	0	0	0	0	0	0	0	0
Other Employee Costs	17	0	(17)	1	0	(1)	1	0
Contractors - Consultants	0	0	0	0	0	0	0	0
Contractors - Others	32	21	(11)	47	43	(4)	314	310
Electricity - Incl RC	0	0	0	2	1	(1)	4	4
Materials	0	16	15	1	27	26	105	131
Plant Equip & Vehicles	9	3	(6)	17	8	(9)	41	32
Capitalised Costs	(60)	(68)	(9)	(117)	(179)	(62)	(835)	(897)
Labour & OH Recovery	75	106	31	261	299	38	1,221	1,259
Service Charges	22	44	22	81	128	47	480	527
Depreciation	1	0	(1)	4	0	(4)	11	7
Other Expenses	32	21	(11)	69	63	(6)	259	253
Operating Expenses	130	143	13	364	390	26	1,601	1,627
Operating Profit	(23)	(33)	10	(39)	(59)	20	(286)	(306)
Key Indicators								
Usage (ML)		1,679		531	5,037	(4,506)	15,643	20,149
Labour Billing Rate (%)	0	0	0	0	0	0	0	0
Labour Capacity (%)	0	0	0	0	0	0	0	0
Routine								
Operations	100	82	(18)	244	247	2	965	967
Preventative	22	31	9	77	93	17	347	364
Corrective	6	4	(2)	14	11	(4)	47	43
Other Routine	0	0	0	0	0	0	0	0
Total Routine (Excl. Electricity)	127	117	(11)	335	351	15	1,359	1,374
Electricity (Activity 08)	0	0	0	2	1	(1)	4	4
Non Routine								
Operations	0	0	0	0	0	0	0	0
Preventative	0	0	0	0	0	0	0	0
Corrective	0	0	0	0	0	0	0	0
R&E (Activity 04)	45	94	49	144	217	73	1,066	1,139
Other Non Routine	0	0	0	0	0	0	0	0
Total Non-Routine	45	94	49	144	217	73	1,066	1,139

Unfavourable to Budget (>=5% of budget)

PROJECT TIMELINE as of 2nd Oct 2019
R&E - SOUTH REGION

Functional Location	Functional Location Description	Project ID	Description	18/19 Budget (\$)	Actuals	Left to spend (overspent)	Financial Progress (%)	Status	Physical Progress (%)
IBT - Macintyre Brook Water Supply									
MAB-MCB-CLM	COOLMUNDA DAM	17MAB01	Study 20 Year Dam Safety Review - Coolmunda Dam	0.00	7,084.00	7,084.00	#DIV/0!	06-PRACTICAL	90%
MAB-MCB-CLM	COOLMUNDA DAM	18MAB01	Coolmunda Dam : Study 20 Year Desktop Comprehensive Risk Assessment - (1 Year after Safety Review)	0.00	5,778.00	5,778.00	#DIV/0!	06-PRACTICAL	90%
MAB-MCB-CLM-OWK-CND	OUTLET CONDUIT	19MAB04	Coolmunda Dam: Review Davit Crane Accessibility and Replace with Suitable for Manhole Cover	8,000.00	13,011.00	5,011.00	163%	06-PRACTICAL	90%
MAB-MCB-CLM-INN-INB	OBSERVATION BORES	20MAB02	Install - Standpipes adjacent to identified seepage in right embankment - Coolmunda Dam - (2017 DS Rec 2.5.2)	26,085.00	0.00	26,085.00	0%	03-RELEASED	0%
MAB-MCB-CLM-EMB-EMR-STE	EMBANKMENT STRUCTURE	20MAB03	Study - LIDAR Survey of D/S Embankment - Coolmunda Dam - (2017 DS Rec 2.5.2)	27,498.00	0.00	27,498.00	0%	03-RELEASED	0%
MAB-MCB-CLM-GLS-005-STR-003-WHL	COUNTERWEIGHT WHEELS	20MAB04	Refurbish - Reconnect the lower wheel on LHS Gate 5 - Coolmunda Dam - (refer notes)	20,226.00	0.00	20,226.00	0%	03-RELEASED	0%
MAB-MCB-CLM-OWK-OLT-VLV-VLR-002	REGULATING VALVE (305)	20MAB05-	Refurbish - 305MM Cone Valve, Actuator & Linkages - Coolmunda Dam - (2018 DS rec 2.12.3)	55,432.00	4,582.00	50,850.00	8%	03-RELEASED	0%
MAB-MCB-GRE-SFC-FNC	SECURITY FENCING	20MAB06	Refurbish - Re-establishment of security fencing if Options / Hazard / Risk Assessment requires - Greenup Weir	7,548.00	0.00	7,548.00	0%	03-RELEASED	0%
MAB-MCB-CLM-SPW	SPILLWAY	20MAB07	Study - Undertake a condition assessment of all floatwells, float wheels, guides, etc - Coolmunda Dam	14,993.00	6,149.00	8,844.00	41%	03-RELEASED	0%
MAB-MCB-WHS-SPW-ST5	STRUCTURE	20MAB08	Refurbish - Remove any loose, spalling and/or drummy concrete and undertake patch repairs - Whetstone Weir - Refurbish Electrical Cabling pending outcome of Options Analysis - Coolmunda Dam - Following from 19BAB07	40,183.00	0.00	40,183.00	0%	03-RELEASED	0%
MAB-MCB-CLM-ELE	ELECTRICAL SERVICES	20MAB09	Study - Inspect NDT of welds on Gate 4 Radial Arm - Coolmunda Dam	67,637.00	3,653.00	63,984.00	5%	03-RELEASED	0%
MAB-MCB-CLM-SPW-GTE-GTR-004-STR	GATE STRUCTURE	20MAB10	Unplanned Capital Replacements - IBT - Macintyre Brook Supply (Contingency - only to be access with CEO approval)	14,208.00	0.00	14,208.00	0%	03-RELEASED	0%
MAB	MACINTYRE BROOK SUPPLY	20MAB11	Replace - Customer Meter Outlets - Macintyre Brook Supply - SunWater Metering Standard AM14	22,577.00	17,064.00	5,513.00	76%	05-WIP	75%
MAB-MO	METER OUTLETS-MACINTYRE BROOK	20MAB12	Replace Valve, 750mm Butterfly	39,819.00	22,451.00	17,368.00	56%	06-PRACTICAL	90%
MAB-MCB-WHS-OWS-OLS-VLV-VLR	BUTTERFLY VALVE	20MAB13							
Sub - Total				\$ 352,100.00	\$ 79,772.00	\$ 272,328.00	23%		0%

The Queensland Competition Authority (QCA) is reviewing irrigation prices to apply to Sunwater and Seqwater customers over the pricing period 1 July 2020 to 30 June 2024. This includes recommending irrigation prices for 22 water supply schemes and associated distribution systems operated by Sunwater.

The QCA has examined the proposed costs of Sunwater, as directed by the State Government. Based on its assessment, the QCA now presents its draft recommended irrigation prices for the period 1 July 2020 to 30 June 2024.

In recommending prices we have not included a return on, or depreciation of, investments made prior to 1 July 2000.

The purpose of the draft report is to provide stakeholders with an opportunity to review and comment on the QCA's proposed approach and prices, prior to the QCA finalising its report.

Background

We are undertaking the review in response to a direction from Government. The Government's direction is set out in its referral, which defines the scope of our review, directs us to provide recommendations on particular issues, provides guidance on the matters we must consider, and sets out the pricing principles we are to apply in calculating recommended prices.

We must undertake our review in accordance with the relevant legal framework, including the referral and the QCA Act. More information on this framework is provided in our 'introduction to irrigation pricing' fact sheet and our Part A report, both of which are available on our website.

Approach to reviewing costs

We are required to recommend prices that allow Sunwater to recover certain prudent and efficient costs. Accordingly, we have assessed operating expenditure (opex), renewals expenditure and dam safety upgrade capital expenditure (capex) proposed

by Sunwater for prudence and efficiency. We engaged AECOM to assist us in our assessment.

In June 2019, Sunwater provided us with updated costs forecasts (including opex) that, while comparable in aggregate to those in the November 2018 submission, were significantly different for the direct and non-direct costs categories.

Sunwater also updated its forecast renewals expenditure in its June 2019 resubmission.

We have used best endeavours to take the June 2019 resubmission into account in undertaking our assessment. We welcome submissions from stakeholders on Sunwater's revised costs.

Key findings from cost review

Relative to the November 2018 submission, we have reduced total opex over the price path by \$26.8 million (9.2%) from \$290.8 million to \$264.0 million. Our adjustments include:

- reducing non-direct costs by \$26.0 million—we have accepted Sunwater's June 2019 revised (lower) local overhead costs and reduced the size of corporate overheads to be allocated across Sunwater's irrigation service contracts
- reducing electricity costs by \$8.0 million—due partly to the one-year extension to the end-date for obsolete and transitional electricity tariffs
- additional costs of \$7.2 million—associated with the inclusion of QCA regulatory fees, increasing insurance costs (based on Sunwater's June 2019 revised cost), and increasing direct operations and maintenance costs (due to reallocation of fleet costs from local overheads).

Further information is available in Part B (chapter 2) of our draft report.

Relative to the November 2018 submission, we have reduced Sunwater's historical and forecast renewals expenditure. Our adjustment include:

Draft report: Rural irrigation price review 2020–24

- reducing historical renewals (exclusive of non-routine operations and corrective maintenance) from \$104.9 million to \$97.3 million (down 7.3%)
- excluding flood repair costs of \$58.2 million (net of insurance revenues of \$12 million), as insurance claims are yet to be finalised
- reducing forecast renewals expenditure by 29.5% to reflect our assessment of the prudent and efficient level and timing of expenditure.

For further information, see Part B (chapter 3) of the draft report.

Dam safety

As required in the referral, we have recommended two pricing options for those schemes with dam safety upgrade projects that are expected to be commissioned in the price path period. The decision about which sets of prices should apply is a matter for the Government when it determines prices for the price path period.

Dams in Queensland have generally been built for the primary purpose of supplying water to users. As a compliance cost, we consider that dam safety upgrade expenditure should be treated as a normal cost of operation in supplying water services.

We have reflected the informal flood moderation benefits of dams by only allocating 80 per cent of irrigators' share of dam safety upgrade expenditure to the allowable cost base.

Where a dam has a formal flood mitigation role, we consider that the costs of dam safety upgrades should be shared with beneficiaries in the broader community.

See Part A (Chapter 4) for further details.

Prices and bill moderation

In recommending prices, we have emphasised the pricing principles set out in the referral, as these principles give effect to the Government's water pricing policy. One of the key principles of that policy is that prices should increase gradually until they reach a cost-reflective level, where they recover the irrigation share of the scheme's operating, maintenance and capital renewal costs but do not recover a return on, or of, the scheme's initial asset base (as at 1 July 2000).

For schemes with existing prices above lower bound costs, we have recommended that the existing volumetric price increases by no more than inflation.

For schemes with existing prices below lower bound costs, we have moderated bill impacts by recommending less than cost reflective volumetric prices for the following tariff groups where this would otherwise lead to price increases well above the maximum level of annual real price increases of \$2.38/ML of WAE (plus inflation) that have occurred in previous price periods:

- Barker Barambah WSS—Redgate Relift
- Burdekin distribution system—Giru Benefitted Area
- Maranoa River WSS.

How you can get involved

Public involvement is a key part of our review. Our draft report provides stakeholders with an opportunity to comment on our proposed approach and prices, prior to us finalising our report and providing it to the Government by 31 January 2020.

We invite stakeholders to comment on the draft report (submissions are due by 4 November 2019) and to attend the workshops we will be running in regional Queensland in September/October 2019.

We also invite stakeholders to consider and provide comment on late submissions provided by Sunwater on a minimum access charge and an electricity cost pass through mechanism.

Timetable

<i>Task</i>	<i>Date</i>
Stakeholder workshops on draft report	September–October 2019
Submissions on draft report due	4 November 2019
Final report provided to the Government	By 31 January 2020
Final report published	Early February 2020

Further information

Our draft report, along with scheme information sheets and other relevant materials can be accessed at the [QCA website](#).

Why are we recommending irrigation prices?

The Queensland Government directed us to recommend irrigation prices for Sunwater and Seqwater customers over the pricing period 1 July 2020 to 30 June 2024.

This includes recommending prices for irrigation customers in the Macintyre Brook water supply scheme (WSS), which is located near the town of Inglewood.

Issues related to the prices for non-irrigation customers are outside the scope of our review.

How we have recommended prices

In recommending prices we have not included a return on, or depreciation of, investments made prior to 1 July 2000.

We have recommended a two-part tariff for the tariff group in this scheme. The first part is a *fixed price* per megalitre (ML) of water access entitlement (WAE), and the second part is a *volumetric price* per ML of water used.

The volumetric price (Part B) recovers variable costs (e.g. a portion of labour costs) that change with water usage. The remaining costs associated with this scheme are recovered by the fixed price (Part A). We have assessed all expenditure to ensure that Sunwater only recovers prudent and efficient costs.

It is government policy that, over time, irrigation prices should transition to fully recover prudent and efficient costs of operating, maintaining, administering and renewing each scheme. Cost recovery for Sunwater's irrigation customers will improve from 91 per cent in 2020–21 to 94 per cent by 2023–24. The shortfall is currently funded by a subsidy, paid by the Queensland taxpayer, which will reduce over time as prices transition to cost reflective.

The fixed price increases annually by up to \$2.38/ML (\$2020–21) plus inflation. The volumetric price increases by our estimate of inflation (2.37 per cent) from 2020–21 onwards.

What prices have we recommended?

After extensive consultation with irrigators, we have released our draft report.

For this scheme, draft prices will not cover costs by the end of the pricing period. Cost recovery will increase from 87 per cent in 2020–21 to 98 per cent by 2023–24.

Dam safety upgrades for this scheme are due to be commissioned in 2022–23. However, this has no impact on our draft recommended prices over this pricing period. We have estimated the impact in the year following

commissioning (2023–24) to be an increase in the cost reflective fixed (Part A) price of \$3.67/ML.

Our draft recommended prices are shown in the table below.

Draft recommended prices for irrigation customers—\$/ML

Tariff group	2019–20 (Current)	2020–21	2021–22	2022–23	2023–24
Fixed (Part A)	48.62	52.15	55.82	59.64	63.61
Volumetric (Part B)	4.54	4.23	4.33	4.43	4.54

We have recommended a reduction in scheme costs for Macintyre Brook WSS

In our draft report, we have reduced Sunwater's proposed scheme costs by 7 per cent over the pricing period 1 July 2020 to 30 June 2024.

Total scheme costs over the price path period—Macintyre Brook scheme (2018–19 dollars) (\$'000)

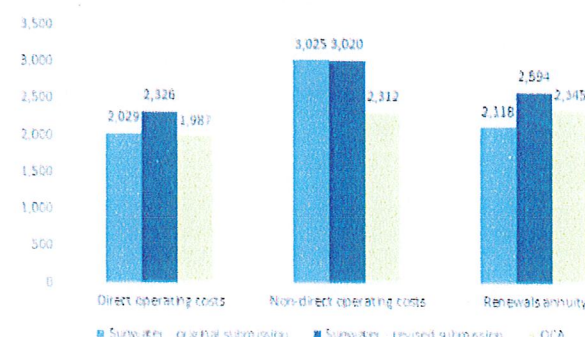


Figure notes: 1. Revenue offsets are not included in the charts. 2. QCA Non-direct operating costs includes the QCA regulatory fees.

Further details on our recommended costs for Sunwater schemes are in Part B (chapters 2 to 4) of the draft report.

We have assessed local impacts

In recommending prices, we have considered bill impacts for irrigation customers.

The table below presents an estimate of the change in water bills (compared to the bill based on current prices), for various levels of water use.

Further details on bill impacts are in Part B (chapter 9, appendix C and chapter 7) of the draft report.

Change in water bill

Water use as portion of entitlement held (%)	Water bill change from 2019–20 to 2020–21 (%)	Water bill change from 2019–20 to 2023–24 (%)
0	7.3	30.8
25	6.9	30.1
50	6.6	29.5
75	6.3	28.8
100	6.1	28.2

How you can get involved

Public involvement is a key part of our review. Our draft report provides stakeholders with an opportunity to review and comment on our proposed approach and prices, prior to us finalising our report and providing it to the Government by 31 January 2020.

We now invite stakeholders to comment on this draft report (submissions are due by 4 November 2019) and to attend the workshops we will be running in regional Queensland in September/October 2019.

We also invite stakeholders to consider and provide comment on late submissions provided by Sunwater on a minimum access charge and an electricity cost pass through mechanism.

An indicative timetable for the remainder of our review is provided in the table below.

Timetable

Task	Date
Stakeholder workshops on draft report	September–October 2019
Submissions on draft report due	4 November 2019
Final report provided to the Government	By 31 January 2020
Final report published	Early February 2020

Where you can find out more

For more information please see the [QCA website](http://www.qca.org.au) for:

- Part A of the draft report for key regulatory and pricing framework issues that apply to both Sunwater and Seqwater
- Part B of the draft report for Sunwater schemes
- Part C of the draft report for Seqwater schemes.

2019/20 to 2023/24 Network Service Plan Fact Sheet

Macintyre Brook Bulk Water Service Contract

This fact sheet details a range of proposed immediate and longer-term improvement projects, and presents a breakdown of anticipated costs. It also provides a summary of changes provided to the Queensland Competition Authority (QCA) during the current irrigation price review process for new prices commencing on 1 July 2020.

Summary of key changes

On 6 November 2018, Sunwater provided a comprehensive submission to the QCA's review of irrigation prices for the 2021–24 period. We have since updated our forecast costs to reflect changes to underlying inputs, including:

- a revised non-routine program of works, based on the latest available information (eg condition and risk data)
- a greater focus on direct charging of labour to service contracts and the splitting of local area support costs to better align with where the costs are incurred
- an increase in insurance premiums, to align with current market conditions and a revalued insurance asset base
- a small reduction in total Inspector-General Emergency Management (IGEM) costs and a change in the way these costs are allocated to service contracts with referable dams, from a purely risk-based approach to one that allocates costs on an equal-share basis and risk. IGEM costs are approximately \$143,000 for this service contract in 2019/20.
- revised electricity escalators, which take into account more detailed site information including updated consumption data and current retail tariffs. For sites on transitional or obsolete regulated retail electricity tariffs that cease on 30 June 2020¹ or 30 June 2022, Sunwater has also corrected the year in which the step change increase is applied.
- using the scheme's 16-year average water usage over the 2002/03 to 2017/18 period to determine the Part B cost per megalitre.

These changes have been reflected in this Network Service Plan (NSP) fact sheet and Sunwater's June 2019 regulatory model, which is available at: <https://www.sunwater.com.au/customer/fees-and-charges/water-pricing-review/>.

For additional information on Sunwater's cost categories and Cost Allocation Methodology, please refer to the 2018/19 NSPs at: <https://www.sunwater.com.au/customer/products-and-services/network-service-plans/>.

¹ The Queensland Government subsequently announced that customers would have until 30 June 2021 to move to standard electricity tariffs. Due to the timing of this announcement, this extension has not been reflected in our modelling.

Irrigation charges for 2019/20

The 2019/20 charges and cost per megalitre are shown in **Table 1**. The Macintyre Brook Bulk Water Service Contract is not expected to fully recover irrigation's share of costs. For the full suite of charges that apply, refer to Sunwater's website.

Table 1: Irrigation charges for 2019/20

Product	Charge type	2019/20 (\$/ML)	Cost (\$/ML) ^{1,2}	Subsidy (\$/ML)
Medium Priority Allocation Charge	Bulk Water Charge – Part A (fixed charge based upon allocation)	48.62	57.23	8.61
Medium Priority Allocation Water	Bulk Water Charge – Part B (variable charge based upon actual usage)	4.54	7.91	3.37

- Costs reflect lower bound cost recovery ie recovery of future replacement and ongoing maintenance and operations. Charges do not allow for any capital returns on existing assets.
- The notional High Priority Allocation Charge cost per megalitre is \$312.91.

Service targets

Sunwater and customers have agreed Water Supply Arrangements and Service Targets for the Macintyre Brook Bulk Water Service Contract. **Table 2** below sets out our performance in 2016/17 and 2017/18 against selected service targets.

Table 2: Service targets and performance

Service target		Target	Number of exceptions	
			2016/17	2017/18
Planned shutdowns – notification	For shutdowns planned to exceed 2 weeks	8 weeks	0	0
	For shutdowns planned to exceed 3 days	2 weeks	0	0
	For shutdowns planned to be less than 3 days	5 days	0	0
Unplanned shutdowns – duration ¹	Unplanned shutdowns during Peak Demand Period	48 hours	0	0
	Unplanned shutdowns outside Peak Demand Period	5 working days		
Maximum number of interruptions	Planned or unplanned interruptions per water year	6	0	0

- This is the number of times that the unplanned shutdown has exceeded the shortest of the peak/off peak periods.

Routine expenditure

Routine (or annual) expenditure includes funds for operations activities (operations, electricity and insurance), preventative maintenance and corrective maintenance.

Table 3: Routine expenditure^{1,2}

Macintyre Brook Service Contract	2015/16			2016/17			2017/18 ³		2018/19 ³		2019/20	2020/21	2021/22	2022/23	2023/24
	Sunwater Actual \$'000	QCA Recomm ended \$'000	Variance \$'000	Sunwater Actual \$'000	QCA Recomm ended \$'000	Variance \$'000	Sunwater Estimate ⁴ \$'000	2016/17 QCA Recomm ended (Adjusted) \$'000	Sunwater Forecast \$'000	2016/17 QCA Recomm ended (Adjusted) \$'000	Sunwater Forecast \$'000	Sunwater Forecast \$'000	Sunwater Forecast \$'000	Sunwater Forecast \$'000	Sunwater Forecast \$'000
Operations	553.0	745.7	(192.7)	591.4	750.4	(159.0)	660.5	769.1	956.6	788.4	979.0	981.8	1006.6	1031.8	1057.2
Labour	113.0	209.2	(96.2)	123.3	215.9	(92.6)	132.5	221.3	160.5	226.8	165.0	165.1	169.7	174.3	179.0
Contractors	17.6	18.1	(0.6)	9.7	18.5	(8.7)	7.4	18.9	14.7	19.4	15.0	14.9	15.3	15.7	16.0
Materials	2.9	6.8	(3.9)	0.9	6.9	(5.9)	3.9	7.0	5.9	7.2	6.0	6.0	6.1	6.3	6.4
Electricity	3.2	1.9	1.3	5.0	2.1	2.9	6.6	2.1	3.9	2.2	3.6	3.5	3.7	4.0	4.0
Insurance	139.6	75.0	64.5	168.0	76.3	91.7	156.9	78.2	182.9	80.2	186.7	191.0	195.3	199.8	204.4
Other	12.2	18.5	(6.3)	17.7	18.8	(1.1)	22.6	19.3	74.2	19.8	75.7	75.4	77.1	78.9	80.7
Local area support costs	97.2	-	97.2	106.1	-	106.1	100.0	-	142.2	-	145.7	145.4	149.1	152.8	156.7
Corporate support costs	40.3	200.5	(160.3)	44.3	204.9	(160.6)	71.4	210.0	120.3	215.3	123.2	123.0	126.1	129.3	132.5
Indirect costs	127.1	215.7	(88.5)	116.3	207.1	(90.7)	159.2	212.2	252.0	217.5	258.1	257.6	264.2	270.8	277.6
Preventative maintenance	264.5	196.1	68.5	257.1	197.3	59.9	271.6	202.2	358.8	207.3	367.8	376.3	376.9	386.5	396.4
Labour	77.1	65.4	11.7	87.4	67.5	19.9	83.6	69.1	102.1	70.9	105.0	105.1	108.0	110.9	113.9
Contractors	14.8	1.9	12.9	10.5	1.9	8.5	6.2	2.0	9.8	2.0	10.0	10.0	10.2	10.4	10.7
Materials	6.7	2.8	3.9	2.3	2.9	(0.6)	2.8	2.9	4.9	3.0	5.0	5.0	5.1	5.2	5.3
Other	9.0	1.1	7.9	5.9	1.1	4.7	3.1	1.2	2.9	1.2	3.0	3.0	3.1	3.1	3.2
Local area support costs	66.0	-	66.0	74.5	-	74.5	62.3	-	91.2	-	93.4	93.4	95.6	98.0	100.5
Corporate support costs	23.0	61.0	(37.9)	25.2	62.3	(37.1)	39.6	63.9	76.5	65.5	78.4	78.2	80.2	82.3	84.3
Indirect costs	67.9	63.9	4.0	51.5	61.6	(10.1)	74.0	63.1	71.2	64.7	73.0	72.8	74.7	76.6	78.5
Corrective maintenance	39.2	38.4	0.8	38.5	38.6	(0.2)	44.5	39.6	42.4	40.6	43.4	43.3	44.4	45.5	46.6
Labour	2.6	12.4	(9.8)	4.5	12.8	(8.3)	2.5	13.1	6.8	13.4	7.0	7.0	7.2	7.4	7.6
Contractors	30.0	-	30.0	19.5	-	19.5	34.0	-	14.7	-	15.0	14.9	15.3	15.7	16.0
Materials	0.3	2.3	(2.0)	1.4	2.3	(0.9)	0.3	2.3	4.9	2.4	5.0	5.0	5.1	5.2	5.3
Other	0.2	-	0.2	3.9	-	3.9	-	-	-	-	-	-	-	-	-
Local area support costs	2.3	-	2.3	3.9	-	3.9	1.9	-	6.1	-	6.3	6.3	6.4	6.6	6.8
Corporate support costs	2.3	11.6	(9.4)	2.5	11.9	(9.4)	3.6	12.2	5.1	12.5	5.2	5.2	5.3	5.5	5.6
Indirect costs	1.7	12.1	(10.4)	2.7	11.7	(9.0)	2.1	12.0	4.7	12.3	4.9	4.9	5.0	5.1	5.2
Routine total	856.8	980.2	(123.4)	887.0	986.3	(99.3)	976.6	1010.9	1357.8	1036.2	1390.2	1392.4	1427.8	1463.8	1500.2

1. All financial figures are nominal. Totals may not add due to rounding.
2. Sunwater's 2020/21 to 2023/24 budget figures are draft as at the time of publication. These figures will not be locked down until late in the financial year prior.
3. For 2017/18 and 2018/19 Sunwater has included and reported against the 2016/17 QCA recommended costs adjusted for inflation which was assumed to be 2.5%.
4. A normalised level of direct expenditure and associated overheads were included in 2017/18 routine costs to rectify an under-representation of time-sheet reporting for direct cost activities (and partially because of the organisational changes occurring) during that year.

Annuity balance and non-routine expenditure

Annuities are managed by Sunwater on behalf of each Service Contract. They allow for customer charges to reflect a constant amount necessary to recoup the costs of refurbishment/rehabilitation of assets over a pre-determined period of time. The forecast annuity balances, and the impacts of budgeted non-routine spend, are shown in **Table 4**. Sunwater has used a 30-year planning period to calculate the annuity from 2020/21.

Details of the major non-routine projects planned for the 2019/20 to 2023/24 period are set out in **Appendix 1**. Compared to the 2018/19 NSP, there has been a slight cost reduction due to the removal of unneeded civil works at Ben Dor Weir and Coolmunda Dam, and other projects including gauging equipment replacements and gate painting options. These changes have been offset to some extent by the addition of non-destructive testing of gates at Coolmunda Dam and a gatic cover change out, minor civil works at Whetstone Weir and public safety works at Greenup Weir.

Table 4: Annuity balance¹

Macintyre Brook Service Contract	2017/18 Actual \$'000	2018/19 Forecast \$'000	2019/20 Forecast \$'000	2020/21 Forecast \$'000	2021/22 Forecast \$'000	2022/23 Forecast \$'000	2023/24 Forecast \$'000
Annuity							
Opening balance ²	(2640.5)	(2745.3)	(2804.6)	(3335.0)	(3138.5)	(2741.4)	(2233.7)
Non-routine spend	(182.5)	(136.0)	(304.2)	(270.4)	(94.5)	(54.4)	(40.4)
Insurance proceeds receipts (if applicable)							
Prior year	-	-	-	-	-	-	-
Current year	-	-	-	-	-	-	-
Annuity contribution ³	275.5	282.4	288.7	661.9	675.1	722.5	748.3
Interest/financing costs	(197.8)	(205.6)	(210.1)	(195.0)	(183.5)	(160.3)	(130.6)
Sunwater – Closing Balance	(2745.3)	(2804.6)	(3030.1)	(3138.5)	(2741.4)	(2233.7)	(1656.3)
QCA – Closing Balance	(1719.5)	(1627.1)					
Difference	(1025.8)	(1177.5)					

1. All financial figures are nominal. Totals may not add due to rounding.

2. The difference in the closing balance for 2019/20 and the opening balance for 2020/21 relates primarily to expenditure incurred prior to the start of the 2012 price path. These amounts have been carried forward to 2020/21 so that they can be considered as part of the QCA's review of expenditure for the new irrigation price path.

3. The annuity contribution is included in the prices paid by customers. It was set by the QCA for 2012/13 to 2016/17 and is rolled forward with the Consumer Price Index for 2017/18, 2018/19 and 2019/20. Thereafter the annuity contribution is based upon Sunwater's forecast.

Appendix 1: Non-routine projects for 2019/20 to 2023/24

The below table sets out Sunwater's currently planned non-routine projects for the 2019/20 to 2023/24 period. While the 2019/20 program is well defined, estimates become more uncertain further into the planning timeline. Forecasts are therefore subject to change in future NSPs, reflecting changes in project delivery timing, asset condition and risk updates, and outcomes from scheduled asset inspections.

Year	Project title	Project scope	Budget (\$'000 nominal)
2019/20	Coolmunda Dam – Regulating valve No. 2 refurbishment	The regulating valve had significant corrosion during the 2018 and 2019 annual inspection. It will be removed from site, the corrosion removed, the valve repainted and seals replaced. Any minor amendments to the hydraulic operating system will be done at the same time.	56
	Coolmunda Dam – Light Detection and Ranging survey	There is evidence that the downstream face rock is bulging/moving slightly in some localised areas. It is prudent to set a benchmark and establish an accurate location of the rock to measure against future surveys.	28
	Coolmunda Dam – Install standpipes	During the 2017 annual inspection, operators advised of additional seepage downstream of the dam. To enable accurate measurement of the extent of the seepage, new standpipe piezometers will be installed. This project has been deferred until after the dam safety review to confirm project validity, standpipe numbers and exact locations.	26
	Coolmunda Dam – Gate 4 non-destructive testing	Following issues with gates at Callide Dam, Sunwater will conduct non-destructive testing on sample gates at other dams to determine if there are cracks and other defects in welding and gate material.	68
	Meter replacements	This is an allowance to replace customer meters if they fail during the year. If none are replaced, the funds will remain in the annuity.	23
	Other works	There are 5 other non-routine projects for 2019/20.	104
	2019/20 Total		305
2020/21	Asset revaluation	Revalue the assets for insurance purposes; update asset replacement costs and Bill of Materials; and identify gaps in asset hierarchy data	23
	Coolmunda Dam – Trash rack refurbishment	One of the trash racks at Coolmunda Dam is in poor condition so it is being removed and refurbished. A spare trash rack will be installed in its place to ensure continuous supply.	17

Year	Project title	Project scope	Budget (\$'000 nominal)
	Coolmunda Dam – Crane refurbishment	This is an allowance to repair any defects identified during the crane audit in 2018. Regular inspections to date have not identified any significant defects so this funding may remain in the annuity.	21
	Meter replacements	This is an allowance to replace customer meters if they fail during the year. If none are replaced, the funds will remain in the annuity.	23
	Coolmunda Dam – Comprehensive inspection	Sunwater conducts comprehensive inspections on our dams and weirs every five years to maintain current asset condition knowledge and improve the non-routine maintenance programs.	136
	Other works	There are 2 other non-routine projects for 2020/21.	50
	2020/21 Total		270
2021/22	Coolmunda Dam – 2-tonne hoist replacement	The 2-tonne hoist unit is required to install the isolation bulkhead and has been assessed as needing remedial works such as compliance signage and minor electrical upgrades to keep it in safe working order.	7
	Coolmunda Dam – Bulkhead gate refurbishment	The bulkhead gates are starting to corrode. It is estimated by 2022 that they will need a full repaint as patch-painting is no longer considered a viable maintenance option.	64
	Meter replacements	This is an allowance to replace customer meters if they fail during the year. If none are replaced, the funds will remain in the annuity.	24
	Other works	There are no other non-routine projects for 2021/22.	-
	2021/22 Total		95
2022/23	Meter replacements	This is an allowance to replace customer meters if they fail during the year. If none are replaced, the funds will remain in the annuity.	25
	Coolmunda Dam – Float well assessments	Sunwater conducts condition assessments of the float wells at Coolmunda Dam to ensure that the floats remain attached and are in the guide slots, the discharge pipework is not full of sediment and there are no other defects that prevent the gates from opening as they are intended.	17
	Weir comprehensive inspections – Two sites	These projects are to conduct a comprehensive inspection of the weir to inform Sunwater of any future refurbishment work and keep the asset condition and risk data up to date, which will allow us to prepare an optimised maintenance plan for the weirs.	13
	Other works	There are no other non-routine projects for 2022/23.	-

Year	Project title	Project scope	Budget (\$'000 nominal)
2023/24	2022/23 Total		55
	Coolmunda Dam – Outlet building pump refurbishment	The emergency pump and motor need minor refurbishment to ensure they work, to open the gates as needed.	15
	Meter replacements	This is an allowance to replace customer meters if they fail during the year. If none are replaced, the funds will remain in the annuity.	25
	Other works	There are no other non-routine projects for 2023/24.	-
	2023/24 Total		40

Contact us

To have your say and shape future NSPs, please contact us via email or post:

Email: nspfeedback@sunwater.com.au

Post: NSP Feedback
PO Box 15536 City East
Brisbane Qld 4002

We consider and respond to all submissions, publishing all responses on our website.

This NSP has been prepared by Sunwater to provide indicative information to our customers for the purpose of consultation. It contains estimates and forecasts which are based upon a number of assumptions. The actual financial performance of the Service Contract to which this NSP relates, and the operations and activities actually undertaken by Sunwater during the relevant periods, may vary materially from the information contained in this NSP. This NSP should not be relied upon beyond its purpose as a tool for consultation and you should not rely on the information contained in this NSP in making decisions about your circumstances. Sunwater will not be responsible or liable for any loss (including consequential loss), claim or damage (including in tort) that is in any way connected with the use of this NSP or the information contained within it.

Rural water management program

Proposals for strengthening non-urban water measurement

CONSULTATION PAPER

September 2019



CS9518 8/19

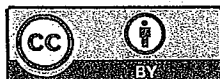
This publication has been compiled by Department of Natural Resources Mines and Energy.

© State of Queensland, 2019

The Queensland Government is committed to providing accessible services to Queenslanders from all culturally and linguistically diverse backgrounds. If you have difficulty in understanding this document, you can contact us within Australia on 13 QGOV (13 74 68) and we will arrange an interpreter to effectively communicate the report to you.

The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence.

Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms.



You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Note: Some content in this publication may have different licence terms as indicated.

For more information on this licence, visit <https://creativecommons.org/licenses/by/4.0/>.

The information contained herein is subject to change without notice. The Queensland Government shall not be liable for technical or other errors or omissions contained herein. The reader/user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using this information.

Table of contents

Introduction	1
Have your say	2
Non-urban water measurement framework.....	3
Why we need to measure water take.....	3
Objectives of the non-urban water measurement framework.....	3
Who will need a meter?	4
Entitlements proposed to require a meter.....	4
Purchase and ownership of metering equipment	5
Proposed future metering equipment and requirements	6
New or replacement meters (including joint meters and bulk meters).....	6
Pattern approval.....	7
Data recording, storage and transmission	7
Existing Meters.....	9
Validation and maintenance of meters.....	10
Supplemented water	11
Implementation approach and timing	12
Other forms of water measurement	13
More information.....	13
Attachment 1: Costs – installation and maintenance of meters and measurement equipment.....	14
Attachment 2: Further information about proposed non-urban water metering standards and requirements	15

Introduction

Our water supply is a precious resource for all Queenslanders, and especially for irrigators, farmers, growers and miners. We all share a responsibility for using it fairly and equitably. The Queensland Government, through the Department of Natural Resources, Mines and Energy (the department) is committed to driving more transparent and accountable water management to support communities, economic development and environmental needs on behalf of all of us.

The Rural Water Management Program (RWMP) is strengthening the ways Queensland's water resources are managed, measured and reported. It was launched in response to the findings of an independent expert panel appointed by the Queensland Government in 2017 to audit non-urban water measurement and compliance.

The Independent Audit found that:

- a significant number of meters do not meet national standards
- existing meter validation and maintenance processes are flawed
- meter reading is done infrequently, resulting in a lack of available information
- metering is implemented inconsistently across the state.

The independent panel's recommendations, most of which were supported in full or in principle by the Queensland Government, identified the need for enhancements in water measurement, regulation and compliance, and information transparency, in order to better manage our vital resources for all water users.

The RWMP builds on our existing programs and is delivering projects to:

- strengthen water measurement
- provide transparent water information
- enhance our regulatory approach
- enable robust compliance.

While the Murray-Darling Basin catchments are a priority, the program has a state-wide focus and will deliver a series of actions to strengthen community confidence in the way Queensland's water resources are accessed and managed.

Strengthening water measurement is one of the key components of the RWMP. Accurately measuring, recording and reporting water take provides transparency and assurance that water is being appropriately managed and that water entitlement holders are meeting their obligations. This makes water meters a critical tool for measuring the take of water.

This consultation paper outlines new policy proposals to improve the standard and coverage of non-urban water measurement and support increased transparency and access to water information across Queensland by:

- providing greater clarity on where a water meter will or won't be required
- introducing telemetry to ensure the collection of real-time data about water use
- identifying a framework to improve the accuracy of water meters
- including a phased implementation of metering based on the level of pressure and risk to water resources.

This paper explains the draft policy proposals and seeks input into the development of a new non-urban water measurement policy for Queensland.

Have your say

We are seeking feedback from the community on the draft proposals to ensure that any new policy is practical and can be implemented effectively. We are particularly interested in comments from water entitlement holders about:

- what forms of water take should be metered, rather than measured in other ways
- whether thresholds can be applied to determine where meters are required
- whether telemetry is a viable and desirable option for data gathering, including how real-time water data should be collected and where it should be available
- issues, assurances and standards around data loggers
- requirements for and application of accuracy testing
- requirements for the validation and maintenance of meters
- record keeping requirements
- the timeframes and approach for implementing the proposals.

Feedback on these proposals can be made in writing from Monday 9 September to 5pm Friday 29 November, 2019. You can make your submission by email, post or online:

- Online: complete the [online submission form](http://www.getinvolved.qld.gov.au) at www.getinvolved.qld.gov.au
- Email: RWMP@dnrme.qld.gov.au
- Post:

Department of Natural Resources, Mines and Energy

Attn: Executive Director, Water Markets

PO Box 15216

City East QLD 4002

Non-urban water measurement framework

The draft policy proposals will be key considerations as we develop a new non-urban water measurement policy to deliver more accurate and reliable measurement across Queensland. The final policy will need to work to the benefit of water entitlement holders, the community and government. It will also need to align with the National Framework for non-urban water metering, allowing Queensland to meet its national water measurement obligations.

Why we need to measure water take

Accurately measuring, recording and reporting water take helps ensure our water resources are managed sustainably. It's also important for effectively implementing Queensland's water plans, including their provisions for how water is shared. Our water plans ensure that water is allocated sustainably to support communities, facilitate economic development and meet environmental needs.

Accurate measurement of water can benefit communities, industry and the environment by:

- providing transparency and assurance that water is being appropriately shared and managed
- ensuring water take complies with water plan requirements to protect environmental flows
- providing water entitlement holders with reliable evidence that they are meeting their regulatory obligations
- ensuring that water take is consistent with water entitlements
- facilitating the operation of water markets and trading.

Objectives of the non-urban water measurement framework

- Ensure the take of water under water entitlements is accurately measured and reported.
- Water measurement information effectively supports the delivery of water planning and management objectives.
- Identify where metering will be required and how we will implement it.
- Ensure adequate standards for metering that give assurance of meter performance and accuracy.
- Provide certainty to water entitlement holders regarding their water measurement obligations.
- Support the optimum utilisation of water made available through water entitlements.
- Meet Queensland's obligations in the Murray-Darling Basin.

Who will need a meter?

The draft policy proposals seek to make clear the entitlements or forms of water take for which a meter will be required.

Entitlements proposed to require a meter

Policy proposals

Entitlements requiring a water meter
<ul style="list-style-type: none">• Water Allocations* (entitlement tradeable separate from land)• Water Licences – Relocatable (entitlement is tradeable but must be attached to land)• Water Licences – Other** (excluding stock & domestic licences) – if specified in a water plan or water regulation• Where supplemented and unsupplemented¹ water entitlements are taken through the same works• Bulk water offtakes for water supply schemes• Water taken under special agreements where required under the agreement or as a condition of a water entitlement or permit associated with the agreement.
<p>* The timing of improved metering for supplemented water allocations will be considered in consultation with water service providers taking account of price path processes.</p> <p>**Thresholds may be set in water plans and under regulation to avoid the unnecessary metering of small water licences which have negligible individual or cumulative impacts. The precise volume involved will vary between areas so must be assessed based on local conditions.</p>

Supporting information

Water allocations (tradeable water rights) and relocatable water licences have carefully specified volumes which makes their use more easily measurable. It is important that these categories of water entitlement are metered, particularly to support water markets.

Most other water entitlements are water licences. These cover a wide range of purposes and sizes across the state and are attached to specified parcels of land. Some licences have a specific volume able to be taken or a maximum area able to be irrigated, while others are limited by the type of use and conditions for taking water.

Under the policy proposals:

- general stock and domestic water licences will not be metered. These licences have no volume specifications and are limited by the type of use and conditions under which water can be taken
- water licences which are already required by regulation to have a meter would continue to require one
- in areas under a water plan, the requirement for remaining water licenses to be metered would be assessed using a risk-based approach through the state's well-established water planning and assessment processes. This will enable landholders and other stakeholders to have their views considered and for local needs and risks be addressed in a flexible way.

¹ A supplemented water entitlement is one which is enhanced by releases of water from government-owned water storages. An unsupplemented entitlement is not enhanced by supplies from government-owned water storages.

While some states have specified whole-of-state volume thresholds for metering, this approach has not been proposed for Queensland. Because of wide variations across the state, a small volume of water in one location may be quite significant and important to measure but relatively insignificant in another. As a result, state-wide thresholds may not allow the flexibility needed to best determine where metering is required

Consultation question 1: Considering the proposal for who will need a meter, please provide your feedback on which types of water take or water entitlements should be subject to metering.

Consultation question 2: Should there be thresholds or limits on the requirement for a meter? If so, what would they be and why?

Purchase and ownership of metering equipment

Consistent with the existing policy, water entitlement holders will continue to be responsible for all costs relating to installing, maintaining and operating their meters and measurement equipment.

Attachment 1 provides an outline of potential costs for meter installations.

Proposed future metering equipment and requirements

All meters and installations must be accurate, verifiable and auditable to provide confidence in water measurement. To ensure this, metering equipment (meters, data loggers, telemetry) and its installation, validation and maintenance will need to comply with the department's non-urban water metering standards. These standards will outline and explain the technical requirements for meters. The new proposed standards are consistent with, and will need to be followed in conjunction with the Australian Standard AS 4747: Meters for non-urban water supply².

This table summarises proposed metering equipment and standards for different types of non-urban water metering.

Table 1 Summary of metering equipment and standards proposals

	Meter - Pattern approved	Data logger	Telemetry - required on a priority basis	Validated to AS4747 or equivalent	Maintenance including accuracy
Existing unsupplemented meters	✓ some exceptions	✓	✓	✓	✓
New or replacement unsupplemented meters	✓ some exceptions	✓	✓	✓	✓
Joint meters*	✓	✓	✓	✓	✓
Water supply and distribution scheme bulk-off take meters	✓	✓	✓	✓	✓

*Meters taking both supplemented and unsupplemented water.

Attachment 2 provides more information about the proposed standards for non-urban water metering.

New or replacement meters (including joint meters and bulk meters)

Policy proposals

It is proposed that all new and replacement meters would need to meet the departmental standards which align with AS4747.

Installation of pattern approved meters will be required, with limited exceptions. These requirements will be set out in the departmental standard.

Supporting information

To ensure that accurate, reliable and timely information is available to support water management, compliance, information transparency and water market operation, it is essential that meters are installed, operating and maintained appropriately.

This can be achieved by requiring all new and replacement meters to stringently meet the proposed new departmental standards which align with the Australian Standard AS4747. This includes

² AS 4747 is available on [Standards Australia](https://standards.australia.org.au/) website

requirements for data loggers (to record and store meter data) and telemetry (to transmit meter read data to the department).

Entitlement holders can also take water under both unsupplemented and supplemented water entitlements. Where this is the case, the water take often occurs through a single meter. These meters are referred to as joint meters or dual-purpose meters.

While the supplemented component needs to be accounted for to the water supply scheme operator (such as water accounting and charging), the unsupplemented component needs to be accounted for to the department. This is to check if the unsupplemented take is consistent with entitlements and access conditions, such as time or flow thresholds. As a result, all joint meters must meet the required standards.

Pattern approval

Pattern approval is the process of testing the pattern (design) of an instrument against an established standard by an impartial body.

For water meters, pattern approval determines whether a meter is able to remain accurate in a range of environmental and operating conditions. Meters are tested to meet the accuracy requirements of AS4747 and must be installed according to the pattern approval and/or manufacturers specifications.

Consultation question 3: What factors need to be considered in requiring pattern approved meters where these are available on the market?

Data recording, storage and transmission

Policy proposals

As part of strengthening transparency and accountability, the policy proposals recommend introducing requirements for the recording, storage and electronic transmission of real-time meter read information as a standard requirement for metering.

A data logger (a device to record and store meter data) is proposed to be included on all new and replacement installations. A new data logger standard outlining specific requirements is being developed.

A telemetry device (to transmit data to the department) is proposed to be included on new and replacement meter installations. The timing for this requirement will be on a priority basis, such as in high risk areas and the Murray-Darling Basin.

Water entitlement holders would be responsible for the cost of including these devices as part of their metering installations.

Supporting information

Making data more available through devices such as data loggers and the use of telemetry provides opportunities to significantly improve water information management, sharing and transparency.

Data loggers

A data logger is a recording device fitted to your meter that measures water use throughout the day. These devices can record and store data for a number of years, ensuring it's auditable and verifiable.

Information captured by data loggers can show how you use water over time. The data can help you make your water use more efficient by identifying issues like leaking pipes, broken fixtures and incorrectly set irrigation systems. The data they provide can also potentially allow you to enter the water trading market as a buyer or seller.

Telemetry

Telemetry is the automatic transmission of data for monitoring. The technology is already used in the agriculture, irrigation and water industry sectors, and its cost and availability has improved significantly in recent years. It is a valuable tool for water measurement, management and reporting.

Telemetry devices can use available communication networks to automatically transmit data from meters, pumps and other devices. The department would provide systems to securely receive, store and report the data, including providing water entitlement holders with timely access to their water use information. This up-to-date data would enhance the department's water management capabilities.

Like data loggers, telemetry data provided back to entitlement holders could support more informed farm management decisions on matters such as water and energy use and minimising water losses, leading to reduced input costs and improving farm profitability. It could also help identify opportunities to enter the water market as a seller or buyer of water.

There has been no decision about what information would be made available beyond the department and individual water entitlement holders. Information privacy requirements are a key consideration.

In the Murray-Darling Basin, the requirement for telemetry on certain entitlements has already been agreed as part of Queensland's commitments to the Murray-Darling Basin Compliance Compact.

Many water entitlements have timing triggers and pumping or water level thresholds that apply to the taking of water. These timing triggers and thresholds underpin the equitable sharing of available water among entitlement holders on a real-time basis and also serve to protect water for the environment and other water users. Situations like these make the availability of real-time information through telemetry a valuable and important way to give entitlement holders and the community confidence that water is being shared fairly and environmental outcomes are being achieved.

It's important that water entitlement holders are able to demonstrate that they're meeting their obligations. Telemetry provides a way to do this in a timely, efficient and transparent manner. Access to real-time data would also allow the department to more effectively hold entitlement holders that unfairly take water outside of their entitlements to account.

The department is assessing transmission network options for telemetered data to ensure reliable coverage is available.

Consultation question 4: In consideration of data recording, storage and transmission, are there circumstances where you consider telemetry is not beneficial?

Consultation question 5: Should there be thresholds or limits on the requirement for telemetry? If so, what would they be and why?

Consultation question 6: Are there any circumstances where you believe data loggers are not beneficial? If so, please describe these and why.

Consultation question 7: What information would you require from the department to be certain about what your data logger is required to do and which device to install?

Consultation question 8: What privacy and commercial-in-confidence considerations do you think are important in relation to the department's and the water entitlement holder's storage, access to and use of water use data?

Existing Meters

Policy proposals

Where water entitlement holders are already required to have a meter, or where a meter is already installed, they will continue to require one.

Transitional arrangements are proposed so that an existing meter can remain in service if:

- it can be shown to be reading accurately (within plus or minus 5%)
- a data logger is or can be fitted
- it is maintained in accordance with the provisions of the new departmental standards.

Under the proposals, an existing meter which can't meet these requirements would need to be replaced in accordance with the proposed standards.

Supporting information

Transitioning existing meters

Some existing meters may be able to be retained. Transitional arrangements for existing meters would need to take into account accuracy and maintenance, the ability to record readings (i.e. data logger compatibility) and whether the existing interim standard has been met.

Where an existing meter doesn't meet the proposed standards but can be verified to read accurately ($\pm 5\%$), can be fitted with a data logger and has been maintained in accordance with the standards, that meter does not need to be replaced until end of life or until it is no longer reading accurately. The proposed standard will set out the timeframes for end of life.

Transitional arrangements will be developed in conjunction with the new metering standards.

Faulty meters

It is possible that an existing meter could become faulty. The *Water Regulation 2016* requires water users to report faulty meters. Under the existing requirements:

- a water user must inspect their meter and/or recording device each time they submit a meter reading to verify that their meter is not faulty
- if a water user becomes aware at any time that their meter has ceased to work or is faulty, they must notify the department and either repair the meter or replace it with one which meets the required standard
- when a water entitlement holder notifies the department about their faulty meter they are given 60 business days (12 weeks) to repair and have the meter validated, provided they maintain the required water use records during this period
- during this period, the meter is still an approved meter. If it is not possible to meet the 12-week timeframe, the water entitlement holder can apply for a further extension based on their specific circumstances.

Consultation question 9: How well do the proposed transitional arrangements balance improved meter accuracy and minimising costs for existing meter owners?

Validation and maintenance of meters

Policy proposals

Water entitlement holders will continue to be responsible for validating and maintaining meters.

Entitlement holders must ensure that a validator (certified meter installer) validates their meter and meter installation against the departmental standards.

Entitlement holders will still be required to lodge a validation certificate with the department.

All meters must be maintained in accordance with the departmental standards, which will set out requirements to ensure ongoing accuracy and operation of meters based on meter type.

Entitlement holders will be required to retain records of meter installation, validation and maintenance and provide these to the department on request.

Periodic testing of meters is proposed to ensure ongoing accuracy.

Supporting information

Enhanced meter validation and maintenance processes will ensure that meters comply with required standards, are installed in accordance with specifications and are operating effectively. The costs associated with validation and maintenance will continue to be the responsibility of entitlement holders.

Proposed reforms include periodic meter accuracy testing for meters commencing once meters reach end of life. The proposed standard will set out the timeframes for end of life. This is a change from the existing policy, but is essential where metering is the mandated form of measurement and is needed to provide confidence that accuracy is being achieved.

Validation

The Water Regulation prohibits entitlement holders from validating their own meter.

Validation is a set of activities to inspect a meter, checking that it's pattern approved, installed in compliance with the relevant standards and maintained to an acceptable state. Validation provides confidence that the meter will operate within an acceptable range of error under normal operating conditions.

While validation is an existing requirement, it has been enhanced. A more rigorous validation process and documentation is proposed to be included in the departmental standard. Validators will be required to record details of works, meter body specifications (including pattern approval details, meter flow capabilities and power source), information on the type of data logger installed and commissioning details confirming the level of accuracy and test method used by the manufacturer.

Validation must be conducted by a certified meter installer (a validator). An entitlement holder cannot validate their own meter installation. Where a meter meets the validation requirements in the standard, a validator will issue a certificate. This validation certificate must be provided to the department.

The departmental standard will outline the schedule and timeframes for meter validations. Non-pattern approved meters are proposed to be subject to more frequent validation.

Maintenance

General maintenance, including an annual, visual inspection to ensure the meter is operational, is proposed. An entitlement holder can conduct this inspection, which would need to be documented.

Tamper evident seals

Tamper evident seals provide visible, identifiable evidence of meter tampering, dismantling or alterations. They must be applied whenever a meter is installed or maintained. If a seal is broken the meter must be re-validated by a validator.

For example, re-validation may be required where the workings of a meter are accessed as part of maintenance and the tamper evident seals have been broken.

Requirements to keep and provide records

Entitlement holders will be required to keep and provide records in relation to meter installations, validation, maintenance and – in some circumstances – water take. Retaining this information will help entitlement holders show they are meeting their obligations and ensure meter records are auditable and verifiable. There may be circumstances where this information must be provided to the department or made available on request. The departmental standards will outline further details about record keeping requirements.

Consultation question 10: What do you see being the effects of the proposed changes to validation and maintenance requirements?

Supplemented water

Policy proposals

To achieve greater consistency in the standards for how water take is measured, these policy proposals would also apply to supplemented water (water supply or distribution scheme water). The only exception would be for channel irrigation schemes, where only the offtake to the scheme will need to meet the new standards.

Supporting information

Supplemented water take is a significant proportion of all water taken under water entitlements in Queensland. This take is currently subject to metering as determined by the water supply scheme operators and has not been required to meet the department's interim standards. This has resulted in unsupplemented water users being held to a higher standard than supplemented water users.

To give water users, industry and the community confidence that the state's water is being used fairly and equitably, all forms of water take must be subject to accurate water measurement. Consistent measurement standards for all take under water entitlements will mean more transparent and equitable water use for everyone.

Implementation timeframes for supplemented water measurement would be developed in close consultation with water supply and distribution scheme operators. Queensland's Murray-Darling Basin commitments and future price path determinations will be considered in these discussions.

Implementation approach and timing

It is proposed that the implementation of metering under a new non-urban water measurement policy across the state will be phased in over a number of years.

An implementation plan will be developed with timeframes informed by risks arising through pressure on available water resources as well as through water plan requirements and national commitments. The implementation plan will draw on information from water planning processes, water management priorities and the outcomes of this and related community consultations. This includes:

- detailed hydrologic assessments of watercourses and aquifers
- identifying environmental risks and needs
- reviewing the degree of development and demand pressure for water
- the need to ensure equitable sharing of the available resource.

The Queensland Murray-Darling Basin will be a priority focus for implementation, especially in relation to delivering metering commitments under the Murray-Darling Compliance Compact. Under these commitments, Queensland must ensure water entitlements in the Queensland Murray-Darling Basin are accurately measured by 2025.

The proposed timeframe for implementing the policy proposals allows industry and water entitlement holders to adapt to the new metering requirements. This timeframe also allows government to develop enhanced water information systems to collect, store and report water meter data.

However, metering is also an ongoing process as water entitlements are activated transferred or traded. Information about metering in the short-term will continue to be available to support water markets and trading.

The implementation of metering for supplemented water entitlements will be phased in over time in close consultation with water supply and distribution scheme operators, taking into account price path timeframes.

Consultation question 11 – Are there any other matters which need to be considered in determining an effective implementation plan?

Other forms of water measurement

While this paper focuses on metering, other technologies and approaches could also be used to improve measurement and provide solutions where metering is not suitable. The department is investigating, trialling and considering other measurement options for improved water management.

Alternative measurement approaches can include sensors on pumps and storage sensors, desktop satellite imagery analysis and the use of remote sensing technologies such as Lidar to assess storage volumes and potential growth.

The department could potentially use these approaches to monitor or further develop methodologies to estimate forms of take under water permits, overland flow (where an entitlement is not required) and through statutory authorisations, (e.g. stock and domestic, prescribed activities under water regulation). This would improve the department's capabilities to manage the state's water resources sustainably and holistically.

More information

Find out more about the measurement policy proposals and consultation process at www.dnrme.qld.gov.au.

Attachment 1: Costs – installation and maintenance of meters and measurement equipment

Consistent with the existing policy, water entitlement holders will be responsible for all costs relating to installing, maintaining and operating their meters and measurement equipment.

The introduction of data loggers and telemetry as a mandatory requirement on meter installations may lead to new costs for water entitlement holders.

Cost estimates per installation* are:

- for smaller meters (up to 200 mm) – \$8,000 to \$12,000
- for medium-sized meters (approximately 300 mm) – \$14,000 to \$18,000
- for large meters (450 mm to 600 mm) – \$25,000 to \$50,000
- for very large meters (approximately 1200 mm) – \$90,000 to \$100,000.

**The unit cost of meters, including data loggers and telemetry, as well as associated costs such as pipework, labour and validation, have been taken into account.*

Initial estimates indicate that the cost to retrofit telemetry to an existing meter ranges from \$500 to \$5000. The cost may be higher for complex metering installations.

The cost for enhanced validation requirements is expected to be \$200 - \$300 per validation, as the majority of the costs are generally associated with the validator accessing the site (travel costs) and these costs will not change under the new proposals.

Attachment 2: Further information about proposed non-urban water metering standards and requirements

It is anticipated that in the future all new and replacement meters in Queensland will be required to be pattern approved.

Requirements for very large meter installations

However, given the current limited supply market* and alternate technologies available for closed conduit full pipe meter installations greater than 600 millimetres in diameter, the department may consider the use of a non-pattern approved meters** for these very large meter installations. The proposed standards will be regularly reviewed and as the supply market for pattern approved meters improves this exception will be removed. In the interim, more frequent validation and accuracy requirements will apply where non-pattern approved meters have been installed. Enhanced maintenance requirements for all meters is outlined in the Maintenance section of this attachment.

*As at 4 July 2019 there were only 2 pattern approved non-urban closed conduit full pipe water meters for (greater than) DN600 to DN1000 installations; only 1 pattern approved meter for DN1200 installations, and no pattern approved meters were available for meters over DN1200. Further, there are currently no pattern approved meters available for open channel or partially filled pipe installations.

**For large meter installations, the use of a pattern approved meter should always be considered in the first instance. However, where a non-pattern approved meter is the only feasible option, the following factors would be considered for use of the meter:

Factors to be considered	'Installations (greater than) 600 mm nominal diameter'
Performance =>	As specified in AS4747.2 <i>Clause 4.3.2.1</i> or <i>Clause 4.3.3</i> (for closed conduit full pipes) As specified in AS4747.3 <i>Clause 7.3.2.1</i> or <i>Clause 7.3.3</i> (for open channels)
How =>	In accordance with the requirements of AS4747.2 - <i>Clause 4.3.1.2</i> or <i>Clause 4.3.1.3</i> (for closed conduit full pipes) In accordance with the requirements of AS4747.3 - <i>Clause 7.3.1.2</i> or <i>Clause 7.3.1.3</i> (for open channels)
Other aspects =>	Shown to comply with AS4747.2: <ul style="list-style-type: none"> - <i>Clause 1.1 Scope;</i> - <i>Section 2 Materials;</i> - <i>Section 3 Design;</i> and - <i>Section 5 Product Documentation.</i>
Certification of submission to the department =>	<i>certified meter installer</i> (for a proposed meter which defines its own geometry). <i>certified meter installer</i> , with training certification by the meter manufacturer (for a proposed meter which does not define its own geometry). <i>certified practicing hydrographer</i> (for a proposed open channel meter).

Meter installation

All non-urban meters will be required to be installed in compliance with the Pattern Approval certificate and the appropriate Australian Standards.

All meters for non-urban use shall be installed in accordance with the relevant NMI documents, Australian Standards or Technical Specifications or manufacturer's specifications (where these reflect NMI documents and Australian Standards), such that there is an acceptable level of confidence that the meters will operate within the maximum permissible limits of error ($\pm 5\%$) allowable under in situ conditions.

(Source – National Framework for Non-urban Water Metering)

The proposed new Queensland metering standard would mandate that meters are to be installed and commissioned as per the requirements of *Australian Standard 4747 – Meters for Non-Urban Water Supply*.

Validation

All non-urban meters will be required to be validated by a certified validator after installation and before water is taken through the meter under the entitlement.

Post-installation validation shall apply to all non-urban meters to ensure there is an acceptable level of confidence newly installed meters operate within the maximum permissible limits of error allowable under in situ conditions ($\pm 5\%$).

Post-installation validation shall be undertaken by a certified validator or certified installer who also holds certified validator status.

To validate a meter after installation, the certified validator shall undertake the following best practice checks:

- *Check the meter (or measuring system, including its component parts) to ensure it has a verification mark and is correctly installed in accordance with the relevant NMI documents, Australian Standards or Technical Specifications and manufacturer's specifications:*

For closed conduits:

- *check the installation to ensure that the lead-in / lead-out pipe lengths are of the specified length*
- *For closed conduits, check the meter internals (via meter capsule removal or lead-in /lead out disassembly) and where necessary remove and clean pipe lengths to ensure they are straight, round and free from obstruction. (The checks which may be undertaken shall vary with the type of meter, e.g. the range of checks possible with an electro-magnetic meter differs greatly from those possible with a mechanical meter).*
- *For open channels, calibrate weirs and height gauges and inspect upstream and downstream infrastructure to minimise potential obstructions impacting on the performance of the measuring device.*

Where appropriate, seal the meter with a seal that is approved by the relevant government department, agency or water service provider to prevent tampering.

Approve the meter and installation for use and issue a validation certificate to the meter owner/user.

Certified installers, maintainers and validators shall hold certification issued by a nationally recognised, industry-based certification scheme. Certification will be competency-based and will recognise qualifications and/or equivalent experience.

(Source – National Framework for Non-urban Water Metering)

Under a new Queensland metering standard it is proposed that:

- A *certified meter installer*, commission, validate and seal a pattern approved meter, post installation.
- A *certified meter installer*, install, commission, validate and seal a non-pattern approved meter, which defines its own geometry.
- A *duly qualified person*, install, commission, calibrate, validate and seal a meter, which does not define its own geometry or is measuring in a partially full pipe.
- A *certified practicing hydrographer*, install, commission, calibrate, validate and seal an open channel meter.

Queensland has proposed to use:

- A *duly qualified person*, as described, as they will have *certified meter installer* accreditation, plus specialised training certification by the particular meter manufacturer.
- A *certified practicing hydrographer*, as described, due to their specialised training in open channel/watercourse measurement. A *certified practicing hydrographer* has received professional recognition of their specialised skills through certification by the Australian Hydrographic Surveys Certification panel.

Maintenance of meters – proposed timeframes for validation (ongoing)

The following four tables detail the maintenance schedule proposed in a new standard by meter type.

CLOSED CONDUIT METERS FULLY CHARGED

Table 1a – Pattern Approved Meter:

Meter Type	Inspection certificate	All meters
Mechanical	<p>Priority meter: 6 monthly</p> <p>All other meters: Annually</p>	<p>Timetable/Sequence:</p> <p>1) Before 5th year of service ends-> <i>validation certificate (by certified meter installer)</i>.</p> <p>2) Before 10th year of service ends:</p> <p>a) replace element and stem assembly, where flow tube in good condition (AS4747 recommends replacing element and stem assembly after 10 years of service) -> <i>validation certificate (by certified meter installer)</i>; or</p> <p>b) where flow tube not in good condition, replace with a new meter which meets the requirements of the Qld Standard.</p> <p>3) Before 15th year of service ends-> <i>validation certificate (by certified meter installer)</i>.</p> <p>4) Before 20th year of service ends:</p> <p>a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard (AS4747 recommends replacing entire assembly after a maximum of 20 years of service); or</p> <p>b) a conforming <i>accuracy test</i> and <i>validation certificate (by certified meter installer)</i> is provided – 3 yearly (continuing).</p>
Electronic		<p>Timetable/Sequence:</p> <p>1) 5 yearly (e.g. before 5th year of service ends, before 10th year of service ends, etc.) -> <i>Validation certificate (by certified meter installer)</i>.</p> <p>2) Before 30th year of service ends:</p> <p>a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard (AS4747 recommends replacing meter after a maximum of 30 years of service); or</p> <p>b) a conforming <i>accuracy test</i> and <i>validation certificate (by certified meter installer)</i> is to be provided – 3 yearly (continuing).</p>
Any meter with suspect read accuracy		<p>Within 3 months, or at next available flow event thereafter:</p> <ul style="list-style-type: none"> - a conforming <i>accuracy test (by certified meter installer)</i> is provided.

Table 1b – Non-Pattern Approved Meter:

Meter Type	Inspection certificate	All meters
Mechanical		<p>Timetable/Sequence:</p> <p>1) Before 3rd year of service ends -> conforming <i>accuracy test</i> and <i>validation certificate</i> (by certified meter installer).</p> <p>2) Before 6th year of service ends:</p> <p>a) replace element and stem assembly, where flow tube in good condition -> conforming <i>accuracy test</i> and <i>validation certificate</i> (by certified meter installer); or</p> <p>b) where flow tube not in good condition, replace with a new meter which meets the requirements of the Qld Standard.</p> <p>3) Before 9th year of service ends:</p> <p>a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard; or</p> <p>b) approval for the continued use of a non-pattern approved meter is a matter for negotiation with the department -> conforming <i>accuracy test</i> (by certified meter installer) is also to be provided. The factors to be considered by the department in the use of a non-pattern approved are described earlier.</p>
Electronic – defines own geometry	<p>Priority meter: 6 monthly</p> <p>All other meters: Annually</p>	<p>Timetable/Sequence:</p> <p>1) 3 yearly (e.g. before end of 3rd year of service, before end of 6th year of service, etc.) -> conforming <i>accuracy test</i> and <i>validation certificate</i> (by certified meter installer).</p> <p>2) Before 15th year of service ends:</p> <p>a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard; or</p> <p>b) approval for the continued use of a non-pattern approved meter is a matter for negotiation with the department -> conforming <i>accuracy test</i> (by certified meter installer) is also to be provided. The factors to be considered by the department in the use of a non-pattern approved are described earlier.</p>
Electronic – does not define own geometry		<p>All other meters - timetable/sequence:</p> <p>1) 3 yearly (before 3rd year of service ends, before 6th year of service ends, etc.) -> conforming <i>calibration report</i> and <i>validation certificate</i> (by duly qualified person).</p> <p>2) Before 15th year of service ends:</p> <p>a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard; or</p> <p>b) approval for the continued use of a non-pattern approved meter is a matter for negotiation with the department -> conforming <i>calibration report</i> (by duly qualified person) is also to be provided. The factors to be considered by the department in the use of a non-pattern approved are described earlier.</p>
	n/a	<p>Priority meter installation - timetable/sequence:</p> <p>1) Annually (before end of 12 months, before end of 24 months, etc.) -> conforming <i>calibration report</i> and <i>validation certificate</i> (by duly qualified person).</p> <p>2) Before 15th year of service ends:</p> <p>a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard; or</p> <p>b) approval for the continued use of a non-pattern approved meter is a matter for negotiation with the department -> conforming <i>calibration report</i> (by duly qualified person) is also to be provided. The factors to be considered by the department in the use of a non-pattern approved are described earlier.</p>
Any meter with suspect read accuracy		<p>Within 3 months, or at next available flow event thereafter:</p> <ul style="list-style-type: none"> - Meter defines own geometry – conforming <i>accuracy test</i> (by certified meter installer). - Meter does not define own geometry – conforming <i>calibration report</i> (by duly qualified person).

OPEN CHANNEL & PARTIALLY FULL PIPE METERS

Table 2a – Pattern Approved Meter:

Meter Type	Inspection certificate	All meters
Partially filled pipe	Priority meter: 6 monthly	<p>Timetable/Sequence:</p> <p>1) 5 yearly (e.g. before 5th year of service ends, before 10th year of service ends, etc.) -> <i>Validation certificate (by duly qualified person)</i>.</p> <p>2) Before 30th year of service ends:</p> <p>a) the meter is to be replaced with a new meter which meets the requirements of this Qld Standard (AS4747 recommends replacing meter after a maximum of 30 years of service); or</p> <p>b) a conforming <i>accuracy test</i> and <i>validation certificate (by duly qualified person)</i> is provided – 3 yearly (continuing).</p>
Open Channel	All other meters: Annually	<p>Timetable/Sequence:</p> <p>1) 5 yearly (e.g. before 5th year of service ends, before 10th year of service ends, etc.) -> <i>Validation certificate (by certified practicing hydrographer)</i>.</p> <p>2) Before 30th year of service ends:</p> <p>a) the meter is to be replaced with a new meter which meets the requirements of this Qld Standard (AS4747 recommends replacing meter after a maximum of 30 years of service); or</p> <p>b) a conforming <i>accuracy test</i> and <i>validation certificate (by certified practicing hydrographer)</i> is provided – 3 yearly (continuing).</p>
Any meter with suspect read accuracy		<p>Within 3 months, or at next available flow event thereafter:</p> <ul style="list-style-type: none"> - Partially filled pipe – conforming <i>accuracy test</i> (by duly qualified person). - Open channel – conforming <i>accuracy test</i> (by certified practicing hydrographer).

Table 2b – Non-Pattern Approved Meter:

Meter Type	Inspection certificate	All meters
Partially filled pipe – defines own geometry	Priority meter: 6 monthly	<p>Timetable/Sequence:</p> <p>1) 3 yearly (e.g. before 3rd year of service ends, before 6th year of service ends, etc.) -> conforming <i>accuracy test</i> and <i>validation certificate</i> (by duly qualified person).</p> <p>2) Before 15th year of service ends:</p> <ul style="list-style-type: none"> a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard; or b) approval for the continued use of a non-pattern approved meter is a matter for negotiation with the department -> conforming <i>accuracy test</i> (by certified meter installer) is also to be provided. The factors to be considered by the department in the use of a non-pattern approved are described earlier.
Partially filled pipe – does not define own geometry	All other meters: Annually	<p>All other meters - timetable/sequence:</p> <p>1) 3 yearly (before 3rd year of service ends, before 6th year of service ends, etc.) -> conforming <i>calibration report</i> and <i>validation certificate</i> (by duly qualified person).</p> <p>2) Before 15th year of service ends:</p> <ul style="list-style-type: none"> a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard; or b) approval for the continued use of a non-pattern approved meter is a matter for negotiation with the department -> conforming <i>calibration report</i> (by duly qualified person) is also to be provided. The factors to be considered by the department in the use of a non-pattern approved are described earlier.
	n/a	<p>Priority meter installation - timetable/sequence:</p> <p>1) Annually (before end of 12 months, before end of 24 months, etc.) -> conforming <i>calibration report</i> and <i>validation certificate</i> (by duly qualified person).</p> <p>2) Before 15th year of service ends:</p> <ul style="list-style-type: none"> a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard; or b) approval for the continued use of a non-pattern approved meter is a matter for negotiation with the department -> conforming <i>calibration report</i> (by duly qualified person) is also to be provided. The factors to be considered by the department in the use of a non-pattern approved are described earlier.
Open channel		<p>Timetable/sequence:</p> <p>1) Annually (before end of 12 months, before end of 24 months, etc.) -> conforming <i>calibration report</i> and <i>validation certificate</i> (by certified practicing hydrographer).</p> <p>2) Before 15th year of service ends:</p> <ul style="list-style-type: none"> a) the meter is to be replaced with a new meter which meets the requirements of the Qld Standard; or b) approval for the continued use of a non-pattern approved meter is a matter for negotiation with the department -> conforming <i>calibration report</i> (by certified practicing hydrographer) is also to be provided. The factors to be considered by the department in the use of a non-pattern approved are described earlier.
Any meter with suspect read accuracy		<p>Within 3 months or at next available flow event thereafter:</p> <ul style="list-style-type: none"> - Partially filled pipe (defines own geometry) – conforming <i>accuracy test</i> (by duly qualified person). - Partially filled pipe (does not define own geometry) – conforming <i>calibration report</i> (by duly qualified person). - Open channel – conforming <i>calibration report</i> (by certified practicing hydrographer).