Subsidiary Water Meter Technical Specifications

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1. Purpose

The purpose of this technical specification is to provide a clear framework for Cairns Regional Council (CRC) employees and consumers/customers in relation to sub-metering of multi units/lots for “new developments”.

The supporting technical specifications ensure that any Water Service Provider (WSP) decisions in respect to sub-metering are consistent and in line with the intent of the WSP Sub-Metering Policy and the Queensland Plumbing and Wastewater Code (QPWC). This technical specification may be amended from time to time. Whilst this document outlines WSP requirements it will not take precedence over any individual decision made in connection with a particular development.

2. Scope

This policy relates to sub-metering requirements for new Multi-Unit premises developed since 1st January 2008, and some non-residential premises, and provides for the mandatory requirements described in the QPWC.

3. References

Queensland Plumbing and Wastewater Code (QPWC)
Body Corporate and Community Management Act 1997
Plumbing and Drainage Act 2018 (PDA)
Plumbing and Drainage Regulation 2019 (PDR)
Australian Standards

4. Definitions

Refer Appendix A for definitions.

All terms referred to in this guide have the same meaning as defined in the *Plumbing and Drainage Act 2018* (PDA), *Plumbing and Drainage Regulation 2019* (PDR) or a relevant Australian/New Zealand Standard. If a definition given in a relevant standard is inconsistent with the PDA, PDR or the QPWC, the legislation prevails.

5. Background

Prior to the amendments to the QPWC on 1 January 2008 it was not mandatory to install water meters within multi-unit residential premises and commercial premises. This meant that in most circumstances individual lot owners had no knowledge of their individual water use and consequently may have been discouraged in their attempts to reduce their individual consumption. From 1 January 2008 the QPWC – *Water Meters in New Premises*, made it mandatory to install sub-meters in all multi-unit developments and some non-residential premises. This enables water service providers to directly charge the owners of separate lots in new buildings for their actual water consumption. For multi-unit buildings under single title, this also enables itemized billing based on sub-meter readings, so that the owner may pass the cost of water onto the individual user.

6. Metering and Body Corporate Requirements

6.1 Master Meter

It shall continue to be a requirement to install a master meter at the front of the property.

6.2 Multiple Body Corporates

Where there are multiple Body Corporates in a development, the total water supply to each Body Corporate shall be metered. This meter is then considered the master meter for the Body Corporate it is connected to. Note, the boundary meter can be the master meter for one Body Corporate only. Where having multiple Body Corporates creates common internal lines, the ownership and responsibility for maintenance of these mains lies with all those who benefit from it.

6.3 Communal Hot Water Systems

Hot water is not metered directly by the water service provider. This is the responsibility of the Body Corporate.

6.4 Sub-meter Requirements

The developer is responsible for ensuring sub-meters conform to this specification.

All sub meters installed in Multi Unit Properties (MUPs) must fulfil the requirements of this specification.

A single sub-meter capturing all cold water entering the lot must service each lot within the MUP.

These sub-meters shall capture only the water entering the lot they are assigned to.

Installation Orientation

All sub-meters are to be installed by licensed plumbers and in accordance with their pattern approval certificates. Care must be taken to ensure that the sub-meter type selected can be installed with the dial face in a position where an unassisted person standing on the floor can easily read it.

Dual Check Valves

Australian Standard AS/NZS3500 outlines a number of provisions in regard to backflow protection. Where necessary, a hazard assessment may be completed for the development as well as for individual lots. The default situation is that each sub-meter installation must be fitted with dual check valves at the points where sub meters are installed. In 20mm diameter sub-meters, these check valves shall be incorporated in the sub-meter so that the overall length of the sub-meter assembly is not affected.

Sub-meter Dimensions

All sub-meters must comply with the dimensions described in Appendix D of AS3565.1. Other sizes must conform to the Australian Standards if available, otherwise with normal CRC practice (details can be provided on request).

6.5 Sub-meter Installation

6.5.1 Sub-meter Installation

Where possible, sub-meters may be installed so that they are accessible from ground level in common areas outside the building, in a weather-resistant hinged sub-meter cupboard on the side of the building or other structure (e.g. Fence). All sub-meters shall be installed in an accessible location. An accessible Location is a location that must be unrestricted at all times, including free from building security, being obscured by vehicle movements, free from overgrown vegetation and all other forms of obstructions and hazards.

The building owner is responsible for ensuring a contact person is available to enable CRC staff access to the sub-meters for maintenance purposes. CRC will not be held responsible in the event where failure to provide access in a timely manner results in damages to persons or property.

6.5.2 Sub meter Installation - New Technologies

CRC is currently trialling Smart Meter Automated Meter Infrastructure (AMI) technology. At the successful completion of this trial it is anticipated that all future sub-meter installations will be required to utilise compatible smart meter technology. These technical specifications will be amended to reflect this change when it occurs.

In the interim where the following situations exist:

- The sub-meter is not physically accessible or not able to be read from ground level, or
- The meter reader does not have 24-hour access to the premises without needing security access keys.

All such installations will require discussion with CRC to ascertain the most appropriate solution available that will address future requirements.

6.6 Buried Sub-Meter Boxes

Buried sub-meters are not permitted.

6.7 Sub-meter Cupboards

Sub-meter cupboards shall be designed such that:

- There is a minimum 100mm gap, perpendicular to the direction of the pipes, between sub-meters.
- There is a minimum 100mm gap between the outermost valves and the edges of the cupboard.
- If the cupboard also houses fire hose reels, the fire rating required shall not be compromised.
- The sub-meters are easily accessible and readable from floor level of common property, unassisted by a ladder or other equipment. Maximum height for the higher of either the centreline of sub-meters or the top of the sub-metering assembly = 1.6m.
- There is no need for a person performing normal maintenance duties to enter into the cupboard. (i.e. The cupboard must not be classifiable as a confined space for entry purposes.) Where meters are located in a utility room, adequate ventilation must be provided.
- A minimum of 2 square meters is available in front of the cupboard as free working space.
- Adequate lighting is available during daylight hours.
- There is sufficient room for the cupboard door(s) to swing open completely and provision for them to be held open.
- The cupboard shall have a minimum 100mm bund at the opening if it is located inside a building.
- The cupboard shall be sufficiently waterproof and drained to prevent seepage into the surrounding building structure in the event of a leak.

6.8 Conventional Meter Assemblies – 20mm

Where conventional 20mm meters are installed, each sub-meter must have ball valves on both sides for shutting of the water supply, an adjustable meter coupling on one side of the meter and a standard meter coupling on the other side for the safe removal of the sub-meter. The ball valve on the upstream side of the sub-meter must be able to be fixed in variable positions with a stainless steel tie. These items together are referred to as the 'conventional sub-meter assembly'. The overall length of the assembly is to be no more than 500mm. This sub-meter assembly shall connect to the Body Corporate plumbing on the upstream side and the lot owner's private plumbing on the downstream side, both with male iron adaptors.

Sub-meter Identification - The sub-meters must be permanently identified with the unit number that they serve and a manufacturer's serial number for the purpose of identifying them on CRC billing system.

7. Connectivity and Installation Audit

On completion of the installation work the developer shall write to CRC requesting a connectivity audit to ensure that each unit/lot/storey in the complex is fed through one sub-meter only and that this meter matches the description in the submitted As-constructed drawings which shall be submitted with the request.

The As-constructed drawings shall show:

- sub-meter serial number and the description of the unit (e.g. unit number) supplied through this sub-meter;
- the serial number of any equipment attached to the meter;
- meter size, make and model; and the
- location, e.g. "one metre at the right hand side of the drive way or the elevator door".

The developer shall also provide the following information:

- date of completion of the installation of the meters; and
- the reading on each meter on the date of completion.

CRC or their representative will conduct the connectivity audit and make sure that the installation has been done in accordance with Plumbing and Drainage Act, AS/NZS 3500.1 and the approved hydraulic drawings.

During the connectivity audit the CRC inspector shall verify that:

- the sub-meters are accessible for reading and maintenance;
- the serial number on each sub-meter matches the serial number shown on the As-constructed drawing; and
- each sub-meter is correctly installed and only measuring flow to the particular unit/lot/storey being tested. Verification shall be done by physical testing.

If the testing shows that the sub-meter has not been correctly installed then the developer shall investigate and remove any cross connections and mismatches, prepare new as-built drawings and apply for another audit. A fee shall be paid to CRC prior to each audit.

During the connectivity audit, the CRC inspector shall record the meter reading on each sub-meter.

If the connectivity audit is successful and all documentation has been provided and is in order, the CRC inspector signs off the As-constructed drawings, certifying that the work has been

successfully completed. A copy of the As-constructed drawings, and the meter reading for each sub-meter shall be sent to designated billing system officer to link each sub-meter with its respective unit/lot in the CRC billing system.

Payment for any water used between the sub-meter reading recorded at or near the time of completion and the issue of the Plumbing Compliance Certificate shall be the responsibility of the developer.

8. Final Inspection Certificate

A Final Inspection Certificate will not be issued until the connectivity audit for the development has been completed to the full satisfaction of CRC WW Department.

9. Ownership and Maintenance

CRC will supply and install the master meter at the Developer's cost and will then be responsible for the maintenance, repair and replacement of any component of the master meter.

Once the installation of the sub-meters has been installed by the Developer and certified by CRC, Council will be responsible for the ownership, maintenance, repair and replacement of any component of the sub-meters, except where the work is considered to be a defect and rectification is the responsibility of the Developer.

The plumbing between the sub-meter and the master meter will be the responsibility of the body corporate.

CRC may at any reasonable time conduct either in-situ testing or take a proportion of sub-meters for laboratory testing at CRC expense. The objective of this testing is to ensure that these meters are working within the Maximum Permissible Error (MPE) over different flow rates. CRC will advise the body corporate in advance of any expected interruptions in supply due to maintenance work and it will be the body corporate responsibility to advise the occupants.

Based on the testing results, CRC may conduct further testing on other sample(s) of meters, test all the sub-meters, replace some or all the sub-meters, or leave the existing sub-meters if found operating within the MPE over different flow rates.

CRC may also elect to replace sub-meters at any reasonable time at no charge. The management of the complex will be advised prior to the replacement.

Appendix A – Definitions

AMI	Advanced metering infrastructure comprising the systems that measure, collect and analyses water consumption and communicate with metering devices such as water meters, either on request or on a schedule.
accessible	For water sub-meter reading purposes, means sub-meters must be located in a public access area. The sub-meters must not be obscured by vehicle movement, overgrown vegetation and be free from all other forms of obstruction (i.e. Security access).
body corporate	is an entity created under the Body Corporate and Community Management Act 1997. The members of the Body Corporate for a community titles scheme are the owners of all the units/lots included in the scheme.
boundary	the area between the property external walls and pathways, streets or fence.
common area	means an area of common property (as defined in the Body Corporate and Community Management Act 1997).
common property	For a community titles scheme is freehold land forming part of the scheme land, but not forming part of a lot included in the scheme.
common property water consumption	the aggregate of all sub-meter usage, subtracted from the master meter usage, plus consumption attributable to sub-meters supplying the common property area will determine the common property water consumption.
communal hot water system	system used to supply hot water to flats, apartments, houses or units in complexes.
community titles schemes	is a scheme registered in accordance with the *Body Corporate and Community Management Act 1997* in relation to certain freehold land. A community titles scheme is established by: • The registration, under the *Land Title Act 1994,* of a plan of subdivision for identifying the scheme land for the scheme; and • The recording by the registrar of the first community management statement for the scheme.
connectivity audit	a verification process in which each sub-meter is matched with its respective unit. The aim of this audit is to ensure that each unit in a given complex is supplied through one sub-meter only and to make sure that the respective sub-meter is marked clearly with the number/description of that unit.
complex	includes Community Titles Schemes (CTSs) and multi sole-occupancy unit of class 2, 4, 5, 6, 7 or 8 building and each storey of a class 5 building.

Complying valve	a device incorporated as part of a water meter which a Water Service Provider can use to securely restrict the flow of water, either partially or fully, to the meterable premises. This is installed upstream of the master meter or sub-meter.
CRC	Shall mean the Cairns Regional Council
DCV	Dual Check Valve, a device used to prevent back flow and thus cross contamination of potable water network.
developer	a corporation or body of persons or even an individual, who builds a development in which the houses/units form part of a complex and can be sold to individual owners.
existing developments	any development whereby the development has a Plumbing Compliance Certificate or the Developer has lodged a request for a Plumbing Compliance Certificate prior to 1 January 2008.
horizontal developments	include free standing units or attached units supplied through one water meter for each unit and where the meter is usually located at the boundary of the unit.
management	management of complex which can be a body corporate of a community title scheme or a representative body of a multi sole occupancy unit
master meter	a meter upstream of sub-meters and used to register the bulk consumption of the complex.
Meterable Premises	Means: (a) all class 1 buildings; and (b) each lot within a community title scheme, including the common property, in a water service provider's area; and (c) the sole-occupancy unit of a class 2, 4, 5, 6, 7 or 8 building in a water service provider's area; and (d) each story of a class 5 building in a water service provider's area where the building consists of more than one story and sole-occupancy units are not identified at the time of the building's plumbing compliance assessment.
MPE	stands for Maximum Permissible Error which a meter is allowed to operate within.
new development	Any complex submitting a request for a Plumbing Compliance Certificate after 1 January 2008.

occupant/owner	an occupant or owner of a house, unit, flat or an apartment within a complex.
pattern approval	a certificate issued by the National Measurement Institute. This certificate states that a meter of certain make and model has passed a set of tests and met a set of requirements in order to be used by a service provider for trade purposes.
positive displacement meter	a meter used to measure the volumetric flow of rate by dividing fluid into separate and equal volumes that can be counted over time. Rotating piston and Nutating disc are examples of positive displacement meters used for flow measurement in the water industry. These meters can be orientated in any direction without compromising their accuracy.
sole occupancy unit	a room or other part of the building for occupation by one or a joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier. This could be a dwelling, a room or a suite of associated rooms in a building classified under the Building Code of Australia as a class 2, 4, 5, 6, 7 or 8 building. A sole occupancy unit also includes any part of the building that is a common area or common property.
Solid state water meters	The measurement technology shall be based on ultrasonic or remnant magnetic sensing featuring no moving parts. These new technologies lend themselves to AMI since the signal is electronic.
sub-meter	a term used to describe individual water meters and related equipment (including AMI) within multi-unit complexes. The term also differentiates from 'master meter' that measures the supply of water to a complex as a whole.
sub-metering	the installation of individual water meters to measure water consumption to individual houses, units, flats or apartments to metereable premises that form part of a complex.
unit	a house, flat, lot of land or an apartment within a complex.
Vertical developments	include developments of more than one storey and developments where units are supplied through meters located inside the development in a common area such as stairwell landings or beside elevator shafts.
Water meter	a device, including equipment related to the device, for measuring the volume of water supplied to premises. Related equipment could include a pulse meter or an automatic meter reader and associated technology or similar devices. The purpose is to ensure the water service provider controls the equipment necessary to ensure the accurate reading of the device for billing purposes.

Water Notice	Shall mean the bill issued by Cairns Regional Council, in keeping with the standard Cairns Regional Council billing practices, for the water consumption and/or other water related charges, to property owners.
Water Service Provider	Shall mean the Cairns Regional Council and is the provider of water to the complex from external sources via properties via a pressurized network of pipes. Registered under the Water Supply (Safety and Reliability) Act 2008, chapter 2, part 3.