



*Dedicated to a better Brisbane*

*Technical Specification for:*  
**SUBMETERING OF MULTI-UNIT  
PROPERTIES**

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Brisbane City Council Water Distribution**

*Date:* **October 2008**

*Status:* **Final**

# Technical Specification for the Submetering of Multi-Unit Properties

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## 1. Introduction

### 1.1. Background

This document is written by Brisbane City Council Water Distribution (BCC WD) as Appendix WH of Brisbane City Council's (BCC's) *Water Supply Standards*. It contains guidelines and technical information for the individual submetering of multi-unit properties (MUPs), required to fulfil the Plumbing Application condition introduced under the *Water Act and Other Legislation Amendment 2007*.

Submeters installed to these guidelines shall become the property of BCC. Where legislation requires, property owners shall be billed from these submeters and residents shall receive Water Advises.

This document supersedes earlier editions, as the outstanding issues have been resolved and the relevant changes have been included.

This document also supersedes the *Community Title Scheme Individual Metering Option Information Kit* previously available but does not supersede any requirements of BCC's *Water Supply Standards*.

For the purpose of this document, a lot is defined as a 'sole occupancy unit'. In other words, an area of exclusive use within the property.

### 1.2. Scope

This document contains details about the following:

- where submeters are required;
- submeter selection information and associated infrastructure;
- submeter installation requirements; and
- Automatic Meter Reading (AMR) technology requirements.

## 2. Metering Requirements

All submeters installed in MUPs must fulfil the requirements of this section. The developer is responsible for making sure submeters conform.

### 2.1. Master Meter

It shall continue to be a requirement to install a master meter on the front of the property, consistent with BCC's *Water Supply Standards*. The only exception to this is where approval has been given for each lot to have an independent water service connected to the Council main and there is no common usage.

#### 2.1.1. 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.

## 2.2. Requirement for Submeters

This section contains a description of where submeters are required. The end of this section contains a number of figures of generic developments with suggested submeter locations.

### 2.2.1. Queensland Plumbing and Wastewater Code

Below is an excerpt, provided for convenience, from the *Queensland Plumbing and Wastewater Code* (QPWC) defining meterable premises, where individual tenancies or owner's water use must be metered:

- (a) Each lot within a *community title scheme*, including the *common property*, in a *water service provider's* area; or
- (b) the *sole occupancy unit* of a *Class 2, 4, 5, 6, 7 or 8* building in a *water service provider's* area; and
- (c) each *storey* of a *class 5* building in a *water service provider's* area where the building consists of more than one *storey* and sole occupancy units are not identified at the time of the building's plumbing compliance assessment.

Where *sole occupancy unit* means:

- (a) a room or other part of a 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 and includes—
  - (i) a dwelling; or
  - (ii) a room or suite of associated rooms in a *Class 4, 5, 6, 7 or 8* building; or
- (b) any part of the building that is *common area* or *common property*.

And *storey* means a space within a building which is situated between one floor level and the floor level next above, or if there is no floor above, the ceiling or roof above, but not-

- (a) a space that contains only-
  - (i) a lift shaft, stairway or meter room; or
  - (ii) a bathroom, shower room, laundry, water closet, or sanitary compartment; or
  - (iii) accommodation intended for not more than 3 vehicles; or
  - (iv) a combination of the above; or
- (b) a mezzanine.

(End of excerpt. Words in italics have legal definitions in the QPWC. Accuracy and currency must be verified against current version of QPWC.)

### Multiple Land Uses

If the development contains more than one land use, then each land use shall follow the relevant submetering requirements. For example, a high rise building with shops on the ground floor, offices on intermediate floors with residential apartments above and a hotel on top may require:

- Each shop to be metered individually;
- Each floor of the office space to be metered;
- Each residential apartment to be metered separately; and
- A single meter for the hotel usage.
- The entire water supply to each Body Corporate must be metered if applicable (see *Section 2.1.1*)

### Optional Submetering

Hotel units do not require individual meters under the QPWC. However, should the class of building change in the future and these units be leased to long-term tenants or occupied by owners, then submeters will be required. Likewise, any restaurant or other facility within the hotel that may be leased to another party will require a submeter. For these reasons, it is recommended but not compulsory for submeters to be fitted or allowances be made during construction, in order not to restrict the future use of the building.

**2.2.2. Body Corporate Usage**

The master meter at the boundary of the property will be considered a Body Corporate meter for the purpose of billing. The volume of water used by the Body Corporate will be determined by subtracting the sum of the usage registered on the submeters from the master meter.

The Body Corporate, or the developer on behalf of the Body Corporate may install additional meters to monitor their onsite water consumption at their discretion (e.g. swimming pools, town top-ups on rainwater tanks, gyms etc). However these meters will not be used for billing by BCC and will remain the property of the Body Corporate.

**Fire Services**

Appendix WC of BCC’s Water Supply Standards provides acceptable solutions for the metering of fire services. These requirements remain unchanged by these guidelines.

**2.2.3. Communal Hot Water Systems**

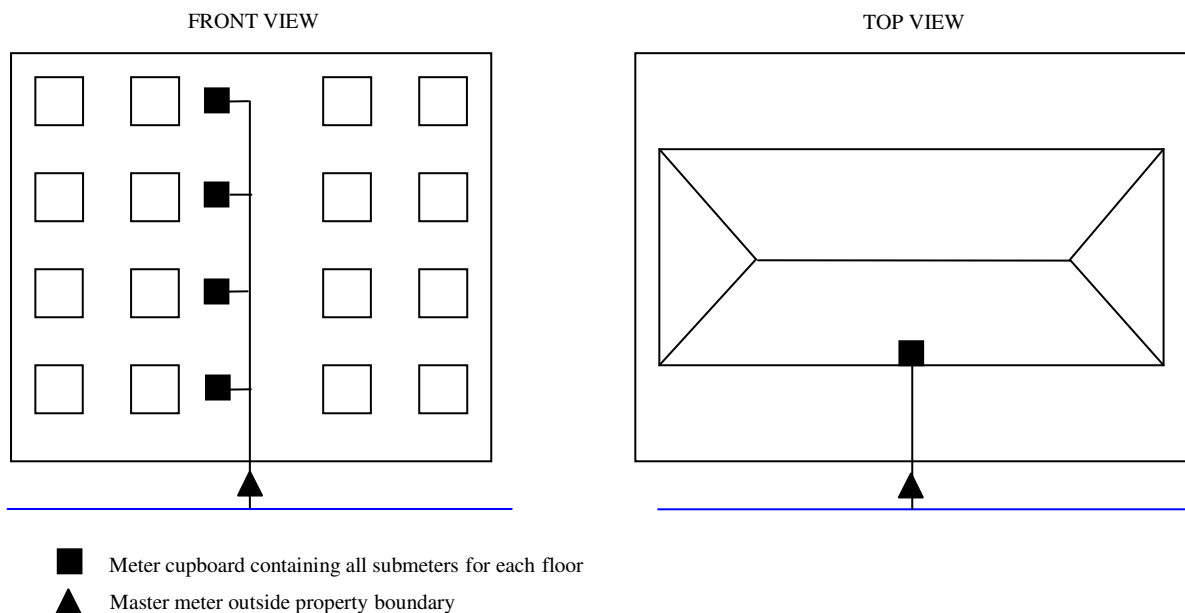
Hot water is not metered directly by the water service provider. The body responsible for the central hot water system (eg. the Body Corporate or energy supplier) is recommended to install meters on hot water inlets, however these will remain the property of the installing body and not become Council-owned donated assets.

A single cold water meter must be installed on the cold water inlet to the boiler to meter all water going into the hot water system. The bill for this usage will be directed to the Body Corporate, as a separate line item to the master meter, for the Body Corporate to distribute amongst its residents.

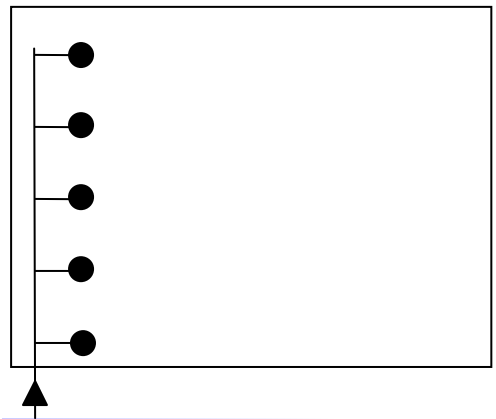
**2.2.4. Submetering Figures**

Below are several figures for different land uses that represent where submeters are required. Other meter locations are allowable, Section 2.4 contains the requirements for submeter locations.

**Figure 1: Apartment Building**

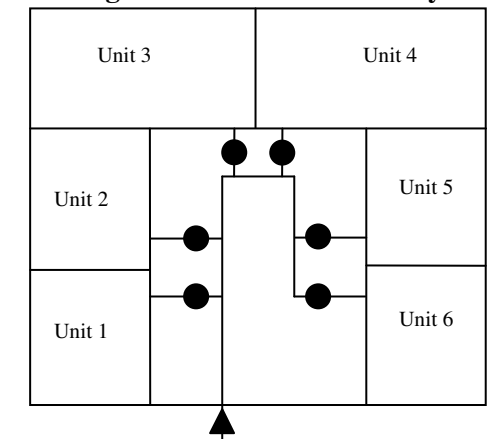


**Figure 2: Office Building**



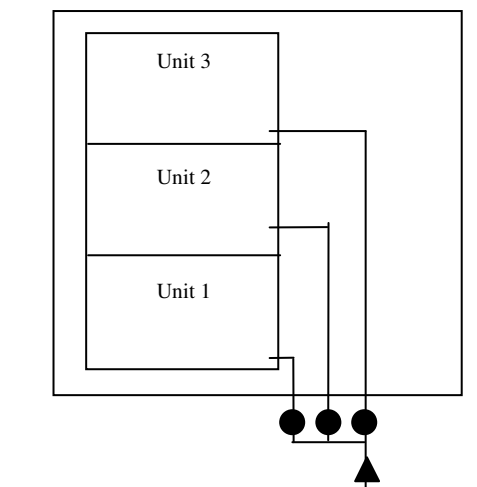
- Submeter for each floor
- ▲ Master meter outside property boundary

**Figure 3: Gated Community**



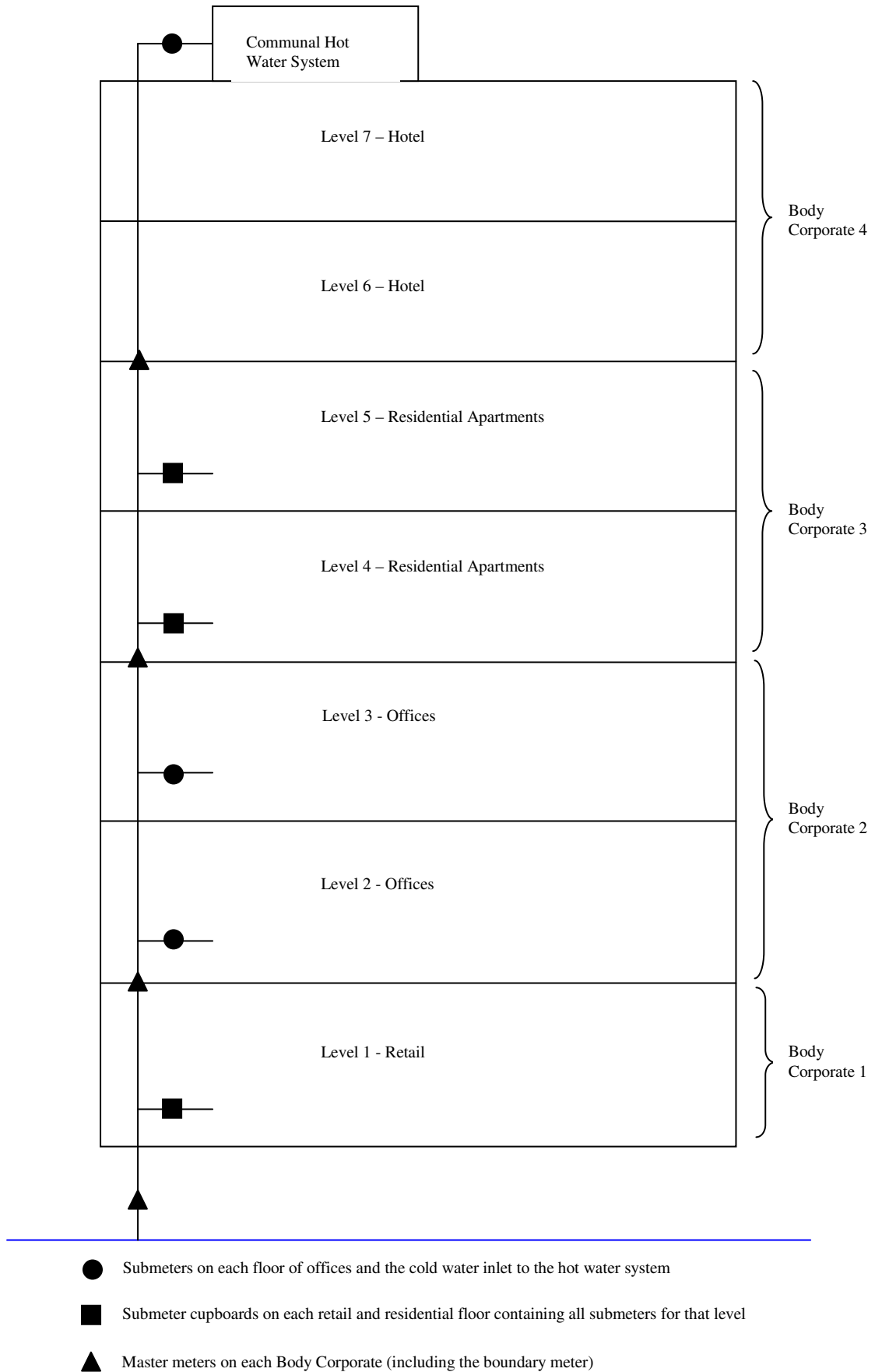
- Submeter for each unit
- ▲ Master meter outside property boundary

**Figure 4: Townhouse Development**



- Submeter for each unit
- ▲ Master meter outside property boundary

**Figure 5: Mixed Use Development with Multiple Body Corporates and a Communal Hot Water System**



### **2.3. Submeter Requirements**

A single submeter capturing all cold water entering the lot must service each lot within the MUP. These submeters shall capture only the water entering the lot they are assigned to.

#### ***Installation Orientation***

All submeters are to be installed by licensed plumbers and in accordance with their pattern approval certificates. Care must be taken to ensure that the submeter 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 submeter installation must be fitted with dual check valves at the points where the submeters are installed. In 20mm diameter submeters, these check valves shall be incorporated in the submeter so that the overall length of the submeter assembly is not affected.

#### ***Submeter Dimensions***

All submeters must comply with the dimensions described in Appendix D of AS3565.1. Submeter assemblies of 20mm size must have end connections of 14 threads per inch. Other sizes must conform to the Australian Standards if available, otherwise with normal Council practice (details can be provided on request).

### **2.4. Submeter Installation**

The following installation options apply to **all** submeters within a development. All submeters must conform to one of these installation options.

#### **2.4.1. Cold Water Submeter - Installation Option 1**

Where possible, submeters may be installed so that they are accessible from ground level in common areas outside the building, either in buried submeter boxes or in a weather-resistant hinged submeter cupboard on the side of the building or other structure (eg. fence).

Access to the submeters 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. This option does not require AMR technology as the submeters shall be manually read in the usual process of meter reading. It is envisaged, but not compulsory, that this may be the most suitable solution for single buildings up to 3 storeys in height.

See the following sections on *Buried Submeter Boxes* and *Submeter Cupboards* for further details.

#### **2.4.2. Cold Water Submeter - Installation Option 2**

As part of Installation Option 2, AMR technology must be installed to facilitate submeter reading. See Section 3 for more information about the AMR requirements and responsibilities.

This option is for cases where submeters at ground level are impractical (eg. high rise buildings), or where access to any of the submeters is restricted in any way (eg. gated communities) submeters are to be installed in the following manner:

In the case of high rise buildings the submeters must be:

- Located in a single latched cupboard in a common area on each floor. If the design of the development makes it impractical to install all submeters in a single cupboard then multiple cupboards may be used, so long as their number is minimised.

In the case of gated communities and horizontal developments:

- Buried in submeter boxes on the common property less than 3m outside the front boundary of the lot for which the submeter is required.

Alternatively, for either type of development:

- Located in a utility room that is accessible through the common property. Requirements are the same as for those in submeter cupboards.

See the following sections on *Buried Submeter Boxes* and *Submeter Cupboards* for further details.

If a development is a mixture of both a gated community and high rise buildings, then the submeter installations may be a mixture of those described above.

### *Contact Person*

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

### **2.4.3. Buried Submeter Boxes**

Submeters installed in buried submeter boxes shall be designed such that:

- The meter box complies with existing BCC specifications (see BCC's *Water Supply Standards* for more details), with the exception that the submeters do not need to be located in the footway against the property boundary, instead by following the *Installation Options* listed above.
- Meters should not be installed in walkways or other areas where they would cause a potential hazard.
- Lids shall have a non-slip pattern.

Submeters installed in buried boxes shall be of a BCC WD standard **manifold** design, where the meter mechanism can be replaced without the need to remove the manifold base.

### **2.4.4. Submeter Cupboards**

Submeter cupboards shall be designed such that:

- There is a minimum 100mm gap, perpendicular to the direction of the pipes, between submeters.
- 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 submeters 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 submeters or the top of the submetering assembly = 1.6m.
- There is no need for a person performing normal maintenance duties to enter into the cupboard. (ie. 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 metres 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.
- The cupboard does not need to be locked, but must be fastened with a latch where a double padlock can be fitted in the future if required.

Submeters installed in cupboards shall be **conventional** (also known as **inline**) meters.

**2.4.5. Other Installation Requirements**

All submeters must be fitted with anti-tamper devices, such as wires.

All submeter boxes, whether housing single or multiple submeters, must be identified on the outside with the words “Water Submeter” or “Water Submeters” respectively, in readable and permanent print.

**2.5. Approved Submeters and Associated Infrastructure**

Depending on their installation, submeters may be conventional or manifold meters. See Section 2.3.3 and 2.3.4 for further details.

**2.5.1. Conventional Meter Assemblies – 20mm**

Where conventional 20mm meters are installed, each submeter must have ball valves on both sides for shutting of the water supply, and 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 submeter. The ball valve on the upstream side of the submeter must be able to be fixed in variable positions with a stainless steel tie.

These items together are referred to as the ‘conventional submeter assembly’. The overall length of the assembly is to be no more than 500mm.

This submeter 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.

Complete submeter assemblies including valves and authorised for use are available from the following manufacturers:

- Reliance Worldwide Pty Ltd
- Elster Metering Pty Ltd

**2.5.2. Manifold Meter Assemblies – 20mm**

The requirements for manifold meter assemblies are described in BCC’s *Water Supply Standards*. The list of Authorised Products for manifold meters also remains the same.

**2.5.3. Meters Larger than 20mm**

The following products have been approved for use on the cold water service as at January 2008:

**Table 1: Authorised Meter Manufacturers Larger than 20mm as of January 2008**

Service size	Authorised Manufacturers	Authorised Products	Product Specification
25mm	Elster RMC	V100 (PSM-T) MRP	Pulse output Australian Standard dimensions BCC WD serial number Submeter assembly
32mm	Elster RMC	V100 (PSM-T) MRP	Pulse output Australian Standard dimensions BCC WD serial number Submeter assembly
50mm +	Actaris Elster RMC	Woltex H4000 Helix Arad	Pulse output Australian Standard dimensions BCC WD serial number Refer to <i>BCC’s Water Supply Standards</i> .

For domestic lines where the submeter is 50mm in diameter or larger, the meter must be installed in Meter Arrangement 1 to 4 with a bypass, as per *BCC's Water Supply Standards*. Refer to *BCC's Water Supply Standards* for installation requirements of large meters on fire and domestic lines.

Where meters sized 25mm and 32mm are installed, ball valves and meter couplings (at least one adjustable) will be required on both sides, same as the 20mm submeter requirements. Where shutting off the water supply would cause significant damage or lost productivity, permission may be sought from BCC WD to install a bypass arrangement.

Meters must be of Australian Standard dimensions and have Australian Standard threads where they connect to the building pipework.

#### **2.5.4. Other Requirements**

AMR technology may also be required, please see Section 2.3 for further information.

##### ***Submeter Sizing***

During design, consideration shall be given to appropriate submeter sizing. Residential lots may be metered by a 20mm submeter from the Authorised Manufacturers in Sections 2.4.1 and 2.4.2. Any larger meters will require BCC WD approval. Meters for non-residential lots must be sized as part of hydraulic design and approved by BCC WD. Within a MUP, submeters of the same size shall be of the same brand.

##### ***Submeter Identification***

The submeters and the Meter Interface Units (MIUs) (installed as part of the AMR system, if required) must be permanently identified with the unit number that they serve and a serial number issued by Council for the purpose of identifying them on Council's billing system.

##### ***As Constructed Drawings***

The hydraulic As Constructed drawings for the development must include a table of:

- submeter serial numbers (and MIU serial numbers if applicable);
- the unit numbers they serve;
- the location of the submeters;
- the date of installation of the submeters;
- the submeter readings on installation; and
- the final submeter reading at the end of construction.

##### ***Site Connectivity***

Before the final plumbing certificate is issued, the developer is required to show that the connectivity between all the meters and their respective units has been checked.

An audit of the connectivity of submeters to their units may form part of the final plumbing inspection for the site. The Council will choose the percentage of units involved in the audit, to a maximum of 100%. In the event that any part of the development fails the connectivity audit, Council or their representative will test connectivity throughout the whole development at the developer's expense. Council may provide the developer with a list of areas requiring rectification before a final plumbing certificate can be issued.

## **3. Automatic Meter Reading Technology**

Where submeters cannot be installed in an accessible part of the property, AMR technology shall be required. Accessible is defined in *Section 2.3.1* as being at ground level, outside the building where access to the submeters is 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.

This section also applies to AMR systems installed voluntarily on accessible submeters.

The presence of an AMR system does not alleviate the need for the meters to be within common or public property. Meter locations must still conform to either Installation Option 1 or Installation Option 2 in Section 2.3.

Where an AMR system is installed, all meters to be donated to BCC WD must be readable through the AMR system, including the master meter at the boundary and any additional master meters for additional Body Corporates (see *Section 2.1.1*).

### **Authorised AMR Systems**

Below is a list of Authorised AMR Systems and their providers, including both radio and hardwired technology. It is expected that developers will select the most appropriate system for their development.

**Table 2: Authorised AMR systems as of September 2008**

<b>Supplier</b>	<b>Communication Technology</b>
Enware Pty Ltd	Radio (with wiring as appropriate)
Meter Technology Australia Pty Ltd	Radio
UDS Pty Ltd	Radio
Epitome Pty Ltd	Hardwired
Utility Technology Pty Ltd	Hardwired
UDS Pty Ltd	Hardwired

### **Testing of the AMR System**

Testing of the AMR system to ensure that accurate readings are received from all submeters will form part of the site audit before issuing the final plumbing compliance certificate.

Amndt  
No.5  
Mar '09

## **3.1. Technical Requirements**

An Authorised AMR system will need to be installed and connected to a Meter Reading Panel (MRP) in an accessible location. For the definition of “an accessible location” see *Section 2.3.1*.

The MRP shall have a display screen between 1.0m and 1.5m above the ground from where all submeter readings can be obtained. For example, either a scrolling system that allows the user to scroll up and down between apartments, or a numeric keypad for entering the apartment number and obtaining the relevant submeter reading.

It is preferable that all alarms would be communicated with the submeter reading, but as a minimum, the low battery alarm (if applicable), serial/unit number and submeter reading must be communicated.

## **3.2. Installation Requirements**

A qualified technician approved by the AMR provider must install each component of the AMR system and work must be carried out to a recognised standard. For example:

- Installation of water submeters must be carried out by to the relevant Australian Standards.
- Installation of electrical systems must be carried out by to the relevant Australian Standards.

All components of the AMR system must be installed in accessible locations in common areas for maintenance purposes, but shall be hidden from public view e.g. by a cover or cupboard.

The MRP shall be protected by a weather-proof cupboard and fitted with a standard BCC WD lock (to be supplied).

The installation of the MIU must not impede the ability for a manual reading of the submeter to be taken. The MIU shall be fitted with tamper-proofing of some kind.

#### *Requirement for Separable Items*

The MIU and the submeter itself shall be separable items. Even if supplied by the same manufacturer, allowance must be made for the replacement of either component with a similar product of a different brand, without the need to replace both. This separation and connection must be able to be carried out in the field, without sending parts away from the site.

#### *Connectivity Testing*

Before the final plumbing certificate is issued, the AMR system must be fully commissioned and proven to be working by providing accurate reads from all submeters in the development. This shall take place as part of the final plumbing inspection.

#### *As Constructed Drawings*

A full set of hydraulic and electrical As Constructed drawings must be submitted both to Council and to the Body Corporate for their records.

## **4. Asset Handover to Water Service Provider**

The accuracy of the connectivity of the submeters and their associated AMR systems shall be verified as per *Section 2.5.4* and *Section 3* respectively.

Once the Final Plumbing Certificate has been issued, ownership of the submeters and associated infrastructure is transferred to the water service provider.

The developer will continue to be responsible for rectifying any defects in products and workmanship for a 12 month period known as the 'defects liability period', from the date of occupancy of the development, or stage of the development.

At the end of this 12 month period, an inspection may be carried out, and all responsibility will transfer to the water service provider, along with any associated warranties.