Sub-Metering Information Kit

Issued to provide general information regarding the QUU requirements for sub-metering

Disclaimer: This information kit in intended for use as a guideline only, and must be read in conjunction with the most up to date SEQ codes and Approved IPAM list, details of which can be found herein. It is the plumber's responsibility to ensure that the equipment chosen for sub metering is approved for use within the QUU region. Non-approved equipment installed by the plumber will have to be replaced at the plumber's cost.

Revision 3.0

May 2017

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1. Introduction

Sub-metering is a term to describe the metering of individual properties within a Community Title Scheme so that the customer of each property has the choice to be billed on the water consumption that they directly use.

Queensland Urban Utilities requires that all new sub-metering and existing sub-metering infrastructure for billing purposes comply with QUU's sub-metering requirements.

All sub-meters will lead back to a common water connection at the property boundary, where the head meter will be found. The head meter counts the entire water consumed at the QUU / customer interface, whereas the sub-meters reads the individual consumption within the customer property boundary.

Generally there are two types of sub-metering:

1. Sub-metering of individual lots, such as town houses. These sub meters are generally located in meter boxes in the ground with one dedicated to each individual property. If these meters are behind a gated premises they will need to have an Automatic Meter Reading (AMR) technology installed to permit the reading of the meters from outside the premises. Refer to Chapter 5 for more details.

2. Sub-metering of units / apartments. These sub-meters are usually installed in groups in a single cabinet on each individual floor of the building. These sub-meters also need to be installed with an approved 'Automatic Meter Reading' technology, as approved on the IPAM list. Refer to Chapter 6 for more details.

Technical Specification

QUU requires **for new or existing Premises** all new sub meters shall:

- Use approved QUU water meters with QUU serial numbers.
- Follow underground/above ground installation arrangement guidelines, depending on the development proposed.
- Have an approved meter box for underground installation or an approved meter cabinet for overground installation.
- Use QUU approved valves and fittings.
- Ensure all sub-meters of the same size installed in a complex are the same make and model.
- Use an Approved Automatic Meter Reading (AMR) technology, where applicable.

Note: For list of latest QUU approved equipment please visit: http://www.seqcode.com.au/products/ and click on the SEQ Accepted Civil IPAM List.

QUU is responsible for the reliable operation of the physical sub meter only. The isolation valves connecting the sub meter and all other associated plumbing is categorised as private plumbing as per the Plumbing & Drainage Act (March 2017). As such any water leakage on the pipework (other than a leak on the meter itself) is the responsibility of the owner / body corporate to rectify.

2. Approved Meters & Sub-Meters

Only QUU approved water meters can be installed in the QUU region. QUU approved meters must also have the QUU serial numbering on the meter. **Note: Unapproved meters or approved meters without the QUU serial number will not be accepted by QUU**. The current list of approved meter manufacturers and models are listed below. Pictures of the approved 20mm meters are shown below.

Service size	Authorised Manufacturers	Authorised Products	Product Specification
20mm	Itron	TD8	In ground or above ground
			QUU serial number format: **ADA1700000**
	Elster	V100	Above ground only
			QUU serial number format: **ABG1700000**
	Elster	V200	In ground or above ground
			QUU serial number format: **ABH1700000**
25mm	Itron	TD8	In ground or above ground
			QUU serial number format: **BDA1700000**
	Elster	V100	Above ground only
			QUU serial number format: **BBG1700000**
	Elster	V200	In ground or above ground
			QUU serial number format: **BBH1700000**
32mm	Itron	TD8	In ground or above ground
			QUU serial number format: **HDA1700000**
	Elster	V100	Above ground only
			QUU serial number format: **HBG1700000**
	Elster	V200	In ground or above ground
			QUU serial number format: **HBH1700000**
40mm	40mm meters not permitted		
50+	Itron	Flostar M	In ground or above ground
			QUU serial number (for 50mm): **DDA1700000**
	Elster	H5000	In ground or above ground
			QUU serial number (for 50mm): **DBH1700000**
	RMC	Octave	In ground or above ground
			QUU serial number (for 50mm): **DEB1700000**
	Sensus	Meistream Plus	In ground or above ground
			QUU serial number (for 50mm): **DCB1700000**

ITRON TD8 20mm

ELSTER V100 20mm

(Above Ground Only)

ELSTER V200 20mm

3. QUU Serial Numbers for Sub-Water Meters

If the meter is purchased directly from the approved manufacturer, and the buyer specifies that the meter is for QUU, the manufacturer will supply a meter with a QUU compliant serial number. The serial number consists of **10 Digits**; **3 letters** at the start, followed by **7 numbers**.

The three letters represent the meter SIZE, MANUFACTURER & MODEL of the meter respectively. The first two numbers represent the year of manufacture, with the remaining 5 numbers allocated by the manufacturer to indicate the production number. The table for the different manufacturer makes and models are below.

First Letter = Size	Second Letter = Manufacturer	Third Letter = Model Version
A = 20mm	B = Elster	Itron TD8 = A
	C = Sensus	Itron Flostar M = A
B = 25mm	D = Itron	RMC Arad Octave = B
C = 40mm **(not permitted)**	E = ARAD (RMC)	Elster V100 = G
D = 50mm		Elster V200 = H
E = 80mm		Elster H5000 = H
F = 100mm		Sensus Meistream Plus = B
G = 150mm		
H = 32mm		
(Note: 65mm not permitted)		

Examples:

Using the table above, the serial number for all of QUU's meter sizes and meter models can be worked out:

1. An 20mm Itron TD8 meter manufactured in 20**17** will have the serial number of the type: ADA**17**00001. (The second meter from the manufacturer will have the serial number ADA1700002 etc.)
2. An 25mm Itron TD8 meter manufactured in 20**16** will have the serial number of the type: BDA**16**00001.
3. A 20mm Elster V100 meter purchased in 20**16** will have the serial number ABG**16**00001.
4. A 25mm Elster V100 meter manufactured in 20**17** will have the serial number BBG**17**00001.

4. Approved Meter Boxes

Meter boxes are to be used when sub-meters are to be installed underground. Note that some plumbing outlets could sell meter boxes or pre-assembled meter assembly kits that are not approved in the QUU region. **The customer must ensure that the pre-assembled meter kit contains water meters that are approved for use by QUU, and that the kit does not include a slip coupling connection.** Slip coupling connections are not permitted for metering or sub metering in the QUU region.

Service size	Size	Authorised Products	Comments
20mm 25mm	427 x 267	Strongcast	Black Lid with lettering "Water Meter"
20mm 25mm	492 x 271	Everhard Industries	Black Lid with lettering "Water Meter"
20mm 25mm	440 x 275	Draper	Black Lid with lettering "Water Meter"

5. General Arrangement for Buried 20mm and 25 mm Sub Meters

The diagrams on the following pages are an extract from the SEQ code for in-ground meter installations.

Figure 1 below shows a typical meter box arrangement in the ground, showing the minimum clearances between meter box and the property boundary. **Note:** the water meter must be positioned in the centre of the meter box, and the meter box must be flush with the ground level. Water meters that are buried deeper than that shown in figure 1 below will be rejected and will need to be rectified at the cost of the installer.

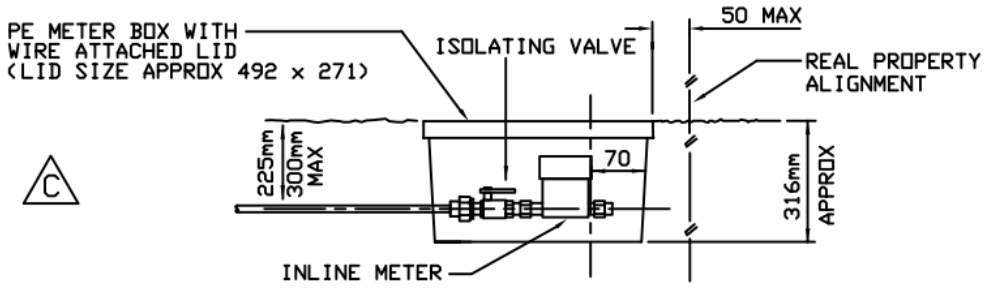


Figure 1: Typical meter box arrangement for 20mm and 25mm meters in meter boxes

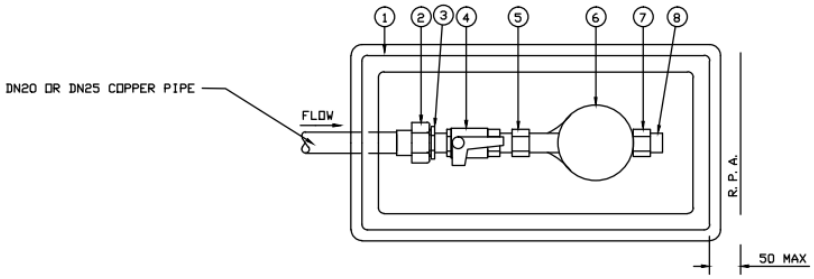
Meter boxes should not be installed in walkways or other areas where they would cause a potential hazard. **Meter boxes are not permitted to be installed in driveways**. Meter box lids shall have a non-slip pattern and shall have 'Water Meter' written into the lid as part of the casting of the lid.

The water meter must have an isolation valve upstream of the meter. A second isolation valve can be fitted downstream as well. **Slip couplings are not permitted**. Some meter box manufacturers offer meter box kits which come pre-assembled with the meter, valves and meter box. An example of this is shown in *Figure* 2 below.

Figure 2: Illustration of a pre-assembled meter kit and a buried meter box. Note the lid must be black and have the words 'Water Meter' clearly displayed on the lid. (Pictures courtesy of Strongcast)

Meter Box Pipe Connections

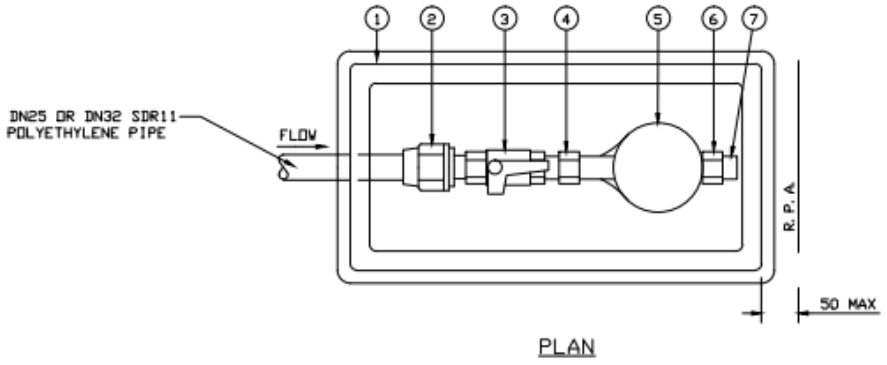
All new pipe connections will be of PE or copper pipe. *Figures 3, 4 & 5* below show the typical internal meter box connections for copper and PE services.



FITTINGS REQUIRED FOR 20mm METER	
ITEM NO	DESCRIPTION
1	PE METER BOX WITH LID (QUU APPROVED HDPE TYPE)
2	STRAIGHT CONNECTOR - 20 OR 25 CAPILLARY B.S.P. F
3	ADAPTER 25 TO 3/4" B.S.P. MF (FOR 25 SERVICES)
4	DN 20 BALL VALVE 3/4" BSP MF
5	DN 20 WATER METER COUPLING 3/4" METER THREAD X 14 TPI F
6	20mm INLINE METER (QUU APPROVED)
7	DN 20 WATER METER COUPLING 3/4" METER THREAD X 14 TPI F
8	PLACTIC CAP

FITTINGS REQUIRED FOR 25mm METER	
ITEM NO	DESCRIPTION
1	PE METER BOX WITH LID (QUU APPROVED HDPE TYPE)
2	STRAIGHT CONNECTOR - 25mm CAPILLARY F
3	--
4	DN 25 BALL VALVE 1" BSP MF
5	DN 25 WATER METER COUPLING 1" METER THREAD X 11 TPI F
6	DN 25 INLINE METER (QUU APPROVED)
7	DN 25 WATER METER COUPLING 1" METER THREAD X 11 TPI F
8	PLACTIC CAP

Figure 3: Meter and fittings with a copper service

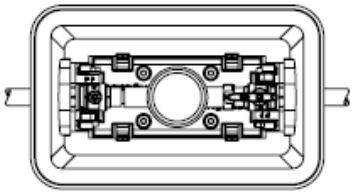


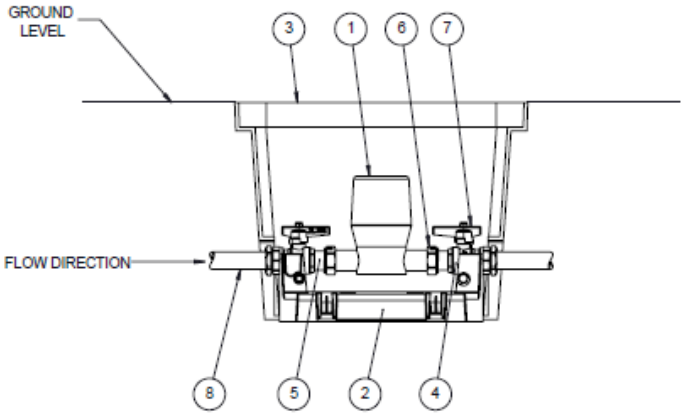
FITTINGS REQUIRED FOR 20mm METER	
ITEM NO	DESCRIPTION
1	PE METER BOX WITH LID (QUU APPROVED HDPE TYPE)
2	PE ADAPTOR 25 TO 3/4" OR 32 TO 3/4" BSP M
3	DN 20 BALL VALVE 3/4" BSP FF
4	DN 20 WATER METER COUPLING 3/4" METER THREAD X 14 TPI F
5	20mm INLINE METER (QUU APPROVED)
6	DN 20 WATER METER COUPLING 3/4" METER THREAD X 14 TPI F
7	PLACTIC CAP

FITTINGS REQUIRED FOR 25mm METER	
ITEM NO	DESCRIPTION
1	PE METER BOX WITH LID (QUU APPROVED HDPE TYPE)
2	PE ADAPTOR 32 TO 1" BSP M
3	DN 25 BALL VALVE 1" BSP FF
4	DN 25 WATER METER COUPLING 1" METER THREAD X 11 TPI F
5	25mm INLINE METER (QUU APPROVED)
6	DN 25 WATER METER COUPLING 1" METER THREAD X 11 TPI F
7	PLACTIC CAP

Figure 4: QUU Approved Water Meter and PE compression fittings for PE Connection.

(PE fittings to Brass shall be MALE thread only)





ITEM NO.	Infinity Part Number	Part Description	QTY.
1	-	DN20 WATER METER	1
2	15178-110	MOULDED METER BRACKET BASE	1
3	-	CONVENTIONAL TAPER OR METER BOX	1
4	-	DOWNSTREAM ISOLATION BALL VALVE	1
5	-	25MM INTEGRATED PE COMPRESSION UNION	1
6	-	14TPI INTEGRATED FINE THREAD COUPLING	1
7	-	BRASS HANDLE NON-LOCKABLE ACCERTED	1
8	-	DN25 PE PIPE	2

Figure 5: QUU Approved Water Meter with 2x DN20 isolation ball valves and with integrated PE compression unions for 25mm PE pipe

Please check on-line for latest version of the following document: http://www.seqcode.com.au/seq-water-supply-code/

6. General Arrangements for Above-Ground Sub-Meters

Sub-meters in units and apartment complexes are typically installed like shown in *Figure* 6 below.

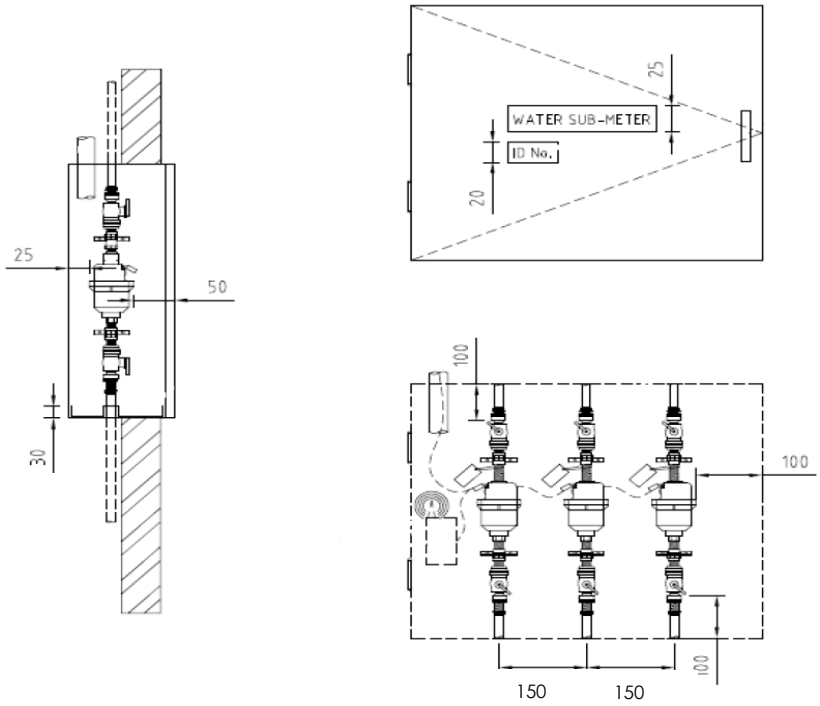


Figure 6: Typical arrangement of sub meters in a cabinet.

Note:

- Each sub meter above ground must have isolation valves upstream and downstream of the meter, and the arrangement must be fitted to the wall using an approved sub meter bracket.
- **No slip coupling** is allowed in the sub meter arrangement.
- There is **a minimum 150mm 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.
- Sub-meters shall not be installed upside down. The preference is for the meters to be installed in vertical banks.
- All sub meters need to be individually tagged to associate each sub meter to its corresponding apartment / unit. The preferred method of identifying the meter with the unit number is by attaching a metal tag to the pipe before the meter with a stainless steel wire. Tag plate to be etched with the unit number for that meter.
- 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**.
- 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.
- If the cupboard is lockable, it shall be lockable with an AMR Key only, which is a C4 key cut to 34284.
- The meter cabinet must be identifiable with the words "Water Sub-meter" or "Water Sub-meters" respectively, in readable and permanent print on the cabinet door.

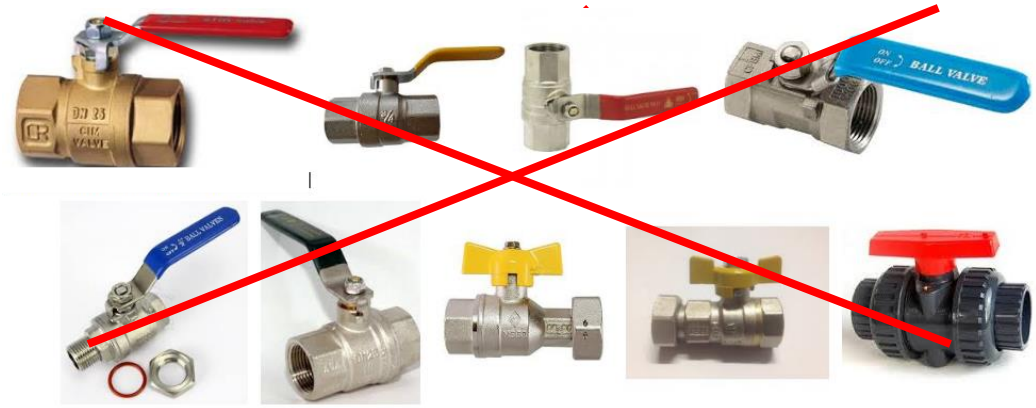
7. Approved Isolation Valves

Only isolation valves approved on the QUU IPAM are permitted for use. A full list of approved products, including valves is available in the SEQ Civil IPAM list, which can be found here: http://www.seqcode.com.au/seq-water-supply-code/ and click on the "SEQ Accepted Civil IPAM List" PDF.

20mm Isolation Ball Valves

Ball Valve Handles must be made from copper Alloy (BRASS) and the valve must be watermarked. Key locks are not permitted. Valves are not required to be lockable.

QUU Approved



Examples of unapproved ball valves

32 - 40mm Ball Valves

- Ball valves shall be DR brass or SS body and comply with WSA PS - 274 with product certification to AS 4796.
- Not required to be lockable.

50 - 200mm Gate Valves

- Flange connections to valves 50mm plus in size
- Not required to be lockable.

8. Automatic Meter Reading (AMR)

Automatic Meter Reading (AMR) must be installed where the meter reader cannot read the physical meter from street level. This is almost always the case with sub metered individual lots that are situated behind a gated premises and with units and apartment complexes where there are multi levels of sub meters.

8.1 AMR for Sub-Metered Individual Lots

These sub meters are generally located in meter boxes in the ground with one dedicated meter box for each individual property.

If the sub meters are behind a gated premises they will need to have an Automatic Meter Reading (AMR) technology installed to permit the reading of the meters from outside the premises by the meter reader. The approved technology for this application is the *Itron Everblu Cyble*, as shown in *Figure 7*.

Fig 7: Itron TD8 water meter with Everblu Cyble attached

8.2 AMR for Sub-Metered Apartments / Units

For units / apartments the sub-meters are usually installed together in groups in a single cabinet on each individual floor of the building. These sub meters must be linked up to an approved AMR system. The AMR system must be installed by an AMR installer approved on the IPAM list. The current approved providers of AMR for QUU are:

- **Itron** Everblu
- **Watersave Vivid** (AMR Solutions). (Using Reed switches supplied by the approved meter manufacturer)
- **UTL** (AMR Solutions). (Using Reed switches supplied by the approved meter manufacturer)
- **Halytech** Spider (Using Reed switches supplied by the approved meter manufacturer)
- **Enware** (Using Reed switches supplied by the approved meter manufacturer)

Notes on AMR for apartments / units:

- The QUU Head Meter (also known as the master meter) must also be connected to the AMR reader. Provision must be made to run communications cable from the location of the master meter to the AMR system.
- The cold water feed feeding the hot water system must be metered and connected to the AMR system.
- Common water feeds to swimming pools, basements etc. to be metered and connected to the AMR system.
- AMR control unit to be hard wired 240V or a Lockable GPO (i.e. a standard GPO is not accepted).
- If the AMR panel or the master meter is in a room at the front of the building the door must be locked with an AMR Key, which is a C4 key cut to 34284.
- The AMR system must be commissioned by the approved AMR installer. The commissioning certificate must be signed off by the installer, by BCC and by QUU.
- All new AMR installations come with a 5 year warranty and 5 years meter reading data back to QUU.
- Skilltech are the current water meter reading company for QUU.

NOTE: The list is subject to change. For confirmation, please check the Civil IPAM list. This can be found online at http://www.seqcode.com.au/products/ and click on the SEQ Accepted Civil IPAM List PDF.

9. AMR Electrical As-Constructed Document Handover

Hard Wired AMR

The as-constructed layout drawings must include the following:

- Conduit material, colour and size
- Identify inspection boxes and junctions
- Plans highlighting location of meter reading panel (wall or Cabinet)
- Wiring diagram to detail units connection at reading panel (See simple example below)
- The Floor plan must show the meter position on high-rises and the location of the cabling in relation to other services in the ducting.

Wireless AMR

Wireless AMR technology as-constructed drawings must include the following:

- Meter reading master panel position (wall or Cabinet)
- Elevation and plan drawings highlighting the location of the wireless repeaters and transponders in the building.
- The Floor plan must show the meter position on high-rises and the location of the wireless transmitters for the sub meters / groups of sub meters on each floor.

Below is an example of a typical sub-meter table to be submitted with the As Built Drawings. A complete commissioning handover check sheet is to be completed by the AMR supplier. An example of this check sheet is shown in Chapter 10.

Sub-meter table for 23 Street Suburb 4169 -Plumbing App No 000000

Serial Number	Unit #	Meter Location	Installation Date	Meter Reading-installation (kL)	Meter reading-end of construction (kL)
FEB 1700042	Master meter	Left hand side of driveway front boundary	20/1/2017	00223	022440
ADA 1733334	Unit 1	Path box right hand side of pedestrian entry	20/1/2017	000021	002456
ADA 1733317	Unit 2	Path box Left hand side of pedestrian entry	20/1/2017	000022	005871
ADA 1733365	Unit 3	Path box right hand side of pedestrian entry	20/1/2017	000022	009582
ADA 1733333	Unit 4	Path box right hand side of pedestrian entry	20/1/2017	000001	000258
DDA 1700901	Hot water	Roof area next to hot water plant	27/1/2017	000223	012440

10. AMR COMMISSIONING CHECKLIST (TO BE COMPLETED BY APPROVED AMR INSTALLER)

SITE NAME:		
CLIENT:		
INSTALLATION DATE:		
INSTALLER NAME:		
PLUMBING APPROVAL NUMBER:		
AMR COMMISSIONED BY:		
AMR SUPPLIER NAME:		
PROJECT PLAN CREATED:		
	WIRELESS	
WIRELESS - RF TRANSMITTER TYPES AND FREQUENCY BAND:		
COMMUNICATION LINE	HARDWIRED	
COMMUNICATION LINE NUMBER OR IP ADDRESS:		
HARD WIRED 240V POWER (OR LOCKABLE GPO) TO DCU:		
BATTERY LIFE:		
C4 KEY WAY CUT TO 34284		

PRODUCT DETAILS COMPLETED TO DATE

AS CONSTRUCTED DRAWINGS ATTACHED SCHEMATIC:		
CONNECTIVITY AUDIT SHEET ATTACHED:		
METER NUMBERS AND READINGS RECORDED AND PROVIDED:		
PRODUCT DETAILS COMPLETED DATE:		
METERS CONNECTED:	QUANTITY:	

INITIAL METER READINGS AND ID'S PROGRAMMED:	
TAP TEST TO EACH METER COMPLETED:	
60 MONTH DEFECT LIABILITY WARRANTY START DATE:	
DEFECTS LIABILITY SERVICE REQUEST PHONE NUMBER:	
SIGNED – AMR INSTALLER	
NAME:	
POSITION:	
DATE:	

SIGNED - QUEENSLAND URBAN UTILITIES:	
REPRESENTATIVE NAME - QUEENSLAND URBAN UTILITIES:	
POSITION:	
DATE:	

SIGNED - BRISBANE CITY COUNCIL:	
REPRESENTATIVE NAME - BRISBANE CITY COUNCIL:	
POSITION:	
DATE:	

You can email any enquiries & your commissioning certificates to amr@urbanutilities.com.au