



**Australia & New Zealand
Household Hot Water Draw-off Research**



Detailed Installation Instructions for Plumber

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Introduction

UtilityCAP are the Project Managers appointed by the NSW Department of Planning, Infrastructure and Environment who are leading research into patterns of hot water use in Australia and New Zealand as part of the Equipment Energy Efficiency (E3) Program's work on hot water systems.

Understanding hot water draw-off patterns in households across Australia and New Zealand is key to providing useful and tailored information to assist consumers in making more informed and energy-efficient choices. The research will be an important input to the E3 Program's hot water systems policy roadmap and will inform the ongoing development of relevant joint Australian and New Zealand standards.



Essentials

- 1 Insurances – Prior to undertaking any of the proposed works or booking the installation, the Plumbing Contractor MUST supply UtilityCAP with the following current documents:
 - 1.1 Professional Indemnity Certificate of Currency – Minimum \$1,000,000
 - 1.2 Public Liability Certificate of Currency - \$20,000,000
- 2 Licenses and Certificates – The Plumbing Contractor MUST ensure the Installing Plumber holds all required plumbing licenses and certificates relevant to the proposed works.
- 3 Risk Assessment – The Plumbing Contractor MUST comply with all national, state and local government regulations regarding statutory Risk Assessment prior to the Installing Plumber being sent to site.
- 4 COVID-19 Risk Management Plan – it is the Plumbing Contractor's responsibility to ensure compliance with national, state or local government COVID-19 requirements by the Installing Plumber.

Process Overview

1 Work Order

UtilityCAP will authorise the Plumbing Contractor to perform the installation by providing:

- Work Order – use the Reference provided for invoicing
- Email with:
 - Householder details
 - Personalised link for providing required photos and data using a Smartphone or Tablet device – **N.B. MUST be able to connect to the Internet**
- Photos of the Hot Water Service as provided by the Householder

2 Booking Installation with Householder

Arranging and co-ordinating installation appointment times will be handled by the Plumbing Contractor to allow for scheduling flexibility.

Ensure the Householder understands that all water will need to be shut off throughout the duration of the installation.

It is essential UtilityCAP are advised of the installation date and time at least one day PRIOR to the appointment to ensure UtilityCAP personnel are available to check connectivity with the Measurement Cabinet when installed.

Failure to advise UtilityCAP prior to the scheduled date and time may require a second site visit to rectify any communications issues.

It is recommended you confirm the installation appointment time with the Householder 24 hours prior to avoid any last minute changes.

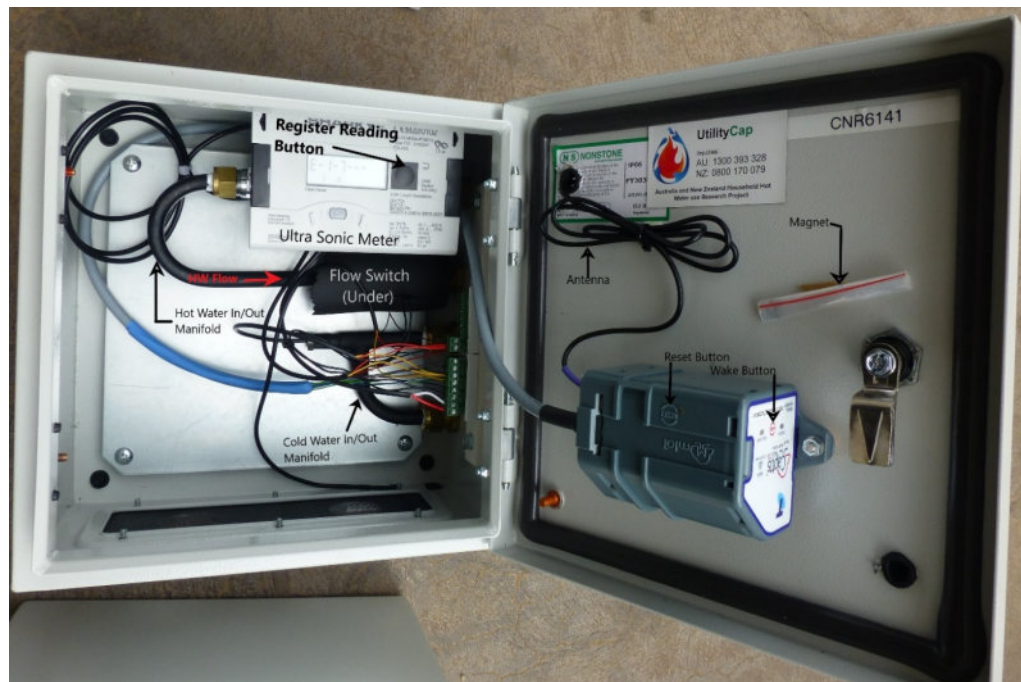
3 Preparation Prior to Site Visit

The Installing Plumber should familiarise themselves with the HWS photos provided by the Householder to ensure they have all piping (other than that supplied by UtilityCAP), thermal insulation and other hardware required for the installation. See 6. Recommended Hardware.

4 Measurement Cabinet

The Measurement Cabinet has been designed to make the installation process as easy as possible, almost a plug & play.

What's inside the Measurement Cabinet



5 Unpacking the Measurement Cabinet

Best to unpack the Measurement Cabinet as close as possible to the intended mounting location.

- 1 Do you have a suitable Measurement Cabinet for this Household i.e., is it a Left or Right hand orientation.
- 2 Unpack and remove the Measurement Cabinet from the box (do not damage this shipping box as it will be needed later to return the unit at completion of the research).
- 3 Open the cabinet door using a slotted screwdriver turning in an anti-clockwise movement. Apply some small pressure onto the cabinet door while you attempt to open it.



4 Carefully remove the enclosed items and place them nearby. There should be the following items:

4.1 A Householder envelope – **DISREGARD AS INFORMATION IS NOW OUT OF DATE**

4.2 Cabinet Key

4.3 Two x 600mm high-quality Polyamide Easy-Hooker Watermark approved braided flexible connectors with elbow.

4.4 Package containing sundry screws and plugs for fixing the cabinet to the wall.

6 Time Estimate

From experience we find after the first one or two installs it should take on average:

15 minutes - Interaction with Householder

60 – 70 minutes - Unpacking, installation of Cabinet and connections

5 minutes - Documentation using a Smartphone

30 minutes - Travel time

TOTAL Time – 120 minutes

7 On-site Installation Process

7.1 As soon as you have mounted the Measurement Cabinet “Wake” the Captis Multi device using the magnet wrapped in plastic on the inside of the Measurement Cabinet door.

- Hold it in place until the Status LED starts to flash then place the magnet back inside of the Cabinet door. The Status button will flash 8 times then after approximately 30 seconds the Cellular LED will glow yellow.
- This Hot Water monitoring research project relies heavily on accessing Australia’s Telstra and New Zealand’s Spark IoT’s Cloud communication platform. **Ensuring the Measurement Cabinet has connectivity with the cellular network is ESSENTIAL.**

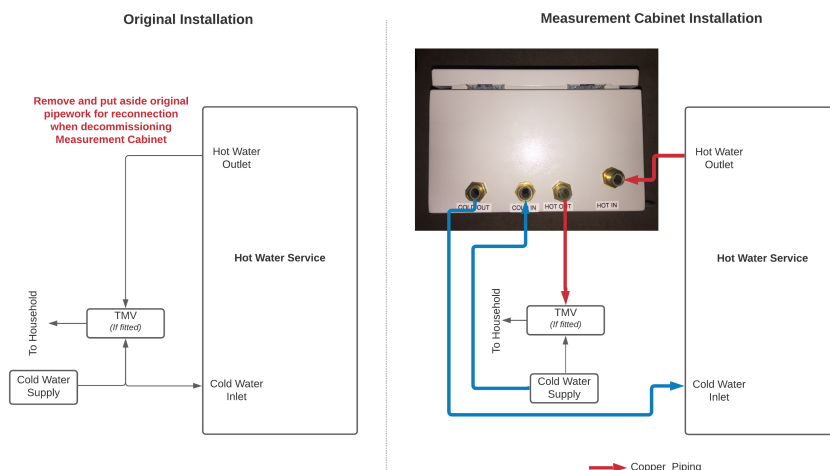


7.2 Divert Cold Water supply IN and OUT of the Measurement Cabinet

7.3 Divert Hot Water supply IN and OUT of the Measurement Cabinet.



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It is a requirement of the researchers that the hot water connection INTO the Cabinet is supplied from the up-stream side of the Temperature Mixing Valve (TMV) where one is fitted.

7.4 Commission the plumbing by turning the cold water back on and:

- Flush the system of air until the water is flowing freely.
- Check that the Hot Water Service is on and working.
- Check that water flow is as it was and that the Householder is satisfied with this flow.
- Check for leaks.
- Final check to ensure the cold-water check valve is fully on.

7.5 Using your mobile phone or other Internet connected device provide the photos and information requested.

Figure 2: Smartphone Screenshot for Photos and Information

8 Hardware Provided

We have supplied each cabinet with 2 x 600mm high-quality Polyamide Easy-Hooker braided flexible connectors. **These MUST ONLY be used for Cold Water connections.**



We have tried to supply sundry items such as mounting brackets, screws & plugs and other items, there will be times when you will need to improvise.

9 Deciding Where and How to Fix the Cabinet

Important points in selecting location:

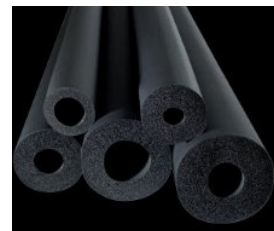
- 9.1 We recommend prioritising the Hot Water connection points to keep this pipework as short as possible as, in accordance with both Australian and New Zealand Plumbing Standards, this needs to be in copper tubing.
- 9.2 We have supplied 2 x 600mm flexible connectors for Cold Water ONLY so consider the location with this in mind.
- 9.3 The Cabinet weighs approx. 9 kilos so ensure the mounting surface will support the load.
- 9.4 Are there other circumstances such as cyclonic or earthquake activity that may impact
- 9.5 The installation is in your service area and we are depending on your local knowledge.
- 9.6 It could be possible, in rare circumstances, that the only option is to attach the Cabinet to the side of the HWS itself. It is your sole responsibility to ensure that no damage is caused to the HWS if you choose this method.

9.7 If you have decided that the place to fix the Cabinet is different to what you previously discussed with the Householder, or there is an aspect they may not be aware of, we highly recommend you clear this with the Householder **before** you proceed.

UtilityCap has vetted each site as to the suitability for installing the Cabinet, we trust we have got this right, but will rely on the installer's professional and practical experience to make the final judgement.

10 Recommended Hardware

It is not possible for UtilityCAP to provide every item that the Installing Plumber may need, therefore we suggest that, apart from those items the Installing Plumber would be expected to carry e.g., brass fittings/adaptors, copper tube and expendables, we suggest the following items:



10.1 Pipe insulation is to be used in frost prone areas **and must be used where the existing pipework has been fitted with insulation.**

We recommend:

1. 15mm Easy Hookers - Armaflex 13mm (wall thickness) x 19mm internal dia. flexible insulation. This size best suits flexible connectors.
2. 15mm copper tube – Armaflex 15mm dia. flexible insulation.

10.2 We recommend 12-15mm x 50 treated pine batten, in the event you need to straddle two fixing points, having this at hand may help in securing a quality fixing point.

11 Pipe Sizing

11.1 **Pipe sizes must be replaced with like-for-like** to ensure there is NO drop in water pressure in the household thus avoiding a return visit(s) should the Householder complain.

11.2 **External Pipe Diameters** are convenient but it's the **Internal Pipe Diameter** that matters. The piping, in many cases, used for cold and hot water connection of the HWS has an **External 12.7mm** with **0.91mm Wall Thickness** which gives **10.88mm Internal diameter**. i.e. $12.7 - 0.91 - 0.91 = 10.88\text{mm}$.

11.3 The supplied Hookers (15mm External diameter) have an **8mm Internal diameter** and only suitable where this matches the existing cold water piping.

11.4 AS/NZS 3500.4 Heated Water Service - Clause 2.4.3 (d) specifies that plastic pipes and fittings cannot be used within 1 m of the outlet of the hot-water service.

If the system is being fed by a gravity-based system, then you are advised NOT TO PROCEED, as this research project excludes low pressure gravity-based systems.

12 On-Site

First impressions are important.

The Installing Plumber is not only representing their company but also the Australian & New Zealand government agencies and the Householders have volunteered to participate in this project, therefore a courteous and professional approach is required.

12.1 Arrive at the pre-booked time and if you are running late please call the Householder and advise them of your delay.

12.2 Introduce yourself to the Householder

12.3 Request they guide you to the Hot Water Service location.

12.4 Confirm with the Householder this is the MAIN Hot Water Service.

Conduct a quick assessment that the Hot Water Service is in reasonable condition. If in your opinion this HWS is likely to “die” within the next 18 months then please advise UtilityCAP immediately.

We can still proceed but UtilityCAP will need to discuss with the Householder the condition of their Hot Water Service and possible courses of action.

- 12.5 Explain to the Householder how, why, and where you intend to fix the Cabinet.
- 12.6 This is their house and they need to be reassured that what you intend to do is reversible (this is why we use Flexible connectors where possible).
- 12.7 We have already received their consent to install the Measurement Cabinet but **YOU must get their consent** (can be verbal) once you have described what you will be doing **before proceeding**, better to deal with any doubts now rather than halfway through.
- 12.8 Advise the Householder the Plumbing Contractor will arrange to return at the end of the project to decommission, remove the cabinet and restore everything to how it is now.
- 12.9 **Advise the Householder you will have to turn the hot water off for about 30 - 60 minutes and that you will need to flush the line once you have finished, mostly at their sink (perhaps they can help you with this).**

Note: Make sure you check with the Householder if they have any pets, young children or other reasons to keep gates shut while you are working, be aware.

From time-to-time things can go wrong, we are here to help and support you.
Should you need any information or assistance call our Help Line (Press Option 3 then 3):
AU 1300 393 328 NZ 0800 170 079