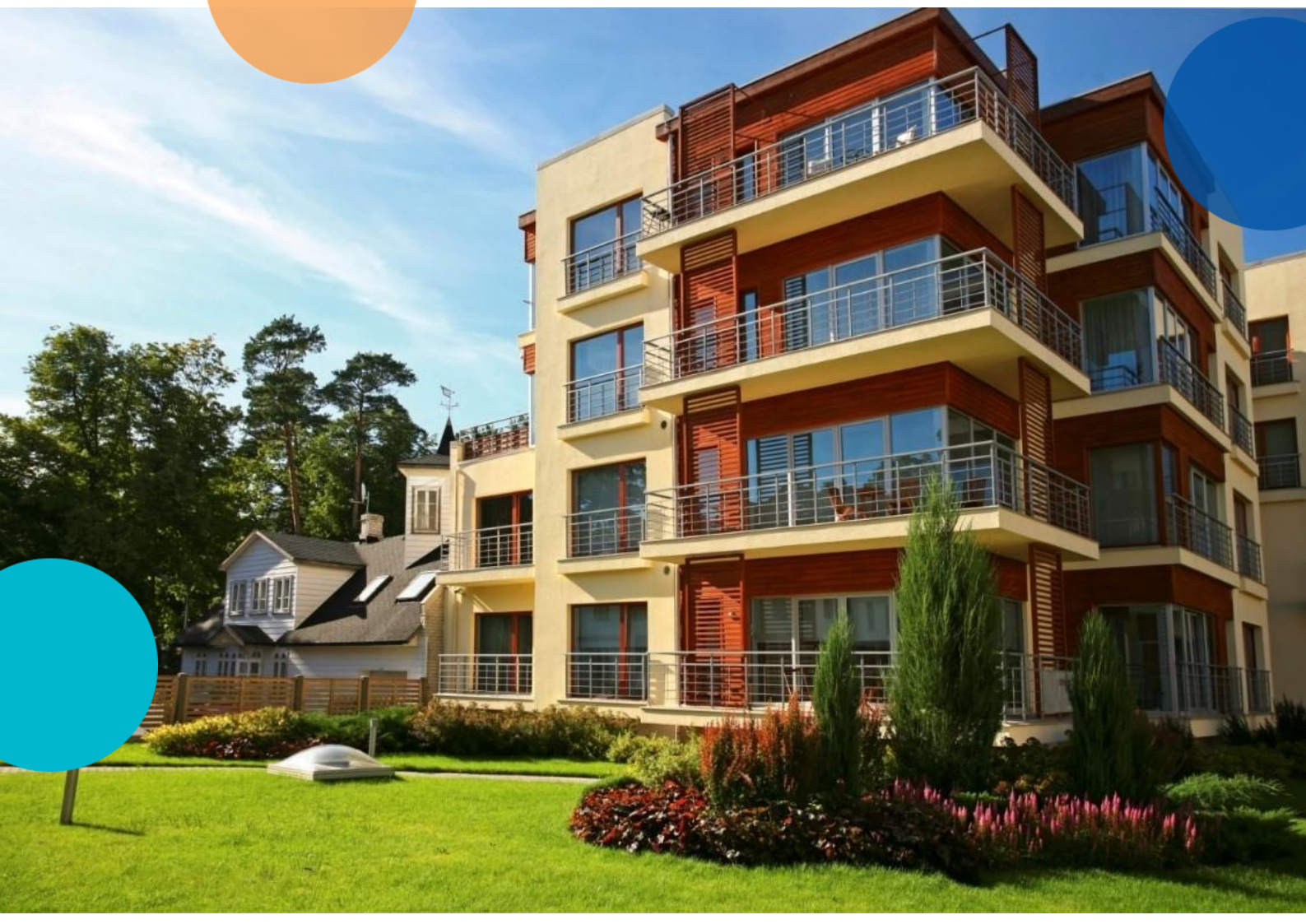
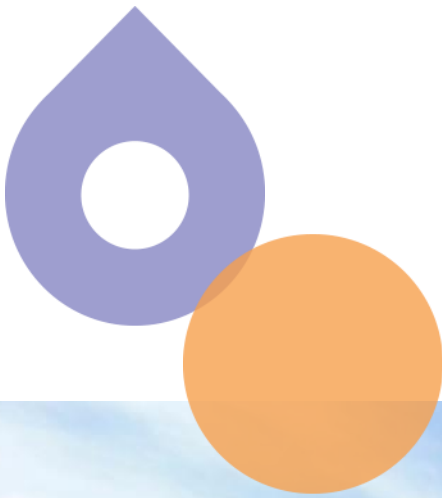


Multi-level individual metering guide

Version 9: June 2020





Overview

What

This guide is for the metering of multi-level buildings. It explains:

- building design, plumbing and metering requirements
- procedures, roles and responsibilities.

To know about metering for other building types, read our [Water meter installation guide](#).

Who

The guide is aimed at property developers, hydraulic consultants and plumbers.

Why

Individually metering units improves billing equity for water use in multi-level developments. With individual metering, each unit owner pays for the water they use rather than a fixed portion of the total water used in the building.

The correct building design, plumbing and metering helps us to:

- read and bill the correct unit owner
- inspect and maintain meters in the future.



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1. Introduction

In September 2014, Sydney Water introduced new rules for the individual metering of units for most new multi-level buildings.

Complying with this guide is a condition of connecting to our system and is included in the Sydney Water Notice of requirements (NOR) or Complying Section 73 Certificate requirements letters.

2. Changes

2.1 What's changed in this version?

We've updated this guide in response to your feedback. The major changes are:

- **Section 3 Individual unit metering for new buildings**

We've included information on how billing will work with individual unit meters and main meters.

- **Section 8.2 Plumbing design**

We've added additional plumbing details for fire services.

2.2 What if you've already designed your building or signed an undertaking?

If these changes impact your development, email meters@sydneywater.com.au to discuss this with us.

2.3 Need more information or advice?

Email meters@sydneywater.com.au or call James Kemsley on 8849 6998 or Anthony McMillan on 8849 6385.



3. Individual unit metering for new buildings

3.1 What are the requirements?

We have two basic requirements, but you may only need to meet one of these.

1. You must design and construct buildings with appropriate pipework and space for individual meters. (See Plumbing requirements).
2. You must install metering systems to enable billing. (See [Metering requirements](#)).

We won't manually read meters in multi-level buildings, so you must install a metering system. We don't provide these metering systems. You buy these from one of our accredited metering suppliers.

There are two types of metering systems:

1. Automated Meter Reading (AMR) metering system
 - is to be used in buildings three floors or less
 - will allow the meter reader to electronically read all the individual meters from outside the building using a handheld reader.
2. Advanced Metering Infrastructure (AMI) metering system
 - is to be used in buildings four floors or more
 - transmits individual meter reading data directly to us using the mobile phone network.

The requirements that apply to your development will depend on the property use, for example residential, commercial or mixed-use registered property title from NSW Land Registry Services, for example one lot deposited plan, stratum subdivided or strata subdivided.

'Mixed' means any building that is a mix of:

- residential and retail, for example home and shops
- residential and commercial, for example home and offices
- residential, retail and commercial, for example home, shops and offices.

3.2 Where is individual metering required and where is it optional?

Once you know the property use and the type of registered property title, you can determine where the requirements apply and where they're optional. To know more, see [Building design requirements](#).

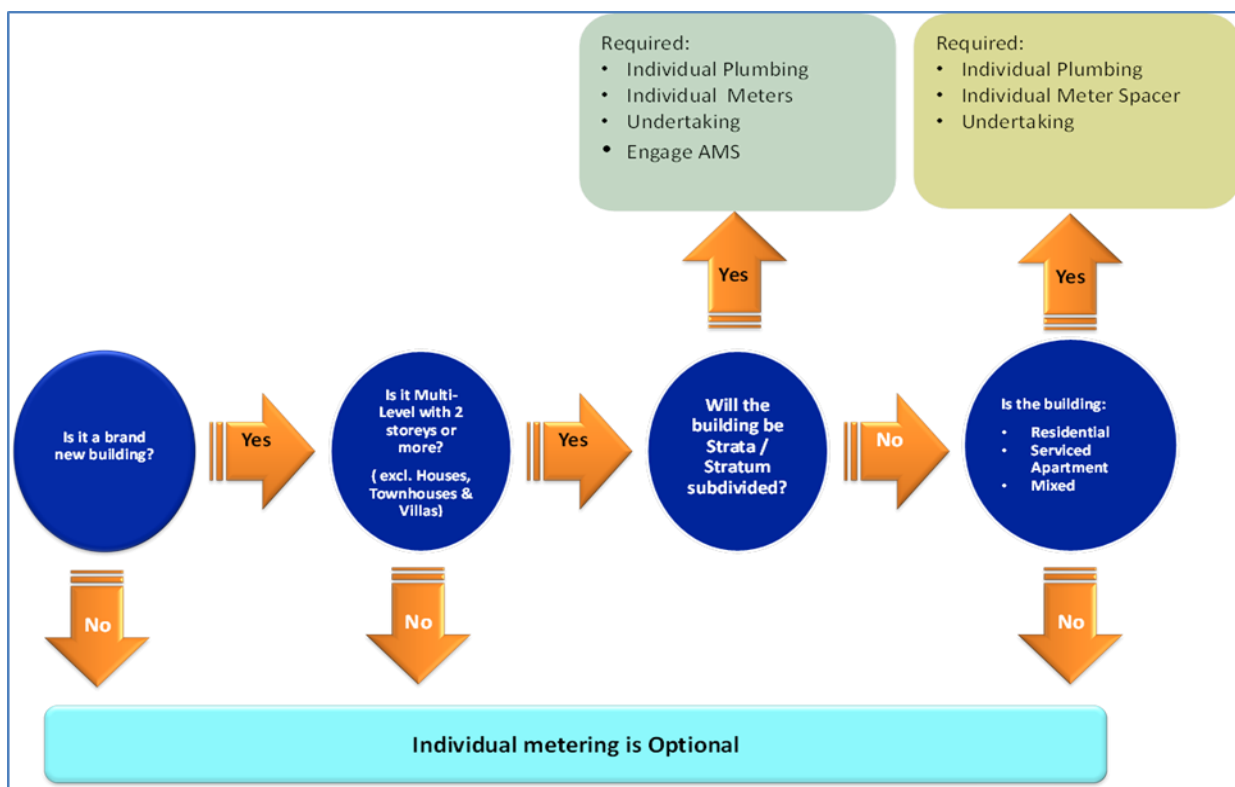


Figure 1. Our requirements depend on the registered property title and property use.

- For strata/stratum-subdivided buildings, you're **required** to install individual unit meters.
- For non-strata/stratum subdivided buildings that are residential buildings, serviced apartments or mixed use, you're **required** to meet our [Plumbing requirements](#) to allow for the **future** installation of individual meters.
- For non-strata/stratum subdivided buildings that are commercial buildings, the requirements **do not** apply.
- Where **optional** individual unit metering is being provided, it must comply with this guide.
- Optional metering in commercial buildings may impact charges. Visit our website to learn more about [Our prices](#).

3.3 How does water use billing change with individual metering?

Buildings without individual meters

All the water for these buildings is measured by a master meter at the boundary of the property and all water use is charged to the owners' corporation. This charge is typically then apportioned by the owners' corporation through strata levies.

Buildings with individual meters and without centralised hot water systems

All water for these buildings is measured by a master meter at the boundary of the property and the water used inside each unit is measured.

We charge the owner of the unit for the water used inside the unit. (This also allows this charge to be passed on to tenants if their lease allows).

The total water used by individual units is then deducted from the water measured through the master meter and we charge this difference to the owners' corporation as common water (for example, pools, garden watering etc).

This common water charge is typically then apportioned by the owners' corporation through strata levies.

Buildings with individual meters and with centralised hot water systems

All water for these buildings is measured by a master meter at the boundary of the property and the **cold** water used inside each unit is measured.

We charge the owner of the unit for the **cold** water used inside the unit (This also allows this charge to be passed on to tenants if their lease allows).

The total of **cold** water used by individual units is then deducted from the water measured through the master meter and the difference is charged to the owners' corporation as common water (for example, all **hot** water, pools, garden watering etc).

We charge the owners' corporation for the **hot** water used inside each unit, as this water is not measured by the individual meter.

This common water charge is for about 40% of total water measured by the master meter (due to the centralised hot water system) and is typically then apportioned by the owners' corporation through strata levies.

Table 1 Who pays for water use with MLIM

	Individual unit owner	Owners' corporation
Master meter only	No water use charge	All water use charges
Individual meters without centralised hot water	All water inside their unit	Common water (difference between total water and individual water)
Individual meters with centralised hot water	Only cold water inside their unit	Common water which includes centralised hot water (difference between total water and individual water)



4. Individual unit metering for existing buildings

Existing multi-level buildings are not required to have individual unit meters. You may choose to install them, but only if they comply with these guidelines on plumbing, meter location and metering systems.

4.1 Summary of requirements

- Each unit must be supplied with only one cold water metered inlet.
- Meters must be in a common area (not inside the unit).
- You must engage one of our accredited metering suppliers to provide the meters and metering system.

Many older multi-level unit developments don't have appropriate plumbing to allow individual metering. If you're interested in retro-fitting individual meters, ask your plumber if the building complies with these guidelines.

Once you've spoken to your plumber, email meters@sydneywater.com.au to discuss building and metering requirements.

Installation of individual meters in existing strata buildings must be endorsed by the owners' corporation. You must provide evidence of this endorsement to us.

If you choose to retrofit individual meters for units in an existing commercial building, the way we determine charges may change. If the building is already strata subdivided, all unit owners must understand the impact on their charges before you install individual meters.

Visit our website to learn more about [Our prices](#).

Individual metering for existing buildings isn't mandatory. However, if you wish to install individual meters, the plumbing and metering must comply with this guide.



5. Roles and responsibilities

This section describes the key roles and responsibilities for developers, accredited metering suppliers, Sydney Water and owners.

Other people are involved in the process. These include hydraulic designers, architects, plumbers and water servicing coordinators (WSC). To know about their roles, see [Summary of process steps](#).

5.1 Developers

Building developers are responsible for providing individual metering that complies with this guide.

The Notice of Requirements or Complying Section 73 Certificate requirements letter requires the developer to sign an Undertaking to provide multi-level individual metering.

The developer will 'undertake' to:

- comply with the requirements of this guide
- provide and install plumbing and space for individual metering according to this guide.

When implementing a strata/stratum plan, the developer 'undertakes' to:

- engage an Accredited metering suppliers (AMS) to provide individual metering
- meet the cost of the individual meters and metering system
- transfer the individual meters and metering system to us, when we've issued a Testing Certificate to the AMS and the AMS confirms that payment for the meters and metering system has been received in full.

We'll issue the Section 73 Compliance Certificate when the developer signs the Undertaking to commit to these requirements. You must meet all other Sydney Water requirements before we issue the certificate.

Developers must engage an AMS and will directly negotiate the price for:

- supply of individual meters
- meter reading systems
- installation
- testing.

The developer and AMS will arrange to supply and deliver the individual meters to suit the construction timeframes.

The **developer's plumber** is responsible for:

- installing the individual meters
- ensuring the meter is labelled with the correct unit number.



The developer must allow access to all metered units for the AMS to complete tap testing and their commissioning process. A site will **not** be individually metered until all tap testing has been completed.

The accredited metering supplier (AMS) will confirm that ownership of the individual meters and metering system has passed to the developer (payment has been made). We'll then issue a Transfer of Ownership notification to the developer (which will trigger reading and billing from the meters).

5.2 Accredited metering suppliers

The accredited metering supplier (AMS) will supply, install and test the metering system in buildings that have been built to allow for individual metering according to this guide. (The developer's plumber installs the meters).

The metering system supplied will be either an Automated Meter Reading (AMR) or an Advanced Metering Infrastructure (AMI) system. To know more, see [Types of metering systems](#).

We read these meters from outside the building using wireless transmitters. They can be installed towards the end of building construction. The developer and AMS will agree on when to install the meters.

The AMS can only supply products we've approved. They'll:

- work with the developer to determine specific metering details to suit the building development
- arrange to supply and deliver individual AMR and AMI meters to the developer. (See [Types of metering systems](#))
- install AMI data logger and repeaters. (See the sections [AMI data logger](#) and [power location and Metering system repeaters](#))
- conduct a tap test to confirm that the meter is connected to the correct unit
- test the metering system to meet our billing requirements (so that accurate metering data can be transmitted from each meter to us)
- tell us when ownership has passed from the AMS to the developer (payment has been made).

The accredited metering supplier (AMS) will supply the individual meters, but they'll be installed by the developer's plumber.

We'll issue a Testing Certificate to the AMS once testing is successful.

- 
- 
- Find out who supplies and installs [Meters in multi-level buildings](#) on our website. We'll update the list if other suppliers are accredited in future.

5.3 Sydney Water

If you comply with this guide, we'll:

- take over the meters and metering system (transfer of assets)
- provide water use bills
- maintain meters and metering systems.

Transferring assets

We'll take over the meters and metering system when we've issued a:

- testing certificate to the accredited metering supplier (AMS)
- transfer of ownership notification to the developer.

Water use billing

Once assets have been transferred, we'll start sending water use bills:

- **for a strata subdivided property** with individual meters, we'll send a bill to:
 - each unit owner, and will include their individual unit cold water use
 - the owners' corporation for the common water use that isn't for individual unit use, for example from centralised hot water tanks, garden, pool etc. We'll calculate this bill using the master meter, less the sum of the water use from the individual meters.
- **for a non-strata subdivided property** with **optional** individual meters, we'll send:
 - a single bill for the whole property to the owner, based on the total water use from the master meter. We'll include a list of the individual unit cold water use from each individual meter on the back of this bill.

Optional individual metering in commercial properties may impact your charges. Visit our website to learn more about [Our prices](#).
- **for a non-strata subdivided property** without individual meters, we'll send a single bill for the whole property to the owner. We'll base this on the total water use from the master meter.

We **won't** provide water use information for individual meters for properties that don't have a Test Certificate or Transfer of Ownership notification. In these cases, the total water use bill from the master meter will go to the owners' corporation (strata subdivided) or owner (non-strata subdivided).

Meter maintenance

We'll maintain the:

- master meter and other pipework as per our *Customer Contract*, that is, up to the master meter to a maximum of one metre from the master property boundary
- individual meters and metering system once we issue a Transfer of Ownership notification

5.4 Owners and owners' corporation

The owner is responsible for maintaining all internal plumbing for buildings that aren't strata/stratum subdivided. In buildings that are strata subdivided, the owners' corporation is responsible.

The owner/owners' corporation is responsible for:

- all plumbing, including couplings, stop taps and individual meter spacer, and connections
- all individual meters and metering assets, **until** we've taken them over
- providing and maintaining continuous electricity to run data loggers for AMI metering systems. The power use is very low.

6. Summary of process steps

6.1 Plumbing preparation (where individual metering is not required)

Table 2 Plumbing preparation summary

Step	Who	Action
Design	Hydraulic designer / Architect	Designs risers, common area space and pipework to meet MLIM Guide. May talk to an Accredited Metering Supplier (AMS) to consider future metering system space and power requirements.
Complying S73 Cert.	Developer	Applies to water servicing coordinator (WSC) for complying Section 73 (S73).
	Water servicing coordinator	Sends complying S73 Certificate requirements letter with requirement for MLIM.
	Developer	Signs Undertaking (where required).
	Water servicing coordinator	Submits complying S73 application package.
	Sydney Water	Releases S73 (when all requirements met).
S73 Cert.	Developer	Applies for S73.
	Sydney Water	Sends Notice of Requirements (NoR) with requirements for MLIM.
	Developer	Signs Undertaking (where required).
	Sydney Water	Releases S73 (when all NoR requirements met).




Step	Who	Action
Install	Plumber/Hydraulic contractor	Installs pipework, master meter and individual meter spacers.

6.2 Plumbing and metering (where individual metering required)

Table 3 Plumbing and metering summary

Step	Who	Action
Design	Hydraulic designer / Architect	Designs risers, common area space and pipework to meet MLIM Guide. Talks to an AMS early in process to consider individual metering system space and power requirements.
Complying S73 Cert.	Developer	Applies to water servicing coordinator (WSC) for complying Section 73 (S73).
	Water servicing coordinator	Sends complying S73 requirements letter with requirement for MLIM.
	Developer	Signs Undertaking (where required).
	Water servicing coordinator	Submits complying S73 application package.
	Sydney Water	Releases S73 (when all requirements met).
S73 Cert.	Developer	Applies for S73.
	Sydney Water	Sends Notice of requirements (NoR) with requirements for MLIM.
	Developer	Signs Undertaking (where required).
	Sydney Water	Releases S73 (when all NoR requirements met).
Install	Plumber/Hydraulic contractor	Purchases meters and metering system from AMS.
	AMS	Coordinates supply and delivery of individual meters to developer's site.
	Plumber/Hydraulic contractor	Installs pipework, master meter and individual meters.
	AMS	Installs the metering system and connects and tests system.
	Sydney Water	Confirms that metering system is sending meter data and provides testing certificate to AMS.
	AMS	Confirms metering system has been paid for in full.
Transfer	Sydney Water	Transfers meters and metering system from developer to Sydney Water (send Transfer of Ownership notification) after successful testing and AMS confirms payment from developer.
Billing	Sydney Water	Charges unit owners for individual unit water use and common water use to the owner/owners' corporation.
Maintain	Sydney Water	Maintains meters and metering systems.
	Owner / owners' corporation	Maintains plumbing, stop taps, coupling and all connections and provides electricity to run data loggers for AMI metering systems.

7. Building design requirements

You must design your building to meet our requirements. You must:

- design and construct buildings with appropriate pipework and space for individual meters. (See Plumbing requirements)
- install individual meters and install metering systems to enable billing. (See Metering requirements)

The table below shows the mandatory and optional requirements based on the property use and registered title. This table refers to the state of the building when completed.

See our Layout diagrams for examples of the most common scenarios.

Table 4 Plumbing and metering design requirements

Registered property type				
Property use	Non-strata / Stratum or Company Title (Single property building)	Strata (Multiple properties in building)	Stratum	Mixed stratum and strata
	(DP)	(SP)	(DP)	(DP and SP)
Residential or serviced apartments	Plumbing only required per dwelling Individual metering is optional ¹ Diagram 1	Metering required Each strata lot Diagrams 2, 7 & 11	Metering required Each stratum lot Diagrams 5 & 9	Metering required Each stratum/strata lot Diagrams 6 & 10
Mixed • Residential and retail (eg home and shops) • Residential and commercial (eg home and offices) • Residential, retail and commercial (eg home, shops and offices)	Plumbing only required per dwelling/shop Individual metering is optional ¹ Diagram 8			




Registered property type				
Commercial - Office - Retail - Hotel - Boarding houses - Other ²	Requirements don't apply			
	Diagram 3 Plumbing and individual metering is optional ¹ Diagram 4			

Table 1:

¹Optional – If you provide optional plumbing or meters they must comply with this guide. Optional metering for commercial properties may affect charges. Visit our website to learn more about [Our prices](#).

² Contact us to discuss metering requirements.

7.1 When to contact us

Contact us if you're:

- doing a staged development
- designing complex building types or uses
- providing other water types (recycled, rainwater etc)
- developing a multi-level industrial building
- developing multiple towers
- developing on a shared foundation.

We'll need to consider the number of water main connections for these developments.

If you have multiple towers:

- If the site is non strata, one main meter connection will be supplied at the boundary.
- Each stratum/strata building should have its own main meter connection and only one level of sub-metering. If new stratum lots are created after the building is completed, you must supply us with a Building Management Agreement, nominating the strata plan, which will incur all the charges from the main meter.
- All other rules for plumbing and metering of individual units apply.

For more information on our:

- connection requirements, email connections@sydneywater.com.au
- metering requirements, email meters@sydneywater.com.au



7.2 Access to meters

As part of your building design, consider how we'll access the meters for future meter maintenance.

You can give us access to meters by using an Abloy utilities access restricted lock. This is a lock that only you and authorised utilities can open. You can only buy one from [Integrity Locksmiths](#). Read about [Using a utility lock](#).

8. Plumbing requirements

8.1 Plumbing standards

All plumbing work must meet relevant Australian Standards, codes, plumbing and building rules.

All building work must comply with the *Building Code of Australia* (BCA) and the *Plumbing Code of Australia* (PCA). The *Plumbing Code of Australia* references the *Australian Standard AS/ANZ 3500 Plumbing & Drainage*.

Section 13 of the Standard indicates that a network utility operator's water meters should be installed according to the network utility operator's requirements. Our requirements for multi-level buildings are set out here in this guide.

8.2 Plumbing design

Master meter

The total cold water supply to the building or each stratum lot must be metered through a master meter. You may need more than one master meter. (See our Layout diagrams).

We supply the master meter. To find out about the requirements for this meter (including location and spacing) and how to get one, read our [Water meter installation guide](#).

Master meter - backflow

You may need to install a separate backflow prevention device with the master meter. Visit our website to learn about [Backflow prevention](#).

Single cold water inlet pipe

Each unit must be supplied with only one cold water metered inlet, so that only the water to that unit is measured by the meter.

All individual units must be supplied directly from the master meter. (See our Layout diagrams).

Centralised hot water

We do not meter the hot water from a centralised hot water system.



Individual meter spacer

The individual meter spacer allows for future metering. It must have the same length and same end connections as a Sydney Water meter.

Dual stop valves

We require that all individual meters installed within the building **must** have two stop valves (also known as ball valves), one on either side of the meter. A site will **not** be individually metered unless two valves have been installed. These can be provided by your plumber. This is to prevent any water damage to the building if meter maintenance is required.

Brackets

A meter bracket must be fitted to the individual meter and attached to the wall for support. These can be provided by your plumber.

Common water use

Common area water use, for example garden, pool, rainwater tank top-up, fire hose reels, cooling towers, wash bay, etc) are measured by the master meter.

We can provide sub-metering of common water uses (and itemise these on the bill) as an additional service. Additional cost will apply. Refer to the [common area metering FAQs](#) or talk to your AMS for details.

For buildings that are to be stratum subdivided, carefully consider the plumbing and metering set up for common water use. Each stratum owner will pay for the water measured through their meter.

Fire services

Any private water service that connects to our water supply must be metered. This includes fire hose reels, but generally doesn't include other fire systems. To learn more about connections to fire systems, email connections@sydneywater.com.au

FPAA1010D Fire Sprinkler code impact on water billing

The configuration of a FPAA101D system doesn't allow for individual metering of toilet and fire sprinkler water use. This water use is measured from the main water meter as common use.

The owners' corporation will be billed for the common water used in the toilets connected via the sprinkler system. This charge is typically then apportioned by the owners' corporation through strata levies. We recommend that the developer is made aware of these issues by the Fire Service Designer.

Recycled water

If we offer a recycled water service to your building:

- the main recycled meter requires an AMR/AMI device fitted.
- individual metering of the recycled water supply is optional

Contact us at meters@sydneywater.com.au to discuss any further metering requirements.

On-site recycled, rainwater or other water

We don't meter other on-site water products.

Private meters

If private meters are installed on the property, we won't read them or charge for water use.

8.3 Individual meter spacer

An individual meter spacer (or bridging piece) is required where individual meters aren't being installed.

The individual meter spacer must be the same length as an individual meter and have threaded ends as defined in AS3565.1-2010 sections 2.2 and section 2.4 for the nominated meter size (DN20 or DN25). Only DN20 meter size can be used for residential units. Email meters@sydneywater.com.au before sizing a DN25 water service for commercial premises.

The plumbing design must allow for easy installation and removal of the individual meter.

The developer's plumber will supply and install the individual meter spacer. You can obtain these from your plumbing supplier.

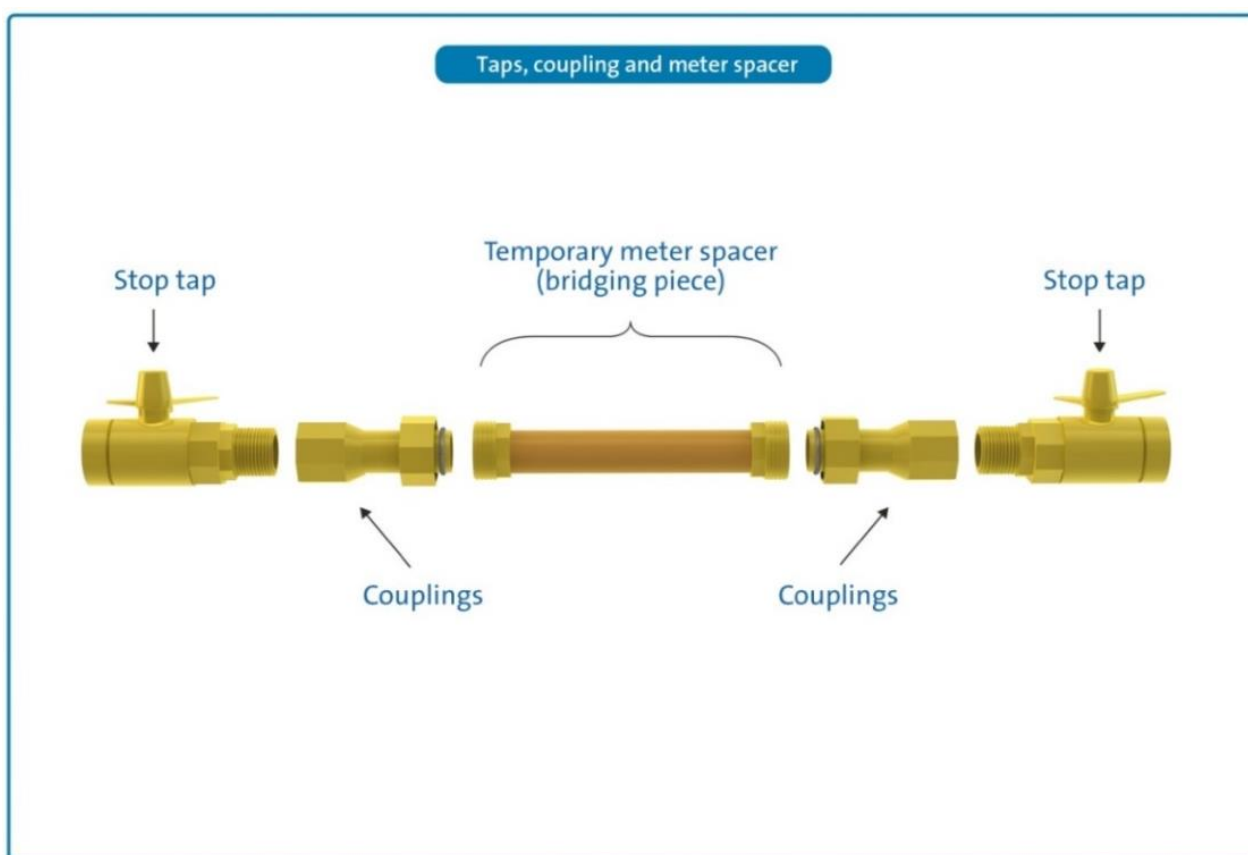


Figure 2 You need to allow the correct space for a meter and provide two stop taps.

You may use pre-fabricated individual meter spacer assemblies. Talk to your plumbing supplier about this.



Figure 3 You may choose to use a pre-fabricated meter assembly.

8.4 Location of individual meter spacers

Individual meter spacers **must** be installed in a **common area** to ensure unrestricted access to meters when they're installed. We need this for inspections, maintenance and future replacement.

Meter spacers **must not** be installed:

- inside individual units
- under kitchen sinks or laundry tubs
- in ceiling cavities.

You must design the area where meters are installed to allow for drips and small leaks when meters are replaced.

We recommend that meter spacers are installed:

- in a non-metallic enclosure or cupboard, for example a dedicated plant room or meter utility room with appropriate access
- on the same floor as the unit. However, in smaller buildings (three floors or less) meter spacers may be grouped together on the ground floor or alternate floors. The meter spacer pipework must clearly label which unit the meter spacer belongs to.

The enclosures or cupboards **must not** be locked. Unrestricted access is required to fit, maintain or replace meters in the future.

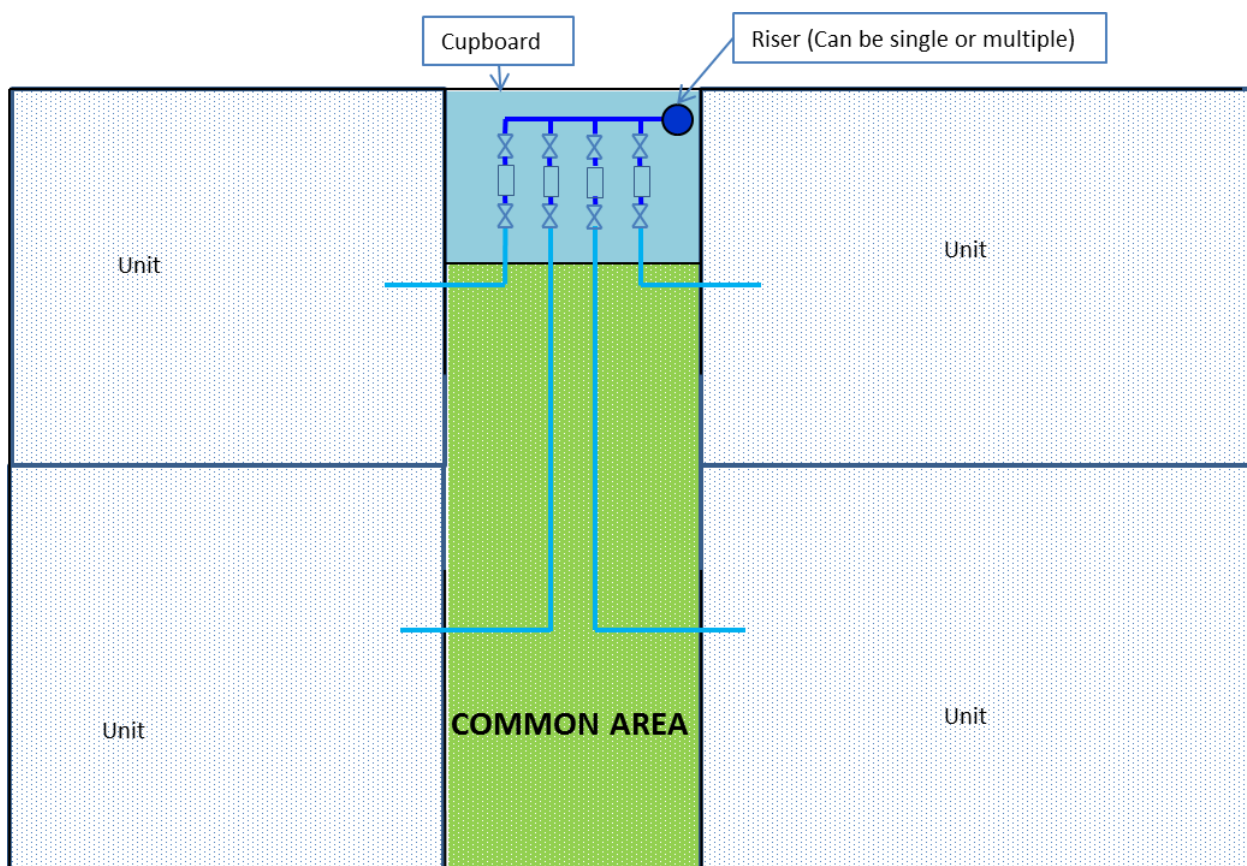


Figure 4. Individual meter spacers must be in a common area, not inside units.

8.5 Individual meter spacer – pipework clearances

Clearances around the meter spacer must meet our requirements, as shown in Figure 6.

Summary of clearances

- No less than 150 mm above finished floor level.
- No greater than 1.5 m above finished floor level.
- Minimum clearance of 150 mm between the centre of each pipe and any wall or door.
- Allowance for meter depth will be at least 250 mm.

The following diagram shows the individual [DN20 & DN25 meter spacer assembly](#). Note: Drawing is intention only and other layouts are possible with these spaces and pipe requirements.

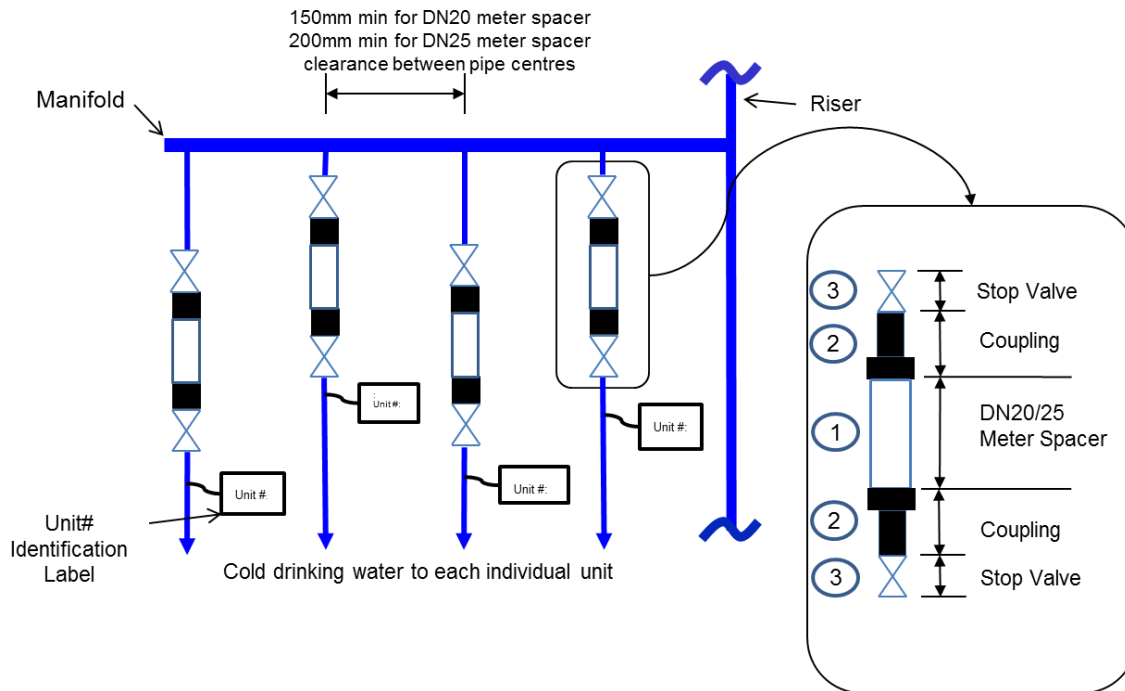


Figure 5. DN20 & DN25 meter spacer assembly.

Item 1: Meter spacer

Pipe with threaded ball joint ends and length of 154 mm (for DN20) and 178 mm (for DN25) in accordance to AS3565.1 – 2010. Only DN20 meter size can be used for residential units. Contact meters@sydneywater.com.au before sizing a DN25 water service for commercial premises.

Item 2: Coupling

Standard couplings 61 mm in length with one end ball joint with loose female union nut and the other end 20 mm BSP female thread.

Item 3: Stop valve

A $\frac{1}{4}$ Turn ball valve with 20 mm (DN20) or 25 mm (DN25) BSP male outlet to fit the standard coupling.

Meter spacers are staggered to achieve the 150 mm (DN20) or 200 mm (DN25) minimum clearance between pipe centres when the meter is installed. Based on the individual meter coupling options selected for your building, the overall individual meter assembly should be about 400 mm in length.

8.6 Pipework for individual meter spacer orientation

You can prepare the pipework for individual meter spacers either vertically or horizontally.

The individual meter spacers must be oriented to ensure that when the individual meter is installed, the meter register display can be easily read for checks, audits and manual meter reads without a ladder or other aids.

8.7 Individual meter spacer assembly - marking and labelling

You must ensure that every individual meter spacer pipework is appropriately labelled with the associated unit number. The label must be:

- no smaller than 50 mm by 25 mm in size
- a permanent waterproof identification label. We recommend metal tags with stamped details or a key ring with permanent marker
- fitted to the fixed pipe on the outlet side of the individual meter spacer.

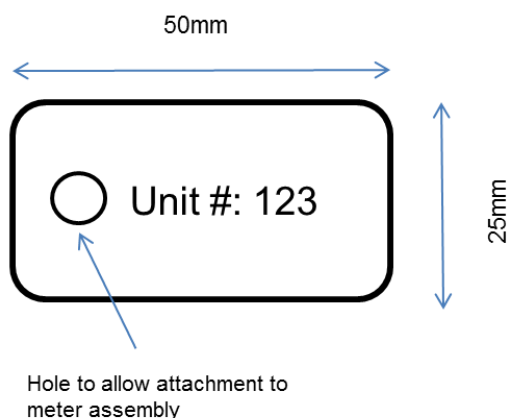


Figure 6 You must correctly label each meter spacer, so we know which unit it belongs to.

9. Metering requirements

9.1 Meters

Master meter

We'll supply the master meter. To find out how to get this meter, read our [Water meter installation guide](#).

You must supply the AMI/AMR wireless device for the master meter. You get this from our accredited metering supplier (AMS).

You **must not** enclose the master meter within a metal cage or metal enclosure.

Individual unit meter

You can only install Sydney Water approved individual unit meters, supplied by an AMS. The developer's plumber or hydraulic contractor will install the individual meters.

The meters and metering system components must be sourced from the same accredited metering supplier.

Sub-metering of common water uses

Meters for common water uses can be provided (with consumption itemised on the bill) as an additional service and additional cost will apply. You'll need to sign an agreement with us, for us to provide this service. You'll also need to purchase the meters from your AMS.

Common area meters must comply with the installation requirements in this guide.

9.1.1 Individual meter backflow protection

All 20 mm and 25 mm individual meters have integrated dual check valves (DCV).

9.1.2 Location of individual meters

You **must** install individual meters in a **common area** to ensure unrestricted access for inspections, maintenance and future replacement.

Meters **must not** be installed:

- inside individual units
- under kitchen sinks or laundry tubs
- in ceiling cavities.

You **must not** enclose the AMR/AMI meter within a metal cage or metal enclosure.

You must design the area where meters are installed to allow for drips and small leaks when meters are replaced.

We recommend that you install meters:

- in a non-metallic enclosure or cupboard, for example a dedicated hydraulic plant room or meter utility room with appropriate access. If meters are installed in a cupboard/room, the cupboard /rooms must be clearly labelled 'Water meters'.
- on the same floor as the unit. However, in smaller buildings (three floors or less) you may group meters together on the ground floor or alternate floors. The meter pipework must be clearly labelled to show which unit the meter belongs to.

You may install the meter in the basement (only one level below street level). However, you must consider our future access needs for meter maintenance and inspections.

Contact meters@sydneywater.com.au about this.

The enclosures or cupboards **must not** be locked. Unrestricted access is required for meter inspections, meter maintenance and future replacement.

The following diagram shows the individual meters installed in the meter spacer.

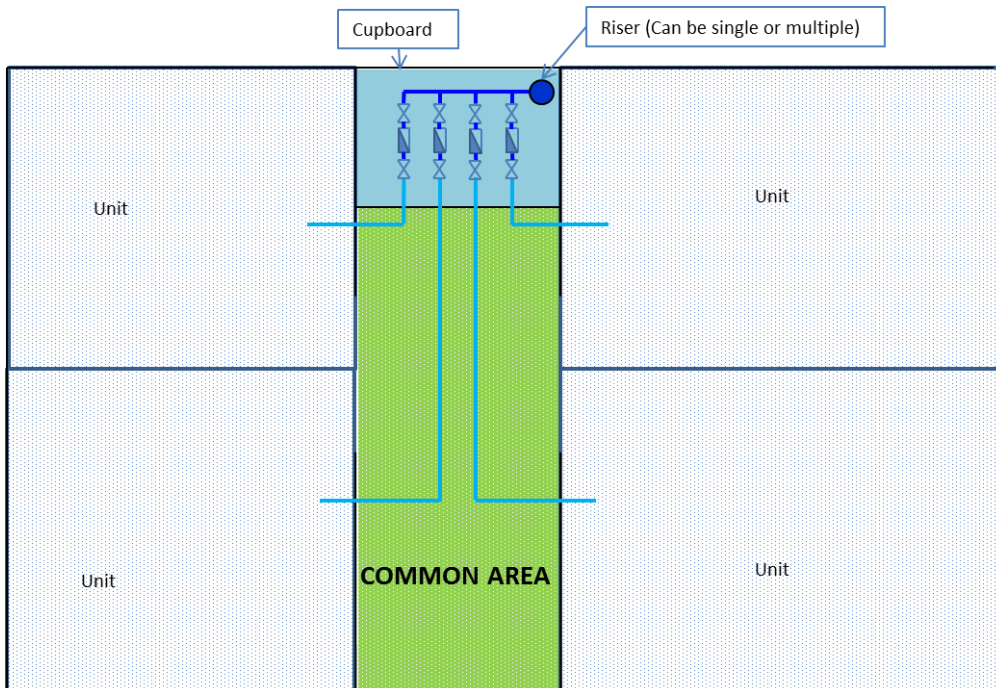


Figure 7. Individual meters must be in a common area, not inside units.

9.1.3 Individual meter – assembly

The meter-assembly must allow for easy installation and removal of the individual meter.

All individual meters installed within the building **must** have two stop valves (also known as ball valves), one on either side of the meter. These can be provided by your plumber.

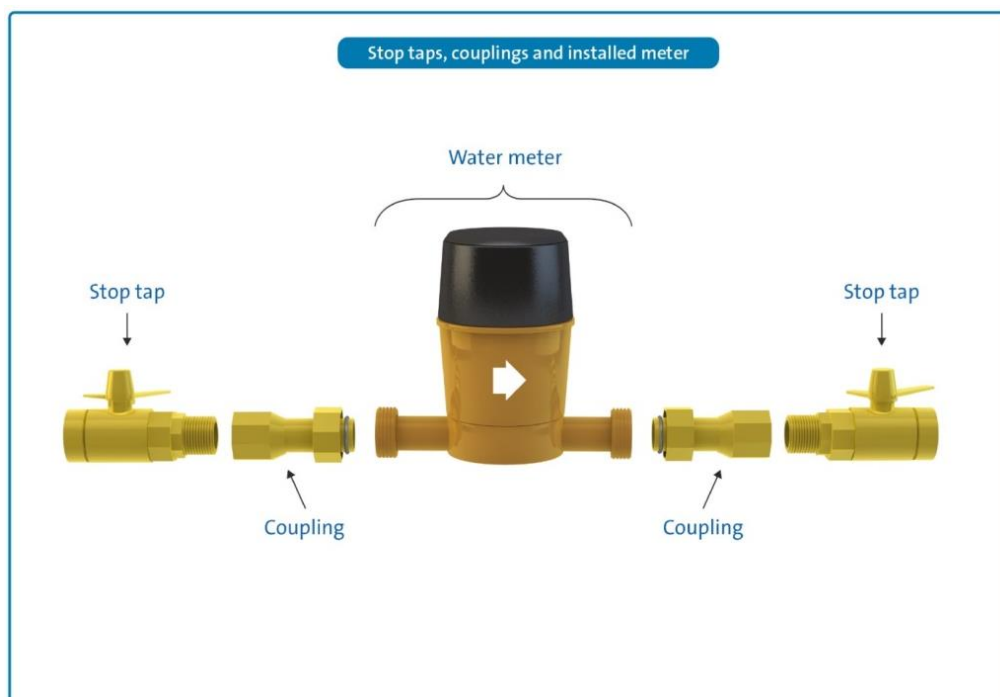


Figure 8 You must have a stop tap on either side of the meter.

9.1.4 Individual meter – pipework clearances

Clearances around the meter must meet our requirements. (See Summary of clearances).

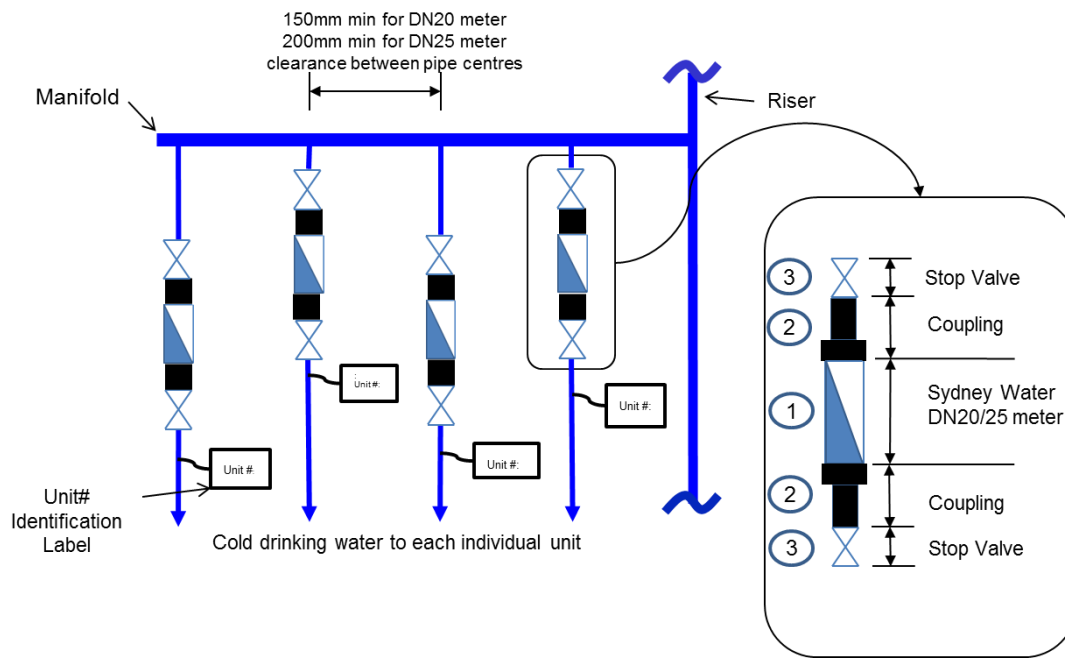


Figure 9. Individual DN20 & DN25 meter assembly.

Item 1: Water meter

Meter (with DCV) and threaded ball joint ends and length 154 mm (for DN20) and 178 mm for (DN25) according to AS3565.1 – 2010. Only DN20 meter size can be used for residential units. Contact meters@sydneywater.com.au before sizing a DN25 water service for commercial premises.

Item 2: Coupling

Standard couplings 61 mm in length with one end ball joint with loose female union nut and the other end 20 mm BSP female thread.

Item 3: Stop valve

A quarter-turn ball valve with 20 mm (DN20) or 25 mm (DN25) BSP male outlet to fit the standard coupling.

Meters are staggered to achieve the 150 mm (DN20) or 200 mm (DN25) minimum clearance between pipe centres.

Based on the individual meter coupling options selected for your building, the overall individual meter assembly should be about 400 mm in length.

Your plumbing supplier can supply pre-fabricated meter assemblies, stop taps and couplings. You must purchase meters for individual units from our accredited metering supplier. Some examples are shown below.



Side view

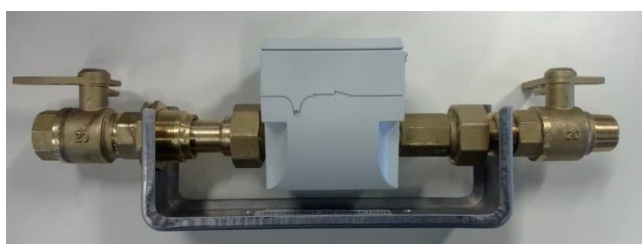


End view



Top view

Figure 10. ITRON DN20 meter in a pre-fabricated meter assembly in different views.



Sideview



End view



Top view

Figure 11. HYDRUS DN20 meter in a pre-fabricated meter assembly in different views.

9.1.5 Individual meter orientation

Individual meters can be installed either vertically or horizontally.

The meter must be orientated to ensure the meter register display can be easily read for checks, audits and manual meter reads without a ladder or other aids.

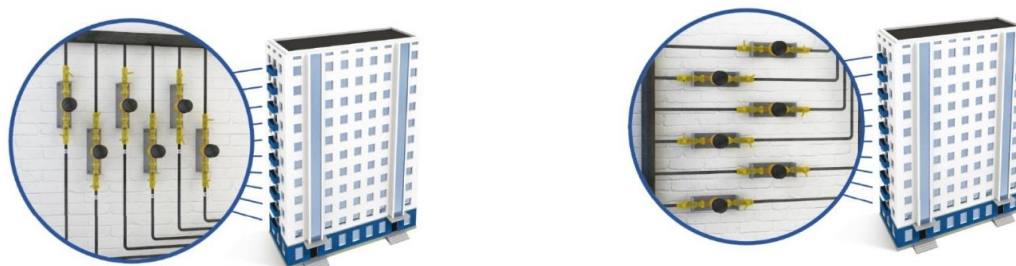


Figure 12. You can install meters either horizontally or vertically.

9.1.6 Individual meter - marking and labelling

You must ensure that every individual meter pipework is appropriately labelled with the associated unit number. The label must be:

- no smaller than 50 mm by 25 mm in size
- a permanent waterproof identification label. We recommend metal tags with stamped details or a key ring with permanent marker. (Note: permanent marker writing only on the meter is not acceptable).
- fitted to the fixed pipe on the outlet side of the individual meter.

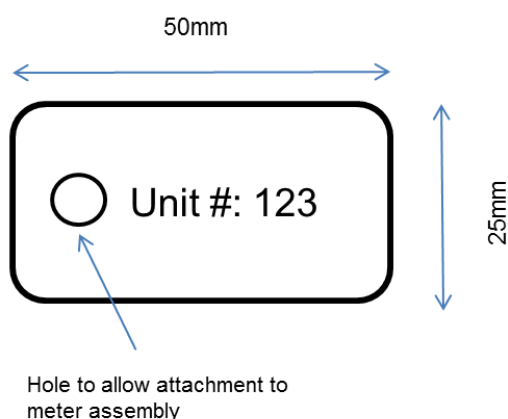


Figure 13. You must correctly label each meter, so we know which unit it belongs to.



9.2 Metering systems

You can install metering systems into buildings that have been prepared for individual unit metering.

You must only install metering systems that are supplied by our accredited metering suppliers (AMS).

The AMS will install the AMI Data Logger & Repeaters and test the metering system (the developer's plumber installs meters supplied by the AMS).

The metering system must be sourced from the same AMS that supplied the meters.

9.2.1 Types of metering systems

We'll use wireless, automated metering solutions to manage the meter readings from the master meter and the individual unit meters. We won't manually read these meters.

There are two types of metering systems:

1. **Automated Meter Reading (AMR)** metering system

This system will allow our meter reader to electronically read all of the individual meters from outside the building using a handheld reader.

2. **Advanced Metering Infrastructure (AMI)** metering system

This system transmits individual meter reading data directly to us using the mobile phone network.

Both systems ensure that the meter reading is electronically sent to us using wireless digital technology.

Some advantages of wireless metering systems:

- Cables are not required to the individual water meters.
- Installation can take place at the end of construction.
- We don't need to gain access to the meters for meter reading.
- Meters don't need to be manually read, eliminating visual meter reading errors.

Also multi-level buildings are often fitted with security doors, which creates an access problem when we need to read our meters. Wireless metering systems avoid such problems. However, we still need access for meter inspections, maintenance and future replacement.

The AMS will supply, install and test the AMR or AMI system. Find out who supplies and installs the meters on the [Meters in multi-level buildings](#) page of our website. (type AMS into the search field).

9.2.2 Developments up to and including three floors

These developments can be fitted with either an AMR or AMI metering system.

AMR is a cost-effective solution. However, in some cases AMR may not provide sufficient radio signal strength to be read from outside the property.

AMI is an option for these buildings, but **must** be provided where AMR is unable to be read. Talk to the AMS about your options.

9.2.3 Developments four floors and above

These developments must be fitted with an AMI system.

The developer must install an AMI metering system that transmits (using mobile phone network) the individual meter reading data to us. The communication between the individual meters and the data logger is wireless, but repeaters may be required to extend the wireless radio signals in some developments. For example, if an Itron metering system is used, at least one repeater is required.

Note: If the development contains multiple buildings which could adopt AMR and AMI based on the above conditions, then an AMI metering system must be used for all buildings.

9.2.4 AMI data logger and power location

If an AMI metering system is chosen, the developer must make provisions for an AMI data logger and 240V 10A power point.

A cabinet covering the data logger and power point is required. The AMS will supply this.

The maximum spatial requirements for the AMI cabinet are about:

600 mm (height) X 400 mm (width) X 250 mm (depth).

To allow for future replacement, hardwiring of data loggers is not permitted.

The AMI data logger **must** be located:

- inside the building
- above ground level to ensure that strong mobile phone signal strength is always achieved
- in a common area.



Figure 14. Examples of AMI data loggers

Talk to an AMS during the design phase about the best location for the AMI data logger and power point.

Some metering systems or buildings may require more than one data logger and power point. The AMS can provide guidance in this area, as each AMI system will be different for each development.

Number of floors in building	Location guidelines for AMI data logger(s)	
Less than 4 floors	Allow for AMI data logger on ground floor	• Must be in a common area. • Must not be below street level, to ensure maximum mobile network strength.
4 - 10 floors	Allow for AMI data logger on middle and top floor	
More than 10 floors	Allow for AMI data logger on bottom floor and every fifth floor thereafter	

You may need more than one data logger.

The data logger should not be located within the same cupboard as the meters. The data logger must be accessible for testing and maintenance without the use of a ladder or other aids (for example, in the Communications cupboard).

9.2.5 Metering system repeaters

If you choose an AMI metering solution, you may need to provide for AMI repeaters. This depends on the metering system. For example, if you use an Itron metering system, at least one repeater is required.

AMI repeaters extend the signal from AMI meters. They aren't used in all metering systems.

The maximum spatial requirements for the AMI Repeaters are about:

250 mm (height) X 150 mm (width) X 100 mm (depth).



AMI Repeaters must be in a common area. They can be mounted in the water meter or data logger cupboard or other locations nominated by the accredited metering supplier. They must be accessible for testing and maintenance without having to use a ladder or other aids.

Figure 15 Example of an AMI repeater.



9.3 Access to meter data for logging or building management systems

NOTE – individual unit meter data is personal information and is protected by Privacy legislation. If this information is collected then appropriate consent must be obtained from the data owner.

We do not allow any access to our dataloggers or individual unit meters for local monitoring.

We're working with our suppliers and industry to design a system of data sharing that meets customer and regulatory needs. Please contact meters@sydneywater.com.au for more information.

Access to main meter for logging

Customers can connect to the master/main meter in conjunction with us via cable for pulse counting. Email us at meters@sydneywater.com.au for further instructions if you wish to do this.

10. Non-compliance

You **must** comply with all requirements in this guideline as part of the Sydney Water contract signed when connected.

If any of the requirements are not met (for example, only one stop valve, no permanent waterproof tag, tap testing not completed, etc.), we'll issue a notice of non-compliance.

It's the responsibility of the owner to have non-compliances corrected. If we issue a notice of non-compliance:

- We won't individually meter the site until requirements are met.
- We'll bill all water use to the site owner.
- We may inform Fair Trading in extreme circumstances.

Once you've met/corrected all the requirements, the owner must notify us and the accredited metering supplier (AMS) must review the site again.

11. Layout diagrams

Where you install a meter/meters depends on the property use and property title registration. Always design the plumbing for the buildings proposed end state.

The diagrams show the most common variations. They are examples only and layout will vary from site-to-site.

Table 5 Summary of diagrams

Diagram	Property use	Property registration with Land and Property Information
1	Residential or Serviced apartments	One lot (not strata subdivided)
2	Residential	Strata subdivided
3	Commercial	One lot (not strata subdivided)
4	Commercial – showing optional individual metering.	One lot (not subdivided)
5	Commercial	Stratum
6	Commercial	Stratum and strata subdivided
7	Commercial	Strata subdivided
8	Mixed use	One lot
9	Mixed use	Stratum subdivided
10	Mixed use	Stratum and strata subdivided
11	Mixed use	Strata subdivided
12	Residential with common area metering	Strata subdivided

Diagram 1: Residential or serviced apartments – one lot (not strata subdivided)

If you have this type of property, you must install one meter. We'll supply this meter. You must also install meter spacers for each unit. They must be in a common area (not inside units). You can get meter spacers from your plumbing supplier.

You can **choose** to install meters for each unit, but you must buy them from our AMS.

To learn more about connections to fire systems, email connections@sydneywater.com.au

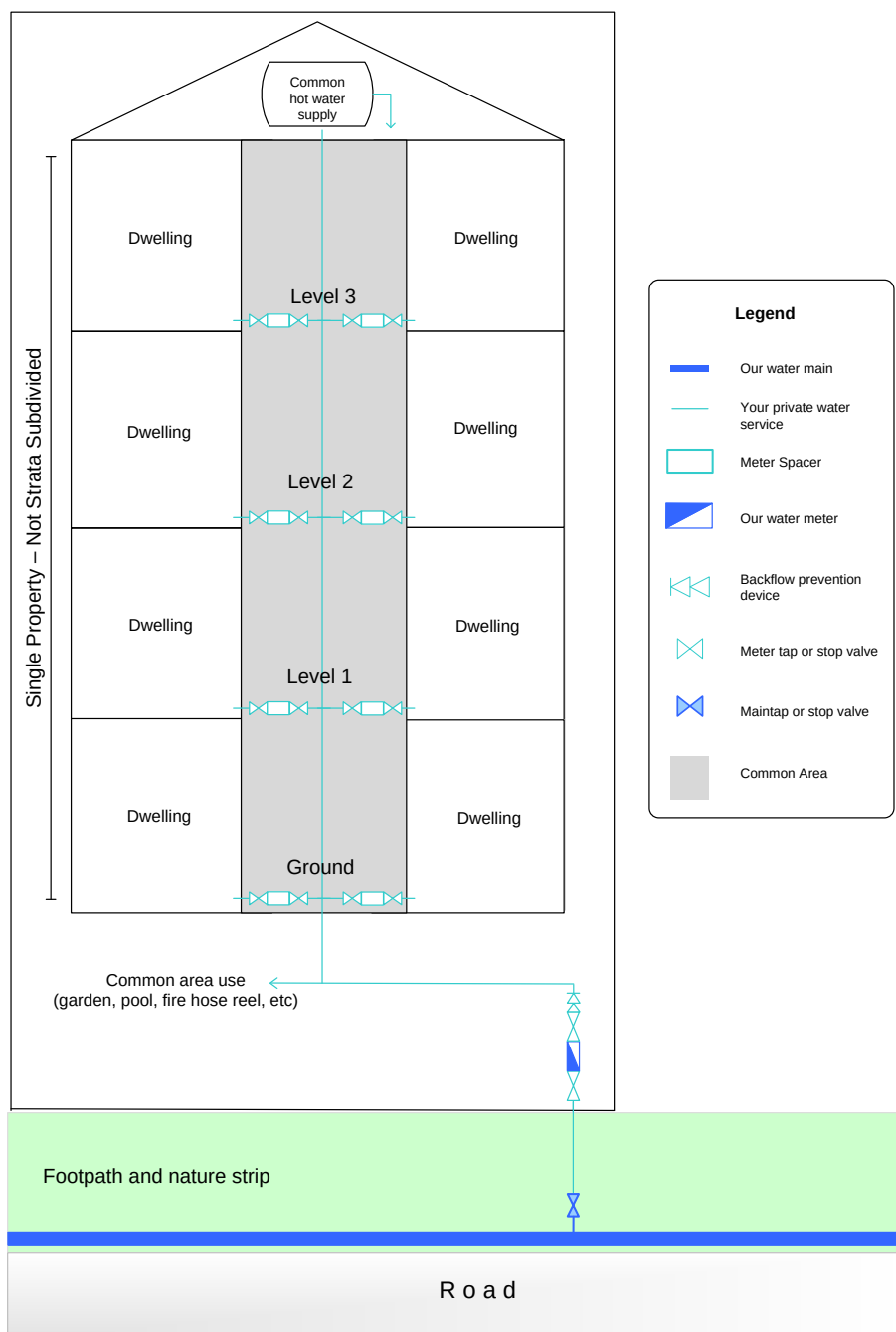


Diagram :1 Residential or serviced apartments – one lot (not strata subdivided). You must install one meter and meter spacers for each unit. Meter spacers must be in a common area.

Diagram 2: Residential – strata subdivided

If you have this type of property, you must install one master meter. We'll supply this meter.

You must also install meters for each strata unit. You must buy these meters from our AMS and install them in a common area.

To learn more about connections to fire systems, email connections@sydneywater.com.au

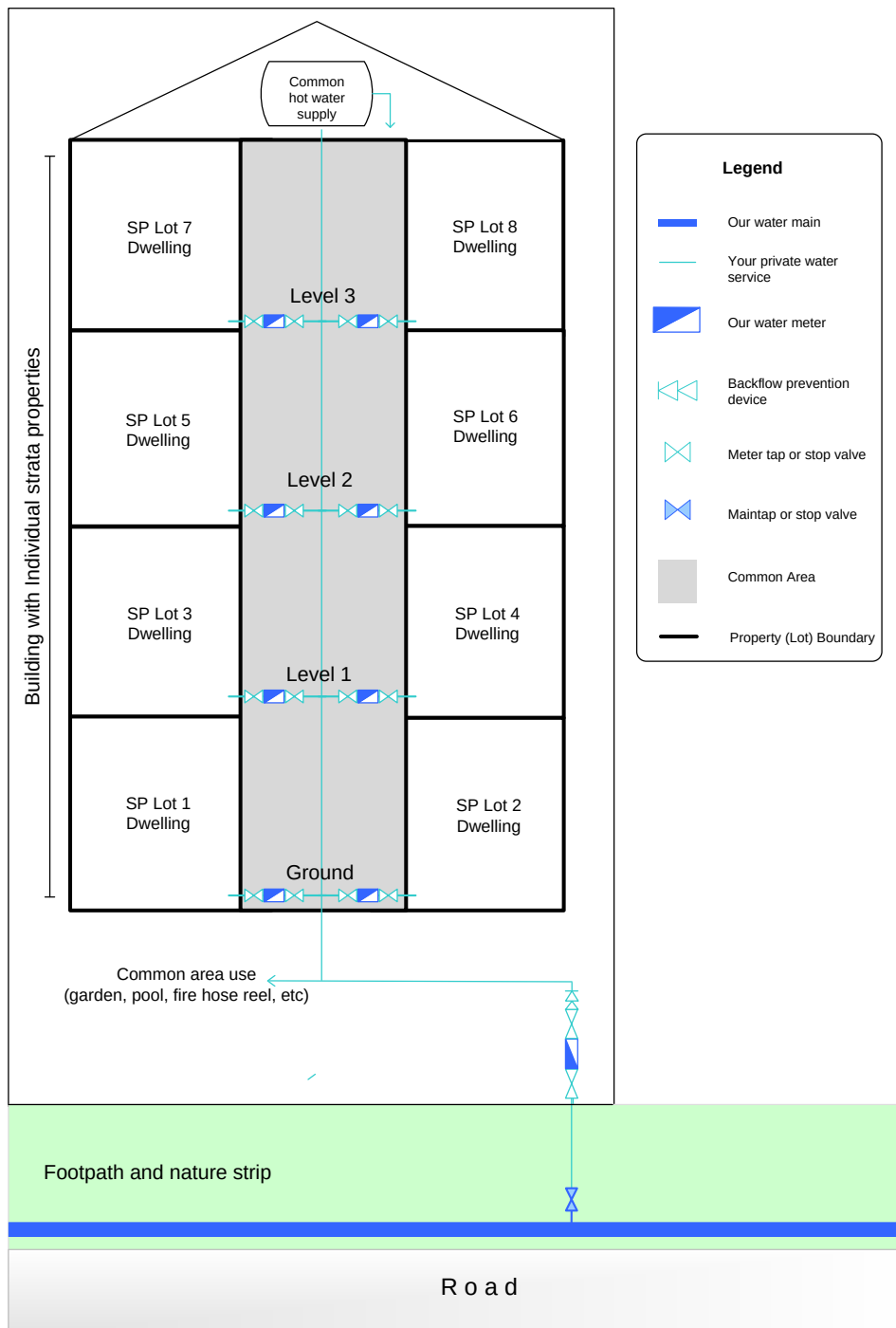


Diagram 2: Residential – strata subdivided: You must install meters for each strata unit. Meters must be in a common area.

Diagram 3: Commercial – one lot (not subdivided)

If you have this type of property, you only need one meter. We'll supply the meter for this property. You don't need to install meter spacers if the building is 100% commercial use and not going to be subdivided.

To learn more about connections to fire systems, email connections@sydneywater.com.au

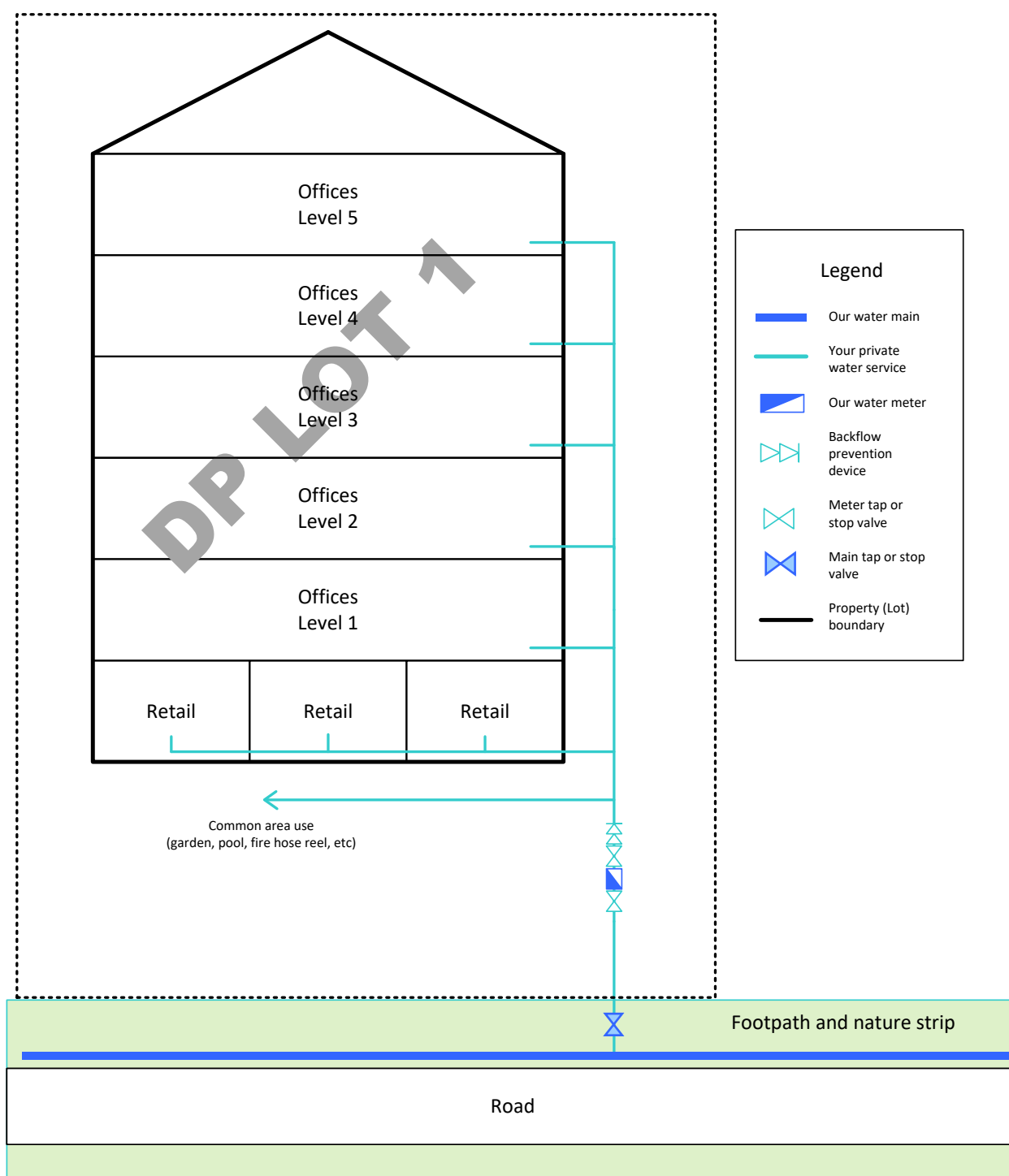


Diagram 3: Commercial – one lot (not subdivided). You only need one meter if you're not subdividing.

Diagram 4. Commercial – One lot (not subdivided) – with optional metering

If you have this type of property, you **only** need one master meter. We'll supply this meter.

Installing individual meters is **optional**. If you choose to install individual meters you must buy them from our accredited metering supplier. If you choose to install individual meters they must be in a common area. They must not be in ceilings or roof cavities.

What you need to know: **You'll pay service charges for each meter**. Visit our website to learn more about [Our prices](#). Contact meters@sydneywater.com.au for advice before you take up the option.

To learn more about connections to fire systems, email connections@sydneywater.com.au

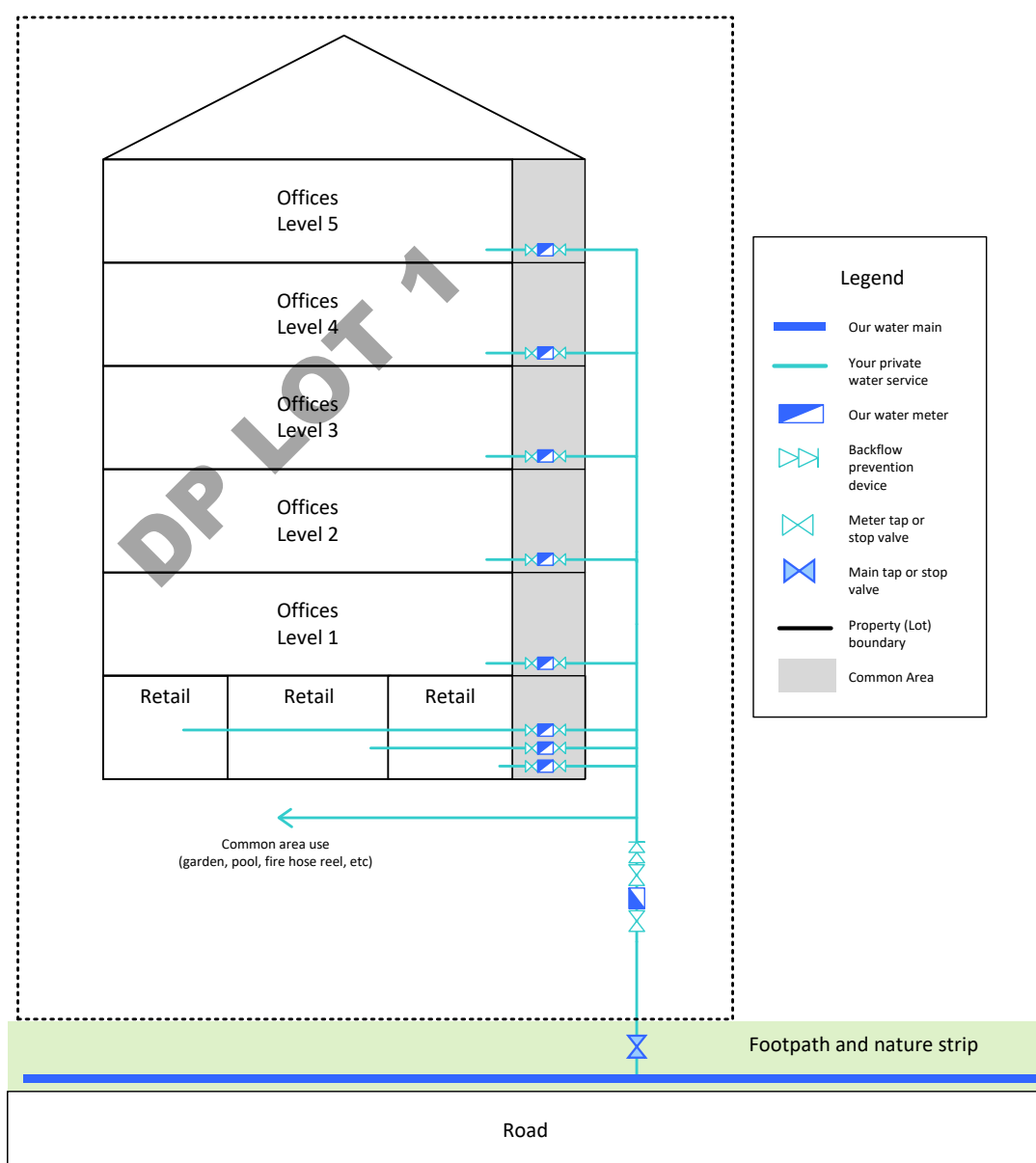


Diagram 4: Commercial – One lot (not subdivided) – with optional metering. You only need to install one master meter. Before you subdivide, individual metering of commercial units is optional. You'll pay service charges for each meter.

Diagram 5: Commercial – stratum-subdivided

You must install a meter for each stratum lot. We'll supply one meter for each stratum lot.

There should be no shared water use between the stratum lots. Each lot owner will pay for the water measured through their meter. If you'd like advice about this, please email meters@sydneywater.com.au.

If you're planning to further subdivide, review our diagrams for strata subdivided buildings.

To learn more about connections to fire systems, email connections@sydneywater.com.au

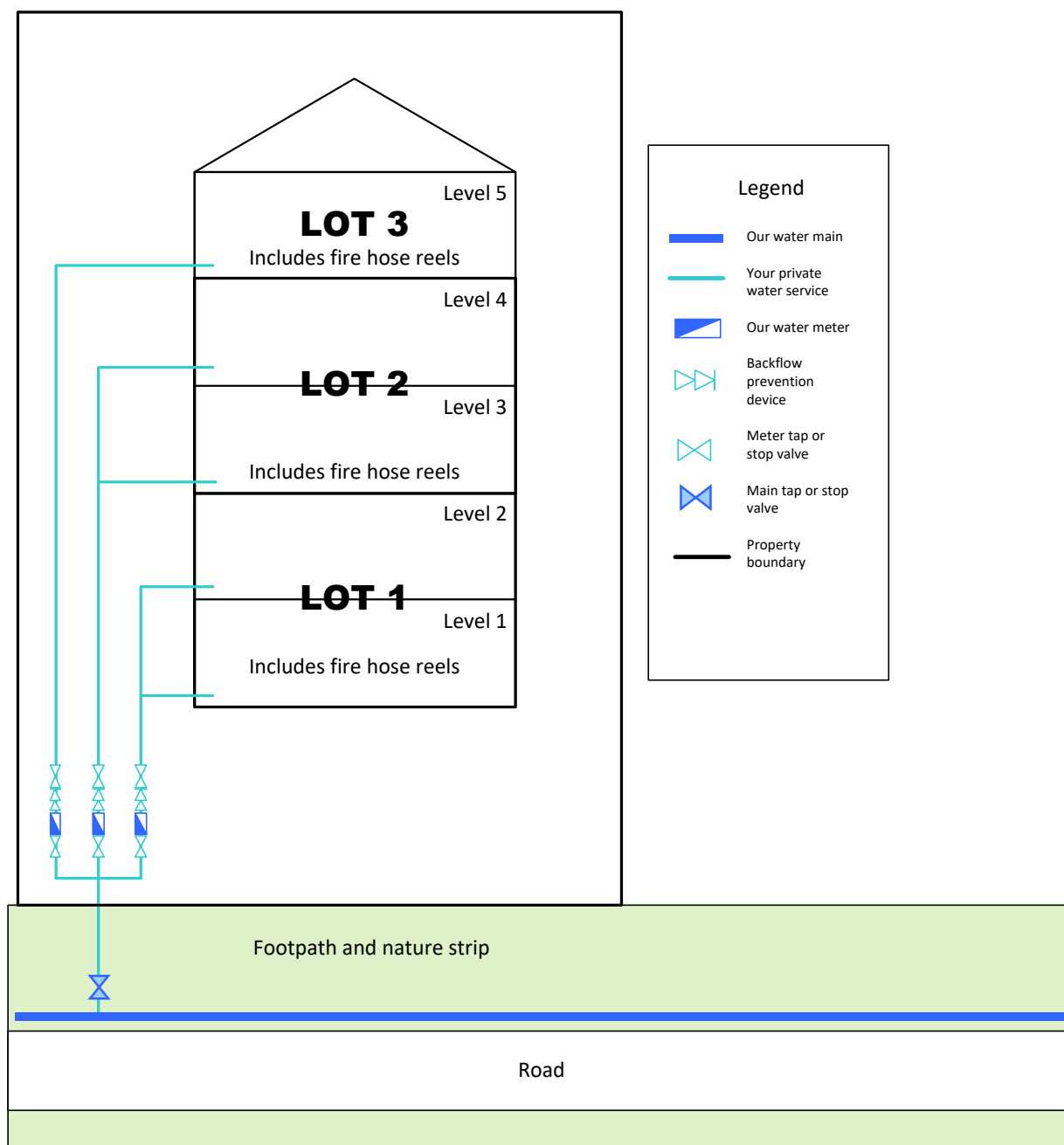


Diagram 5: Commercial – stratum-subdivided. You only need to install one meter per stratum lot.

Diagram 6: Commercial – stratum and strata subdivided

If you have this type of property, you must install:

- a meter for each stratum lot. We'll supply one meter for each stratum lot
- a master meter for the strata lots. We'll supply this meter
- one meter for each strata lot. You must buy these from our accredited metering supplier.

If you're planning to further subdivide, review our diagrams for strata subdivided buildings.

To learn more about connections to fire systems, email connections@sydneywater.com.au

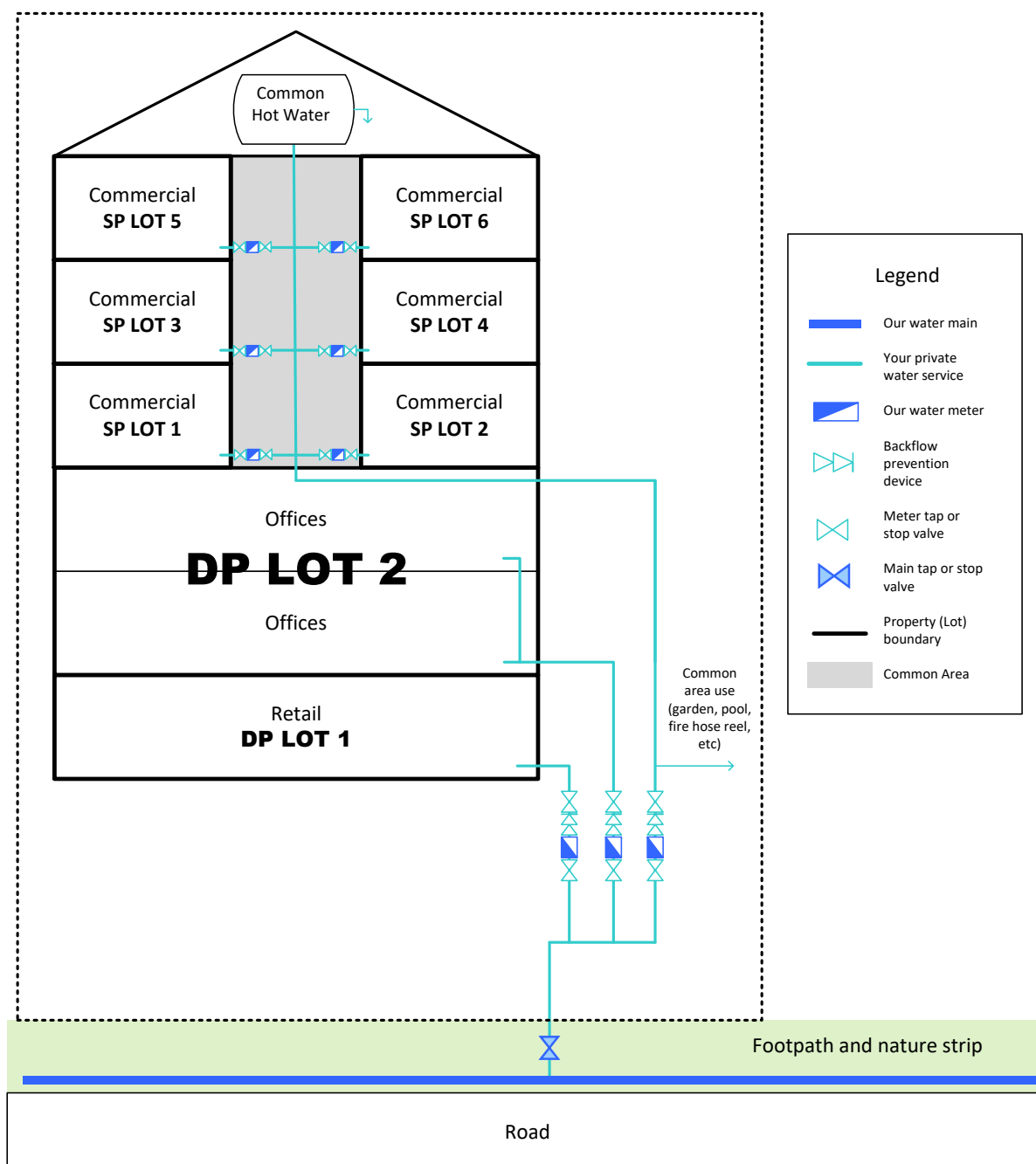


Diagram 6: Commercial – stratum and strata subdivided. Individual meters must be in a common area, not inside units.

Diagram 7: Commercial – stratum and strata subdivided

If you have this property type, you must install a master meter and meters for each strata unit. We'll supply the master meter. You must buy the meters for the units from our accredited metering supplier.

Each unit owner will get their own water use charge on their bill. The owners' corporation will still get the common water use charge on their bill.

What you need to know: Individual metering for existing buildings is optional. **If you retrofit an existing commercial strata subdivided building, the way we calculate your service charges will change.** Visit our website to learn more about [Our prices](#). Email meters@sydneywater.com.au for advice before you retrofit existing commercial buildings.

To learn more about connections to fire systems, email connections@sydneywater.com.au

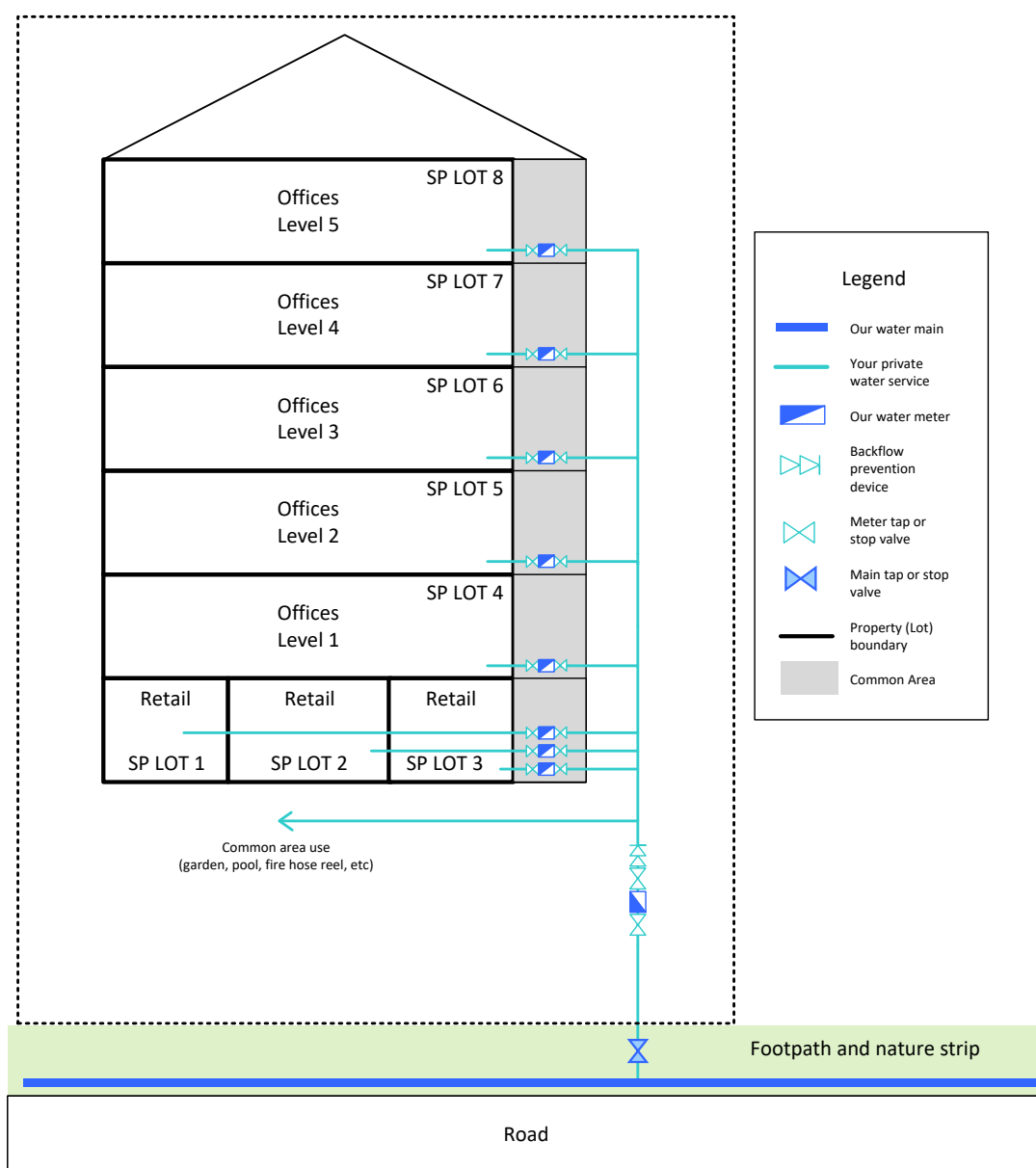


Diagram 7: Commercial – stratum and strata subdivided. Individual meters for each strata property are required. Meters must be in a common area.

Diagram 8: Mixed residential and commercial – one lot

If you have this type of property you must install one meter. You must also install meter spacers for each potential strata unit.

You can **choose** to install individual meters. If you do this, you must buy these from our AMS.

To learn more about connections to fire systems, email connections@sydneywater.com.au

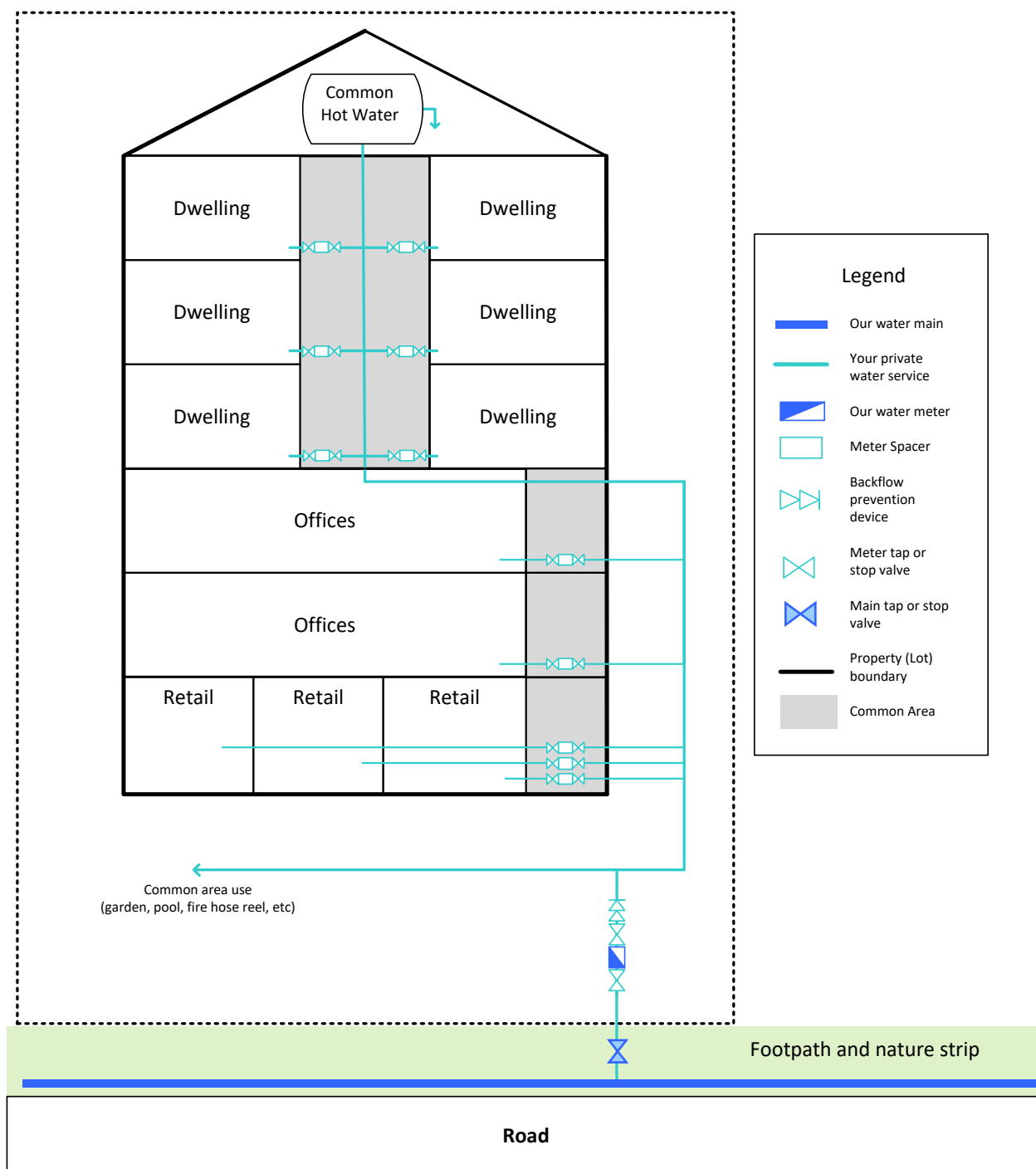


Diagram 8: Mixed residential and commercial – one lot. This shows the layout before you subdivide. You must install meter spacers in a common area, not inside each unit.

Diagram 9: Mixed residential and commercial – stratum-subdivided

If you have this type of property type, you must install one meter for each stratum lot. We'll supply these meters.

If the residential units are under one lot, you must install meters spacers for each unit. Meter spacers must be in a common area, not inside each unit. You can **choose** to install meters on these or not. When you strata-subdivide, you must install a meter on each unit (see our diagrams for strata subdivided properties).

To learn more about connections to fire systems, email connections@sydneywater.com.au

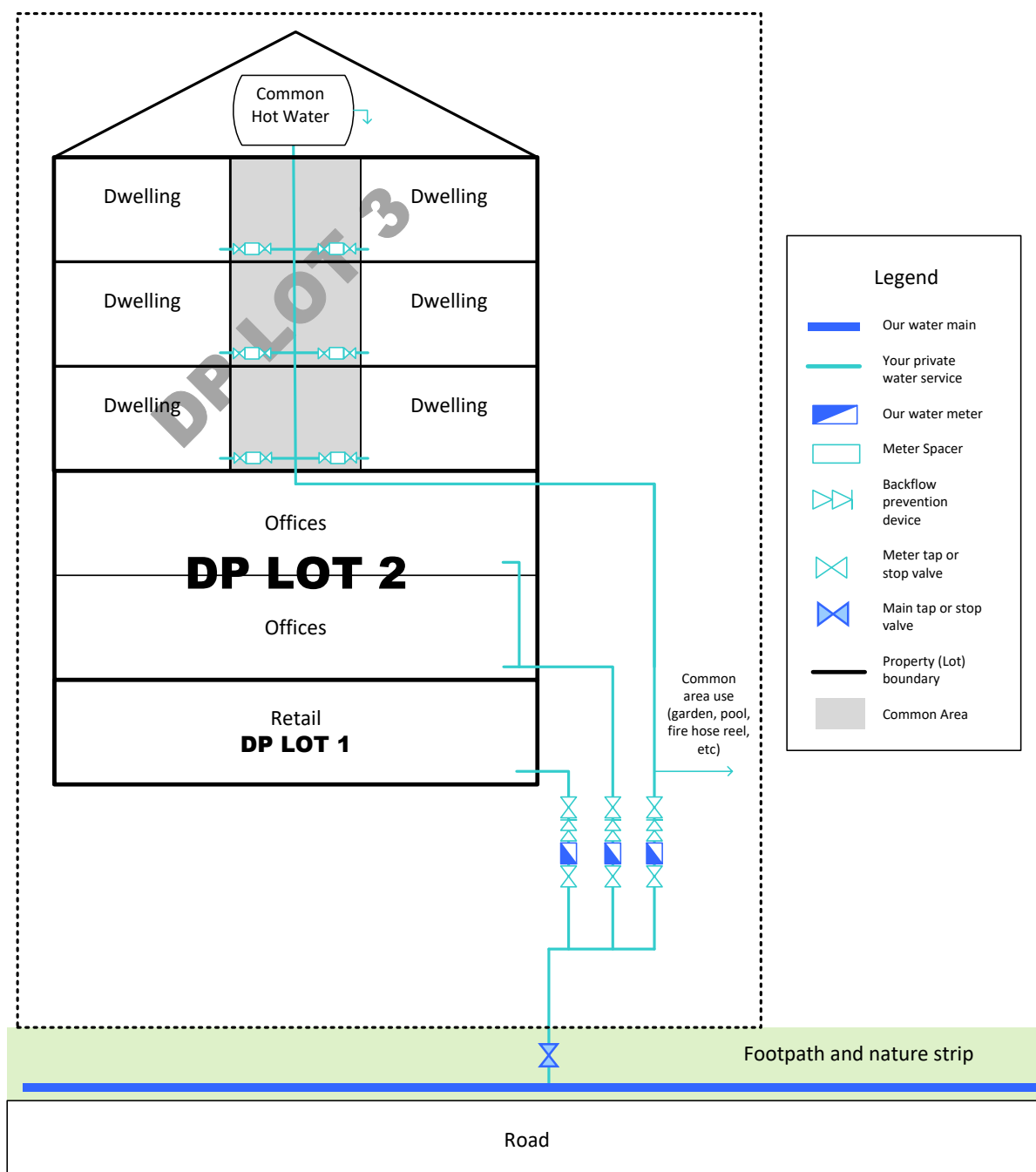


Diagram 10: Mixed residential and commercial – strata and stratum subdivided

If you have this property type, you must install:

- one meter for each stratum lot and a master meter for the strata lots. We'll supply these meters.
- a meter for each strata unit. You must buy these from our accredited metering supplier.

To learn more about connections to fire systems, email connections@sydneywater.com.au

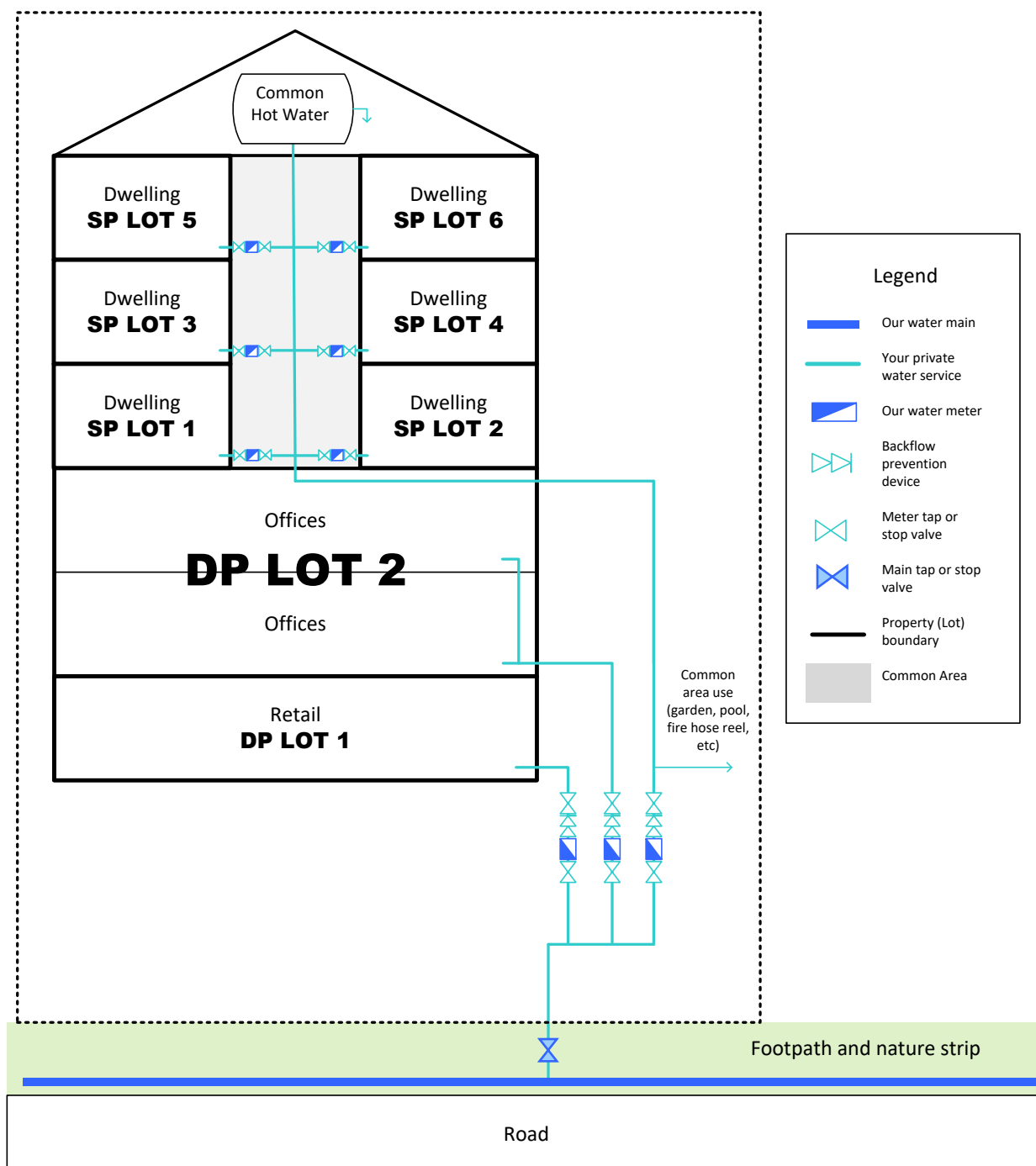


Diagram 10: Mixed residential and commercial – strata and stratum subdivided. This shows the layout when you subdivide. Meters must be in a common area, not inside each unit.

Diagram 11: Mixed residential and commercial – strata subdivided

If you have this property type, you must install a master meter and meters for each strata unit. We'll supply the master meter. You must buy the individual meters for the units from our accredited metering supplier.

Each unit owner will get their own water use charge on their bill. The owners' corporation will still get the common water use charge on their bill.

To learn more about connections to fire systems, email connections@sydneywater.com.au

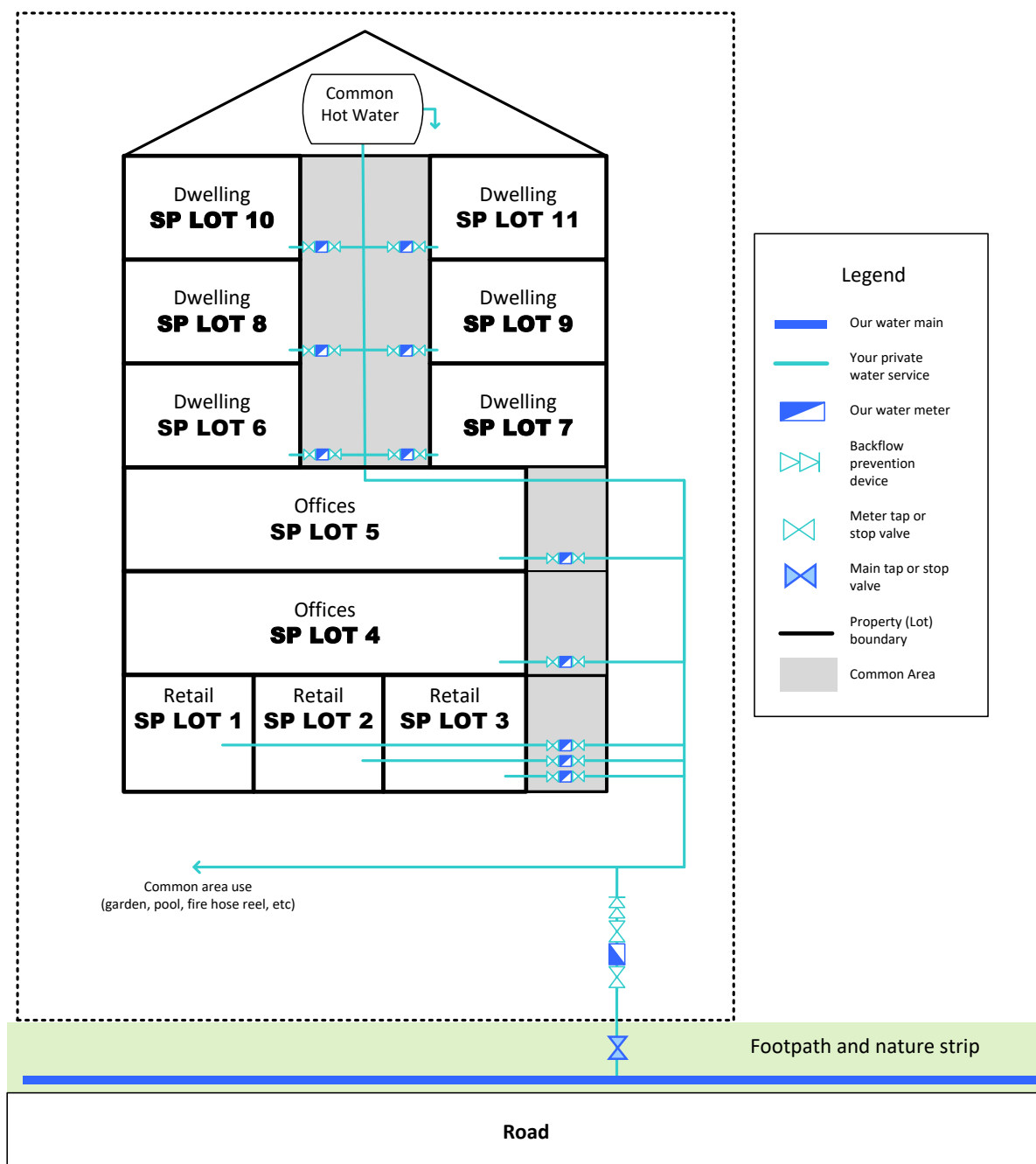


Diagram 11: Mixed residential and commercial – strata subdivided. When you subdivide, you must install a meter for each strata unit. Meters must be in a common area, not inside a unit.

Diagram 12: Residential with common area metering – strata subdivided

If you have this type of property, you must install one master meter. We'll supply this meter.

You must also install meters for each strata unit. You must buy these meters from our AMS and install them in a common area.

You must also buy and install the meters for the common area use from our AMS.

To learn more about connections to fire systems, email connections@sydneywater.com.au

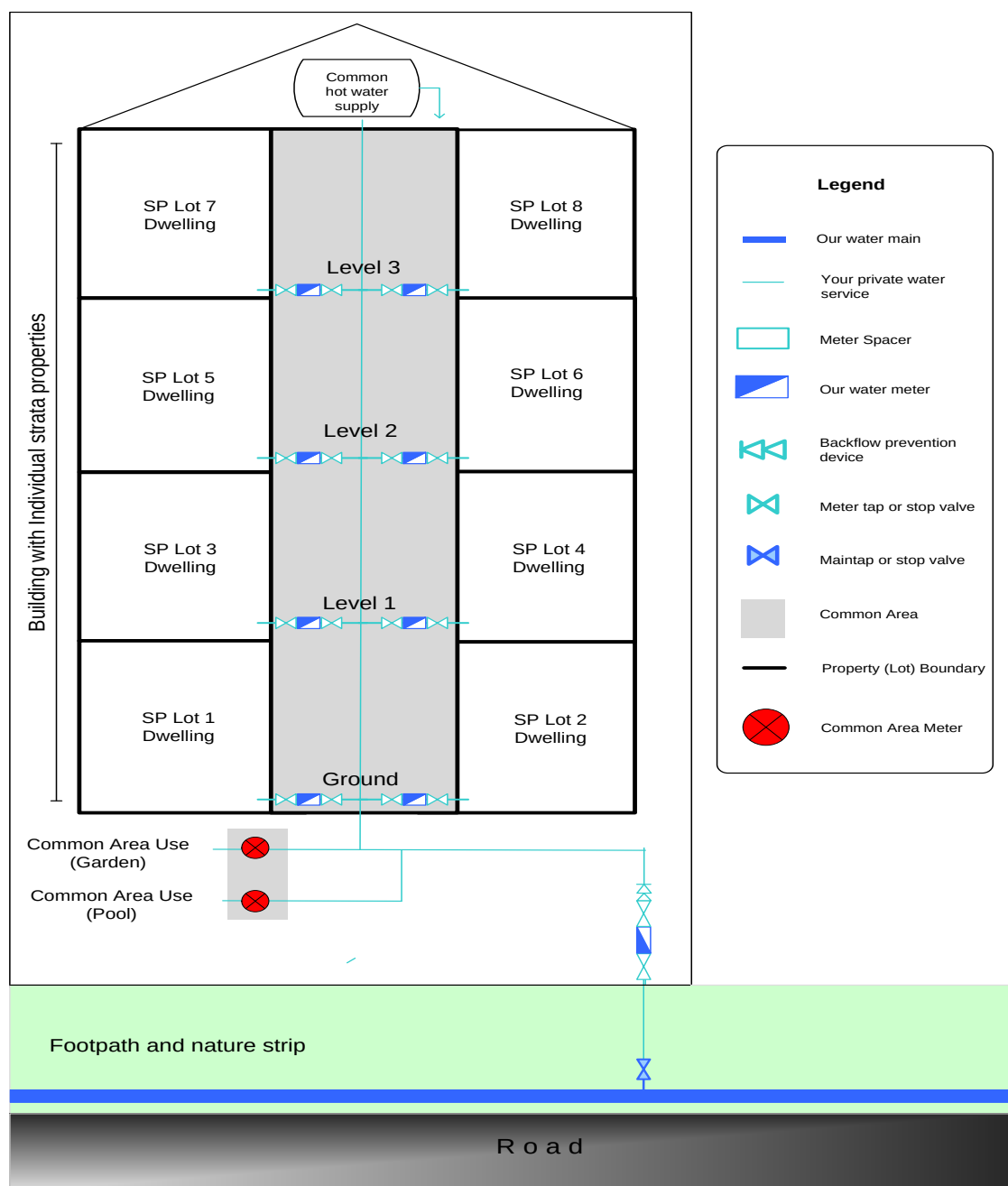


Diagram 12: Residential with common area metering – strata subdivided

12. Need more information?

If you'd like information on an example we don't cover, please email meters@sydneywater.com.au

You'll need to include:

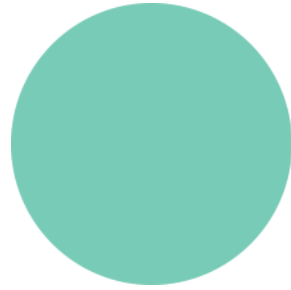
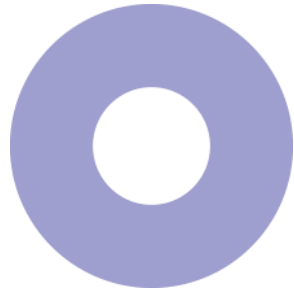
- a drawing or diagram of your proposed metering arrangement or a copy of the hydraulic plans if you have them
- the property address
- the Sydney Water case number if you have one.

13. Definitions

Term	Definition
AMI	Advanced Metering Infrastructure. A fixed network wireless meter reading system that transmits meter reading directly to us.
AMR	Automated Meter Reading. Remote meter reading system using walk-by wireless handheld device.
AMS	Accredited metering supplier. Metering suppliers we have accredited.
Backflow	This is when water is sucked backward through the water supply instead of forward. There's a risk of contamination when this happens.
Common area meter	A sub-meter installed on a common water use after the main meter (for example on a swimming pool or car wash bay). The meter will be read and maintained by us and water use listed on the bill. A quarterly fee applies for this service.
Deposited plan (DP)	A plan of survey or a plan compiled from a survey which has been lodged and registered with Land and Property Information. The deposited plan becomes the legal identity (land title).
Dual check valve	A device fitted within the meter that stops untreated water being sucked back into the water supply.
Individual meter	Water meter to measure cold water use in individual units.
Lot	A title of property that NSW Land Registry Services register. It may be in a deposited or strata plan.
Master meter	Water meter to measure the building's total water use.




Term	Definition
Meter spacer	A temporary fitting that can be used until a meter is installed. It ensures the exact space for a meter is allowed for. The meter spacer must meet the lengths required by AS3565. It must have ball joint ends. It must be made of material and to a standard that meets all other relevant plumbing codes and Australian standards.
MLIM	Multi-level individual metering
Multi-level building	A building with more than a ground floor that is not a house, townhouse or terrace.
Notice of requirements (NOR)	A notice we issue to developers specifying what is required to obtain a Section 73 Compliance Certificate.
Number of floors	The floors containing dwellings, units, shops or offices. Ground floor is counted as a floor. The number of floors is used to determine if an AMI or AMR metering system is to be used.
Section 73 Compliance Certificate (or S73 Certificate)	A certificate issued under Section 73 of the <i>Sydney Water Act 1994</i> . A consent authority (usually local council) may require you to obtain a Section 73 Certificate as a condition of your development consent.
Strata lot (Strata)	A lot that NSW Land Registry Services register in a strata plan under the <i>Strata Schemes (Freehold Development) Act 1973</i> . A strata plan must have internal lots and external lots. Generally, internal lots are occupied lots and external lots are common areas. An internal lot may be a townhouse, villa, apartment or unit.
Strata plan (SP)	The division of land contained in conventional title/s into strata lots and common property or strata lots only.
Stratum lots	These are layered lots in a deposited plan.



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