Jemena Gas Networks (NSW) Ltd

Medium Density & High Rise

Residential Metering Guide ADG-002

Contents

1 Document Control

Revision	Date	Purpose	Changes Description	Checked	Approved
Issue 1	18/12/13	1st Draft Issue			
Issue 2	20/12/13	2nd Draft Issue			
Version 1	23/12/13	Version 1 release		N. Hilton	D. Beinart
Version 2	08/05/14	Version 2 release		N. Hilton	D. Beinart
Version 3	12/09/19	Version 3 release		A. Lelliott	D. Beinart
Version 4	06/04/20	Version 4 release		N. Hilton Anson An	D. Beinart

This document is provided by Jemena Gas Networks (NSW) Ltd and is subject to change. It is the responsibility of the user to ensure they have the latest version by referring to the Jemena web site.

Definitions page (refer to the network operator rules for current definitions.

ABLOY PROTEC (Multi-Utility Coded)	Patented security locking system used by utilities to gain access to assets in the event of emergency or to carry out maintenance activities. The Abloy key systems has a letter designation identifying which utility can operate each lock. A "All Utility Coded" lock enables all utility to operate the lock.
ABLOY PROTEC (Jemena Only Code)	An Abloy key system with only an "A" designation code, which restricts access to only Jemena employees or their representatives.
AS/NZS	When followed by numbers or letters AS/NZS means a standard published by Standards Australia/New Zealand, e.g., AS/NZS 4645.1 – Gas Distribution Networks (Network Management).
Basic metering equipment As defined in Gas Supply (Safety and Network Management) Regulation 2013.- Clause 4	Equipment encompassed in a boundary regulator, meter kit or meter set that includes one or more of the following devices: (a) Meters to measure the volume of gas flow; (b) Valves to isolate gas supply; can Pipework – including a combination of pipes, flanges, tees, elbows and other pipe connecting equipment designed to convey gas; (d) Fittings – smaller components used in conjunction with fittings, pressure sensing tubing and tube fittings, instrument valves and associated equipment; can Filters – devices designed to trap and remove foreign matter from gas streams; (f) Pressure regulators – devices to reduce and control gas pressure; (g) Over pressure protection devices to protect downstream equipment from exposure to excessive pressure (over pressure) in the event of upstream equipment failure; (h) Non-return valves to ensure gas flow travels in one direction and to prevent reverse flow; (i) Mechanical indexes to indicate raw metered gas consumption; (j) Meter bars and other equipment designed to support a gas meter and associated equipment that form part of the meter installation; Electrical connections and wiring to convey electrical signals for gas meters, flow correctors, alarms and metering communications equipment; (l) Flow correction devices or software to enable (actual) uncorrected raw metering data to be adjusted for effects of temperature and/or pressure and/or gas quality and referenced to standard pressure and temperature conditions; (m) Temperature and pressure correction devices or software to enable raw (actual) uncorrected metering data to be adjusted for effects of temperature and pressure; and (n) Devices and equipment designed to analyse and calculate the heating value of the gas stream such as gas chromatographs or calorimeters.
Boundary regulator	Equipment installed to reduce gas pressure to a lower level prior to entry to high rise buildings, shopping centres and where required for other consumers. (see basic metering equipment for more information).
Consumer	A person who occupies premises connected to a gas network, who is supplied with natural gas by a gas retailer.
Consumer service	The pipework and associated fittings that conveys gas from the network service to the inlet of the basic metering equipment. If a boundary regulator is installed, the pipework between the boundary regulator and the inlet of the meter kit or meter set is also considered as part of the consumer service.
Enclosure	Any cage/structure/room where basic metering equipment is housed, with or without a roof.
Gas main	Pipes used in Jemena's network to transport gas.
Gas pressure	The pressure of gas above atmospheric pressure, classified as follows:

	(a) Low pressure – up to 7 kPa (b) Medium Pressure – over 7 kPa and up to 400 kPa can Secondary pressure – over 400 kPa and up to 1050 kPa
Gas retailer	A holder of a retailer authorisation and who supplies natural gas to consumers connected to the network.
Jemena	Jemena Gas Networks (NSW) Limited CAN 003 004 322, being the network owner and operator of the Network.
Lock Box	140mm (l) x 85mm (w) x 60mm (d) stainless steel box, with a Abloy key lock
Master meter	A component of the basic metering equipment that is typically used to measure gas flow to water heating appliances on high rise buildings with centralised hot water and individual hot water meters. It can apply to other installation types such as commercial tenancies.
Meter set	Basic metering equipment that has been assembled for the purpose of measuring gas flow that exceeds 75 sm3/hr.
Meter kit	Basic metering equipment with the purpose of measuring gas flow that is equal to or less than 75 sm3/hr.
MIRN	The Meter Installation Registration Number(MIRN) provides a unique identifier for each distribution delivery point(meter) within the NSW Gas Retail Market.
Network	Jemena's gas distribution system in New South Wales, consisting of a system of pipes and associated facilities and equipment that are used to convey and control the flow of gas to consumers. For clarity, the Network: (a) Includes any pipe or fitting upstream of the consumer service, generally at a point in the public thoroughfare 225 mm outside the property boundary; and (b) Ends at the downstream outlet of the network service. Note: The consumer service, including any pipe and associated fittings downstream from the point in the public thoroughfare 225 mm outside the property boundary, is not part of the network.
Property boundary	Is the boundary line which divides private property from public areas, such as public footpaths, streets, roads, public lanes etc.
Path valve	A valve situated approximately 225 mm outside the property boundary at the inlet of the consumer service. It is usually below ground in a path box for easy access, and is used to control the flow of gas into the consumer service.

2 Introduction

2.1 Purpose

This document defines the allowable metering configurations by Jemena Gas Networks (NSW) Ltd with regard to the design and installation of individual metering equipment for natural gas services and central hot water services within medium density and high rise residential buildings.

This guide has been prepared to assist developers, architects, hydraulic engineers and plumbers in understanding the individual metering requirements of Jemena, and to therefore design medium density and high residential developments such that those requirements can be readily accommodated.

2.2 Principles

The following principles are to be adhered to for MIRN associated metering;

- Jemena is responsible for the approval of the metering configurations;
- Any proposed variations to the standard meter configuration must be submitted to Jemena prior to installation;

- Jemena requires unimpeded access to meters for the purpose of meter reading and maintenance;
- Meters are required to bill the customer consuming the gas. Meters necessary to bill the customer will be provided by Jemena NSW Gas Networks;
- Metering equipment is provided by Jemena, unless otherwise stated within this document or, in the letter of offer to the developer;
- Meter equipment is, and remains the property of, Jemena NSW Gas Networks;
- Jemena reserves the right to make changes to this and related documents from time to time, as required.

2.3 Implementation

The changes to Jemena's metering policy and associated requirements for medium density and high rise residential developments as described herein, will have significant spatial planning impacts to building design.

As such the policy will not be applied retrospectively, and will only apply to new developments having a Development Application lodgement date on or after 1st March 2014.

It is intended that the period between policy release (1st January 2014) and policy activation (1st March 2014), will allow building designers to incorporate all necessary changes in the initial planning stages of new developments such that compliance with this policy can be achieved.

2.4 Reference Documents

Users of this document are also directed to review the following additional information and supporting documentation;

- Jemena Network Operator Rules
- Jemena Gas Networks Design Guide JDG-003 (Design Guide For Gas Centralised Hot Water Systems)
- AS/NZ 5601 – Gas Installations

3 Gas and Hot water meter access requirements

Jemena requires unimpeded 24hr access to its gas and hot water meters in the event of an emergency and to carry out routine maintenance activities. All gas and hot water meters must be installed in easily accessible common property areas (for more information on gas meter locations see section 4). . Where meters are installed behind common property locked doors or security controlled elevators, a suitable access solution to Jemena meters must be implemented. Unless otherwise approved at the discretion of the Network Operator, the following access solutions are to be implemented.

3.1 Front Entrance access (Mandatory)

Either a static dual lock with an ABLOY PROTEC (Multi-utility Coded) locking system shall be fitted to the front entrance doors OR an ABLOY PROTEC (Multi-Utility Coded) locking systems override switched shall be fitted to the RFID control panel on the front entrance doors.

3.2 Elevator Access (If required)

If RFID controls are fitted to the elevator, Then an ABLOY PROTEC (Multi-Utility Coded) locking systems override switched should be installed.

3.3 Internal Access doors (If required)

If there are any locked or RFID controlled internal door within the common property area, then an ALBOY PROTEC (Multi-Utility Coded) locking system static lock should be installed on the door or an ABLOY PROTEC (Multi-Utility Coded) locking system override switch should be install on the RFID control panel.

3.4 Ground Floor Lock box (If required)

In addition to mandatory front entrance locking systems, an ABLOY PROTEC (Jemena Only Code) lock box shall be installed in any of the following suitable locations or as directed by the Network Operator

- Ground Floor gas cupboard,
- Meter Room (if accessible from the ground floor),
- Ground floor water meter cupboard.

4 Natural Gas Service Metering Requirements

4.1 General Requirements

All work carried out to install or replace all or any part of natural gas metering equipment must be in accordance with AS/NZ 5601 (Gas Installations), any other applicable Australian Standard, the Gas Supply (Safety and Network Management) Regulation 2013, Jemena Network Operator Rules and this guide.

Any person installing or replacing all or any part of natural gas metering equipment owned or managed by Jemena, where the work is not being done on behalf of Jemena, must obtain Jemena's authorisation before undertaking the work.

4.2 System Design

Typically natural gas services installed within medium density and high rise residential buildings are required to provide gas for the following purposes;

- Apartment cooktops
- Internal bayonet heating points
- External BBQ bayonet points
- Individual hot water systems
- Central hot water systems
- Mechanical services heating requirements
- Gas supply to associated retail tenancies in mixed residential developments
- Pool/Spa heating appliances

Natural gas supply within the Authority mains is reticulated at low pressure (0-7kPa), medium pressure (8 to 400kPa) or high pressure (in excess of 400kPa) for efficiency of transmission throughout the gas main network. Medium and high pressure is not suitable for supply within residential areas of medium density and high rise residential developments due to safety, fire rating Building Code of Australia requirements, Jemena Network Operator Rules and AS5601. As such the gas is required to be reduced in pressure through a boundary regulator assembly so that it can be reticulated through the building safely, and at a pressure that is suitable for the appliances and equipment to which gas supply is required. (typically maximum 5kPa)

4.3 Pipework Design

Natural gas pipework systems installed within medium density and high rise residential buildings fall into a combination of two basic categories, described as follows;

- Primary Reticulation Systems(Consumer Service) – referring to the natural gas installation downstream of the site boundary regulator assembly, but upstream of the customer meter assemblies. This section of pipework is a shared service to supply all apartments within the building and may be provided in many different configurations from individual risers, to larger more consolidated central risers depending upon the particular building design that is being developed.

- Secondary Reticulation Systems(Consumer Piping) – referring to the natural gas installation downstream of the customers meter assembly. This section of pipework is dedicated to the individual apartment, and supplies metered gas directly to the appliances and equipment of that apartment. Secondary reticulation systems are of a small nominal diameter (typically 15mm – 25mm), and are usually centralised around the individual apartments.

Pipework is designed to achieve to a maximum permissible pressure drop within the system, (both primary and secondary), with regard to the connected gas load and the length of pipework required to reach the destination.

4.4 Metering Purpose

Natural gas metering within residential apartments is required to measure the consumption of energy within the development. Meters fall into three categories as follows;

- Individual apartment meters to measure natural gas consumption of appliances and equipment that are provided for the sole benefit of an individual apartment.

- Central appliance meters to measure natural gas consumption of appliances and equipment that are provided for shared benefit of several apartments.

- Tenancy meters to measure natural gas consumption of appliances and equipment that are provided for the sole benefit of a retail tenancy.

- Volume Boundary Meters to measure natural gas consumption of appliances and equipment where an Embedded Network Operator(ENP) has private metering downstream.

4.5 Standard Metering Configurations

Jemena will provide the metering equipment for the configuration specified below. Metering configuration will be based on the appliance and application type.

4.5.1 Individual Apartments

Individual appliances are appliances that consume gas within a dwelling or commercial premises. Jemena will provide a single gas meter for each dwelling to meter gas consumption by individual appliances. Typical examples of individual appliances within medium density and high rise residential developments include;

- Cooktops
- Ovens
- Internal Bayonet Points (heating)

- External Bayonet Points (BBQ's)
- Instantaneous Hot Water Systems

4.5.2 Centralised Appliances

Centralised appliances are appliances that provide a shared service for a number of dwellings. Jemena will provide a single gas meter for each centralised appliance so that a total gas consumption can be recorded. Owners Corporations may use this to bill on a unit entitlement basis to each individual dwelling that is benefited by the centralised appliance. Typical examples of centralised appliances within medium density and high rise residential developments include;

- Central Mechanical Services Systems
- Central Laundry Facilities (gas hot water and gas clothes dryers)
- Communal Barbecue/Entertainment Areas
- Communal Heated Pool/Spa.

4.5.3 Tenancy Units (Retail/Commercial)

Tenancy units located within medium density and high rise residential developments shall be separately metered to residential parts of the development. Jemena will provide a single gas meter for each tenancy unit to meter gas consumption by individual appliances of that unit. Typical examples of individual appliances within tenancy units include;

- Cooking Facilities
- Internal Bayonet Points (heating)
- External Bayonet Points (BBQ's)
- Instantaneous Hot Water Systems

4.6 Retrofitting Sites

Sites that require retrofitting are existing sites that are considering;

- converting from electricity to gas; or
- requiring the installation of new natural gas facilities; or
- requiring a new metering configuration and installation.

Applications for retrofitted sites will be reviewed and approved by Jemena based on the metering configurations detailed above. There is no obligation on Jemena Gas Networks (NSW) Ltd to retrofit a site.

4.7 Meter Locations

4.7.1 Individual Apartment Meters

Natural gas meters for individual apartments must be located within common areas of the development, generally as close as practicable to the point of use to achieve the most cost effective installation. Individual apartment meters may be located individually or in groups at a central location. Metering locations shall comply with the following requirements;

1. Be accessible and allow unimpeded access for maintenance and meter reading.
2. Be located at a height between 100mm and 2200mm above floor level. (top of metering equipment)
3. Be in a location that is not exposed to physical damage.
4. Be in a location that is dry and well ventilated.
5. Be in a location not exposed to ignition sources.

The location of individual apartment meters within dwellings is not permitted.

4.7.2 Central Appliance Meters

Natural gas meters for central appliances must be located within accessible areas of the development, generally as close as practicable to the point of use to achieve the most cost effective installation. These areas must not be accessed via a ladder or other types of similar apparatus. Metering locations shall comply with the following requirements;

1. Be accessible and allow unimpeded access for maintenance and meter reading.
2. Be located at a height between 150mm and 1700mm above floor level. (top of metering equipment)
3. Be in a location that is not exposed to physical damage.
4. Be in a location that is dry and well ventilated.
5. Be in a location not exposed to ignition sources.

4.7.3 Tenancy Meters (Retail/Commercial)

Natural gas meters for tenancies can be located within common areas or within the tenancy of the development, generally as close as practicable to the point of entry.. Tenancy meters may be located individually or in groups at a central location. Metering locations shall comply with the following requirements;

1. Be accessible and allow unimpeded access for maintenance and meter reading.
2. Be located at a height between 150mm and 1700mm above floor level. (top of metering equipment)
3. Be in a location that is not exposed to physical damage.
4. Be in a location that is dry and well ventilated.
5. Be in a location not exposed to ignition sources.

4.7.4 Prohibited Locations

Natural gas meters for individual appliances must not be located in any of the following locations (for further details refer to Clause 6.2.2 of the Jemena Network Operating Rules);

1. In a location where commercial, household items, including combustible or discarded materials are stored around or in-front of the basic metering equipment restricting access of Jemena's meter readers and maintenance crews;
2. Shall not be used as storage racks. No items (e.g., mop, broomstick, ladder, garbage bin) shall be rested on or stored in close proximity;
3. Near a location where chemicals or corrosive agents such as chlorine or cleaning agents are stored or frequently used;
4. In a room in which an unsealed grease trap is located;
5. Near a source of ignition, refer Section 6.8 – Exclusion Zones for Basic Metering Equipment;;
6. Near LPG bottles;
7. A lift shaft or lift motor room;
8. A room specifically intended for electrical switchgear;
9. A fire-isolated stairway or passage;
10. A fire hydrant duct or hose reel cabinet;
11. A sprinkler or hydrant pump room;
12. In a position that would obstruct egress from a building;
13. In a position where the basic metering equipment would be subject to physical damage unless adequately protected;
14. In an area where excessive temperatures or sudden excessive changes in temperature may occur;
15. In an area of excessive vibration;
16. In the foundation area under a building;
17. In a cavity wall, unless installed in a ventilated enclosure with external access and the cavity is sealed;
18. In an unventilated position;
19. On the ground, or on a floor which is frequently wetted or on a floor which contains material which may corrode the basic metering equipment;
20. Where a service riser is not separated from an earth electrode by 500mm; and
21. A ceiling space

For additional requirements on the prohibited locations of the basic metering equipment, refer to AS/NZS 4645.1 - Gas Distribution Network (Network Management).

4.8 Alternative Locations

Other alternative metering locations may be approved at the discretion of the Network Operator. Any such approvals will be subject to written application to the Network Operator, for assessment on a project by project basis.

4.9 Meter Identification

Each gas meter shall be identified by clear permanent markings that indicate the dwelling or building service that is being supplied by the meter. Pipework shall be similarly labeled on the outlet side of the meter.

4.10 Meter Orientation

Each gas meter must be installed and orientated in accordance with the manufacturer's specifications to ensure the accurate measurement of gas consumption.

Each meter must be orientated to ensure that the meter register display can be easily read for commissioning, audits and manual meter reads.

4.11 Meter Supports

Gas meters having a gross weight under 26kg must be securely supported and be clear of the ground or base. Meters shall be supported on the approved meter bar provided and the weight of the meter must not put any strain on the connecting piping.

Gas meters having a gross weight of 26kg or more must be securely supported on a suitable base, bracket or platform sized to withstand the total weight of the meter.

4.12 Meter Handling

When transporting, storing, moving, installing or changing meters, the following procedures must be observed;

1. handle with care to prevent damage, place carefully and do not drop,
2. cap or seal their meter inlet and outlet connections from the atmosphere,
3. keep in an upright position,
4. keep clear of ignition sources if the meter has previously contained gas,
5. prevent contamination by liquids or solids,
6. install in accordance with relevant instructions and requirements of the manufacturer,
7. secure to prevent loss or theft.
8.

4.13 Meter Sizes & Clearances

4.13.1 Individual Apartment Meters

Generally individual apartment gas meters shall conform to the following spatial allowances;

- Meter height 450mm (including meter bar and regulator)
- Meter width 250mm
- Meter depth 150mm

Individual apartment meters shall be installed with the following minimum clearances;

- 100mm clear below the base of the meter to the floor.
- 100mm clear between meters and/or adjacent walls or objects horizontally.
- 100mm clear between meters and/or adjacent wall or objects vertically.
- Maximum mounting height 2200mm (top of metering equipment)

Jemena reserve the right to alter gas meter suppliers and specifications without notice

4.13.2 Central Appliance Meters

Generally spatial requirements for central appliance meters shall be advised by Jemena on a site by site basis after the submission of loads for the connected equipment have been assessed by Jemena.

Central appliance meters shall be installed with the following minimum clearances;

- 150mm clear below the base of the meter to the floor.
- 150mm to 600mm clear between meters and/or adjacent walls objects horizontally depending on meter size.

- 150mm clear between meters and/or adjacent walls or objects vertically.
- Maximum mounting height 1700mm (top of metering equipment)

Jemena reserve the right to alter gas meter suppliers and specifications without notice.

4.13.3 Tenancy Meters

Generally spatial requirements for tenancy meters shall be advised by Jemena on a site by site basis after the submission of loads for the connected equipment have been assessed by Jemena.

Tenancy meters shall be installed with the following minimum clearances;

- 150mm clear below the base of the meter to the floor.
- 150mm to 600mm clear between meters and/or adjacent walls objects horizontally depending on meter size.
- 150mm clear between meters and/or adjacent walls or objects vertically.
- Maximum mounting height 1700mm (top of metering equipment)

Jemena reserve the right to alter gas meter suppliers and specifications without notice.

4.14 Remote Metering Facilities

Remote metering facilities enable Jemena Gas Networks (NSW) Ltd to obtain metering and billing data through an electronic transfer of information from the site. Remote metering facilities may be required for all medium density and high rise residential developments. Remotely metered developments will require the installation of:

- Meter data loggers (MDL's) (provided by Jemena) required to measure and record the individual gas and water meter usages on-site.
- Jemena provides MDL sites with a 3G solution however provision of a dedicated telephone line to the remote metering facility for the physical transfer of electronic information between the metering facility and Jemena NSW Gas Networks billing systems is required.
- Inter-connecting cabling for power supply and data transfer from the remote meters to the MDL's must be identified by clear permanent markings that indicate the dwelling or building service that is being supplied.(to be provided by the Developer)
- Refer to the Jemena website for the MDL guide

4.15 Submission of Loads

The Hydraulic Consultant shall provide the following information to Jemena;

- the calculated peak load for each meter;
- the number of residential units;
- the preferred metering positions.
- Schematics showing metering installations and associated consumer service designs

The submission of this information does not place any onus on Jemena to connect natural gas or provide what has been requested in the submission. Once this information has been correctly provided, an offer for the supply of natural gas may be issued to the developer.

4.16 Maintenance

The maintenance of gas meters will be provided by Jemena. Associated pipework and equipment shall be maintained as required by the building owner, or their agent.

5 Hot Water Service Metering Requirements

5.1 General Requirements

All work carried out to install or replace all or any part of central hot water metering equipment must be in accordance with AS/NZ 3500 (Plumbing Code), any other applicable Australian Standard and this guide.

Any person installing or replacing all or any part of central hot water metering equipment owned or managed by Jemena, where the work is not being done on behalf of Jemena, must obtain Jemena's authorisation before undertaking the work.

5.2 System Design

Typically hot water services installed within medium density and high rise residential buildings fall into two basic categories, described as follows;

- Individual Systems – whereby hot water is generated independently for each apartment by equipment that is wholly owned and maintained by the owner of that apartment and is individually gas metered.

- Central Systems – whereby hot water is generated centrally for all apartments by equipment that is owned and maintained by a body corporate or similar entity and is individually hot water metered to all fixtures that require hot water supply. **NOTE: at no time is any "un-metered" hot water supply allowed without an individual hot water meter.**

The decision with regard to which type of system should be adopted for any given development needs to take account of a number of factors including;

- The number of apartments to be served.
- The available space within the building to install hot water plant.
- The available space within the building to install hot water pipework and equipment.
- Client specific requirements.

5.3 Pipework Design

Hot water pipework systems installed within medium density residential buildings fall into two basic categories, described as follows;

- Centralised Systems – whereby the hot water pipework system is installed in a manner that allows hot water to be constantly circulated from the hot water plant, throughout the building and back to the hot water plant where the water is reheated to regain heat losses accumulated throughout the system during the water circulation. This type of pipework design is most often referred to as a flow and return pipework system.

- Individual Systems – whereby hot water pipework is installed in a manner that allows hot water to be supplied directly from the apartment hot water appliance to the individual fixtures and tap ware, without any opportunity for circulation. This type of pipework design is referred to as a dead-leg system because the hot water after leaving the hot water appliance does not recirculate back to the appliance.

Traditionally the type of pipework system utilised within a building has been dependent upon the type of hot water system design that has been employed, with circulating systems favoured for central hot water systems and dead-leg systems favoured for individual hot water systems.

5.4 Metering Purpose

Ideally hot water metering within residential apartments is required to measure the consumption of two valuable resources;

- Water
- Natural Gas

Individual apartment hot water metering is provided by Jemena for flow and return central hot water systems. The purpose of this metering is to provide meter readings between the various apartments that can be applied to accurately apportion the total energy cost of the hot water plant within the building to each apartment.

5.5 Standard Metering Configurations

Jemena will provide the metering equipment for the configuration specified below. Metering configuration will be based on the appliance and application type.

5.5.1 Individual Apartments

Jemena will provide a single hot water meter for each individual apartment to meter hot water consumption within that apartment. This type of metering is required for central hot water systems only.

5.5.2 Central Hot Water System

Jemena will provide a master cold water inlet meter and a master gas meter for each central hot water plant so that a total water consumption and the total gas consumption of the central hot water plant can be compared and validated against the total water consumption of the individual apartment hot water meters supplied by the central hot water plant. These two meters are not used for direct billing purposes to Body Corporates or Owners Corporations.

5.6 System Performance

Jemena reserves the right to set minimum energy efficiency performance standards for proposed centralised hot water systems.

The efficiency of various central hot water systems shall be measured by the “Common Factor” method as described within JDG-003 Design Guide For Gas Centralised Hot Water Systems.

Any tempering of water temperature after the boiler and before the individual hot water meters shall draw water downstream of the master cold water meter. This ensures that the integrity of the common factor calculation is maintained to verify system performance.

5.7 Meter Locations

5.7.1 Individual Apartment Meters

Hot water meters for individual apartments must be located within common areas of the development, generally as close as practicable to the point of use to reduce the length of dead-leg pipework required downstream of the meter to supply hot water to the individual apartment. Individual apartment meters may be located individually or in groups at a central location. Metering locations shall comply with the following requirements;

1. Be in a location complaint with plumbing standards for maximum length of dead-leg pipework.
2. Be accessible and allow unimpeded access for maintenance and meter reading.
3. Be located at a height between 150mm and 2200mm above floor level. (top of metering equipment)
4. Be in a location that is not exposed to physical damage.
5. Be in a location that is dry and well ventilated.
6. Be in a location that minimises the impact of water leakage.
7. Not to be located in ceiling or roof spaces

The location of individual apartment meters within dwellings is not permitted.

5.7.2 Central Hot Water Master Meters

Cold water master meters for central hot water plants must be located within accessible areas of the development, generally as close as practicable to the point of use to achieve the most cost effective installation. These areas must not be accessed via a ladder or other types of similar apparatus. Metering locations shall comply with the following requirements;

1. Be accessible and allow unimpeded access for maintenance and meter reading.
2. Be located at a height between 150mm and 1700mm above floor level. (top of metering equipment)

3. Be in a location that is not exposed to physical damage.
4. Be in a location that is dry and well ventilated.
5. Be in a location that minimises the impact of water leakage.

5.7.3 Prohibited Locations

Hot water meters for individual appliances must not be located in any of the following locations;

8. In a location where commercial, household items, including combustible or discarded materials are stored around or in-front of the basic metering equipment restricting access of Jemena's meter readers and maintenance crews;
9. Shall not be used as storage racks. No items (e.g., mop, broomstick, ladder, garbage bin) shall be rested on or stored in close proximity;
10. Near a location where chemicals or corrosive agents such as chlorine or cleaning agents are stored or frequently used;
11. In a room in which an unsealed grease trap is located;
12. Near a source of ignition, refer Section 6.8 – Exclusion Zones for Basic Metering Equipment;;
13. Near LPG bottles;
14. A lift shaft or lift motor room;
15. A room specifically intended for electrical switchgear;
16. A fire-isolated stairway or passage;
17. A fire hydrant duct or hose reel cabinet;
18. A sprinkler or hydrant pump room;
19. In a position that would obstruct egress from a building;
20. In a position where the basic metering equipment would be subject to physical damage unless adequately protected;
21. In an area where excessive temperatures or sudden excessive changes in temperature may occur;
22. In an area of excessive vibration;
23. In the foundation area under a building;
24. In a cavity wall, unless installed in a ventilated enclosure with external access and the cavity is sealed;
25. In an unventilated position;
26. On the ground, or on a floor which is frequently wetted or on a floor which contains material which may corrode the basic metering equipment;
27. Where a service riser is not separated from an earth electrode by 500mm; and
28. A ceiling space

For additional requirements on the prohibited locations of the basic metering equipment, refer to AS/NZS 4645.1 - Gas Distribution Network (Network Management).

5.8 Alternative Locations

Other alternative metering locations may be approved at the discretion of the Network Operator. Any such approvals will be subject to written application to the Network Operator, for assessment on a site by site basis.

5.9 Meter Identification

Each hot water meter shall be identified by clear permanent markings that indicate the dwelling or building service that is being supplied by the meter. Pipework shall be similarly labeled on the outlet side of the meter.

5.10 Meter Orientation

Each hot water meter must be installed and orientated in accordance with the manufacturer's specifications to ensure the accurate measurement of water consumption.

Each meter must be orientated to ensure that the meter register display can be easily read for commissioning, audits and manual meter reads.

5.11 Meter Supports

Hot water meters must be securely supported by the connecting pipework and rigid metal meter connections, and be clear of the ground or base. Connecting pipework must not put any strain on the meter.

5.12 Meter Handling

When transporting, storing, moving, installing or changing meters, the following procedures must be observed;

1. handle with care to prevent damage, place carefully and do not drop,
2. cap or seal their meter inlet and outlet connections from the atmosphere,
3. prevent contamination by liquids or solids,
4. install in accordance with relevant instructions and requirements of the manufacturer
5. secure to prevent loss or theft

5.13 Meter Sizes & Clearances

5.13.1 Individual Apartment Meters

Generally individual apartment hot water meters shall conform to the following spatial allowances;

- Meter length 600mm (including isolation valve and 90^0 bend either side of meter)
- Meter width 100mm
- Meter depth 100mm

Individual apartment meters shall be installed with the following minimum clearances;

- 100mm clear below the base of the meter to the floor.
- 100mm clear between meters and/or adjacent walls or objects horizontally.
- 100mm clear between meters and/or adjacent wall or objects vertically.
- Maximum mounting height 2200mm (top of metering equipment)

Jemena reserve the right to alter hot water meter suppliers and specifications without notice

5.13.2 Central Hot Water Meters

Generally spatial requirements for central hot water meters shall be advised by Jemena on a project by project basis after the submission of loads for the connected equipment have been assessed by Jemena.

Central hot water meters shall be installed with the following minimum clearances;

- 150mm clear below the base of the meter to the floor.
- 150mm clear between meters and/or adjacent walls objects horizontally.
- 150mm clear between meters and/or adjacent walls or objects vertically.
- Maximum mounting height 1700mm (top of metering equipment)

Jemena reserve the right to alter hot water meter suppliers and specifications without notice.

5.14 Remote Metering Facilities

Remote metering facilities enable Jemena Gas Networks (NSW) Ltd to obtain metering and billing data through an electronic transfer of information from the site. Remote metering facilities will be required for all medium density and high rise residential developments. Remotely metered developments will require the installation of:

- Meter data loggers (MDL's) (provided by Jemena) required to measure and record the individual gas and water meter usages on-site.
- Jemena provides MDL sites with a 3G solution however provision of a dedicated telephone line to the remote metering facility for the physical transfer of electronic information between the metering facility and Jemena NSW Gas Networks billing systems is required.
- Inter-connecting cabling for power supply and data transfer from the remote meters to the MDL's must be identified by clear permanent markings that indicate the dwelling or building service that is being supplied (to be provided by the Developer)
- Refer to the Jemena website for the MDL guide

5.15 System Certification

Jemena will not supply metering equipment for a centralised hot water system until it receives certification from an appropriately qualified and competent party, confirming the system has been designed to meet the specified minimum energy efficiency performance requirements, and a certification from the building developer confirming that the certified design has been installed. Jemena is not liable for and will seek indemnification from Developers for installations that do not meet the minimum specification or designs which may adversely impact the consumer.

Applicants are referred to AGD-003 Design Guide For Centralised Hot Water Systems, which contains detailed information in regard to the procedures and applications that are required to be submitted to Jemena for Centralised Hot Water System approval including;

- Clause 6 - System Certification
- Clause 6.1 - Certifier Qualifications and Competency
- Clause 6.2 - Certification of Generalised Common Factor

The submission of this information does not place any onus on Jemena to connect natural gas or provide what has been requested in the submission. Once this information has been correctly provided, an offer for the supply of natural gas may be issued to the developer.

5.16 Maintenance

The maintenance of hot water meters will be provided by Jemena. Associated pipework and equipment shall be maintained as required by the building owner, or their agent.

6 Indicative Spatial Requirements

6.1 Individual Apartment Gas Meter Bank Dimensions

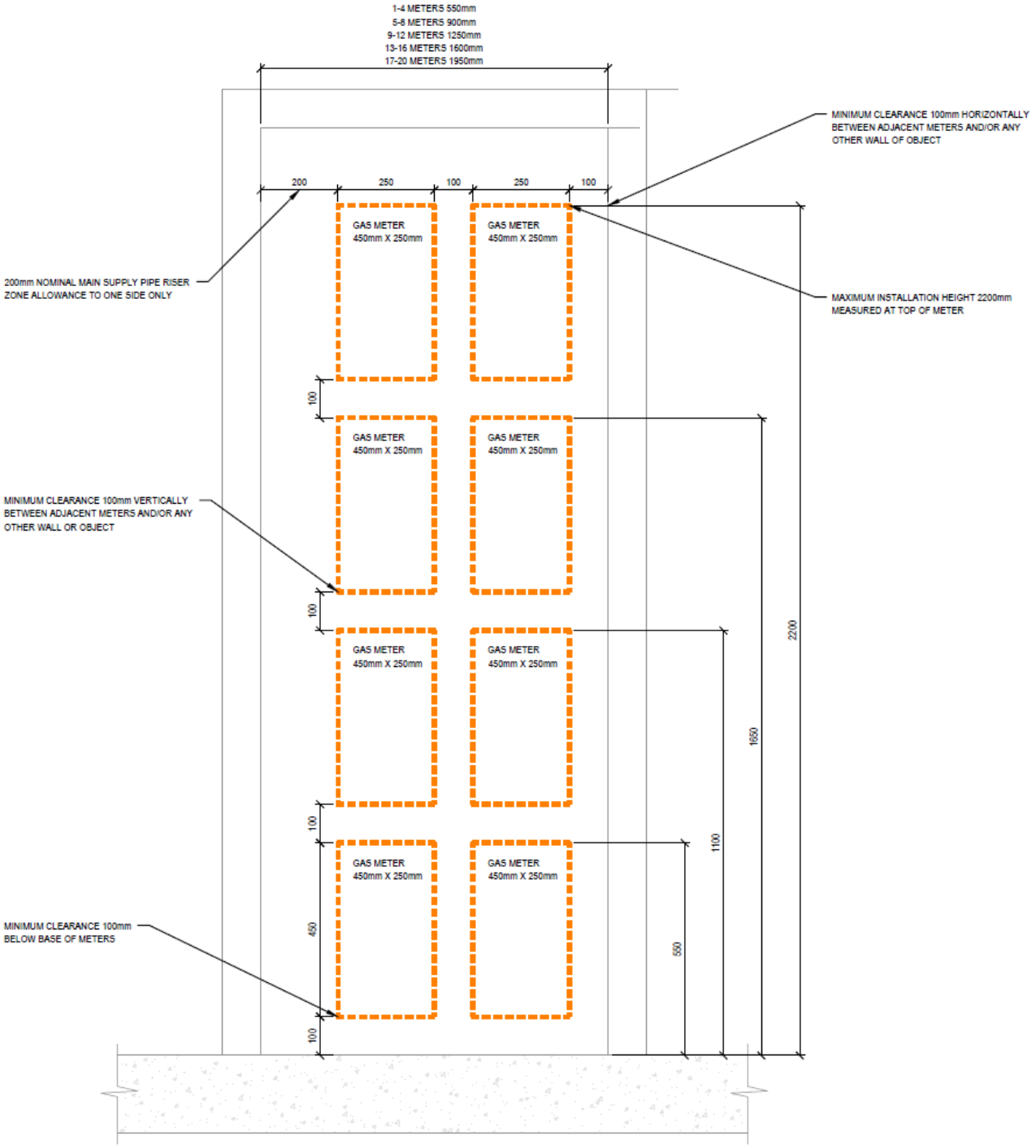
Indicative dimensions for a dedicated cupboard containing only individual apartment gas meters stacked up to four meters high is as follows;

Number of Meters	Cupboard Width (mm)	Cupboard Depth (mm)	Meter Set Height (mm)
1	550	300	550
2	550	300	1100
3	550	300	1650
4	550	300	2200
5	900	300	2200
6	900	300	2200
7	900	300	2200
8	900	300	2200
9	1250	300	2200
10	1250	300	2200
11	1250	300	2200
12	1250	300	2200
13	1600	300	2200
14	1600	300	2200
15	1600	300	2200
16	1600	300	2200
17	1950	300	2200
18	1950	300	2200
19	1950	300	2200
20	1950	300	2200

NOTE - Spatial allowances described above are made with reference to a main riser allowance of 200mm on the inlet side of the cupboard only.

6.2 Individual Apartment Gas Meter Bank Diagram

The following diagram indicates generic dimensions for individual apartment gas meters installed within a common cupboard.



JEMENA INDIVIDUAL APARTMENT
NATURAL GAS METER BANK
SCALE 1:10