HIGH RISE BUILDING GAS OPERATIONS

High rise building gas operations

Videos and Q&A session

Please watch:

- The high rise buildings gas operations video series, and
- live recorded High rise gas operations Q&A session.

FAQs

The following questions were asked by industry at the Gas high rise Q&A webinar held in October 2021.

How is ESV applying Appendix K? In particular K5 pipework in required exits, e.g. lift lobbies of high rise buildings.

Appendix K is informative. However, K5 refers to Clause 5.3.1 which provides a list of prohibited locations for consumer piping. Lift lobbies are not considered an exit way or required exit for the purpose of prohibited consumer piping location unless it is nominated by the building surveyor as being as such. Fire isolated stairway, passageway or ramp, exit-way or safe path, lift well, rubbish / clothes chutes and fire control rooms are all considered prohibited locations.

Pressure testing in service gas lines, specifically to do with allowable pressure drop.

There is no allowable pressure drop for high rise buildings.

Is there a maximum lockup pressure allowable in a high rise installation? For example, a reading greater than 7Kpa at the cooktop regulator test point.

There is no maximum lockup pressure in a high rise building. You need to consider that pressures in excess of 7 kPa are subject to overpressure protection. Also consider system design pressure and appliance max pressure as found on data plate.

When servicing Type A appliances in a high rise, should we be adjusting appliance pressures or is that something set in the design and during commissioning of the entire building?

Appliance pressure should be checked during Type A servicing and if the pressures are outside of the manufacturers stated minimum and maximum pressures range the pressure should be adjusted accordingly.

Practitioners with type A servicing accreditation should be aware of AS 4575 which relates to Type A appliance servicing.

If there is a permanent joint valve located outside the door of an apartment for example, you cannot disconnect the permanent joint to do a pressure test when doing a Type A service or gas safety check. Can we test up against an isolated valve without physically disconnecting the pipe?

Existing gas installations shall be tested in accordance with AS/NZS 5601.1:2013 clause 3.5.2 and Appendix E.

If there is no disconnection point at the outlet of the occupancy isolation valve, it is acceptable to test the downstream installation back to this valve. A suitable test point will need to be accessed to enable a complete test of this section of the installation.

How can gasfitters size the pipes if the run is more than 320m?

AS/NZS5601.1:2013 Informative Appendix F includes pipe sizing tables for installations up to a maximum length of 320m.

For gas installations over 320m the design may need to be referred to a Hydraulic Engineer for pipe sizing. Another option may be to purchase a pipe sizing program or seek the assistance of the pipe manufacturer to provide pipe sizing specific to your installation.

In relation to branch lines, kitchens etc. or apartments do gas isolation valves and press gas valves need a means of disconnection immediately after the valve? If not, where is disconnection after the valve required? And does it differ if a press valve is used over a screw fitting, such as tube bushes?

Reference: AS/NZS 5601.1:2013 Clause 6.6.4 – Means of disconnection

The gas appliance connection shall include a means of disconnection.

Where the means of isolation of an appliance is provided to satisfy Clause 6.6.3 the means of disconnection shall be downstream of the isolation valve.

For high rise installations, all appliances must have a means of isolation.

It is no longer a requirement to have a means of disconnection after a gas valve installed on consumer piping except where the above applies.

With respect to a 15mm BSP thread leading from the lugged elbow into a cupboard for connection to the service valve/appliance regulator, say a cooktop/cooker, is there any special requirements with regards to thread sealing of joints? Tapered thread requirements.

Reference: AS/NZS 5601.1:2013 Clause 4.4 Prohibited Types of Joints and Fittings

Specific to this question the following joints are prohibited

- Longscrew connectors,
- Plain nipples, e.g., running nipple with parallel threads, expect where no practical alternative is available.

Note: A brass external parallel thread to a brass internal thread may be used, provided that the joint is welded or a suitable permanent quick-setting thread compound is used and a means of disconnection is provided.

ESV accepts non-permanent jointing such as lugged elbow threads providing the joint is in an accessible and ventilated location.

Is there a detailed example of what ESV wants to see in a Schedule 8?

Refer to the ESV High Rise video for Schedule 8 requirements presented by ESV's Doug Rennie.

You may also wish to refer to ESV's Gas information sheet 60: Gas installation acceptance – Schedule 8 requirements.

When requesting a staged handover for a project, what does ESV look for to determine if the project is still too early for gas? For example, shaft completion etc.

Each stage must be completed and ready for gas. Anything that isn't completed needs to be disconnected from the installation and a separate GasTrac gas application will be required for any additional stages.

This may require the gas riser pipe to be sealed using a plug, cap, blank flange or a capped or plugged manual shut off valve for future extension. If the gas riser is located in a fully ventilated pipe riser shaft the shaft will be required to be ventilated top and bottom to a safe location as per AS/NZS 5601.1:2013 Clause 5.3.12, Table 5.3.

Gas located below ground servicing a building: pipework entering under the building must be copper, however can the in-ground pipework be PE pipe if there is structure above (level 1 slab) but is an open air driveway?

Reference: AS/NZS 5601.1:2013 Clause 5.4.1 Installation of consumer piping underground – General

Underground plastic consumer piping is generally permitted except under buildings.

The note to this clause states that Undercroft carparks and verandas are considered as buildings.

Below ground plastic consumer piping installed beneath a roof or building structure is considered non-compliant. An open air driveway would be considered compliant however if it were roofed it will be deemed non-compliant.

When installing internal gas line from corridor to an apartment, usually it's a plastic type coming off a copper main. Does the gasfitter need to identify the type of internal pipe work? And if so, at the main meter or somewhere inside the apartment?

Reference: AS/NZS 5601.1:2013 Clause 4.5.4

A label is to be attached adjacent to the gas meter indicating the make or trade-name of the proprietary material.

It is also advisable to include details of the transition from copper to plastic consumer piping on the plan of consumer piping which is required to be displayed on site as per Clause 5.7.3

In relation to the main isolation valve for Commercial kitchens can the use of compression fittings be used or barrel union and then box out in the wall?

Reference: AS/NZS 5601.1:2013 Clause 5.3.8 Table 5.2 and Clause 5.3.12 Table 5.3

Compression fittings and barrel unions are non-permanent joints and must be installed in ventilated and accessible locations. Where a valve is to be installed in a concealed, unventilated location such as a wall cavity or ceiling space all joints must be permanent. Access must still be provided for operation of the valve.

In relation to pool boilers located within other mechanical spaces i.e. a swimming pool plant room containing chemicals. Please explain the requirement to isolate these units.

Reference: AS/NZS 5601.1:2013 Clause 6.3.5 Proximity of flammable goods or chemicals

An appliance shall not be installed in a location where chemicals may combine with combustion air and cause corrosion or malfunction of the appliance.

Once a performance clipping solution has been approved can it be used again on future projects?

All Performance Based Designs are site specific and need to contain all of the relevant details for that particular project.

You may wish to develop a template which will make it easier to develop and tailor individual, site specific Performance Based Designs for pipe support systems on other projects.

Any performance based solution that is submitted must be in accordance with Gas Technical Information Sheet numbers 45 and 63, links below:

https://esv.vic.gov.au/gas-technical-information-sheets/45-performance-based-complex-gas-installations/

https://esv.vic.gov.au/gas-technical-information-sheets/gas-information-sheet-63-gas-piping-support-systems-and-as-nzs-5601-12013/

Are there any issues for locating the isolation valves in a joinery? Or is this considered a concealed space?

Reference: AS/NZS 5601.1:2013 Tables 4.1, Clauses 5.3.8 and Table 5.3

Isolation valves are required to be accessible and if the jointing method is non–permanent (screwed or mechanical joints) the valve must be in a ventilated location.

Valves which are press-fit type (permanent joints) must be accessible but may be located in unventilated locations such as ceiling spaces or wall cavity with access hatches.

Further question regarding locating the isolation valves for individual apartments. Can they be located in a ceiling space complete access panel or do the isolation valves need to be within the riser cupboard?

Reference: AS/NZS 5601.1:2013 Clause 5.2.9

If the requirements of AS/NZS 5601.1:2013 Clause 5.2.9 “accessible and *where practicable* external to the occupancy” cannot be met then an alternative location for apartment isolation valves may be selected. This needs to be discussed with ESV (at gas application stage) and agreed upon to ensure any alternative location is acceptable.

Valves must be accessible and if Non-Permanent jointing is used then the valve may need to be boxed and vented. Valves which are Press-fit type (permanent joints) are required to be accessible but not ventilated.

Are there any issues or limitations for gas pipes embedded in concrete?

Reference: AS/NZS5601.1:2013 Table 4.1 & Clause 5.3.13

Refer to clause 5.3.13 for specific requirements of piping embedded in concrete.

Do any gas regulations or standards clearly outline or bring attention to the mandated earthquake design requirements (to AS1170.4 section 8) for building services including gas piping in all class 2-9?

AS/NZS 5601 parts 1 & 2 do not reference AS 1170.4 with regards to seismic /earthquake design requirements.

What are the ventilation requirements for a cafe or commercial restaurant set up in a difficult spot with poor ventilation? Please advise how to this should be calculated and provide more detail about the use of an interlock.

Reference: AS/NZS 5601.1 clause 6.4.4 and clause 6.4.5

In order to establish if additional ventilation is required you must calculate the total gas consumption (MJ/h) of the commercial kitchen and the room volume (m3). Once this information is known, divide the total gas consumption (MJ/h) by the room volume –***MJ/hr ÷ m3***, if the result of this calculation is less than 3MJ per m3 room volume then no additional ventilation is required.

If the result of the calculation is greater than 3MJ/m3, you are required to install additional ventilation.

Where mechanical ventilation is to be considered:

Clause 6.4.8 and Table 6.3 are not applicable mechanical ventilation in a commercial kitchen due to the conflicting requirements of AS/NZS 1668.1 and AS1668.2 where the kitchen exhaust system requires approximately 80% of the exhaust rate to be provided as supply air.

This results in a negative pressure environment, which will not be compliant with the requirements of AS/NZS 5601.1Clause 6.4.8 and Table 6.3.

As such if the ventilation is to be provided by mechanical means then a Performance Based Design will need to be submitted (AS/NZS 5601.1 Clause 2.6.5). Refer to ESV Technical information sheet 45 for guidance on developing a Performance Based Design application.

Table 6.3 may be used for guidance in the provision of adequate air supply in L/s based on the total gas consumption (MJ/hr).

If mechanical ventilation is used then the requirements of Clause 6.4.9 must also be complied with.

Where the required air supply to a *gas appliance* relies on a mechanical system, there shall be an *interlock* to cause the *gas* supply to the *appliance*(s) to be shut off upon failure of the mechanical air supply system. The *interlock* sensor shall *fail safe* and it shall be proved in the no-flow state prior to start up.

When conducting a gas safety inspection for the new real estate (gas safety) check list, is a gas pressure test on the fitting line still required?

For residential apartment buildings where the gas supply can be isolated to each individual apartment gasfitters are required to conduct a leakage test from the occupancy isolation valve to the appliances.

For residential apartment buildings where the gas supply cannot be isolated to each individual apartment then gas leakage should be checked from the gas isolation valve for each gas appliance.

More information: https://esv.vic.gov.au/technical-information/residential-tenancy-changes/gasfitter-toolkit/faqs-gas-safety-checklist/

What and where is identification required for internal gas pipe used?

Reference: AS/NZS 5601.1:2013 Clause 5.1.12.1

Identification of pipework is required where “the location of the pipework is such that it is not readily identifiable as *consumer piping*,”

As high-rise buildings have multiple various services including water, fire services etc., all of the gas pipework is required to be identified as per Clause 5.1.12.2 and Figure 5.1.

What is ESV's definition of "accessible location" pertaining to the location of a Gas Regulator? In particular, regarding a free standing cooker installation?

Reference: AS/NZS 5601.1:2013 Clause 1.8.1

Generally in high-rise buildings where an electric oven is located under a gas cooktop, the gas isolation valve, regulator and GPO will usually need to be installed in an adjacent cupboard to be deemed accessible. The standard defines accessible as: *Access can be gained without hazard or undue difficulty for inspection, repair, testing, renewal, or operational purposes.*

ESV view the need to remove an oven or similar in order to access these components as being inaccessible.

In the case of a freestanding cooking appliance, the appliance isolation valve and regulator must be installed as per the manufacturer's installation instructions and be accessible.

In relation to rod sizes for supporting multiple gas lines run on unistrut/trapeze. If there are 2 - 100mm copper lines. What size rod would be compliant?

Reference: AS/NZS 5601.1:2013 Clause 5.8.3 & Table 5.6

The standard gives details for the diameter of rod hangers used to support a single pipe.

For multiple pipes supported on a trapeze or for reduced size rod hangers you must develop a Performance Based Design in accordance with AS/NZS 5601.1:2013 Section 2.

ESV has published Gas Information sheet 63 to assist in the development of a Performance Based Design for pipe support systems.

The Standards Committee AG006 that is responsible for AS/NZS 5601.1 - is planning to work on an update to this section of the standard.

More information: watch the gas high rise video Pipe Support Systems and Performance Based Designs presented by Kevin Dwyer.

How do we determine if a fire rated shaft for high rise building is required? Do we need to consider more than 5 levels or more for a fire rated shaft?

The Building Surveyor will determine if the pipe shaft in a high rise building will require fire rating.

In an apartment, is an isolating valve to be installed at the cook top and before the fitting line enters the apartment?

Reference: AS/NZS 5601.1:2013 Clause 5.2.9 and 6.6.3

An occupancy isolation valve is to be installed in an accessible location and where practicable, external to the occupancy.

Cooktop isolation requirements are listed in Clause 6.6.3 & Table 6.4.

Cooking appliances installed in a residential apartment building must have a means of isolation provided on the inlet connection of the appliance.