Multi-Unit Developments (excluding multi-storey)

AIM
The aim of this technical solution is to inform practitioners about the requirements for below ground sanitary drains and water supply to multi-unit developments. For the purpose of this technical solution, a “multi-unit development” means a development of three or more residential buildings but limited to three storeys in height. The requirements for multi-storey developments greater than three storeys’ are not addressed in this technical solution.

PLUMBING REGULATIONS 2008
The Plumbing Code of Australia (PCA) is adopted by and forms part of the Plumbing Regulations 2008. Part B1 of the PCA specifies the objectives and performance requirements related to the installation of cold water services. AS/NZS 3500.1: Plumbing and drainage Part 1: Water services is a “deemed to satisfy” document listed in Part B1 of the PCA and contains a section on “multi-unit developments”.

Part C2 of the PCA specifies the objectives and performance requirements related to the installation of sanitary drainage systems. AS/NZS 3500.2: Plumbing and drainage Part 2: Sanitary plumbing and drainage is a “deemed to satisfy” document listed in Part C2 of the PCA and contains a section on multi-unit developments.

1. GENERAL
The provision of water and sewerage services for subdivisions of multi-unit developments differ to those for “as of right” land subdivisions.

In “as of right” subdivisions the water and sewerage reticulation systems are constructed to the Water Services Association of Australia (WSAA) codes. The water and sewerage mains are normally owned and maintained by the water authority and each property is provided with separate connections to the authority’s system.

In multi-unit developments, the main lines of water and sewerage infrastructure are mostly constructed to AS/NZS 3500.1 and AS/NZS 3500.2. The main lines of water and sewerage are owned and maintained generally by the owners corporation and have in most cases, one connection each to the water authority’s system.

2. SUMMARY OF REQUIREMENTS
Generally, where a multi-unit development has 20 or more residential buildings: The main water service pipeline to the buildings must comply with either WSA 03 Water Reticulation Code of Australia, or AS/NZS 3500.1.

The main sewer pipeline to the buildings must comply with either WSA 02 Sewerage Code of Australia, or AS/NZS 3500.2.

Where services are constructed to AS/NZS 3500.1, there are some additional requirements as outlined and clarified in this technical solution (see Figure 2).
3. SANITARY DRAINAGE

3.1 Sanitary Drainage Work within Individual Lots

All sanitary plumbing and sanitary drainage work within each individual allotment must comply with AS/NZS 3500.2 and have:

- An inspection shaft provided immediately upstream of the junction in the main line of sanitary drain.
- Additional provision of overflow relief for sewerage surcharge.
- An open upstream drainage vent.

3.1.1 Inspection Shaft

Inspection shafts must be constructed in accordance with Clause 4.4.2 of AS/NZS 3500.2. These inspection shafts are in addition to the property sewerage inspection shaft (in boundary trap omitted areas) or the boundary trap and shaft (in boundary trap areas) that must still be fitted at the property sewer connection point that is provided by the water authority.

3.1.2 Overflow Relief

Provided that there is existing protection against sewerage surcharge (e.g. an overflow relief gully complying with Clause 4.6.6.6, or a reflux valve in accordance with Clause 4.5) the gully at each allotment may have a lesser separation of 100mm to the 150mm minimum separation required by Clause 4.6.6.6 (see Figure 1).

A footnote in AS/NZS 3500.2 under Clause 4.6.6.5 indicates conditions for additional gullies.

3.1.3 Ventilation

An open upstream drainage vent must also be provided at each allotment / unit, and the vent must comply with the location and sizing provisions of Clause 3.9 in AS/NZS 3500.2. An air admittance valve is not acceptable as an upstream vent.

3.2 Developments of 3-19 Units

Unless otherwise required by the water authority the main lines of sewerage must comply with AS/NZS 3500.2.

3.3 Developments of 20 Units or More

By agreement between the water authority and the developer, the main lines of sewerage infrastructure, may be constructed to either or both the Sewerage Code of Australia (WSAA Installation Requirements) or AS/NZS 3500.2. However, should the developer elect to install to AS/NZS 3500.2 the following additional requirements will apply.

3.3.1 Maintenance Shafts

Maintenance shafts that permit access for drain cleaning and CCTV equipment must be provided in the main lines of sanitary drainage, at each change of direction and main line junctions. The spacing of maintenance shafts must not exceed 150m in straight lines of the main line of sewer.

4. WATER SUPPLY

4.1 Pipe sizing within dwellings

The technical solution titled, “Cold water pipe sizing, testing and commissioning” provides an example of sizing the water supply pipes to outlets within the dwelling.

4.2 Main lines of water supply within common property (applies whether the development is constructed at one time or is constructed in stages)

The licensed plumber will be required to certify the work to the given hydraulic design of the main lines of water supply. Should a hydraulic design not have been prepared, the licensed plumber will need to ensure that the sizing will be adequate.
Appendix C of AS/NZS 3500.1 - Sizing Method for Supply Piping for Dwellings, provides an example for sizing the main lines of water supply. This method uses Table 3.2 in AS/NZS 3500.1 which provides the probable simultaneous demand for up to 100 units.

4.3 Developments of 3-19 Units
Unless otherwise required by the water authority the main lines of water supply must comply with AS/NZS 3500.1.

4.4 Developments of 20 Units or More
By agreement between the water authority and the developer, the main lines of water supply infrastructure, may be constructed to either or both the Water Supply Code of Australia (WSAA) installation requirements or AS/NZS 3500.1. However, should the developer elect to install to AS/NZS 3500.1 the following additional requirements will apply.

4.4.1 Divide Valves
The development is to be divided into zones where the maximum allotments within a zone affected by any shutoff at the main lines of water supply is not greater than 40 units. The divide or isolation valves that are fitted to the main line must be no further apart than 300m.

4.4.2 Ring Mains or Flushing Points
To maintain circulation of water, the main lines shall form a ring main or be provided, at surface level, with flushing points at any dead end of the main water service line.

4.4.3 Fire Services
Fire services must be provided in accordance with the fire authority requirements. External fire hydrants are to be located in accordance with AS 2419.1 Fire hydrant installations system design, installation and Commissioning.

Note:
The lesser separation of the overflow relief gully at each individual unit is only permitted after provision for overflow relief for sewerage surcharge, such as described in Clause 4.6.6.6 of AS/NZS 3500.2 has been made.
FIGURE 2 – EXAMPLE: MULTI-UNIT WATER AND SEWERAGE SERVICES (MORE THAN 20 UNITS)

Notes:
- Individual lots each have an inspection shaft at the branch from the main lines of sewer and an overflow relief gully – refer to paragraph 3.1.1 and 3.1.2.
- Isolating valves must be provided at branches to individual buildings – refer to Clause 5.4.2 of AS/NZS 3500.1.

The provision of maintenance shafts on the main lines of sewer applies to developments of 20 or more units – refer Paragraph 3.3.1.