

Dear Customer

Please find enclosed Amendment 5, effective 14 February 2014, to the Acceptable Solutions and Verification Methods for Clause G13 Foul Water of the New Zealand Building Code. The previous amendment to G13 (Amendment 4) was in October 2011.

<b>Section</b>	<b>Old G13</b>	<b>February 2014 Amendments to G13</b>
Title pages	Remove title page and document history page 1-2	Replace with new title page and document history pages 1-2B
References	Remove page 7/8	Replace with new page 7/8
Definitions	Remove page 9/10	Replace with new page 9/10
G13/VM2	Remove page 35/36	Replace with new page 35/36
G13/AS2	Remove page 43/44	Replace with new page 43/44
G13/AS3	Remove page 51/52	Replace with new page 51/52
G13//VM4	Remove page 52A/52B	Replace with new page 52A/52B





MINISTRY OF BUSINESS,  
INNOVATION & EMPLOYMENT  
HĪKINA WHAKATUTUKI

# Acceptable Solutions and Verification Methods

For New Zealand Building Code Clause  
**G13 Foul Water**

Second Edition



## Status of Verification Methods and Acceptable Solutions

Verification Methods and Acceptable Solutions are prepared by the Ministry of Business, Innovation and Employment in accordance with section 22 of the Building Act 2004. Verification Methods and Acceptable Solutions are for use in establishing compliance with the New Zealand Building Code.

A person who complies with a Verification Method or Acceptable Solution will be treated as having complied with the provisions of the Building Code to which the Verification Method or Acceptable Solution relates. However, using a Verification Method or Acceptable Solution is only one method of complying with the Building Code. There may be alternative ways to comply.

Users should make themselves familiar with the preface to the New Zealand Building Code Handbook, which describes the status of Verification Methods and Acceptable Solutions and explains alternative methods of achieving compliance.

Defined words (italicised in the text) and classified uses are explained in Clauses A1 and A2 of the Building Code and in the Definitions at the start of this document.

Enquiries about the content of this document should be directed to:



**MINISTRY OF BUSINESS,  
INNOVATION & EMPLOYMENT**  
HĪKINA WHAKATUTUKI

Ministry of Business, Innovation and Employment  
PO Box 1473, Wellington.  
Telephone 0800 242 243  
Fax 04 494 0290  
Email: [info@dbh.govt.nz](mailto:info@dbh.govt.nz)

**Verification Methods and Acceptable Solutions  
are available from [www.dbh.govt.nz](http://www.dbh.govt.nz)**

## New Zealand Government

© Ministry of Business, Innovation and Employment 2014

This document is protected by Crown copyright, unless indicated otherwise. The Ministry of Business, Innovation and Employment administers the copyright in this document. You may use and reproduce this document for your personal use or for the purposes of your business provided you reproduce the document accurately and not in an inappropriate or misleading context. You may not distribute this document to others or reproduce it for sale or profit.

The Ministry of Business, Innovation and Employment owns or has licences to use all images and trademarks in this document. You must not use or reproduce images and trademarks featured in this document for any purpose (except as part of an accurate reproduction of this document) unless you first obtain the written permission of the Ministry of Business, Innovation and Employment.

## Document Status

The most recent version of this document (Amendment 5), as detailed in the Document History, is approved by the Chief Executive of the Ministry of Business, Innovation and Employment. It is effective from 14 February 2014 and supersedes all previous versions of this document.

The previous version of this document (Amendment 4) will cease to have effect on 14 August 2014.

People using this document should check for amendments on a regular basis. The Ministry of Business, Innovation and Employment may amend any part of any Verification Method or Acceptable Solution at any time. Up-to-date versions of Verification Methods and Acceptable Solutions are available from [www.dbh.govt.nz](http://www.dbh.govt.nz)

<b>G13: Document History</b>			
	<b>Date</b>	<b>Alterations</b>	
First published	July 1992		
Amendment 1	September 1993	pp. vii–viii, References p. xi, Definitions	p.25, Figure 3 p. 31, Figure 7
Reprinted incorporating Amendment 1		October 1994	
Amendment 2	1 December 1995	p. viii, References	
Amendment 3	28 February 1998	p. ii, Document History p. viii, References	p. 1, 1.0.1 p. 21, 1.0.1
Second edition published 1 July 2001	Effective from 1 October 2001	Document revised – second edition issued	
Amendment 1	Published March 2007 Effective from 23 June 2007	p. 2, Document History, Status p. 6, Contents pp. 7–8, References	pp. 9–10, Definitions p. 52A, AS3 1.0, 1.0.1, 1.0.2 p. 55, Index
Erratum 1	Effective from 23 June 2007	pp. 5–6, Contents pp. 33–34, AS1 8.0, 8.1	pp. 50–51, AS2 7.0, 7.1
Amendment 2	Effective from 21 June 2007	p. 2, Document History, Status pp. 3, 4, 4A, Building Code Clause p. 6, Contents	p. 8, References p. 52A, VM4 p. 54, Index
Amendment 3	Published 30 June 2010 Effective from 30 September 2010	p. 2, Document History, Status pp. 7–8, References p. 11, G13/VM1 1.0.1 p. 13, G13/AS1 Table 1 p. 32, G13/AS1 6.1.1 p. 33, G13/AS1 6.2.2, 6.3.1, 6.3.2, 7.1.2, Table 7	p. 37, G13/AS2 Table 1 p. 42, G13/AS2 5.1.2 p. 50, G13/AS2 6.1.2 p. 51, G13/AS3 1.0.1 pp. 54–55, Index
Amendment 4	Effective from 10 October 2011 until 14 August 2014	p. 2, Document History, Status p. 8, References	p. 10, Definitions p. 37, G13/AS2 Table 1
Amendment 5	14 February 2014	p. 2A, Document History, Status pp. 7–8, References p. 9, Definitions p. 35, G13/VM2 1.0.1	p. 44, G13/AS2 5.6.1 p. 51, G13/SA2 1.03 p. 52A, 1.1.2
<b>Note: Page numbers relate to the document at the time of Amendment and may not match page numbers in current document.</b>			



# References

For the purposes of New Zealand Building Code (NZBC) compliance, the Standards and documents referenced in these Verification Methods and Acceptable Solutions (primary reference documents) must be the editions, along with their specific amendments, listed below. Where these primary reference documents refer to other Standards or documents (secondary reference documents), which in turn may also refer to other Standards or documents, and so on (lower-order reference documents), then the version in effect at the date of publication of these Verification Methods and Acceptable Solutions must be used.

Amend 4  
Oct 2011Amend 5  
Feb 2014Amend 5  
Feb 2014

## Where quoted

### Standards New Zealand

Amend 3  
Sep 2010

NZS 3501: 1976 Specification for copper tubes for water, gas, and sanitation  
*Amends: 1, 2, 3*

AS1 Table 1,  
AS2 Table 1Amend 5  
Feb 2014

NZS 3604: 2011 Timber framed buildings

AS2 5.6.1

Amend 5  
Feb 2014

NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design

AS2 5.6.1

NZS 4442: 1988 Welded steel pipes and fittings for water, sewage and medium pressure gas

AS2 Table 1

Amend 3  
Sep 2010

### British Standards Institution

BS 437: 2008 Specification for cast iron drain pipes, fittings and their joints for socketed and socketless systems

AS2 Table 1

Amend 3  
Sep 2010

BS EN 12056-2:2000 Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation

VM1 1.0.1

### Standards Australia

Amend 3  
Sep 2010

AS 1579: 2001 Arc welded steel pipes and fittings for water and waste water

AS2 Table 1

AS 1589: 2001 Copper and copper alloy waste fittings

AS1 Table 1

Amend 3  
Sep 2010

AS 1646: 2007 Elastomeric seals for waterworks purposes

AS2 Table 1

Amend 3  
Sep 2010

AS 2887: 1993 Plastic waste fittings

AS1 Table 1

Amend 3  
Sep 2010

AS 3571: 2009 Plastic piping systems – Glass reinforced thermoplastics (GRP) systems based on unsaturated polyester (UP) resin – pressure and non-pressure drainage and sewerage (ISO 10467: 2004 MOD)

AS2 Table 1

Amend 4  
Oct 2011

		Where quoted
Amend 3 Sep 2010	AS 4139: 2003 Fibre reinforced concrete pipes and fittings	AS2 Table 1
	<b>Australian/New Zealand Standards</b>	
Amends 3 and 4	AS/NZS 1260: 2009 PVC-U pipes and fittings for drain, waste and vent applications <i>Amend: 1</i>	AS1 Table 1, AS2 Table 1
Amend 5 Feb 2014		
Amends 2 and 5	AS/NZS 1547: 2012 On-site domestic wastewater management	VM4 1.1.2
	AS/NZS 2032: 2006 Installation of PVC pipe systems <i>Amend: 1</i>	AS1 6.1.1, 6.2.2, 6.3.1, 7.1.2 AS2 5.1.2, 6.1.2, 7.0.1, Table 1 AS3 1.0.1
Amend 3 Sep 2010		
Amend 4 Oct 2011	AS/NZS 2033: 2008 Installation of polyethylene pipe systems <i>Amend: 1, 2</i>	AS1 Table 1
	AS/NZS 2280: 2012 Ductile iron pipes and fittings	AS2 Table 1
Amend 5 Feb 2014		
Amend 4 Oct 2011	AS/NZS 2566.2: 2002 Buried flexible pipelines installation	AS2 Table 1
Amend 1 Jun 2007 Amend 5 Feb 2014	AS/NZS 3500:- Plumbing and drainage Part 2: 2003 Sanitary plumbing and drainage <i>Amend: 1, 2, 3, 4</i>	AS1 7.1.3, 8.0.1, 8.0.2, 8.1, VM2 1.0.1 Comment, AS2 6.1.3, 7.0.2, 7.1 AS3 1.0.2
	AS/NZS 3518:2004 Acrylonitrile butadiene styrene (ABS) compounds, pipes and fittings for pressure applications <i>Amend: 1</i>	AS2 Table 1
	AS/NZS 4058: 2007 Pre cast concrete pipes (pressure and non pressure)	AS2 Table 1
	AS/NZS 4130: 2009 Polyethylene (PE) pipe for pressure applications <i>Amend: 1</i>	AS2 Table 1
Amend 3 Sep 2010	AS/NZS 4401: High density polyethylene (PE-HD) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings 2006	AS1 Table 1
Amend 3 Sep 2010	AS/NZS 4936: 2002 Air Admittance valves for use in sanitary plumbing and drainage systems.	AS1 Table 1
Amend 4 Oct 2011	AS/NZS 5065: 2005 Polyethylene and polypropylene pipe and fittings for drainage and sewerage applications <i>Amend: 1</i>	AS2 Table 1
	<b>European Standards</b>	
	EN 12380: 1999 Air admittance valves for drainage systems – Requirements and test methods	AS1 5.8.2, Table 1
	<b>American Society of Sanitary Engineers</b>	
	ASSE 1050: 1991 Performance requirements for air admittance valves 1for plumbing DWV systems stack type devices	AS1 5.8.2, Table
	ASSE 1051: 1992 Performance requirements for air admittance valves for plumbing drainage systems	AS1 5.8.2, Table 1

Amend 1  
Jun 2007

# Definitions

Amend 1  
Jun 2007

This is an abbreviated list of definitions for the words or terms particularly relevant to these Verification Methods and Acceptable Solutions. The definitions for any other italicised words may be found in the New Zealand Building Code Handbook.

Amend 5  
Feb 2014

**Access chamber** A chamber with working space at *drain* level through which the *drain* passes either as an open channel or as a pipe incorporating an *inspection point*.

**Access point** A place where access may be made to a *drain* or *discharge pipe* for inspection, cleaning or maintenance; and may include a *cleaning eye*, *inspection point*, *rodding point*, *inspection chamber* or *access chamber*.

**Adequate** *Adequate* to achieve the objectives of the *building code*.

**Air admittance valve** A valve that allows air to enter but not to escape in order to limit pressure fluctuations within the sanitary plumbing or drainage system.

**Branch discharge pipe** A *discharge pipe* that serves one or more *fixture discharge pipes* for any one floor.

**Branch vent pipe** A *vent pipe* that serves two or more *fixture vent pipes*.

Amend 1  
Jun 2007

**Building** has the meaning ascribed to it by Sections 8 and 9 of the Building Act 2004.

**Cleaning eye** A small *diameter access point* usually formed as part of a fitting or trap.

**Combined waste pipe** A *discharge pipe* which serves two or more *waste pipes*.

**Developed length** The total length along the centre line of a pipe including fittings and bends.

**Diameter (or bore)** The nominal internal *diameter*.

**Discharge pipe** Any pipe that is intended to convey discharge from *sanitary fixtures* or *sanitary appliances*.

**Discharge stack** A *discharge pipe* that has one or more *discharge pipe* connections, and which is vented at one end via a *discharge stack vent*.

**Discharge stack vent** A *vent pipe* connected to the top of the *discharge stack*.

**Discharge unit** The unit of measure for the discharge (hydraulic load) in the *plumbing system*, and is based on the rate, duration and frequency of discharge from a *sanitary fixture* or *sanitary appliance*.

**Drain** A pipe normally laid below ground level including fittings and equipment and intended to convey *foul water* or *surface water* to an *outfall*.

**Drain vent pipe** Any pipe which is intended to permit the movement of air into and out of the *drain* and *sewer*.

**Fixture** An article intended to remain permanently attached to and form part of a *building*.

**Fixture discharge pipe** A *discharge pipe* that is used to convey waste from a single *sanitary fixture* or *sanitary appliance* to a *branch discharge pipe*, a *discharge stack*, or directly to a *drain*. It does not include any pipes forming part of a *sanitary appliance*.

**Fixture vent pipe (trap vent)** A *vent pipe* that is connected to a *fixture discharge pipe* or the *sanitary fixture* itself.

**Floor waste** An outlet located at the low point of a graded floor or in a level floor designed to receive accidental or intentional discharges.

**Floor waste pipe** A pipe that receives the discharge from a *floor waste* and that discharges outside the *building* or to the *foul water* drainage or *sanitary plumbing system*.

**Foul water** The discharge from any *sanitary fixture* or *sanitary appliance*.

**Foul water drainage system** *Drains*, joints and fittings normally laid underground and used specifically for the conveyance of water from the *plumbing system* to an *outfall*.

**Grease trap** A device designed to intercept grease in a *foul water* discharge.

**Gully trap** A fitting designed to prevent foul air escaping from the drainage system and used to receive the discharge from *waste pipes*.

**Inspection chamber** A chamber with working space at ground level through which the *drain* passes either as an open channel or as a pipe incorporating an *inspection point*.

**Inspection point** A removable cap at *drain* level through which access may be made for cleaning and inspecting the drainage system.

**Network utility operator** means a person who—

- a) undertakes or proposes to undertake the distribution or transmission by pipeline of natural or manufactured gas, petroleum, biofuel, or geothermal energy; or
- b) operates or proposes to operate a network for the purpose of—
  - i) telecommunication as defined in section 5 of the Telecommunications Act 2001; or
  - ii) radiocommunications as defined in section 2(1) of the Radiocommunications Act 1989; or
- c) is an electricity operator or electricity distributor as defined in section 2 of the Electricity Act 1992 for the purpose of line function services as defined in that section; or
- d) undertakes or proposes to undertake the distribution of water for supply (including irrigation); or
- e) undertakes or proposes to undertake a drainage or sewerage system.

**Outfall** That part of the disposal system receiving *surface water* or *foul water* from the drainage system. For *foul water*, the *outfall* may include a *sewer* or a septic tank. For *surface water*, the *outfall* may include a natural water course, kerb and channel, or soakage system.

**Plumbing system** Pipes, joints and fittings, laid above ground and used for the conveyance of *foul water* to the *foul water drain* and includes *vent pipes*.

**Relief vent** A *vent pipe* which is connected to a *discharge stack* below the lowest branch connection and which connects at its upper end to the *discharge stack vent* or terminates as an open vent.

**Rodding point** A removable cap at ground level through which access may be made for cleaning and inspecting the drainage system.

**Sanitary appliance** An appliance which is intended to be used for *sanitation* and which is not a *sanitary fixture*. Included are machines for washing dishes and clothes.

**Sanitary fixture** Any *fixture* which is intended to be used for *sanitation*.

**Sanitation** The term used to describe the activities of washing and/or excretion carried out in a manner or condition, such that the effect on health is minimised, with regard to dirt, contamination and infection.

**Sewer** A *drain* that is under the control of, or maintained by, a *network utility operator*.

**Soil fixture** A *sanitary fixture* constructed to receive solid and/or liquid excreted human waste. It includes bedpan disposal units, slop sinks, urinals, water closet pans, and water-flushed sanitary towel disposal units.

**Surface water** All naturally occurring water, other than sub-surface water, which results from rainfall on the site or water flowing onto the site, including that flowing from a **drain**, stream, river, lake or sea.

**Vent pipe** A pipe for the purpose of protecting *water seals* that at its upper end is either open to the atmosphere or fitted with an *air admittance valve* and that at its lower end is connected to a *discharge pipe*.

**Waste pipe** A *discharge pipe* that conveys the discharge from *waste water fixtures* to a *gully trap*.

**Waste water fixture** A *sanitary fixture* or *sanitary appliance* used to receive wastes, and which is not a *soil fixture*.

**Water seal** The depth of water that can be retained in a *water trap*.

**Water trap** A fitting designed to retain a depth of water that prevents foul air and gases escaping from the *plumbing system* or *foul water drainage system* and entering a *building*.

# Verification Method G13/VM2 Drainage

## 1.0 Drainage

---

**1.0.1** No specific methods have been adopted for verifying compliance with the Performance of NZBC G13.

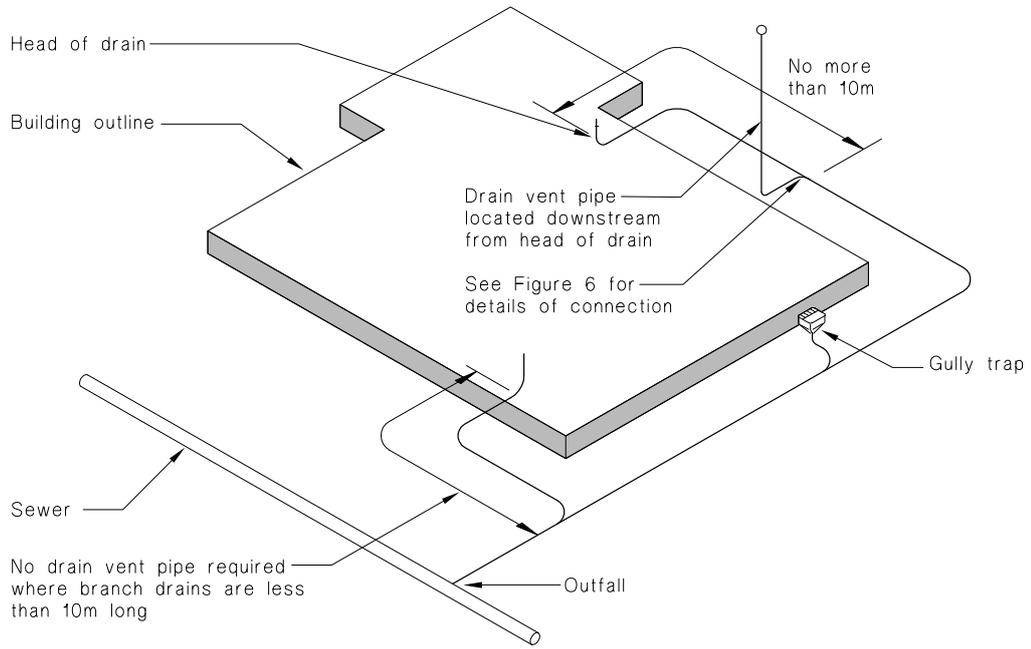
**COMMENT:**

AS/NZS 3500.2 is referenced in G13/AS3.

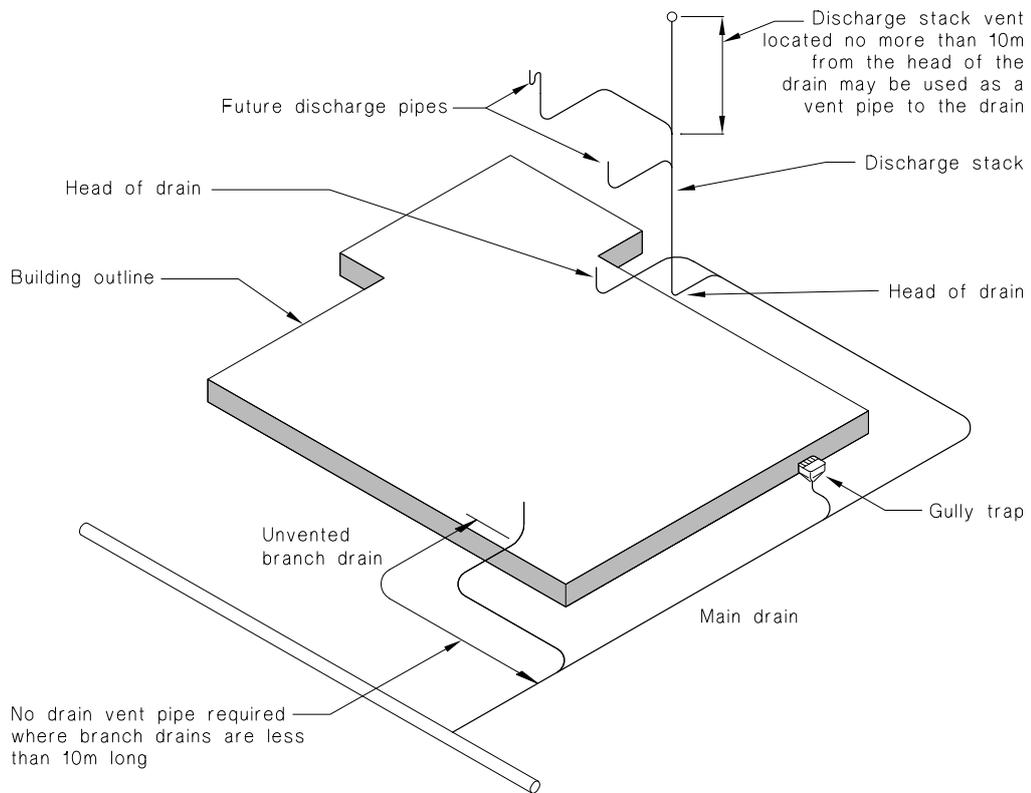
Amend 5  
Feb 2014



**Figure 5:** Position of drain vent pipe  
Paragraphs 4.1.3, 4.1.4 and 4.1.5

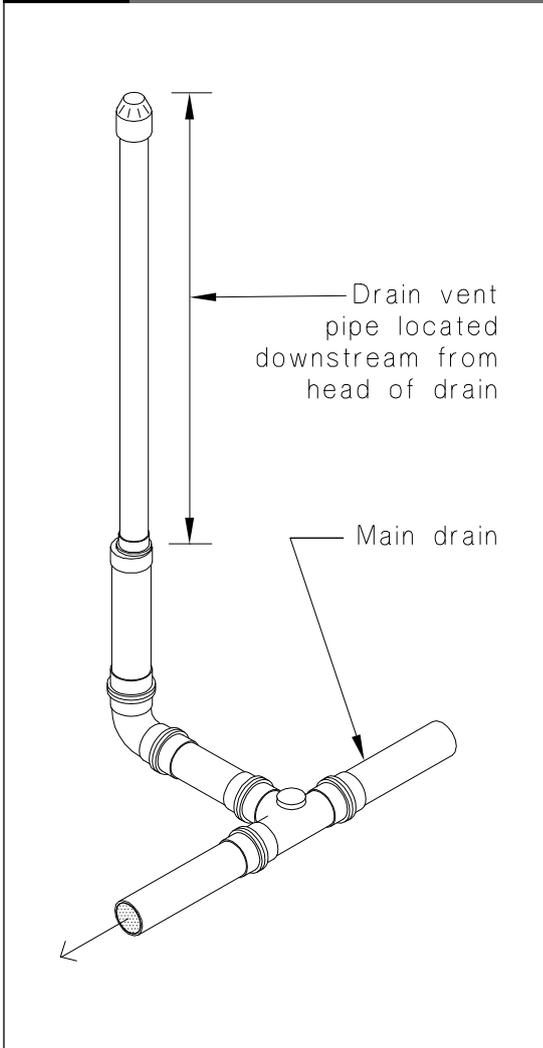


**(a) Drain vent pipe**



**(b) Discharge stack used to ventilate drain**

**Figure 6:** Typical drain vent connection  
Paragraph 4.1.4



**5.3.2** Drains laid in ground described in Paragraph 5.3.1 shall be subject to specific design.

#### 5.4 Trench width

**5.4.1** The width B of the trench shall be no less than the pipe diameter D plus 200 mm. The width of the trench at the top of the pipe shall be no more than 600 mm unless the pipes in the trench are covered with concrete, as shown in Figure 7 (c).

#### 5.5 Placing and compacting

**5.5.1** Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid.

**5.5.2** Side bedding (along both sides of the pipe) and cover bedding (where used) up to 300 mm above the pipe, shall be compacted.

#### 5.6 Proximity of trench to building

**5.6.1** For light timber framed and concrete masonry buildings constructed to NZS 3604 or NZS 4229 in accordance with B1/AS1 pipe trenches which are open for no longer than 48 hours shall be located no closer than V to the underside of any building foundation, as shown in Figure 8. Where the trench is to remain open for periods longer than 48 hours the minimum horizontal separation shall increase to 3V in all ground except rock.

Amend 5  
Feb 2014

#### 5.7 Access points

**5.7.1** Except in accordance with Paragraphs 5.8 and 5.9, all drains shall be laid to allow easy access for maintenance and the clearance of blockages.

**5.7.2** Drains shall be provided with access points to facilitate cleaning and the clearance of blockages. Such access points shall be constructed to prevent the ingress of ground water and tree roots.

**5.7.3** Access points may comprise access chambers, inspection chambers, rodding points or inspection points. Methods of access point construction are shown in Figures 9 to 12.

#### COMMENT:

Rodding points are preferred to inspection points in landscaped or sealed areas and within buildings.

# Acceptable Solution G13/AS3

## Plumbing and drainage

### 1.0 Installation of PVC-U pipe

**1.0.1** AS/NZS 2032 is an Acceptable Solution for the installation of PVC-U pipe and fittings, but may exceed the performance criteria of NZBC G13.

### 1.0.2 AS/NZS 3500.2

AS/NZS 3500.2, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 13, as modified by Paragraph 1.0.3, is an Acceptable Solution for plumbing and drainage.

### 1.0.3 Modifications to AS/NZS 3500.2

- Clause 2.2** Delete and replace with "Materials and products shall comply with NZBC B2 and G13/AS1 Paragraph 2.0 Materials".
- Clause 2.8.7** Delete clause.
- Clause 3.5.1 (d)** Delete and replace with "Drains shall not be installed in water courses".
- Clause 3.16** Delete "(a) Mortar jointed vitrified clay pipes shall not be re-used".
- Section 3.19** Delete section.
- Section 4.4** Replace "inspection shafts" with "access point" in this section.
- Clause 4.6.6.1** This applies only to Housing.
- Clause 4.8.3** Delete and replace with "Access and inspection chambers shall be as required by G13/AS2."
- Clause 5.6** Delete and replace with "Drains in other than stable ground shall be subject to specific design."

**Clause 11.2** Replace "AS 1428" with "NZBC G1 or NZS 4121".

**Clause 11.3.7** Replace "AS/NZS 3500.1" with "G12/AS1 or AS/NZS 3500.1".

Amend 1  
Jun 2007  
Amend 3  
Sep 2010

Amend 1  
Jun 2007

Amend 5  
Feb 2014



# Verification Method G13/VM4

## Foul Water: On-Site Disposal

### 1.0 General

---

#### 1.1 Scope

**1.1.1** This document describes the design methods for systems used for the collection, storage, treatment and disposal of *foul water*.

**1.1.2** A design method and construction details given in sections 5.1 to 5.5 and 6.1 to 6.2 of AS/NZS 1547 (and the appendices referred to in these sections), for the treatment of domestic *foul water* for flow rates up to a maximum 14,000 litres/week from a population equivalent of up to 10 persons, may be verified as satisfying the performance criteria of G13 Foul Water.

Amend 5  
Feb 2014

Amend 2  
Jun 2007

