Queensland Plumbing and Wastewater Code

Version 2025

Queensland Government

Contents

A Introduction and general provisions.

A1 Commencement

Queensland Plumbing and Wastewater Code Version 2025: V**1** commences on XXXX

A1.1 Introduction

Purpose of the Queensland Plumbing and Wastewater Code

The Queensland Plumbing and Wastewater Code (QPW Code) sets out Queensland specific plumbing and drainage standards.

The QPW Code:

(a) adopts standards in relation to matters not covered by the Plumbing Code of Australia (PCA) (National Construction Code, Volume 3) or
(b) imposes higher standards over and above the requirements of the PCA or
(c) replaces requirements of the PCA.

Relationship with the Plumbing Code of Australia

The PCA provides a nationally uniform set of technical plumbing and drainage standards. Where there is any inconsistency between the PCA and the QPW Code, or the QPW Code has additional requirements, the QPW Code prevails to the extent of any inconsistency.

A1.2 Commencement

This version of *Queensland Plumbing and Wastewater Code* commences on [DAY MONTH YEAR] and replaces *Queensland Plumbing and Wastewater Code 2024.1,* which commenced on 26 April 2024.

Note: A new format of versioning has been introduced to maintain continuity of documents.

Version	Publication date	Commencement date	Changes
1		26/03/2019	• Nil. Full version change to new template.
2024.1	18/04/2024	26/04/2024	• Updated format and numbering scheme • Removed AS1456.4:2016 from referenced standards. • Included Schedule 1 – Greywater Treatment Plant Testing Approval requirements. • Included new definitions for low, medium and high exposure categories for greywater treatment plant systems • Inserted additional 'deemed-to-satisfy' solution under performance criteria C3.2 for low exposure greywater treatment plants • Reformatted notes to tables in Appendix 1

2025	XX/XX/XXXX	XX/XX/XXXX	• Table A4.0 name • Updated to include new provisions to facilitate a urine diversion trial. • Include new definitions to align with the new provisions for a urine diversion trial • Section C3 name change • Minor typographical edits to Schedule 1

A2 Application

The QPW Code has been designed to provide performance solutions to meet the statutory requirements of the *Plumbing and Drainage Act 2018* (the Act).

Objectives and functional statements are informative only and are included to provide an aid to interpreting the *performance requirements*. Objectives are the community expectations and functional statements describe how to meet those community expectations.

A3 Compliance

Compliance with the QPW Code is achieved by satisfying the performance requirements.

Meeting the performance requirements

Performance requirements have been developed to meet the objectives and functional statements. The deemed-to-satisfy solutions provide a simple and direct manner of meeting the performance requirements.

Where legislation requires compliance with the QPW Code, compliance with the *performance requirements* is mandatory.

The *performance requirements* can only be satisfied by a:

(a) *deemed-to-satisfy solution*; or

(b) *performance solution*; or

(c) *combination of the solutions* of (a) and (b).

A4 Referenced standards

The table below sets out the number and title of each Australian Standard referred to in this Code. The Australian Standards are the editions as amended from time to time by Standards Australia and as referenced by the PCA.

Table A4.0 – Referenced standards

Number	Year	Title
AS/NZS 1546	2008	Part 1: Septic Tanks
AS 1546	2008	Part 2: Waterless composting toilets
AS 1546	2017	Part 3: Secondary treatment systems
AS/NZS 1547	2012	On-site wastewater management
AS/NZS 3500	2021	Part 1: Water Services
	2021	Part 2: Sanitary plumbing and drainage

	2021	Part 4: Heated Water

A4.1 Restrictions and exclusions

Australian Standard AS/NZS 3500.1, section 6, applies only to:

(a) the method of preventing the water supply to premises being contaminated or polluted; and
(b) the method of jointing, supporting, or fixing of the plumbing; and
(c) the use of an item allowed under section 65 of the Act.

A5 Explanatory information

The Objectives and Functional Statements of the QPW Code are explanatory information only and purely for the purpose of aiding interpretation and to assist in providing guidance on the intent of the Performance Requirements. They have no regulatory status.

A6 Definitions

Unless noted otherwise, all terms have the same meaning as defined in the Act, Plumbing and Drainage Regulation 2019 (the Regulation), PCA or a relevant Australian/New Zealand Standard.

If a provision (including a definition) in the QPW Code is inconsistent with a provision in the PCA or in a part of the Queensland Development Code (QDC) prescribed by regulation, the QPW Code provision prevails to the extent of the inconsistency.

If a provision (including a definition) in the PCA is inconsistent with a provision in a part of the QDC prescribed by regulation, the provision in the QDC prevails to the extent of the inconsistency.

Note: *Italicised* words within the body of the text, other than legislation titles, are defined below.

amenity means an attribute which contributes to the health, physical independence, comfort, and wellbeing of people.

automatic switching device means a device that controls the *water supply* to plumbing outlets by automatically switching from *rainwater tank* water to the service provider's water supply when the water level in the *rainwater tank* is insufficient to meet the premises demand.

Biochemical Oxygen Demand (BOD_5) as defined in AS 1546.3:2017.

class 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10, in relation to a building, mean the definitions as specified in the PCA.

closed loop greywater treatment system means a system incorporating:
(a) a source water tank containing greywater from appliance/s.
(b) a greywater treatment plant.
(c) provisions for make-up water.
(d) provisions for bleed water to be disposed of to the sewer or approved discharge point.
(e) a treated water storage tank used to supply the treated water to appliance/s for re-use.

cold-water service means *supply pipes* that supply cold-water.

common property has the meaning provided in section 10 of the *Body Corporate and Community Management Act 1997.*

community titles scheme see section 10 of the *Body Corporate and Community Management Act 1997.*

complying valve means a device incorporated as part of the *water meter* which a *water service provider* can use to securely restrict the flow of water, either partially or fully, to the *meterable premises,* installed upstream of a *water meter*.

deemed-to-satisfy solution means a method of satisfying the *performance requirements.*

design life means the period during which the item is designed to meet the *performance criteria.* It is to be a minimum of 15 years.

disinfection as defined in AS 1546.3:2017.

drinking water means water intended primarily for human consumption but which has other domestic uses.

dry-vault toilet means a system for disposing human waste incorporating a chamber that:
(a) receives and treats the waste; and
(b) uses a biological degradation or dehydration process to treat the waste; and
(c) does not use water other than water for cleaning or to help the biological degradation process.

efficient irrigation system means a fixed *outdoor irrigation system* consisting of a network of permanent piping connected to *emitters* which has been designed and installed to water a specific landscape area and will reduce the maximum output capacity.

emitter means a *device* of any kind fitted on a pipe which is operated under pressure to discharge water in a spray, mist, or drip form. Common types of *emitters* include drippers, micro-sprayers, pop-up and gear-drive sprays, and fixed sprinkler heads.

escherichia coli (e. coli) as defined in AS 1546.3:2017.

greasy waste means liquid waste containing grease or oils, that is generated by a commercial business, generally from food preparation activities, that is discharged into sanitary drainage.

greywater means wastewater from a bath, basin, kitchen, laundry, or shower, whether or not the wastewater is contaminated with human waste.

greywater diversion device means a device that:
(a) diverts greywater to sanitary drainage or a land application area; and
(b) if the device forms part of a greywater use facility:
(c) automatically diverts greywater from the facility to sanitary drainage if the facility does not work properly or at all; and
(d) allows greywater from the facility to be manually diverted from the facility to sanitary drainage.

greywater treatment plant means a *plant* installed on premises for treating, on the premises, *greywater* produced on the premises.

greywater use facility means a facility consisting of:
(a) a greywater diversion device and a land application area; or
(b) greywater treatment plant, with or without a land application area.

heated water has the meaning given by the Plumbing Code of Australia.

high exposure treatment plant means a greywater treatment plant that produces effluent of a quality prescribed in Tables S2 and S3.

influent as defined in AS 1546.3:2017.

land application area means an area where greywater, or effluent from an *on-site sewage treatment plant* is disposed of by subsurface or surface irrigation.

low exposure treatment plant means a greywater treatment plant that produces effluent of a quality as prescribed in Tables S2 and S3.

loss means either: physical damage, financial *loss,* or *loss* of *amenity*.

manufacturer means any person, company or firm and any nominated representative of the company or firm that manufactures or assembles a greywater treatment plant.

medium exposure treatment plant means a greywater treatment plant that produces effluent of a quality prescribed in Tables S2 and S3**.**

meterable premises means:
(a) all class 1 buildings.
(b) each lot within a community title scheme, including the common property, in a water service provider's area.
(c) the sole-occupancy unit of a class 2, 4, 5, 6, 7 or 8 building in a water service provider's area.
(d) each storey of a class 5 building in a water service provider's area where the building consists of more than one storey and sole-occupancy units are not identified at the time of the building's plumbing compliance assessment.

NATA *means the National Association of Testing Authorities, Australia.*

nephelometric turbidity unit (NTU) *as defined in AS 1546.3:2017.*

on-site sewage facility means:

(a) a facility, other than an *environmentally relevant on-site sewage facility*, installed on premises, that includes:
  (i) an *on-site sewage treatment plant* on the premises for treating sewage produced on the premises; and
  (ii) either
    (A) a land application area on the premises for disposal of the effluent produced by the *on-site sewage treatment plant*; or
    (B) a tank for storing on the premises the effluent produced by the *on-site sewage treatment plant* for later disposal off the premises by collection from the tank; or
(b) a facility, other than an *environmentally relevant on-site sewage facility*, installed on premises, that:
  (i) includes an *on-site sewage treatment plant* on the premises for treating sewage produced on the premises; and
  (ii) disposes of the effluent produced by the *on-site sewage treatment* plant off the premises -
    (A) if the facility is installed for testing purposes only – into a sewage system; or
    (B) by common effluent drainage; or
    (C) in another way, stated in the permit issued for the installation of the facility; or
(c) a *dry-vault toilet* or a chemical, composting or incinerating toilet, or
(d) a holding tank for storing sewerage installed on premises

on-site sewage treatment plant means a sewage treatment *plant* that is/or is designed to be part of an *on-site sewage facility* installed on premises.

on-site wastewater management system means a system installed on premises that receives and treats wastewater generated on the premises and applies the resulting effluent to an approved disposal or *land application area* (including an *on-site sewage facility* but excluding a *greywater use facility*).

outdoor irrigation system means a network of permanent piping connected to *emitters* which has been designed and installed to water a specific landscape area.

performance requirement means a requirement which states the level of performance which a *performance solution* or *deemed-to-satisfy solution* must meet.

performance solution means a method of complying with the *performance requirements* other than by a *deemed-to-satisfy solution.*

pH as defined in AS 1546.3:2017.

plant means an *on-site sewage treatment plant* or a *greywater treatment plant.*

point of connection has the meaning given by the PCA.

premises group means the land comprised in two or more premises, all the owners of which have mutual rights and obligations under the *Body Corporate and Community Management Act*

1997 or the *Building Units and Group Titles Act 1980* for their respective ownerships, and includes the *common property* forming part of:

(a) if the premises are lots included in a community titles scheme under the *Body Corporate and Community Management Act 1997*—the scheme land under that Act; or

(b) if the premises are lots under the *Building Units and Group Titles Act 1980*—the parcel of which the premises form part.

public area means an area to which the public has lawful access, for example, a footpath.

Queensland Urban Utilities means the Central SEQ Distributor-Retailer Authority established under section 8(b) of the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009* and registered as a service provider under section 22(2)(a) of the *Water Supply (Safety and Reliability Act) 2008*.

rainwater tank means a covered *tank* or combination of covered *tanks* used to collect rainwater from a building roof.

secondary on-site sewage treatment plant means an *on-site sewage treatment* plant that produces effluent of a quality equal to or higher than secondary quality effluent.

secondary quality effluent means effluent quality which meets the performance and effluent compliance criteria treatment levels specified in Schedule 1.

site and soil evaluation report mean an *assessment* of the legal constraints, financial consequences, and the risks to public health and the environment of an *on-site sewage facility* or *greywater use facility*.

sole-occupancy unit, in relation to a building, means:

(a) a room or other part of the building for occupation by one or a joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier, including:
  (i) a dwelling; or
  (ii) a room or suite of associated rooms in a building classified under the Building Code of Australia as a *class 2, 4, 5, 6, 7* or *8* building; or

(b) any part of the building that is a *common property.*

storey means a space within a building which is situated between one floor level and the floor level next above, or if there is no floor next above, the ceiling or roof above, but not:

(a) a space that contains only:
  (i) a lift shaft, stairway, or meter room; or
  (ii) a bathroom, shower room, laundry, water closet, or sanitary compartment; or
  (iii) accommodation intended for not more than three vehicles: or
  (iv) a combination of the above; or

(b) a mezzanine.

supply pipes mean a pipe for supplying water within premises.

tank means:

(a) a covered tank, or combination of covered tanks used to collect stormwater and recycled water; or

(b) a rainwater tank.

test period means the total period that a greywater treatment system is subject to testing requirements,

total suspended solids (TSS) as defined in AS 1546.3:2017.

treatment plant approval means:

(a) a treatment plant testing approval; or

(b) a treatment plant use approval.

trickle top-up system means a system that provides an approved plumbing connection between the *water service provider's water supply* and a *rainwater tank* in accordance with AS/NZS 3500.1.

urine diverter toilet means a toilet designed to separate urine from faeces.

urine diversion trial means a trial of urine diverter toilets authorised under the *Plumbing and Drainage Regulation 2019*.

urine treatment plant is a plant used to receive urine from a *urine diverter toilet* and convert the urine into fertilizer as part of the *urine diversion trial*.

water meter means a device, and related equipment, for measuring the volume of water supplied to premises.

Example of equipment related to *the device—a pulse meter associated with the device.*

water service means:
(a) water harvesting or collection, including, for example, water storages, groundwater extraction or replenishment and river water extraction; or
(b) the transmission of water; or
(c) the reticulation of water; or
(d) drainage, other than stormwater drainage; or
(e) water treatment or recycling.

water service provider for premises, means the person registered under the *Water Supply (Safety and Reliability) Act 2008*, Chapter 2, Part 3, as the *water service provider* for retail *water services* for the premises.

water supply system means infrastructure used to supply water to premises, whether or not the infrastructure is also used to store or treat water, that consists of –
(a) a water main; and
(b) a pipe that connects the water main to the premises; and
(c) any of the following-
  (i) valves;
  (ii) engines;
  (iii) pumps;
  (iv) machinery;
  (v) other works.

WC cistern means water closet cistern.

Performance criteria and acceptable solutions

B Water services

B1 Cold-water services

Introduction to this part

This Part sets out additional requirements to the PCA for the design, construction, installation, replacement, repair, alteration, and maintenance of any part of a *cold-water service* of a property that is connected to the *drinking water* supply, from the *point of connection* to the points of discharge.

Objective

BO1 The objective of this part is to:
(a) safeguard people from illness, injury, or *loss* (including *amenity*) due to the failure of a cold-water installation; and
(b) ensure that a cold-water installation (including an installation provided for use by people with a disability) is suitable; and
(c) conserve water and energy; and
(d) safeguard the environment; and
(e) safeguard public and private infrastructure; and
(f) ensure that a cold-water installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy objectives (a) to (e).

Functional statements

F1.1 Sanitary fixtures, sanitary appliances and supply outlets provided with *drinking water* must have safe and adequate piped water supply.

F1.2 The *cold*-water *service* must be conveyed through plumbing installations in a way that minimises any adverse impact on building occupants, the *water service provider's* infrastructure, property, and the environment.

B1.1 Building supply pipes to water main standard.

Performance requirements

P1 *Supply pipes* for *premises* or a *premises group* must provide an efficient water supply for the *premises* or *premises group*.

Deemed-to-satisfy solutions

D1 The design and installation of *supply pipes* supplying *premises* or *premises group* must comply with:

(a) AS/NZS 3500.1; or
(b) design requirements for water infrastructure published by the Local Government or *water service provider* for the area.

In this section:

premises group includes a proposed *premises group*.

Note:

1. *Supply pipes for premises* or a *premises group* are not the property of the *water service provider*. *Water service providers* are not responsible for the maintenance of the *supply pipes* for *premises* or a *premises group* downstream from the connection point to the *water service provider's* water main.

B1.2 Water meters for new premises

Performance requirements

P1 The *water supply* to a *meterable premises* must be fitted with a device (*water meter*) to measure the amount of water supplied to the premises.

P2 A *water meter* must be located so it is easy to read and maintain.

P3 A *water meter* must be properly maintained.

P4 The installation of a *water meter* includes a device which allows for the restriction of the flow of water from the *water service* to the *water meter*.

Deemed-to-satisfy solutions

D1 Each *water supply* to a *meterable premises* is to be fitted with a *water meter* which:

(a) measures only the water supplied by that water supply to that *meterable premises*; and
(b) is approved by the *water service provider*; and
(c) complies with relevant requirements of the *water service provider* that may be imposed under the *Water Supply (Safety and Reliability) Act 2008*.

D2 The *water meter* is:

(a) located so that it can be easily maintained and read from *common property* or *public area*; and
(b) installed:
    (i) in *common property*; or

less than 3 m from a property boundary within a *public area.*

D3 The *water meter* has a *complying valve.*

B1.3 Water conservation for class 1 and class 2 buildings

Performance requirements

P1 For lots which have a *class 1* or *class 2* building, in areas serviced by a *water service provider*, *outdoor irrigation systems* installed or replaced on or after 1 March 2009 must facilitate the efficient use of water.

Deemed-to-satisfy solutions

D1 For lots which have a *class 1* or *class 2* building, in areas serviced by a *water service provider*, *outdoor irrigation systems* installed or replaced on or after 1 March 2009 comply with Department of Resources[1] guidelines for an *efficient irrigation system - 'Efficient Irrigation for Water Conservation'* when:

(a) connected to a *water service provider's water service*; or
(b) connected to a *rainwater tank* where the *rainwater tank* has a continuity of supply from a *water service provider's water service* through either:
    (i) a *trickle top-up system*; or
    (ii) an *automatic switching device* where the off take is located downstream of the *automatic switching device*.

B1.4 Water storage tanks

Performance requirements

P1 Water from a *tank* must not contaminate the *drinking water* within a *water service providers water supply system*.

Deemed-to-satisfy solutions

D1 Where a *tank* is installed, the *water service providers water supply system* is protected from the potential of back-flow, by the installation of:

(a) a *back-flow prevention device* that complies with PCA; or
(b) for a *rainwater tank*, a dual-check valve with an atmospheric port.

Note: Approval may be required from the *water service provider* or local government authorising any connection or discharge of the water service provider's water supply to a tank used to store water obtained from another source.

B1.5 Integrated basins and Water Closet cistern

Performance requirements

P1 Installation of an *integrated system* must avoid the likelihood of contamination of any *water supply system*.

P2 Installations intended for personal hygiene must be provided with a suitable *cold-water service*.

Deemed-to-satisfy solutions

D1 An *integrated system* may only be installed in a residential building classified under the PCA as a *class 1a, 2, 4* or *10a* building.

D2 Water supplied to the *integrated system* must be:

(a) *drinking water* or rainwater; and
(b) supplied to the basin directly from the system tap when the toilet is flushed.

D3 The basin must be attached to the top of the *WC cistern*.

D4 Water from the basin must be discharged directly into the *WC cistern*.

[1] https://www.resources.qld.gov.au/__data/assets/pdf_file/0010/1463779/efficient-irrigation-guideline.pdf

D5 Water from the *WC cistern* must be discharged into a sanitary drain through the toilet pan.

In this section:

integrated system means a toilet that has, as an integral part, a basin that discharges *greywater* from the basin directly into the *WC cistern*.

system tap means a tap connected to a *supply pipe* that supplies water to the *integrated system*.

B2 Heated water services

Introduction to this Part

This Part sets out additional requirements to the PCA for the design, construction, installation, replacement, repair, alteration, and maintenance of any part of a *heated water service* of a property that is connected to the *drinking water* supply, from the *point of connection* to the points of discharge.

Objective

BO2 The objective of this part is to:

(a) safeguard people from illness, injury, or *loss* (including *loss* of *amenity*) due to the failure of a *heated water* installation; and
(b) ensure that a *heated water* installation (including an installation provided for use by people with a disability) is suitable; and
(c) conserve water; and
(d) safeguard the environment; and
(e) reduce greenhouse gas emissions; and
(f) safeguard public and private infrastructure; and
(g) ensure that a *heated water* installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy objectives (a) to (f).

Functional statements

BF2.1 Sanitary fixtures, sanitary appliances and supply outlets provided with *heated water* must have a safe and adequate piped *heated water* supply.

BF2.2 The *heated water* supply must be conveyed through *plumbing* installations in a way that:

(a) minimises any adverse impact on building occupants, the service provider's infrastructure, property, and the environment; and
(b) facilitates the conservation of water.

B2.1 Installation of solar heated water systems

Performance requirements

P1 The collectors for a solar *heated water system* must be installed to maximise solar gain and minimise energy *loss*.

Deemed-to-satisfy solutions

D1 The collectors for a solar *heated water* system must be installed in accordance with AS/NZS 3500.4, subject to D2 of this Part.

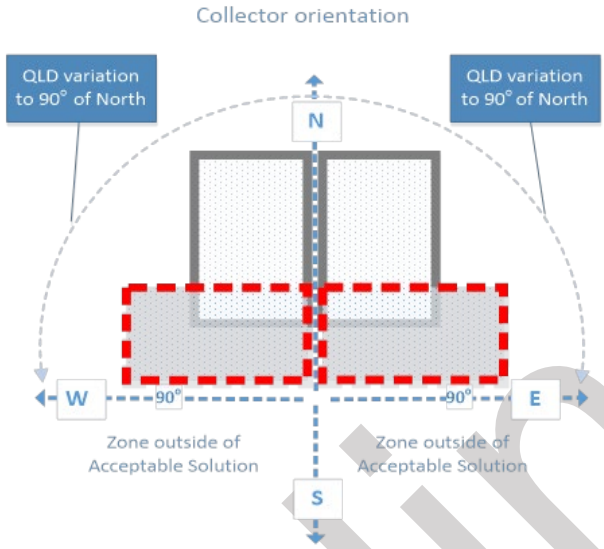
D2 For applying AS/NZS 3500.4, the references in clauses 6.5.1.2 and 6.5.1.3(a) of the standard to '45°' is taken to be a reference to '90°'.

Notes:

1 Clauses 6.5.1.2 and 6.5.1.3(a) provide that collectors must be installed so they face no more than 45° east or west of true north.

2 Under D2 orientation of a collector panel for a solar *heated water* system will comply with the *deemed-to-satisfy solution* requirement if it is installed within 90° east or west of true north. Refer to Figure 1.

Figure 1 - Orientation of collectors



B3 Nondrinking water services

Refer to Part B3 of the Plumbing Code of Australia.

B4 Fire-fighting water services

Refer to Part B4 of the Plumbing Code of Australia and the Building Act 1975.

B5 Cross-connection control

Refer to Part B5 of the Plumbing Code of Australia.

B6 Rainwater services

Refer to Part B6 of the Plumbing Code of Australia.

B7 Rainwater storage

Refer to Part B7 of the Plumbing Code of Australia.

C Sanitary plumbing and drainage systems

C1 Sanitary plumbing system

Introduction to this Part

This Part sets out the additional requirements to the PCA for the design, construction, installation, replacement, repair, alteration, and maintenance of any part of a sanitary plumbing system of a property including from sanitary fixtures and appliances to an approved disposal system.

Objective

CO1 The objective of this part is to:

(a) safeguard people from illness, injury or *loss* (including *loss* of *amenity*) due to the failure of a sanitary plumbing installation; and

(b) ensure that a sanitary plumbing installation (including an installation provided for use by people with a disability) is suitable; and
(c) conserve water and energy; and
(d) safeguard the environment; and
(e) safeguard public and private infrastructure; and
(f) ensure that a sanitary plumbing installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy objectives (a) to (e).

Functional statements

CF1.1 Sanitary fixtures and sanitary appliances must be provided with an adequate disposal system.

C2 Sanitary drainage systems

Introduction to this Part

This Part sets out the additional requirements for the design, construction, installation, replacement, repair, alteration, and maintenance of any part of a sanitary drainage system of a property including from sanitary fixtures and appliances to an approved disposal system.

Objective

CO2 The objective of this part is to:

(a) safeguard people from illness, injury, or *loss* (including *loss* of *amenity)* due to the failure of a sanitary drainage installation; and
(b) ensure that a sanitary drainage installation (including an installation provided for use by people with a disability) is suitable; and
(c) conserve water and energy; and
(d) safeguard the environment; and
(e) safeguard public and private infrastructure; and
(f) ensure that a sanitary drainage installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy objectives (a) to (e).

Functional statements

CF2.1 Sanitary fixtures and sanitary appliances must be provided with an adequate disposal system that does not impact adversely on occupants of the premises, property, the environment, or the *sewerage service provider's* infrastructure.

C2.1 Building sanitary drain to sewerage system standard

Performance requirements

P1 Sanitary drainage for premises or premises group must provide efficient drainage for the premises or premises group.

Deemed-to-satisfy solutions

D1 The design and installation of a main line of a sanitary drain servicing premises or a premises group must comply with:

(a) AS/NZS 3500.2; or
(b) design requirements for sewer infrastructure published by the Local Government or sewerage service provider for the area.

In this section:

premises group includes a proposed premises group.

main line: means a drain that provides connection points for multiple buildings but doesn't include main drains or branch drains of a single premises.

Note:

1. *A main line* of a sanitary drain servicing *premises* or a *premises group* is not the property of the *sewerage service provider*. *Sewerage service providers* are not responsible for the maintenance of a *main line* upstream from the connection point to the *sewerage service provider's* sewer main.

C2.2 Connection of appliances and fixtures to grease arrestors

Performance requirements

P1 The connection of an appliance or fixture used in a commercial premises that has the potential to discharge *greasy waste* to a sewerage system must be connected in such a way as to prevent *greasy waste* entering the sewer.

Deemed-to-satisfy solutions

D1 Any appliance or fixture installed in a commercial premises that may discharge *greasy waste* must connect to the sewerage system through a grease arrestor.

D2 An appliance or fixture discharging to a grease arrestor must be:

(a) fitted with a fixture trap; and
(b) vented in a way that is compliant with AS/NZS 3500.2.

D3 If the grease arrestor will collect *greasy waste* from floor areas, a 100 mm floor waste must be connected to the inlet pipe of the arrestor.

D4 If the distance between a fixture and a grease arrestor is greater than 2.5 m the diameter of the connecting pipe must be greater than 50mm.

C2.3 Requirements for grease arrestors

Performance requirements

P1 Grease arrestors must be:

(a) located in an accessible location; and
(b) designed, constructed, and installed to –
    (i) avoid the likelihood of *greasy waste* entering the sewerage system; and
    (ii) prevent foul air or odours; and
    (iii) avoid illness, injury, and *loss* to people.

Deemed-to-satisfy solutions

D1 A grease arrestor must:

(a) be of a size and design approved:
    (i) for premises in a sewered area—by the sewerage service provider, or
    (ii) for any other premises—by the local government.
(b) be installed:
    (i) in an accessible position to enable servicing.
    (ii) preferably outside a building; and
    (iii) as close as practicable to the appliance or fixtures the arrestor serves.
(c) have a gas-tight lid suitable for loads likely to be imposed.

D2 The grease arrestor outlet must:

(a) have a minimum diameter of 100 mm; and
(b) be fitted with a trap.

D3 Grease arrestors must have a:

(a) 100mm vent that complies with AS/NZS 3500.2 section 6.9 and is installed at the upper end of a drain that connects to the grease arrestor; and
(b) 100mm vent that complies with AS/NZS 3500.2 section 6.9 and is directly connected to the chamber.

D4 The clean-out point for a grease arrestor must be accessible.

C2.4 Vent pipes to be covered

Performance requirements

P1 A vent pipe must terminate at the upper end of a sanitary drain or sanitary plumbing installation in a manner that prevents the egress or ingress of animals, vermin or insects whilst still ensuring sufficient ventilation of the sanitary drainage system.

Deemed-to-satisfy solutions

D1 A vent pipe must have a vent cowl over the termination point of the vent pipe that has the same effective ventilation capacity as the vent pipe.

D2 If the vent pipe is connected to an *on-site sewage facility*, the vent cowl must be mosquito proof.

C3 On-site wastewater management

Introduction to this Part

This Part sets out additional requirements to the PCA for the design, construction, installation, replacement, repair, alteration, and maintenance of any part of an *on-site wastewater management system*.

Objective

CO3 The objective of this Part is to:

(a) safeguard people from illness, injury, or *loss* (including *loss* of *amenity*) due to the failure of an *on-site wastewater management system* installation; and
(b) ensure that an *on-site wastewater management system* installation (including an installation provided for use by people with a disability) is suitable; and
(c) conserve water and energy; and
(d) safeguard the environment; and
(e) safeguard public and private infrastructure; and
(f) ensure that an *on-site wastewater management system* installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy objectives (a) to (e).

Functional statements

CF3.1 *On-site wastewater management systems* must collect, contain, treat, and assimilate and process domestic-wastewater, human excreta, or both so that public health and environmental standards are maintained.

C3.1 On-site wastewater management systems

Performance requirements

P1 *On-site wastewater management systems* must be designed, constructed, installed, and maintained:

(a) to protect public health by ensuring that risks associated with the dispersal of wastewater to a *land application area* are minimised; and
(b) to protect the environment by ensuring:
    (i) surface, ground water and waterways are not polluted; and
    (ii) soil productivity is maintained or enhanced; and
(c) with adequate treatment and storage capacity for the volume of waste and frequency of disposal;
(d) with adequate size, strength and rigidity for the nature, flow rates, volume of wastes and/or waste products which must be processed;
(e) with adequate vehicle access for collection of waste from the facility;
(f) to avoid the likelihood of contamination of any *drinking water* supplies;
(g) from materials which are impervious both to the waste for which disposal is required and to water;

(h) to avoid the likelihood of foul air and gases accumulating within or entering into buildings or nearby premises;
(i) to avoid the likelihood of unauthorised access;
(j) to permit cleaning, maintenance, measurement and performance sampling;
(k) to avoid the likelihood of surface water and stormwater entering the system;
(l) to avoid the likelihood of unintended or uncontrolled discharge;
(m) to permit the manufacturer, model, serial number and design capacity to be easily identifiable after installation;
(n) to minimise nuisance (e.g., noise) to the occupants of nearby premises; and
(o) so that the installation throughout its *design life* will continue to satisfy the requirements of items (a) to (n).

Deemed-to-satisfy solutions

D1 Wastewater must be disposed of in a *land application area* which complies with C3.3 of the QPW Code.

D2 Septic *tanks* must comply with AS/NZS 1546.1.

D3 The design, commissioning, performance, and compliance testing of a *secondary treatment plant* must be in accordance with AS 1546.3.

D4 An *on-site wastewater management system* must be operated and maintained in accordance with the designer's or manufacturer's instructions.

D5 The size, determination, design, construction, installation, replacement, repair, alteration and maintenance of *on-site wastewater management systems* and *land application area* must be in accordance with AS/NZS 1547.

D6 The design, construction, installation, replacement, repair, alteration and maintenance of all sanitary plumbing and drainage for an *on-site wastewater management system* must be in accordance with AS/NZS 3500.2.

C3.2 Greywater use facility

Performance requirements

P1 A *greywater use facility* must be designed, constructed, installed, and maintained:

(a) to protect public health by ensuring that risks associated with the use and/or disposal of *greywater* to the *land application area* are minimised; and
(b) protect the environment by ensuring:
    (i) surface, ground water and waterways are not polluted; and
    (ii) soil productivity is maintained or enhanced.
(c) with adequate treatment and storage capacity for the volume of waste and frequency of disposal;
(d) with adequate size, strength and rigidity for the nature, flow rates, volume of wastes and/or waste products which must be processed;
(e) with adequate vehicle access for collection of waste from the facility;
(f) to avoid the likelihood of contamination of any *drinking water* supplies;
(g) from materials which are impervious both to the waste for which disposal is required and to water;
(h) to avoid the likelihood of foul air and gases accumulating within or entering into buildings or nearby premises;
(i) to avoid the likelihood of unauthorised access;
(j) to permit cleaning, maintenance, measurement and performance sampling;
(k) to avoid the likelihood of surface water and stormwater entering the system;
(l) to avoid the likelihood of unintended or uncontrolled discharge;
(m) to permit the manufacturer, model, serial number and designed capacity to be reasonably easily identifiable after installation;
(n) to minimise nuisance (e.g., noise) to the occupants of nearby premises; and

(o) so that the installation throughout its *design life* will continue to satisfy the requirements of items (a) to (n).

Deemed-to-satisfy solutions

D1 *Greywater* that is treated in a *closed loop greywater treatment system* must be used for the purpose, and comply with the requirements, set out in Table T1.

D2 The design, commissioning, installation, performance, and compliance testing of a *greywater treatment plant*, other than a *closed loop greywater treatment system*, must be in accordance with Schedule 1.

D2 Disposal of *greywater* to a *land application area* must comply with C3.3 of the QPW Code.

D3 The *greywater use facility* must be operated and maintained in accordance with the designer's or manufacturer's instructions.

D4 The design, construction, installation, replacement, repair, alteration and maintenance of all sanitary plumbing and drainage systems for a *greywater use facility* must be in accordance with AS/NZS 3500.

D5 All work for a *greywater treatment plant* must comply with the *treatment plant approval*.

D6 Low exposure effluent must be dispersed in accordance with Table S2 and S3.

C3.3 Land application area

Performance requirements

P1 A *land application area* must be designed, constructed, installed, and maintained in such a manner as to:

(a) complete the treatment, uptake and absorption of the final effluent within the boundaries of the approved application area;
(b) avoid the likelihood of the creation of unpleasant odours or the accumulation of offensive matter;
(c) avoid the likelihood of the ingress of effluent, foul air or gases entering buildings or nearby premises;
(d) avoid the likelihood of stormwater run-off entering the pipes;
(e) avoid the likelihood of root penetration or ingress of ground water entering the pipes;
(f) protect against internal contamination;
(g) provide adequate access for maintenance;
(h) incorporate adequate provisions for effective cleaning;
(i) avoid the likelihood of unintended or uncontrolled discharge;
(j) avoid the likelihood of blockage and leakage;
(k) avoid the likelihood of damage from superimposed loads or ground movement;
(l) avoid the likelihood of contamination of any *drinking water* supplies;
(m) avoid the likelihood of contamination of soils, ground water and waterways; and
(n) ensure that the installation throughout its *design life* will continue to satisfy the requirements of items (a) to (n).

Deemed-to-satisfy solutions

D1 The design of a *land application area* must take into account a *site and soil evaluation report* produced as a result of an on-site inspection carried out in accordance with AS/NZS 1547.

D2 The complies with the setback distances set out in Appendix 1, Part 2 and AS/NZS 1547..

D3 The design of a *land application area* for a *greywater treatment plant* must be based on a design flow of 100L per person per day.

D4 The *land application area* and any pump or motor are not located adjacent to bedrooms, living rooms or recreational areas of the premises or nearby premises.

C3.4 Composting, chemical, and incinerating toilets

Performance requirements

P1 Composting, chemical, and incinerating toilets must be designed, constructed, installed and maintained in such a manner as to:

(a) protect public health by ensuring that risks associated with the dispersal of waste are minimised; and
(b) protect the environment by ensuring:
  (i) surface and ground water are not polluted; and
  (ii) soil productivity is maintained or enhanced.

Deemed-to-satisfy solutions - general

D1 Composting, chemical, and incinerating toilets must be designed, constructed, maintained, and installed:

(a) with adequate storage capacity for the volume of waste and frequency of treatment of solids; and
(b) with adequate ventilation in the entire structure and chamber; and
(c) with as much natural lighting in the entire structure as possible; and
(d) to avoid untreated waste coming into contact with any person, or spill from it, when it is being operated, maintained, removed or cleaned; and
(e) to allow all waste liquids or spills to be contained and trapped, to prevent the liquids or spills being released outside the chamber when it is being operated, maintained, removed, or cleaned; and
(f) to withstand adverse effects from the environment including, for example, by heat, cold, humidity, gasses or sunlight; and
(g) to ensure the entire structure or the chamber and any associated inspection and access covers and/or extensions are integrally sound, and exclude penetration by roots, and entry or infiltration of rain, groundwater, insects, and vermin; and
(h) to avoid the likelihood of a child falling through the pedestal opening; and
(i) is finished in a way that provides a smooth surface internally and externally and free of recesses; and
(j) to allow access when it is being maintained, contents removed or cleaned; and
(k) to reduce the likelihood of unauthorised access by people; and
(l) to ensure its controls and working parts are easily used and can't be accidentally disturbed; and
(m) from materials which are durable and capable of withstanding normal operating conditions for the *design life* of the facility.

D2 The structure of a toilet must comply with the minimum floor dimensions and minimum useable floor area set out in the Building Code of Australia.

D3 The toilet door must be:

(a) constructed from a material that is impervious, opaque, impact and corrosion resistant and washable; and
(b) fitted to ensure privacy; and
(c) able to be latched closed from the inside and outside.

D4 The toilet must have a toilet seat.

Deemed-to-satisfy solutions – composting toilets

D5 The size, determination, design, and installation of waterless composting toilets must be in accordance with AS/NZS 1546.2.

Deemed-to-satisfy solutions – chemical toilets

D6 The chamber for a chemical toilet must:

(a) be designed in a way that ensures it will remain structurally sound when lifted, hoisted, or transported, including when the toilet is full; and
(b) if it is a freestanding unit, be fitted with suitable lifting loops or points to facilitate loading and off-loading from a delivery vehicle; and

(c) if it is a freestanding unit, be anchored against ground movement or seismic loads.

D7 The chamber floor for a chemical toilet must be:

(a) constructed from a material that is impervious, impact and corrosion resistant and washable; and
(b) unbroken and slip resistant; and
(c) raised above ground level and resist lateral and uplift loads.

D8 The chamber roof for a chemical toilet must be:

Constructed from a material that is impervious, translucent, impact and corrosion resistant and washable.

D9 A chemical toilet must:

(a) not include straight-drop or recirculation of contaminated material; and
(b) be fitted with a water seal bowl incorporating a counterbalanced flap arrangement that, when closed, is capable of holding a minimal water seal.

D10 The waste holding *tank* for a chemical toilet must:

(a) be moulded in one piece from impervious and impact and corrosion resistant material; and
(b) have a minimum capacity of 230 L; and
(c) have a suitable draw-off point through which the waste holding *tank* is emptied with a device to enable emptying of the *tank* without spillage; and
(d) have a draw-off point that is secured so that it can't be tampered with or opened by a person, other than a person authorised by the local government for the area in which the toilet is located.

D11 If a chemical toilet includes a urinal, the urinal must be:

(a) suitably trapped into the waste holding *tank*; and
(b) capable of being flushed with non-drinking water.

D12 If a chemical toilet has a flushing mechanism, it must be:

(a) effective; and
(b) watertight; and
(c) of durable quality; and
(d) capable of providing a minimum of 200 mL for each flush.

D13 If a chemical toilet includes a non-drinking water *tank* it must be not less than 20% of the volume of the toilet's waste holding *tank*.

D14 If the chemical toilet water *tank* is connected directly to a water supply it must be constructed with a reticulation that provides a 40mm air-break between the top water level and the water inlet.

Deemed-to-satisfy solutions – incinerating toilets

D15 The incinerating toilet must be designed and installed in a way that ensures during the incineration cycle or normal operation:

(a) it is fitted with an automatic safety valve to stop incineration; and
(b) the flue effluents are free from particulate matter; and
(c) the flue effluents are free from faecal and urine odours; and
(d) the flue pipe does not block the flue ways; and
(e) after it is installed, it is obvious when the burner is alight; and
(f) ash removal tray is easy to remove and clean; and
(g) the handles or knobs or parts that are removable, including, for example, the ash removal tray, to ensure a person removing the part has minimal contact with hot surfaces; and
(h) the incineration cycle does not alter the function of any components of the toilet or cause permanent deterioration of the toilet's surface finishes or surroundings; and
(i) the waste deposited onto the burning grid is reduced to ash in one firing cycle; and
(j) it must be capable of maintaining a CO/CO^2 ratio of less than 0.02; and
(k) if the burning cycle is interrupted, the toilet is capable of beginning a further completing burning cycle when the lid is closed; and

(l) sufficient inlet air is available to achieve efficient and effective combustion.

D16 If the incinerating toilet uses gas, it must be fitted with:

(a) a way of testing gas pressure; and
(b) a cut-off switch that cuts off the gas supply when the pressure is more than the capacity for which the toilet has been designed; and
(c) a flame safeguard system; and
(d) a pilot turn-off provision; and
(e) a manual shut-off valve that is upstream from the other controls on the pilot and main burner lines; and
(f) fitted with a built-in draught diverter; and
(g) its burner and ignition systems and bleed line terminations must be protected against heat damage; and
(h) its burner and ignition systems must be interlocked with the lid in a way that ensures the interlock system cannot be bypassed; and
(i) its burner and ignition systems and sensing devices must be fitted in a way that ensures they are stable.

D17 Any insulation material in an incinerating toilet must:

(a) be fixed in a way that ensures it can't slip or become dislodged from the toilet; and
(b) not contain asbestos; and
(c) be odour and fume free; and
(d) not be reactive to the application for which it is being used.

D Excessive noise

Refer to section D of the Plumbing Code of Australia.

E Facilities

Refer to section E of the Plumbing Code of Australia.

F Urine Diversion Trial

Introduction to this Part

This Part establishes requirements for the installation and operation of a *urine diverter toilet* as part of the *urine diversion trial*.

The *urine diversion trial* aims to extract nitrogen from urine, in the form of urea, before it is discharged into the sewerage system, enabling its potential use in applications such as agriculture. Additionally, by removing nitrogen from the standard wastewater stream, the trial seeks to positively impact the environment by reducing the amount of nitrogen released from sewerage treatment plants following treatment.

Objective

FO1 The objective of this Part is to:

(a) safeguard people from illness, injury or loss due to a failure of the *urine diverter toilet* during the *urine diversion trial*; and
(b) ensure that plumbing or drainage installed for the *urine diversion trial* is suitable; and
(c) conserve water and energy; and
(d) safeguard the environment; and
(e) safeguard public and private infrastructure; and
(f) ensure that the installation of the *urine diverter toilet* is designed and is capable of being maintained so that during the *urine diversion trial* it will continue to satisfy Objectives (a) to (e).

Functional statements

F1.1 The *urine diversion trial* must be provided with an adequate disposal system that does not impact adversely on the occupants of the premises, property, the environment, or the sewerage service provider's sewerage system.

F1.2 The *urine diversion trial* must only collect, contain, treat, and process urine in a way that ensures public health and environmental standards are maintained.

Performance requirements

P1 The *urine diversion trial* must ensure sewage, other than urinary waste, is transferred from a sanitary plumbing or drainage system to a sewerage service provider's sewerage system.

P2 *The urine diversion trial* must ensure that untreated urine or waste products from the *urine treatment plant* are transferred from the sanitary plumbing or drainage system to the sewerage system of a sewerage service provider.

P3 Plumbing and drainage for the *urine diversion trial* must be designed, constructed, installed and maintained in such a manner as to:

(a) protect public health by ensuring that:

(i) risks associated with the dispersal of waste are minimised;

(ii) suitable mechanisms are installed to ensure any waste can be immediately diverted to the sanitary plumbing or drainage system in the event of any overflow;

(iii) the entry of water, foul air and gases into any buildings is prevented via the sanitary plumbing or drainage system; and

(b) protect the environment by ensuring:

(i) surface and ground water are not polluted; and

(ii) soil productivity is maintained or enhanced.

P3 A *urine diverter toilet* must ensure efficient use of water through limiting flushing volumes.

Deemed-to-satisfy solutions

D1 A *urine diverter toilet* must be designed in a manner that:

(a) directs all faecal matter to the sanitary plumbing or drainage system;

(b) directs urine to a collection tank within the *urine treatment plant*;

(c) directs any overflow of urine from the collection tank to the sanitary plumbing or drainage system;

(d) a sanitary plumbing or drainage system must connect to a sewerage service provider's sewerage system, and

(e) includes a suitable water seal trap.

D2 the design, construction, installation, replacement, repair, alteration and maintenance of all sanitary plumbing and drainage systems for a *urine diverting toilet* as part of the *urine diversion trial* must be in accordance with AS/NZS 3500.

D3 A *urine diverter toilet* connected to a sanitary plumbing or drainage system must ensure the efficient use of *drinking water* by—

(a) limiting water usage from—

(i) a cistern or flushing device for a urinal to a flush volume of not more than 2.5 L for each:

- single urinal stall; or
- 600 mm length of a continuous urinal wall; and

(ii) a dual flush cistern or flushing valve that is connected to a water closet pan to a flush volume of not more than—

- 6 L and 3 L; or
- 4.5 L and 3 L; or

(b) water saving measures equivalent to or greater than those described in (a).

D4 A *urine diversion trial* must:

(a) have adequate capacity to collect the anticipated volume of urine waste;

(b) include a suitable overflow connection point;

(c) have adequate ventilation in the facility's entire structure and chamber;

(d) not expose untreated waste to any person;

(e) allow all waste liquids or spills to be contained or trapped to prevent any release or spill of the liquids;

(f) restrict access to unauthorised people; and

(g) ensure its system controls are secure.

Schedule 1 – Greywater Treatment Plant Testing Approval

Schedule 1 is to be used in concurrence with acceptable solution C3.2

Application

Testing Agency

All compliance checking, monitoring, testing, and sampling is to be performed by an agency accredited as a third-party quality management certification body certified by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) or by another accreditation body with which JAS-ANZ has a memorandum of understanding, and at the cost of the applicant.

The samples for Biochemical Oxygen Demand (BOD^5), suspended solids (TSS), total nitrogen (TP), total phosphorus (TP) and thermotolerant coliforms, taken by the testing agency, must be directly transported and delivered to a laboratory, registered by the National Association of Testing Authorities (NATA) to carry out analyses for the parameters specified. Where applicable residual disinfectant and dissolved oxygen samples must be analysed on-site.

Certification is required that tank/s have been designed, manufactured, constructed and tested in accordance with AS/NZS 1546.1

Testing Requirements

Performance Requirements

P1 The *plant* is designed and capable of being tested to ensure that—

(a) all plant discharges are safe; and
(b) risks associated with the discharge of domestic wastewater to the environment are minimised; and
(c) surface and groundwater are not polluted; and
(d) soil productivity is maintained or enhanced, and cumulative adverse environmental effects do not occur during the *design life*.

P2 The *plant* is designed to maintain and enhance community *amenity* by—

(a) being managed so as to achieve sustainable long-term performance; and
(b) providing treatment capacity to meet expected hydraulic and organic loadings.

P3 The *plant* and any necessary ancillary equipment shall be designed to function and meet all other performance requirements during the *design life.*

P4 The *plant* is designed and constructed to -

(a) provide a reliable treatment process that will achieve the effluent quality criteria when operated and maintained in accordance with the manufacturer's instructions; and
(b) provide easy access for authorised persons to all parts of the plant for inspection, maintenance and repairs which is secure from unauthorised access.

Deemed-to-Satisfy Solutions

D1 The *plant* which is a *greywater treatment plant* that produces outputs equivalent to the potential end uses in Table S2 or S3 as applicable.

D2

(a) Each component of the plant and ancillary equipment will be manufactured to last the *design life* apart from mechanical and electrical components that -
    (i) have a minimum *design life* of 15 years; and
    (ii) have a minimum warranty period of 12 months; and
    (iii) are readily accessible for maintenance and replacement.
(b) All components are capable of being securely fixed to withstand all loads encountered during transportation, installation and normal operation; and

(c) The application is accompanied by documentation meeting the requirements of the Plumbing and Drainage Regulation 2019 Schedule 5
(d) The documentation in (c) will be publicly available for downloading during the *design life* from the website nominated in the application and on the label.

D3 The *plant* otherwise complies with the code.

Performance evaluation testing

Performance evaluation testing may be carried out in accordance with the following clauses:

(a) The test plant (including alarm system) must be installed on a premise that will produce a flow of greywater representative of the operational loading. For a greywater treatment plant, the source components must include all components e.g. bath, shower, basin, laundry and kitchen where applicable.
(b) Aspects to consider when selecting and setting up a test site include:
    (i) Minimum flow requirements continually received over at least the 26-week monitoring program.
    (ii) The premises are occupied full time and on a continual basis over the 26-week monitoring program.
    (iii) Greywater influent to the greywater treatment plant is not to be absent for more than three consecutive days.
    (iv) Appropriate diversion plumbing to either the sewer or other appropriate system line is made available in the case of greywater treatment plant failure.
    (v) Approval for installation and operation of the test site shall be obtained from the local government.
(c) The test plant must be installed, commissioned, operated and maintained according to the manufacturer's instructions. The manufacturer is responsible for ensuring the plant is free of defects and is operable.
(d) The plant must be placed under test over a period of26 weeks. The plant must be commissioned in accordance with the manufacturer's recommended procedure.
(e) The data specified in Table S1 must be obtained at the described intervals from grab samples collected over the 26-week monitoring period.
(f) A sanitary drainage connection point is available to allow the diversion of greywater to a sanitary drain including in the event of a failure of the treatment plant.
(g) Other data to be recorded at a minimum of every six days includes –
    (i) Plant inflow reading.
    (ii) Site notes and comments.
(h) The final effluent grab samples must be taken from the outlet chamber or a point prior to land application or reuse. The influent samples must be taken upstream of all process units associated with the greywater treatment plant.
(i) The samples for BOD^5, total suspended solids, total nitrogen, total phosphorus and thermotolerant coliforms taken by the testing agency must be directly transported and delivered to a laboratory, registered by NATA to carry out analyses for the parameters specified. Analyses for disinfectant concentration must be tested on-site immediately after sampling.

The manufacturer must ensure that the premises are returned to their original condition, or to the satisfaction of the owner of the premises and the local government once testing has been completed.

Table S1 Testing periods for greywater treatment plants

Greywater Treatment Plant Monitoring Program Test Period		
Items to be tested	Influent test	Effluent test
BOD^5	Every 12 days	Every 6 days
TSS	Every 12 days	Every 6 days
Thermotolerant Coliforms*	Every 12 days	Every 6 days
E. coli**	Every 12 days	Every 6 days
Free Chlorine (where used)	N/A	Every 6 days
Optional Test (manufacturer to nominate)		
Total Nitrogen	Every 12 days	Every 6 days
Total Phosphorus	Every 12 days	Every 6 days

* If the plant does not include disinfection, then thermotolerant coliforms can be excluded from the monitoring program.

** E.Coli is to be tested instead of thermotolerant coliforms where a closed loop greywater treatment system is being tested

Table S2 – Potential end uses of greywater where a greywater treatment plant is installed on premises generating less than 3 kL (<3 kL) per day

Effluent Quality	Potential End Uses	Parameter	Effluent Compliance Value
High exposure quality effluent	End uses with a high level of human contact, including: • Sanitary flushing • Laundry use (cold water source to washing machines) • Vehicle washing • Path/Wall wash-down	Biochemical oxygen demand (BOD^5) Total suspended solids (TSS) Thermo-tolerant organisms (org/100 mL) pH Turbidity Disinfection	≤10 mg/L ≤10 mg/L <10 6.5 – 8.5 <2 NTU (95th percentile) / ≤5 NTU (maximum) Cl: 0.2 – 1.0 mg/L residual (where used as primary disinfection)
Medium exposure quality effluent	End uses with a medium level of human contact, including: • Lawn and garden spray irrigation	Biochemical oxygen demand (BOD^5) Total suspended solids (TSS) Thermo-tolerant organisms (org/100 mL) pH Turbidity Disinfection	≤20 mg/L ≤30 mg/L <30 6.5 – 8.5 <5 NTU (95th percentile) Cl: 0.2 – 1.0 mg/L residual (where used as primary disinfection)
Low exposure quality effluent	End uses with a low level of human contact, including: • Lawn and Garden manual bucketing, surface broadcasting, sub-surface irrigation	Biochemical oxygen demand (BOD^5) Total suspended solids (TSS) Thermo-tolerant organisms (org/100 mL) pH Disinfection	≤240 mg/L ≤180 mg/L N/A N/A N/A

Table S3 – Potential end uses of *greywater* where a *greywater treatment plant* is installed on premises generating greater than 3 kL (≥3 kL) per day

Effluent Quality	Potential End Uses	Parameter	Effluent Compliance Value
High exposure quality effluent	End uses with a high level of human contact, including: • Sanitary flushing • Laundry use (cold water source to washing machines) • Vehicle washing • Path/Wall wash-down	Biochemical oxygen demand (BOD^5) Total suspended solids (TSS) Escherichia coli (95% of samples taken over a 12-month period) Escherichia coli (maximum) pH Turbidity Disinfection (where chlorine is used as primary disinfection) (residual must be maintained at point of use for sanitary flushing and laundry use)	≤10 mg/L ≤10 mg/L <1 cfu/100 mL 10 cfu/100 mL 6.5 – 8.5 <1 NTU (95th percentile) / ≤5 NTU (maximum) Cl: 0.2 – 1.0 mg/L residual
Medium exposure quality effluent	End uses with a medium level of human contact, including: • Lawn and garden spray irrigation	Biochemical oxygen demand (BOD^5) Total suspended solids (TSS) Escherichia coli (95% of samples taken over a 12-month period) Escherichia coli (maximum) pH Turbidity	≤10 mg/L ≤10 mg/L <10 cfu/100 mL <100 cfu/100 mL 6.5 – 8.5 <5 NTU (95th percentile)
Low exposure quality effluent	End uses with a low level of human contact, including: • Lawn and Garden drip or sub-surface irrigation (no pooling on surface)	Biochemical oxygen demand (BOD^5) Total suspended solids (TSS) Escherichia coli (95% of samples taken over a 12-month period) Escherichia coli (maximum)	≤20 mg/L ≤30 mg/L <100 cfu/100 mL <1000 cfu/100 mL

Table S4 - Estimate of *greywater* generated by an average house in a sewered area (3-bedroom home and four occupants)

Greywater flow	L/person/day
Daily *greywater* flow from bathroom	60
Daily *greywater* flow from laundry	35
Total for bathroom and laundry	95

Table S5 - Estimate of *greywater* generated by an average house in an unsewered area

Greywater flow total for bathroom and laundry	Bedrooms	L/day
1-5	3	600
6-7	4	840
8	5	960
9-10	6	1200

Appendix – 1

Part 1 – Closed loop greywater treatment systems

Table T1 – End uses of greywater where a closed loop greywater treatment system is installed on premises.

End use	Parameter	Effluent compliance value
End uses in *closed loop greywater treatment system* with little or no human contact for use in a washing machine	Escherichia coli (max) *	10 cfu/100 mL in any single sample. Less than 1cfu/100 mL in any follow-up sample

- Note: Total dissolved solids, oil and grease and total suspended solids effluent compliance values for the operational functionality of the system may be conditioned as part of the approval.

Part 2 – Setback distances

Table T2 – Setback distances for subsurface land application area for an on-site sewage treatment plant or a greywater treatment plant.

Feature	Horizontal separation distance* (m)		
	Up slope	Down slope	Level
Property boundaries, pedestrian paths, walkways, recreation areas, retaining wall, and footings for buildings and other structures.	2	4	2
Inground swimming pools	6	6	6
Inground potable water *tank* not exposed to primary effluent	6	6	6
Inground potable water *tank* exposed to primary effluent	15	15	15

* Distances are given in metres and are measured from the edge of trench/bed excavation or subsurface irrigation distribution pipework to the nearest point of the feature.

Table T3 –Setback distances for surface irrigated land application area for an on-site sewage treatment plant or a greywater treatment plant

Feature	Horizontal separation distance * (m)
Property boundaries, pedestrian paths, and walkways	2
Water edge of a swimming pool	6
Dwellings, recreation areas	10

* Distances are given in metres and are measured from the edge of the irrigated wetted area to any point of the feature.

Table T4 – Setback distances from area affected by greywater diversion device

Feature	Setback distance * (m)
Property boundaries, pedestrian paths, and driveways	1.0

Footings of buildings	1.5
Retaining wall footing	1.0
In ground swimming pool surrounds	1.0
In ground potable water *tank*	6.0
Bore or a dam	50

* Distances are given in metres and are measured from the edge of the irrigated wetted area to any point of the feature.

Table T5 – Setback distances for on-site sewerage facilities and greywater use facilities - Protection of surface water and groundwater

Feature	**Separation distance * (m)**		
For *onsite sewerage facilities* – see Table 2.1 in AS 1546.3	**Advanced Secondary**	**Secondary**	**Primary****
For *greywater treatment plants* – see Schedule 1	**High level exposure**	**Medium level exposure**	**Low level exposure**
Top of bank of permanent water course	10	30	50
Top of bank of intermittent water course			
Top of bank of a lake, bay, or estuary			
Top water level of a surface water source used for agriculture, aquaculture, or stock purposes			
Open stormwater drainage channel or drain			
Bore or a dam			
Unsaturated soil depth to a permanent water table (vertically)	0.3	0.6	1.2

* Distances are given in metres and are measured from,

- any part of the on-site sewage facility (including pipes and fittings) and,

- the edge of irrigated wetted area of the Land Application Area to the feature as listed

** Primary effluent typically has a (BOD^5) (Biochemical Oxygen Demand) of between 120 – 240 mg/L and Total Suspended Solids of between 65 -180 mg/L.