



Queensland Plumbing and Wastewater Code guidelines

For councils, plumbers, builders and developers

A guideline to assist in the interpretation and application of the Queensland Plumbing and Wastewater Code

Effective August 2008



Introduction

Queensland's ClimateSmart 2050 strategy has been developed to help the state address climate change. Through the ClimateSmart adaptation plan, the Queensland Government is working to ensure we have a secured future water supply.

The Queensland Plumbing and Wastewater Code (QPW code) compliments the government's commitment to water savings through the implementation of a wide range of measures including sub-meters, expanded use of treated greywater and blackwater re-use trials.

In an aim to help protect and conserve the state's water resources the Queensland Government will introduce a new version of the Queensland Development Code (QDC) Part MP 4.2 which addresses water savings targets in class 1 buildings and a new QDC Part MP4.3 to address alternative water sources in commercial buildings. These will commence on 1 January 2008.

The QPW code compliments the QDC by providing for the approval of greywater treatment plants and setting the effluent quality criteria for greywater use.

Water saving targets can now be achieved through effective utilisation of:

- household rainwater tanks
- communal rainwater tanks
- greywater treatment plants
- dual reticulation
- stormwater reuse.

The purpose of this guide is to assist councils, plumbers, builders and developers to understand the technical and regulatory requirements for on-site wastewater management systems, greywater use facilities and sub-meters.

A full copy of the QPW code is available on the Department of Infrastructure and Planning website at www.dip.qld.gov.au/plumbing



Important notes

This document should be used as a guide to interpreting the QPW code and be read in conjunction with the QPW code.

All terms referred to in this guide have the same meaning as defined in the *Plumbing and Drainage Act 2002 (PDA)*, *Standard Plumbing and Drainage Regulation 2003 (SPDR)* or a relevant Australian/New Zealand Standard. If a definition given in a relevant standard is inconsistent with the Act, Regulation or the QPW code, the legislation prevails.

All relevant Australian and New Zealand Standards are applicable, unless otherwise outlined in the QPW code. Where there is an inconsistency, or the QPW code has additional requirements, the QPW code prevails.

QPW code

The QPW code has been designed to provide performance solutions to meet the statutory requirements of the PDA. This will maintain the standards set by the QPW code while allowing for innovation in materials and methods.

This version of the QPW code was published on 23 November 2007 and commences by amendment to the SPDR on 1 January 2008. It replaces the previous version published by the former Department of Local Government, Planning, Sport and Recreation on 1 March 2006.

Because of our unique climate, the wastewater handling and disposal requirements for Queensland sometimes differ from other Australian states. To answer this need, Queensland introduced the QPW code to provide for greywater use and on-site sewerage treatment within our state.

Parts of the QPW code

The QPW code is split into five distinct parts. These parts are designed to work together and should not be read in isolation.

Part	Title
1	On-site wastewater management systems
2	Greywater use facilities
3	Land application systems
4	Water meters for new premises
5	Chief executive approvals



Terminology and definitions

The QPW code and PDA introduce several new definitions. It is important to be familiar with these definitions. The following is a limited guide to some of the definitions that are relevant to the QPW code. However these are a guide only and the precise wording of the definition in the QPW code or PDA should always be consulted.

On-site wastewater management system—a system installed on premises that receives and treats wastewater generated on the premises and applies the resulting effluent to an approved disposal or re-use system (including an on-site sewerage facility but excluding a greywater use facility).

Land application system—a greywater application area associated with a greywater use facility or a land application area associated with an on-site sewerage facility.

Meterable premises—which means each lot within a community title scheme, including the common property, in a water service provider's area, and the sole occupancy unit of a class 2, 4, 5, 6, 7 or 8 building in a water service provider's area, and 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.

Sole occupancy unit—which means 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. This could be a dwelling, a room or a 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. A Sole occupancy unit also includes any part of the building that is a common area or common property.

Water meter—a device, including equipment related to the device, for measuring the volume of water supplied to premises. Related equipment could include a pulse meter or an automatic meter reader and associated technology or similar devices. The purpose is to ensure the water service provider controls the equipment necessary to ensure the accurate reading of the device for billing purposes.

Public area—A public area means an area which the public have access too. This is an inclusive definition, i.e. it is not limited to the footpath and may include public car parks, walkways, etc, provided the public ordinarily has access to them.

Common area—means an area of common property. This could include an area of the common property that is leased to a another person.

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 above, the ceiling or roof above. It does not include a space that contains only a lift shaft, stairway or meter room or a bathroom, shower room, laundry, water closet, or sanitary compartment or accommodation intended for not more than three vehicles or combination, or a mezzanine.



Alternative or new materials

The QPW code has been designed to foster innovation and creativity. It should not be interpreted in a manner which prevents the use of materials or products not specifically referred herein. Alternative or new materials and products not covered by the code or the Regulation should be submitted to a JAS-ANZ accredited agency for certification or approval.

Associated legislation

It is important to be aware that compliance with the QPW code or a relevant standard may not be the only requirement. In addition, it is important to realise the limitations of the QPW code.

The QPW code does not operate in isolation. Other state and commonwealth legislation such as State Acts, IDAS codes, council planning schemes and local laws may impose additional requirements. Legislation and standards to consider may include:

- *Body Corporate and Community Management Act 1997* (BCCM)
- *Building Act 1975*
- *Building Regulation 2006*
- *Environmental Protection Act 1994*
- *Environmental Protection (Air) Policy 1997*
- *Environmental Protection (Noise) Policy 1997*
- *Environmental Protection Regulation 1998* (EP Regulation)
- *Environmental Protection (Waste Management) Policy 2000*
- *Environmental Protection (Waste Management) Regulation 2003*
- *Environmental Protection (Water) Policy 1997* (EPP (Water))
- *Integrated Planning Act 1997* (IPA)
- *Plumbing and Drainage Act 2002* (PDA)
- *Standard Plumbing and Drainage Regulations 2003* (SPDR)
- *Public Health Act 2005*
- *Water Supply (Safety and Reliability) Act 2008*
- *Water Act 2000* (Water Act)
- *Water Regulations 2002*
- *Water Efficiency Labelling and Standards Act 2005*
- Building Code of Australia
- Plumbing Code Australia
- Queensland Development Code
- Australian and New Zealand Design Standards
- Australian Technical Specifications

For example, with regard to the use of on-site sewage treatment plants, the PDA restricts the approval of these plants to those that are designed to service 20 or less equivalent persons. For those plants designed to service 21 or more equivalent persons a separate approval will be required under the *Environmental Protection Act 1994* (EP Act) from the Environmental Protection Agency.



Standards

The following standards are referenced in the QPW code and are applied provisions for the purposes of the Regulation.

- AS/NZS1546.1 On-site domestic wastewater treatment units Part 1:Septic tanks
- AS/NZS 1546.2 On-site domestic wastewater treatment units Part 2:Waterless composting toilets
- AS/NZS 1546.3 On-site domestic wastewater treatment units Part 3:Aerated wastewater treatment systems
- AS/NZS 1547 On-site domestic wastewater management.
- AS3565.1 Meters for Water Supply—Cold water meter
- AS3565.2 Meters for Water Supply—Combination meters
- AS3565.3 Meters for Water Supply—Water meters with integral dual check valves
- AS3565.4 Meters for Water Supply—In-service compliance testing
- AS3565.5 Meters for Water Supply—Water meters with two integral single check values.

1 On-site wastewater management systems

1.1 Scope

The QPW Code sets out the technical requirements for the sustainable management, site and soil evaluation, design, installation and operation of on-site wastewater management systems in areas not served by a sewerage system.

1.2 Application

Part 1 of the QPW code applies to on-site sewerage facilities serving premises where the sewage is predominantly of domestic origin and where the facility includes a sewage treatment works having a peak design capacity to treat sewage of 20 or less equivalent persons.

It applies to any part of an on-site sewerage facility of the above peak design capacity installed on a premises as part of a common effluent drainage (CED) scheme. It does not apply to the sanitary drains and other components of the sewage collection system that forms part of the CED scheme.

With regard to chemical, composting and incinerating toilets, these are not approved by the chief executive nor does the QPW code cover their design or installation. The PDA requires chemical, composting and incinerating toilets to comply with the Environmental Protection Agency design rules.

The QPW code permits the segregation of wastewater at the source into two separate streams i.e. blackwater and greywater. Part 2 of this code deals with greywater use facilities.



1.3 Specific terminology

The QPW code introduces a new definition for the purposes of Part 1, namely an 'on-site wastewater management system'. This is further defined in the code to mean:

A system installed on premises that receives and treats wastewater generated on the premises and applies the resulting effluent to an approved disposal or re-use system (including an on-site sewerage facility but excluding a greywater use facility).

Despite the new term, the QPW Code applies to on-sewerage facilities and on-site sewage treatment plants for the purposes of the PDA. The purpose is to align the terminology with that used in other codes referred in the *Plumbing and Drainage Act*, particularly the Plumbing Code of Australia (PCA).

1.4 Relevant associated legislation

The *Environmental Protection Act 1994* (EP Act) places a general environmental duty upon all persons to take all reasonable and practicable measures to prevent or minimise harm to the environment.

The *Environmental Protection Regulation 1998* (EP Regulation) defines environmentally relevant activities. On-site sewerage facilities having a peak design capacity to treat sewage of 20 or less equivalent persons are not environmentally relevant activities under the Regulations.

The *Environmental Protection (Water) Policy 1997* (EPP (Water)) requires local governments to consider the cumulative impacts of on-site land application of effluent on the environment when assessing and approving development applications under the *Integrated Planning Act 1997* (IPA). The policy further requires that the environmental values of Queensland waters be enhanced or protected.

Under section 31(2) of the policy, it is an offence to deposit or release solid or liquid waste from an on-site sewerage facility:

- (a) into a roadside gutter, stormwater drain or a water course
- (b) in a place where it could reasonably be expected to move or be washed into a roadside gutter, stormwater drain or a water course.

The *Public Health Act 2005* contains provisions relating to situations considered to be a nuisance or a breeding-ground for mosquitoes. Such situations include accumulation of water and waste and run off of water and waste from premises. The Act places obligations on local government and provides them with powers to inspect premises and deal with nuisance situations.

1.5 Design of on-site sewerage treatment plants

The function of an on-site sewage treatment plant is to receive and treat domestic sewage, within the boundaries of the property, to produce effluent appropriate to the land application area. An on-site sewage treatment plant must:

- protect public health by minimising the risks associated with the treatment of sewage and its ultimate discharge to the environment
- provide treatment capacity to meet expected hydraulic and organic loadings from a premise discharging domestic sewage
- provide a reliable treatment process that will achieve the required effluent quality criteria when operated and maintained in accordance with the manufacturer's instructions
- provide easy access for authorised people to access all parts of the plant for inspection, maintenance and repairs.



On-site sewage treatment plants may be installed freestanding, partially in-ground or buried. Exposure to weather, internal loads/pressures, external loads/pressures, and ground movement may result in corrosion of the tank material and fittings. This can result in leakage from the sewage into the surrounding environment.

When a treatment plant is installed in the ground, the top surface of the tank or tanks should be placed at or just above the ground surface to ensure inspection and access covers are readily accessible and the access of surface water is prevented.

When it is installed below ground level, provision must be made for a watertight vertical extension to be installed above the access and inspection openings to bring the access and inspection covers to or just above finished ground level. The surrounding ground levels must slope away from the tanks installed at ground level to prevent water entering or ponding around the plant.

1.6 Performance requirements

The performance requirements for on-site sewerage facilities are detailed in the table contained in Part 1 of the QPW code.

These are split into two broad performance criteria. Performance criteria P1 relates to protection of public health, the environment and amenity. Performance criteria P2 relates to the design, construction and installation of the facility.

Performance criteria are supplied with an acceptable solution. In the case of performance criteria P1 this includes disposal to an application area that complies with part 3 of the QPW code, the facility complies with the 'applied provisions' and is operated and maintained in accordance with the designer's or manufacturers instructions. The latter has been included to ensure both the on-site sewage treatment plant and the on-site sewerage facility are operated and maintained in a manner that maximises the life of the facility.

For performance criteria P2 the acceptable solution draws upon various standards which are also applied provisions under the SPDR.

1.7 Effluent quality

The effluent quality an on-site sewage treatment plant must satisfy is shown in Appendix 1 of the QPW code. The quality is classified into secondary and advanced secondary treatment characteristics. These are largely the same as those required for AS/NZS 1547:2000.

Typical primary or clarified effluent concentrations of biochemical oxygen demand (BOD) and total suspended solids (TSS) are shown below:

Parameter	Primary effluent (mg/L)	Secondary effluent (mg/L)	Advanced secondary effluent (mg/L)
Biochemical oxygen demand (BOD)	120-240	20	10
Total suspended solids (TSS)	65-180	30	10
Thermo tolerant coli forms (org/100ml)	N/A	200	10

The addition of an effluent filter to the outlet of the septic tank or primary treatment chamber will improve effluent quality by reducing the BOD and TSS to be in the range of 15–30 per cent. Where an effluent filter is installed the effluent is still regarded as primary treated.



Part 5 of the QPW code provides the requirements for testing and approval of on-site sewage treatment plants.

1.8 Disinfection

Disinfection is often the final step after secondary or tertiary treatment and helps to reduce the remaining viruses and bacteria. Disinfection methods include chlorination, ultra violet radiation and ozonation.

Under AS/NZS 1547 effluent discharged to a land application area by surface irrigation must be of secondary quality. In order to meet the thermotolerant coliform requirements the effluent needs to be disinfected.

Surface irrigation is considered to be:

- a) spray irrigation where sprinklers disperse the effluent over the land application area
- b) surface drip irrigation where the effluent is distributed from a perforated small diameter pipe installed on the natural surface.

Where a layer of mulch, e.g. pine bark, covers the distribution system, the effluent is to be disinfected before being discharged to the land application area.

There may be subsurface discharge situations, e.g. shallow groundwater table, where the local government may consider disinfection appropriate to minimize the potential for pathogenic organisms entering the groundwater. In these cases, the compliance permit for the on-site sewerage facility may include a condition requiring the effluent to be disinfected.

2 Greywater use facilities

2.1 Scope

Part 2 of the QPW code relates to the design, construction and installation of greywater use facilities in both sewered and unsewered areas in a manner that protects public health, the environment and amenity.

2.2 Application

Although the Act makes a distinction between the sewered and unsewered areas, this part of the QPW code deals with both.

In the past greywater use facilities were designed to process greywater sourced from components such as laundry, bath, shower and hand basins before dispersing the effluent to the greywater application area. The QPW code has been amended to permit appropriately treated greywater to be used for other purposes such as toilet flushing, washing of paths/walls/vehicles and washing machine use.



2.3 Use of greywater

The diversion of bath, basin, laundry, shower or kitchen greywater to lawns and gardens by subsurface or surface irrigation is already permitted by:

- manual bucketing
- connecting a flexible hose to a washing machine outlet
- seeking council approval for the installation of greywater diversion devices and treatment plants by licensed plumbers.

In sewered areas the current limitation on the approval of greywater systems for domestic homes where less than 3000 litres per day is generated has been expanded. From 1 January 2008 greywater can be used in all classes of building where up to 50 000 litres of greywater is generated per day. However, where the amount generated per day is greater than 3000 litres per day a greywater treatment plant must be installed.

Other than the changes to the use of treated greywater, effective 1 January 2008, the assessment of applications by council for use of greywater in unsewered areas is unchanged.

Council can approve the use of greywater in unsewered areas where:

- the facility complies with the SPDR
- council is satisfied there is enough water available to operate the facility
- either there is enough suitable land or a suitable arrangement has been made for the use of the greywater
- the greywater treatment plant is approved by the Department of Infrastructure and Planning or the greywater diversion device has Watermark approval.

Greywater used for land irrigation should be used in a manner that is sustainable. It is important to avoid surface runoff of greywater. Rainfall and greywater irrigation should not exceed the ability of the soil and vegetation to absorb or transpire the water. During periods of heavy and consistent rainfall greywater irrigated to the garden or lawn should be diverted to the sewer. Essentially, greywater should only be applied to areas where the water needs of plants are not satisfied by rainfall.

2.4 Design of greywater use facilities

Greywater use facilities are designed to process greywater sourced from laundry, bath, shower and hand basins. This has traditionally been dispersed to a land application area. From 1 January 2008 the QPW code permits the use of treated greywater for other purposes such as toilet flushing, path/wall/vehicle wash down, cold water supplied to the washing machine and vehicle washing.

The PDA requires councils to accept and assess all applications for greywater systems. Plumbing work on greywater systems, including modifying existing plumbing and drainage associated with the installation of a greywater diversion device or greywater treatment plant, must be carried out by licensed plumbers. The licensed plumber must obtain written approval from the relevant local council prior to starting work. Homeowners can install their own irrigation systems providing these comply with the approved plans for the system.

The design, construction and installation of greywater use facilities must comply with the QPW code and specifically AS/NZS 1547 and 3500. AS/NZS 1547 provides more information on the siting, suitability, soil evaluation, sizing and installation of land application systems. See also the land application systems section of this guideline.



2.5 Greywater diversion devices

Greywater diversion devices (GDDs) are evaluated to Australian Technical Specification ATS 5200.460-2005. Certification to the technical specification for plumbing and drainage products is obtained by the manufacturer by way of a Watermark licence. Diversion devices are only exempt from requiring approval from council if they are licensed with a Watermark licence.

The Watermark Certification logo is shown below.



(source: www.saiglobal.com/assuranceservices).

Greywater diversion devices must also comply with the installation requirements of the SPDR.

2.6 Greywater treatment plants

A greywater treatment plant collects, stores, treats and may disinfect greywater to specific standards.

They can be installed in both sewered and unsewered areas to provide treated greywater for lawn and garden irrigation (including surface irrigation), toilet flushing, washing of paths/walls/vehicles and washing machine use. The potential end use depends on the quality of effluent produced by the treatment plant.

The Chief Executive of the Department of Infrastructure and Planning is responsible for administering the PDA, accrediting greywater treatment plants and circulating approval notices (refer to the chief executive approval section of this guideline).

Greywater treatment plants are subject to specific design and sizing appropriate to their intended application. They must be installed by a plumber, and operated and maintained in accordance with the designer's or manufacturer's instructions.

2.7 Performance requirements

The performance requirements for greywater use facilities are detailed in Part 2 of the QPW code.

As with Part 1 of the QPW code, performance criteria P1 relates to protection of public health, the environment and amenity and performance criteria P2 relates to the design, construction and installation of the facility. These performance criteria are also provided with acceptable solutions.

The acceptable solution for performance criteria P1 includes the disposal of greywater in a manner appropriate to the potential end use (see table T1) or an application area that complies with part 3 of the QPW Code. The facility must comply with the 'applied provisions' and be operated and maintained in accordance with the designer's or manufacturer's instructions. The latter has been included to ensure that both the greywater treatment plant and the greywater use facility are maintained in a manner that maximises the life of the facility.

For performance criteria P2, the acceptable solution draws upon various standards which are also applied provisions under the SPDR. The acceptable solution requires that the greywater treatment plant be designed to ensure the volume of treated greywater available for any indoor use is equivalent to three days supply. In addition it must provide at least 36 hours retention of



the expected daily flow of greywater with a 40 litres/person/year capacity factored in to allowed for scum and sludge accumulation.

2.8 Effluent quality

Greywater treatment plants must satisfy the requirements for the desired potential end use, as described in table T1 of the QPW code.

Potential End Uses	Parameter	Effluent Compliance Value
Multi dwellings with high level human contact end uses including: <ul style="list-style-type: none"> • sanitary flushing • laundry use (cold water source to washing machines) • vehicle washing • gait/wall washdown 	Biochemical oxygen demand (BOD5) Total suspended solids (TSS) Escherichia coli (95% of samples taken over a 12 month period)* Escherichia coli (maximum)* pH Turbidity 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/100ml 10 cfu/100ml 6.5 – 8.5 <1 NTU (95%ile) 5 NTU (maximum) Cl: 0.2 – 1.0 mg/L residual
Multi dwellings with medium human contact end uses including: <ul style="list-style-type: none"> • lawn and garden spray irrigation 	Biochemical oxygen demand (BOD5) 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/100ml <100 cfu/100ml 6.5 – 8.5 <5 NTU (95%ile)
Multi dwellings with low human contact end uses including: <ul style="list-style-type: none"> • lawn and Garden drip or sub-surface irrigation (no pooling on surface) 	Biochemical oxygen demand (BOD5) 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/100ml <1000 cfu/100ml
Single dwellings with low human contact end uses including: <ul style="list-style-type: none"> • lawn and Garden manual bucketing, surface broadcasting, sub-surface irrigation 	Biochemical oxygen demand (BOD5) Total suspended solids (TSS)	≤240 mg/L ≤180 mg/L

* 95% of samples taken over a 12 month period must meet the effluent compliance value. The 5% of sample per year that may not meet this value must be under the maximum effluent compliance value. Once 12 months of data has been collected, the 12-month period becomes a rolling figure with the 12 months ending at the close of the previous month (i.e. Jan 07 – Jan 08 then Feb 07 to Feb 08, so that the 12 months is calculated on a monthly basis).

Part 4 of the QPW code outlines the requirements for testing and approval of greywater facilities.

2.9 Positioning of greywater use facilities

Greywater use facilities must be positioned within the property boundaries of the premises producing the greywater and come within the daily control of the occupier of the premises.

All greywater systems need a permanent connection to the sewerage system to enable greywater to be discharged during periods of wet weather or when householders are producing excessive amounts of greywater.



Factors to be assessed and managed affecting the type of facility to be installed is:

- a) land availability for installing a facility. Consideration should be given to the gradient of the land, depth of natural soil and/ or rock. The soils chemical characteristics also need to be considered to determine it's suitable for the long-term application of greywater
- b) greywater dispersion should avoid human contact, pose no environmental concerns and promotes efficient application to plants
- c) the devices exposure to weather, internal loads/pressures, external loads/pressures, ground movement and the external environment needs to be considered. Additional consideration should be given to the possibility of materials corroding internally from the greywater.

2.10 Disinfection

Disinfection is often the final step after secondary or tertiary treatment and helps to reduce the remaining viruses and bacteria. Disinfection methods include chlorination, ultra violet radiation and ozonation.

Where the greywater is used for surface irrigation of lawns and gardens the same considerations under AS/NZS 1547 apply as discussed in this guideline under on-site wastewater systems.

Where the primary disinfection to achieve the effluent quality criteria in table T1 of the QPW Code is chlorine, then a residual chlorine level of 0.2–1.0 mg/L residual must also be provided.

2.11 Sewered areas

From 1 January 2008 local councils can approve the use of greywater in all classes of buildings. The maximum volume of greywater which can be used has been lifted to 50 000 litres per day. Removal of these restrictions enables commercial premises to re-use greywater.

Changes to the regulation of greywater treatment plants commenced 1 July 2008. Regulation is now based on the capacity of the greywater treatment plant rather than the amount of greywater that is generated on the premises.

- a single greywater treatment plant capable of treating **less than 50 kL greywater per day** will continue to be regulated under the PDA whether or not individual treatment plants are connected in any way.

For example, installation of two greywater treatment plants with capacities of 30 kL and 25 kL respectively, even though connected, will still be governed by the provisions of the PDA as the individual capacity of each treatment plant does not exceed the 50 kL or more capacity threshold.

- a single greywater treatment plant capable of treating **50 kL or more greywater per day** will be regarded as a 'large greywater treatment plant' and installation will be regulated by the chief executive officer of the Department of Natural Resources and Water under the framework set out under the *Water Supply (Safety and Reliability) Act 2008*

Local governments will still oversee installation of greywater treatment plants under each of the regulatory frameworks.

2.12 Unsewered areas

The PDA and the QPW code have been amended to extend the use of greywater in sewerred areas. There have not been specific changes to the PDA or the QPW code with respect to greywater use in unsewered areas. The QPW code applies to the use of greywater irrespective of whether or not the area is sewerred or unsewered.



Queensland Development Code

Amendments to the Queensland Development Code (QDC) are part of the state's water demand management measures and worthy of mention in this guideline.

QDC Part 25—Water Savings Targets (renumbered MP 4.2) was amended to provide for the use of treated greywater as an option to meet water saving targets for class 1 buildings (e.g. houses and townhouses). This will provide residents with greater flexibility to choose how to achieve water savings.

A new part of the QDC, Alternative Water Sources—Commercial Buildings, to be numbered MP 4.3 was introduced for commercial buildings from 1 January 2008. Specifically, this part will apply to classes 3 to 9 and class 10 buildings associated with or ancillary to those buildings. This new part will require commercial buildings to have alternative water sources and requirements can be achieved through a range of options, including the use of treated greywater.

An online electronic calculator has been developed to assist in determining requirements and the options available. The calculator should be used in combination with the QDC Part MP 4.3 and is available on the Department of Infrastructure and Planning website www.dip.qld.gov.au/tools

Combined with the lifting of restriction on the class of building permitted to use treated greywater, this measure has the potential to generate significant water savings.

3 Land application systems

3.1 Scope

This part of the QPW Code deals with land application systems provided with greywater use facilities and on-site sewerage facilities.

3.2 Application

In addition to requiring compliance with AS/NZS 1547, Part 3 of the QPW code specifically deals with setback distances and the ability of the land application system to cater for the volume of effluent to be disposed or dispersed in the land application area.

3.3 Performance requirements

The performance requirements for land application systems are detailed in Part 3 of the QPW code.

Performance criteria P1 relates to the design, construction and installation of the facility. The acceptable solution for these performance criteria includes:

- setback distances
- the ability of the land application system to cater for the volume of effluent to be disposed or dispersed in the land application area
- proximity of pumps and motors to bedrooms, living rooms and recreational areas
- compliance with the applied provisions.

3.4 Site-and-soil evaluation

A site-and-soil evaluation is carried out under AS/NZS 1547 in order to obtain detailed site-specific information relating to the allotment. This enables the on-site sewerage facility and



greywater use facility design to meet the performance outcomes required by the QPW code in conjunction with the requirements of the EP Act and the EPP (Water).

The site-and-soil evaluation will assist in resolving the following questions:

- Which site and soil factors relevant to the site must be taken into account when selecting and designing the on-site sewerage facility?
- Is the site environmentally suitable for an on-site sewerage facility?
- If so, what type of on-site sewerage facility is appropriate?
- What capacity and/or size should the land application be?

Where local knowledge research results or performance practice can provide an equal or superior result in achieving the performance objectives of the QPW code, then may be adopted. Justification for their adoption must be lodged with and accepted by the local authority.

3.5 Setback distances

Setback distances are not specified in AS/NZS 1547. The standard leaves the setting of setback distances up to the regulatory authority, in this case the state.

Acceptable solution A1 provides a range of setback distances for various circumstances which are detailed further in the tables provided in the QPW code.

Examples of setback distances can be found in appendices 1 to 3. It is important to remember that these are a guide and do not prevail over the QPW code.

4. Sub-meters for new premises

4.1 General

From 1 January 2008 it will be mandatory to install sub-meters in all new multi-unit developments and some non-residential premises. Irrespective of the date of lodgement of the development application or the building development application (building application/BA) any plumbing assessment applications lodged on or after 1 January 2008 for new premises within a reticulated water supply area will require a sub-meter for each separate lot and common property in a community title scheme (CTS) or for each sole occupancy unit in the building. This does not apply to the retrofit of existing buildings, only new buildings.

This will enable water service providers to directly charge the owners of separate lots in new buildings for their actual water consumption. For multi-unit buildings under single title, this will also enable itemised billing based on sub-meter readings, so that the owner may pass the cost of water onto the individual user.

Amendments to the *Water Act 2000* will also complement this measure to ensure consistent standards by water providers are adhered to across Queensland. These consistent standards will include specifications on billing content and billing cycles. The standardised billing content will include graphical information on water consumption, comparisons of average daily water consumption with previous billing periods and the local area average, and messages about water savings and consumption targets.

Changes to billing specifications will initially apply to individually metered residential premises connected to the reticulated water supply. It is proposed to commence arrangements for South East Queensland on 1 July 2009, with commencement staggered from 1 January 2010 to 1 January 2012 for regional Queensland.

The introduction of sub-meters for these new buildings and developments form part of the Water Demand Management measures announced by the Queensland Government in response to the current drought experienced by many areas of the state.



4.2 Performance requirements

The performance requirements for sub-meters are specifically dealt with in Part 4 of the QPW code 'water meters for new premises'.

It is divided into four performance criteria and four acceptable solutions. These have been designed to be simple and easy to read.

Performance criteria P1 requires the water supply to a meterable premises be fitted with a device (water meter) to measure the amount of water supplied to the premises.

Acceptable solution A1 provides a method of complying with this through the use of water meters. The water meter must be approved by the water service provider. An alternative solution can be formulated but it must be at least equivalent to the acceptable solution.

4.3 Meterable premises

An important part of the introduction of sub-meters is the premises upon which the meters must be installed. Meterable premises only apply to those premises located in a water service provider's area, i.e. those supplied with reticulated water.

It applies to all lots within a community titles scheme. The common property usage must be metered. This is to ensure that the body corporate (which manages the common property) also receives water usage information and separate billing, e.g. for pools, watering gardens, etc.

Sole occupancy units of certain classes of buildings (i.e. classes 2, 4, 5, 6, 7, and 8) which are exclusively occupied must be provided with sub-meters. For example, where a shop is split into multiple shops to become sole occupancy units then the premises must be fitted with sub-meters.

At the time of construction it may be difficult to identify the areas of a class 5 multi-storey building which are going to be leased out, i.e. the sole occupancy units. In this case a sub-meter must be fitted on each storey of the building.

Where individual sole occupancy units have not been identified in a class 5 building, council will bill in the same way that it does now. In this case the bill will be sent to the owner of the building e.g. the person recorded in the council's land record as the owner of the land. Individual councils may have specific billing arrangements for these types of buildings. The bill will then be apportioned as it would under the respective lease or tenancy agreements. Parties may choose to agree separately on the water usage based on the water used per floor.

Each floor can then be supplied with information on water use which will assist tenants to gauge their water use and measure the effectiveness of water reduction methods and devices on a floor by floor basis.

4.4 Location of sub-meters

Performance criteria P2 of the QPW code requires that the sub-meter be located so it is easy to read and maintain. Acceptable solution A2 further provides that it must be easy to read and maintain from the common area, common property or public area. Furthermore, where the meter is located in a public area it must be less than 3 metres from the property boundary.

Both 'public area' and 'common area' are further defined in the QPW code. A public area means an area which the public have access too. This is an inclusive definition, i.e. it is not limited to the footpath and may include public carparks, walkways, etc, provided the public ordinarily has access to them.

The location of the meter is important because it must be located in a place where the water service provider can easily access it.



4.5 Ownership of sub-meters

Water service providers will own and maintain the sub-meters and related equipment. The service provider will decide and advise the plumber if it wants to have its own plumber or contract a plumber to install the sub-meters. Alternatively, it may decide to instruct the plumber for the development on how to install the sub-meters on its behalf.

From 1 January 2008 all water meters located in community title schemes created and requiring compliance under the PDA will be owned by the water service provider supplying water to the scheme. Prior to this, the *Body Corporate and Community Management Act 1997* provided that utility infrastructure (including sub-meters) was 'common property' that was owned by the body corporate, unless it fell within an exclusion.

Water service providers will be responsible for maintaining and replacing the sub-meters rather than being owned and maintained by the body corporate for the community title scheme.

4.6 Tampering with water meters

From 1 January 2008, it is an offence to tamper with water meters or related equipment. Related equipment includes devices that assist in measuring or reading the volume of water supplied to the premises. Automatic meter reading equipment is considered to be equipment related to the meter.

People found guilty of tampering with water meters or related equipment face fines of up to \$12 375.

4.7 Role of the water service provider

4.7.1 General

Water service providers who provide retail water services will own the meters and be responsible for reading and charging customers accordingly. They will also be responsible for maintaining and replacing meters as necessary.



4.7.2 Approval of meters and sub-meters

Meters and sub-meters must be approved by the water service provider. As water service providers will have different requirements in terms of choice of meter and reading equipment, therefore no limitation or restriction on the type of meter to be used has been defined by the Act.

For example, some service providers may wish to use automatic meter reading equipment which can be read in a wireless manner. This will require specific meters and sub-meters to be installed in their service area.

4.7.3 Location of meters and sub-meters

All buildings, other than a class 1 or class 10, must have meters and sub-meters installed. A floor plan of the building must be provided with the council application showing the approximate location on the premises of each meter and details of the specifications of each meter and sub-meter for measuring the supply of water to any part of the premises.

This is critical to enable council to assess the plans and the location of the meters and sub-meters. The water service provider must be given an opportunity to nominate where the meters and sub-meters are to be placed within the common area, common property or public area. The plumber and water service provider should contact each other early in the process.

4.7.4 Powers of entry

Changes have been made to the *Water Act 2000* giving service providers greater powers of entry to read meters check the accuracy of meters and maintain or replace meters. The entry power does not allow entry to any part of a place used for residential purposes and entry may only be made at a reasonable time.

4.7.5 Installation of meters and sub-meters

Only a licensed plumber may install meters and sub-meters. The decision on who will install the meters and sub-meters is to be determined by the water service provider. This is to ensure the meters and sub-meters can be accurately read and monitored.

In most cases, the water service provider will use plumbers contracted to or employed by the service provider, i.e. those persons specifically trained in installation. However, the water service provider may choose to utilise the plumber who has installed the plumbing in the building.

Plumbers must give water service providers at least two business days notice that meters and sub-meters are to be installed. Notice must be given in writing and must be prior to the cladding or lining covering the plumbing work being attached. This is the responsibility of the person licensed for the work or who performs, directs the performance of or supervisors the work.

In most situations this will be the plumber who has been nominated as the plumber for that work on other forms used under the Act.

4.7.6 Connection to the water service provider's infrastructure

Approval to connect to the water service provider's infrastructure will remain a separate approval under the *Water Act 2000*.



4.7.7 Contact with the council

The water service provider may want to make contact with the council plumbing inspector about a particular development. This may include advising the Inspector of the approved meter, sub-meter and the preferred location of the water meters for the development. Information supplied directly to the Inspector will assist in the assessment of plans and compliance assessments for the work. As many service providers are part of council this network should be set up between the business unit and department as early as possible.

4.8 Role of the plumber

4.8.1 General

The role of the responsible person, i.e. the plumber, on the job is to maintain a dialogue between both the water service provider and the council. This is a legal requirement. Failure to do so can result in fines of up to \$1500.

4.8.2 Plans

As discussed above it is important that the plumber contact the water service provider as soon as possible to ascertain the water service provider's requirements and so the location of the meters can be placed on the plans to be submitted to council.

4.8.3 Installation

Each service provider will have different requirements for the type of meter which will impact how the plumber leaves the plumbing open and ready for installation. By opening the dialogue between council and the plumber early, the plumber will be aware of who to notify when the time comes for installation.

As stated above, only a licensed plumber may install sub-meters. In addition, where the plumber contracted to or employed by the water service provider installs the water meter, that person must submit a Form 7—Notification of Responsible Person to Council.

4.9 Role of the council

4.9.1 General

Installation and assessment of meters and sub-meters will be managed through the compliance permit and compliance assessment process by local councils under the Act.

4.9.2 Assessment of plans

When an application is made for a compliance permit (approval of plans for plumbing work required before work can commence) it must be accompanied by advice from the service provider about the meter and sub-meters for that particular building.

Councils must assess what type of premises the water is being supplied to and the requirements for the installation of sub-meters. This will mean assessing the plan against the definition of 'meterable premises' in the QPW code to determine the requirements for the development. Council will also need to determine if all common property usage has been metered.

If the information required to be supplied by the service provider has not been received or additional information is needed to assess the application, then council must issue an information



request seeking this information. Assessment of the application should stop until the information is received. Council may impose conditions on the compliance permit requiring that installation of meters comply with the advice from the service provider, where this complies with the QPW code requirements.

The Plumbing Inspector may wish to make contact with the water service provider to establish a network for the flow of information. As many service providers are part of council this network should be set up between the business unit and department as early as possible.

4.9.3 Compliance assessment

As part of the inspection process council should check the approved water meter has been installed and the location of the installation conforms to the requirements of the water service provider, where consistent with the QPW code. As with other compliance assessments, council may wish to request 'as constructed' plans to show the final location of the water meters.

Council should not issue the final approval of plumbing work (a compliance certificate) until the installation of sub-meters has taken place to the specifications of the water service provider, where this complies with the requirements of the QPW code.

In addition, council should request additional forms from the plumber who installed the water meter, where that person did so as a contractor or employee of the water service provider. This will include submitting a Form 7—Notification of responsible person.

5. Chief executive approvals

5.1 Introduction

Part 5 of the QPW code establishes the requirements for the chief executive approval of an on-site sewage treatment plant or a greywater treatment plant under the Act.

A chief executive approval is required:

- a) for an on-site sewage treatment plant where the sewage generated on the property is less than that of 21 equivalent persons
- b) for a greywater treatment plant where the treated greywater is less than 50 kilolitres per day.

5.2 Scope

On-site sewerage treatment plants

The function of an on-site sewage treatment plant is to treat sewage of predominantly domestic origin by means of aerobic and/or anaerobic processes and, where required, disinfection so as to produce an effluent appropriate to the land application facility.

On-site sewage treatment plants may be installed freestanding, partially in-ground, or buried. In these situations they are exposed to the effects of the weather, internal loads/pressures, external loads/pressures and any ground movement.

When installed in the ground, the top surface of the tank(s) is placed at or above the ground surface, so that inspection and access covers are accessible and ingress of surface water is minimised. When the tank(s) is installed below ground level, inspection and access covers must be extended to ground level. Unauthorised or accidental access must be prevented.



Greywater treatment plants

Greywater treatment plants are specifically designed to treat greywater from baths, basins, showers and washing machines. Although greywater can include wastewater from a kitchen, the PDA prohibits the use of kitchen greywater in seweraged areas. In unsewered areas the kitchen greywater must be discharged to an on-site sewerage facility or greywater treatment plant. In these circumstances the greywater from the kitchen must be connected to a grease arrestor before discharging to the greywater treatment plant.

The major change in the QPW code is that for the first time greywater can be used for other purposes in addition to land application. From 1 January 2008 these will include toilet flushing, path/ wall wash down, vehicle washing and washing machine (cold water) use. The potential end use for the effluent will depend on the effluent quality detailed in Table T1 of the QPW code. Manufacturers of greywater treatment plants will need to prove, through testing, that their plants can comply with the applicable criteria for the intended use.

The sitting and installation requirements for on-site sewage treatment plants (as discussed above) apply equally to greywater treatment plants.

5.3 Limitations

A chief executive approval does not include:

- a) the method of land application of the treated effluent
- b) a chemical, composting or incinerating toilet
- c) a dry-vault toilet (e.g. waterless toilet).

The method of land application is dealt with separately in Part 3 of the QPW code. The referenced standard for this purpose is AS/NZS 1547:2000. This standard is also an applied provision under the SPDR.

With regard to chemical, composting, incinerating toilets, these are not approved by the chief executive. The PDA requires chemical, composting, incinerating toilets to comply with the Environmental Protection Agency design rules detailed in the *Environmental Protection (Waste Management) Regulation 2003*.

5.4 Procedure

The procedure for obtaining chief executive approval for an on-site sewage treatment plant or greywater treatment plant is shown in a flow chart (appendix 4).

An additional flow chart outlines modification of designs approval which can form part of the chief executive approval (appendix 5) of this guideline.

5.5 Testing agency

Testing by a JAS-ANZ accredited 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. The cost is covered by the applicant.

Testing criteria

The samples for BOD, 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 the National Association of Testing Authorities (NATA). NATA will carry out



analyses for the parameters specified where applicable residual disinfectant and dissolved oxygen samples must be analysed on site.

Testing to AS/NZS 1546.3

The test criteria and test period procedures specified in appendix A of AS/NZS 1546.3 apply to an on-site sewage treatment plant placed under test.

Testing other than AS/NZS 1546.3

Where AS/NZS 1546.3.1 does not apply then performance evaluation testing may be carried out in accordance with appendix 2 of the QPW code.

For example, this will be the case where the number of equivalent persons generating waste exceeds ten. It may also occur where it is difficult or not possible to construct the on-site sewage treatment plant (e.g. a sand filter) or test the plant at a municipal treatment plant (e.g. a greywater treatment plant).

5.6 Performance criteria

The performance criteria the on-site sewage treatment plant or greywater treatment plant must satisfy for approval by the chief executive is provided in the QPW code. The table is self explanatory and easy to read.

5.7 Effluent quality

The effluent quality that an on-site sewage treatment plant must satisfy is shown in Appendix 1 of the QPW code. The quality is classified into secondary and advanced secondary treatment characteristics. These are largely the same as those required for AS/NZS 1547.

Greywater treatment plants must satisfy the desired potential end use, as detailed in table T1 of the QPW code.

5.8 Documentation

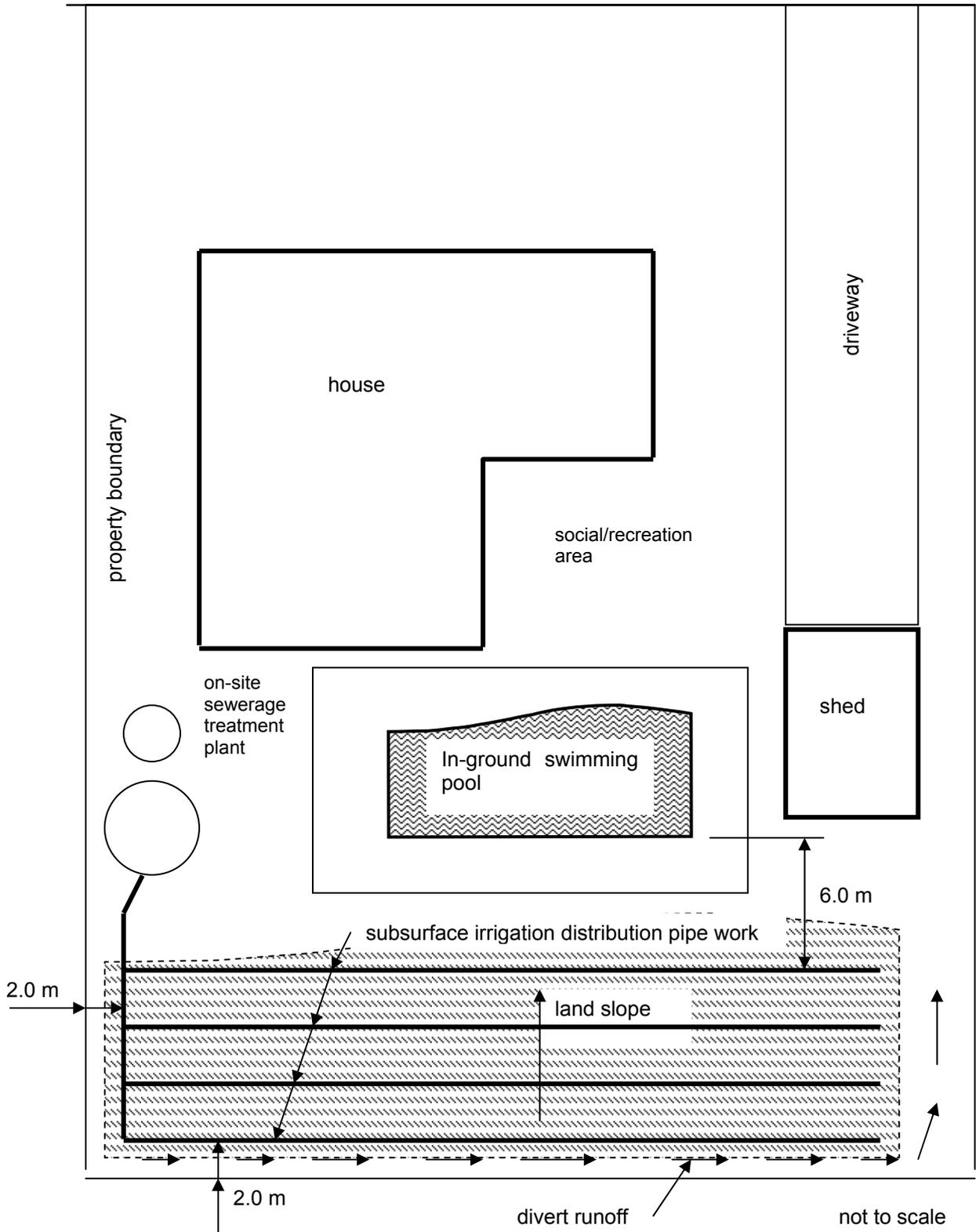
The documentation required to be submitted with an application is detailed in appendix 3 of the QPW code. These include drawings, an owner's manual and label, installation manual and an operation and maintenance manual.

6. Further information

More information is available at the Department of Infrastructure and Planning website, www.dip.qld.gov.au or by contacting Building Codes Queensland division of the Department of Infrastructure and Planning on (07) 3239 6369 or buildingcodes@dip.qld.gov.au

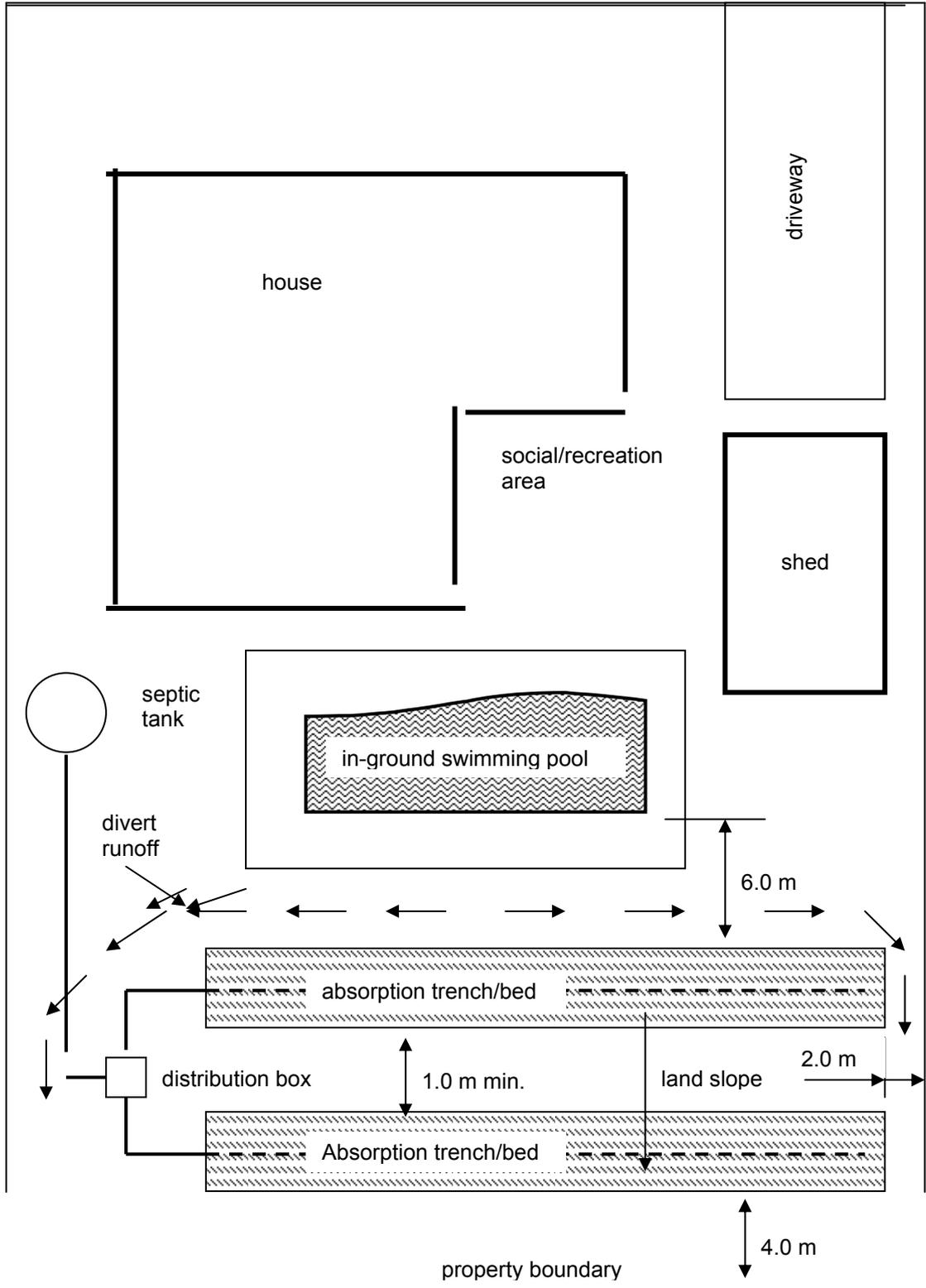


Appendix 1—Setback distances shallow subsurface irrigation area landfall to front of block





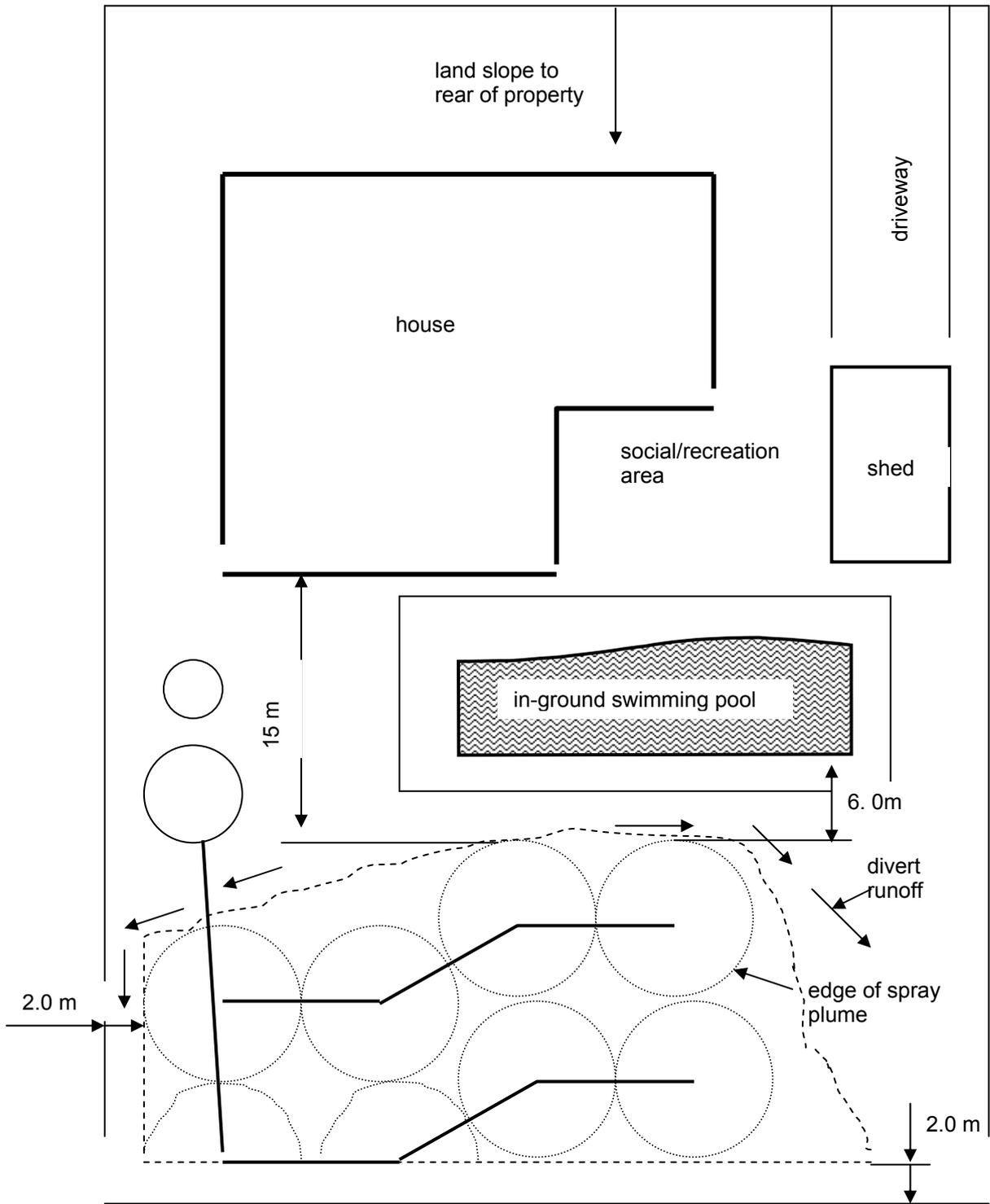
Appendix 2—Setback distances soil absorption trench where land falls to rear of the allotment



not to scale



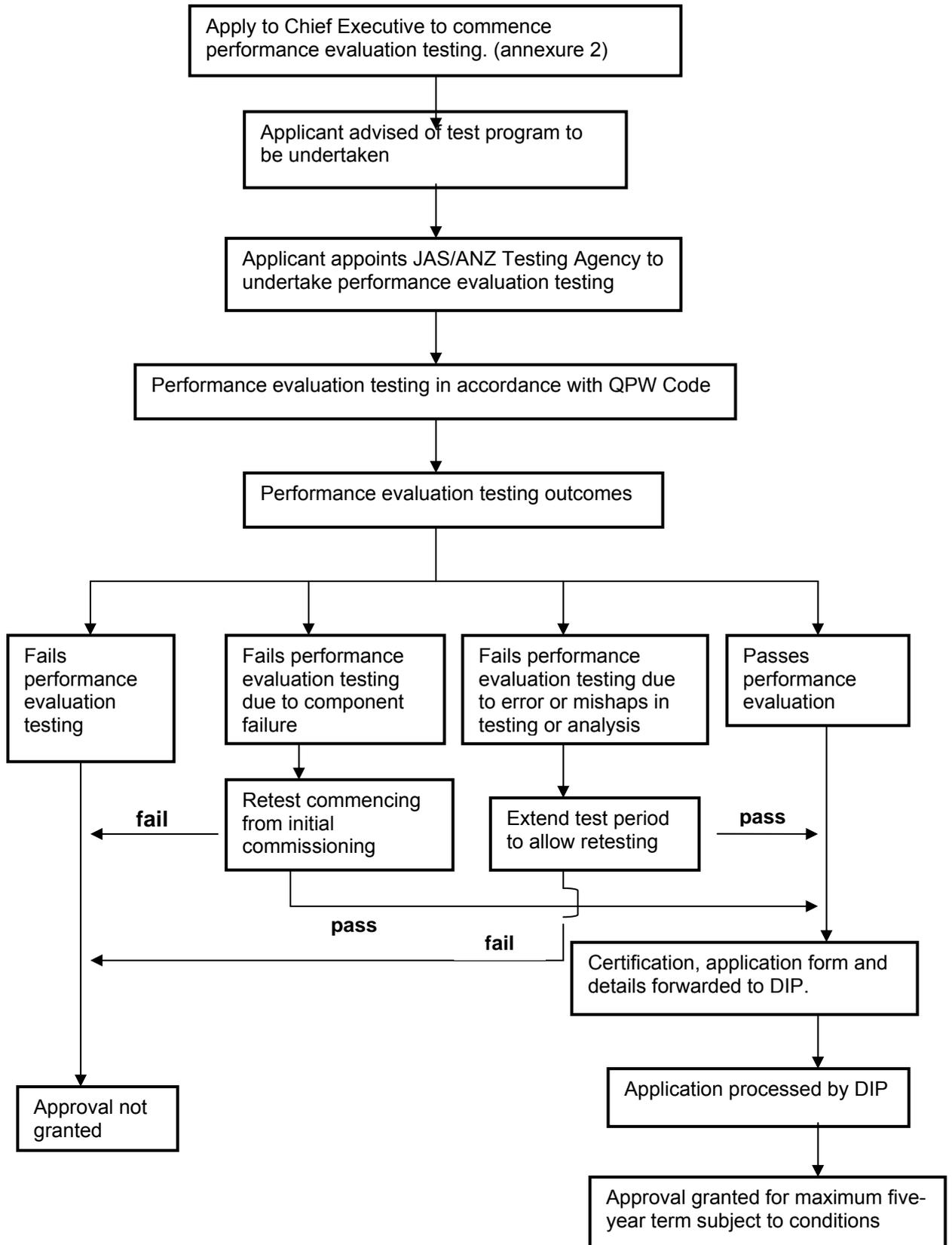
Appendix 3—Horizontal separation distances for subsurface irrigated land application areas



not to scale

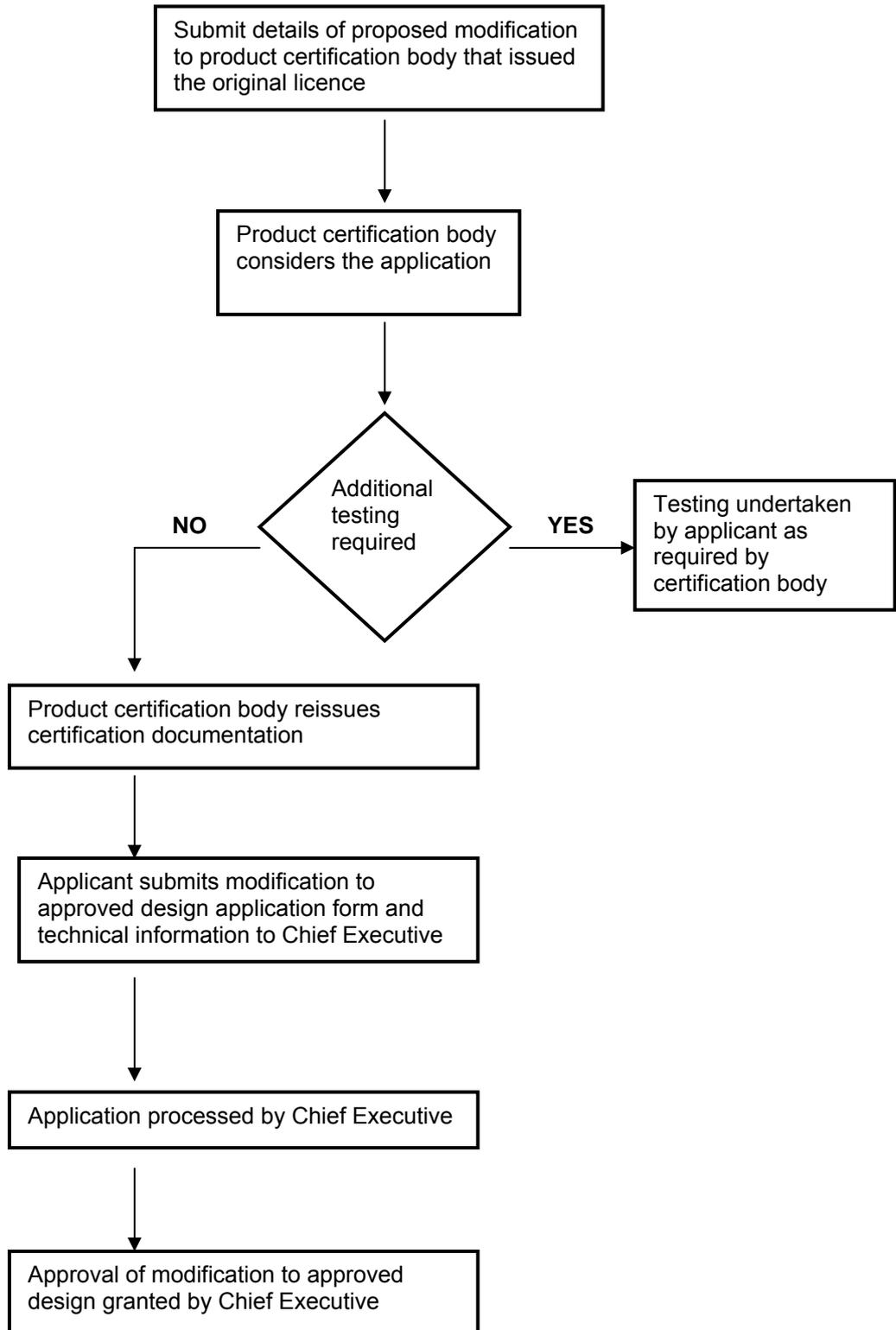


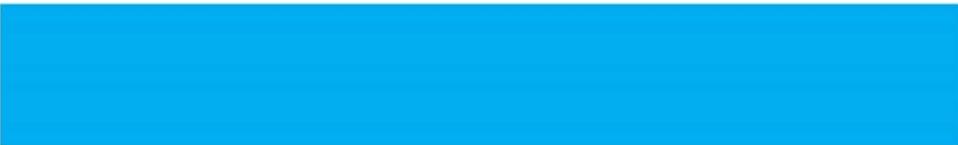
Appendix 4—Procedure for obtaining a chief executive approval





Appendix 5—Procedure for approval of modification or variation to approved design





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