
MP 4.3 – ALTERNATIVE WATER SOURCES – COMMERCIAL BUILDINGS

Table of Contents

Commencement.....	2
Application.....	2
Exemption	2
Referral Agency	3
Associated Requirements	3
Referenced Standards	3
Definitions	3
<i>Alternative Water Source</i>	7
<i>Rainwater tank</i> - use, capacity, catchment area, water quality protection measures and point of discharge	7
<i>Water Storage Tanks</i> - treated water supply, use, capacity and water sources	9
<i>Tanks</i> - Water quality protection measures, system materials and openings.....	9
Signage on <i>tanks</i>	12
<i>Greywater Treatment Plants</i>	12
Appendix A - Local Government Areas	14
Appendix B – <i>Tank</i> size and <i>roof</i> catchment area requirements where a <i>swimming pool</i> is installed on the <i>lot</i>	14
Appendix C – Minimum flow rates and top up levels.....	14
Appendix D - Water quality standards and monitoring frequency requirements for <i>suitable uses</i>	15

Purpose

To specify alternative water source requirements for *commercial buildings* in areas with a *reticulated town water supply system*.

Commencement

This version of MP 4.3 –

- (a) commences on 1 January 2010 and
- (b) replaces the version of MP 4.3 published on 1 January 2009.

Application

- (1) MP 4.3 applies in local government areas listed in Appendix A on or after 1 January 2008 and in local government areas not listed in Appendix A on or after 1 July 2008 where:
 - (a) a building development application is made for the construction of a *commercial building* on or after 1 January 2008; or
 - (b) lawful carrying out of building work starts for a *commercial building* that is self assessable development on or after 1 January 2008.
- (2) MP 4.3 does not apply to alterations and additions to an existing *commercial building*.
- (3) Despite (1), MP 4.3 does not apply if the development application or lawful carrying out of building work that is self assessable development is for a building in a local government area or part thereof for which the *Minister* has granted an exemption.

Exemption

- (1) A local government may apply to the Minister for an exemption from MP 4.3. A local government's application to the Minister must be in the approved form.
- (2) An exemption granted to a local government by the Minister under MP 4.3:
 - (a) continues until repealed or amended by the Minister; and
 - (b) applies to all building development applications lodged with the local government on or after 1 January 2008.
- (3) An exemption granted under MP 4.2 - Water Savings Targets (whether before or after MP 4.3 comes into force) is an exemption for MP 4.3 unless the Minister specifies otherwise in the exemption.
- (4) A local government may apply the requirements of MP 4.3 in its planning scheme despite any exemption.

Referral Agency

There is no referral agency for this code.

Where the *acceptable solutions* of this standard are not adopted, the assessment manager may assess the building for compliance with the *performance criteria* of this standard under Chapter 4 Part 3 of the *Building Act 1975*.

Associated Requirements

- *Plumbing and Drainage Act 2002*
- *Standard Plumbing and Drainage Regulation 2003*
- *Integrated Planning Act 1997*
- *Integrated Planning Regulation 1998*
- *Building Act 1975*
- *Building Regulation 2006*
- *Water Supply, Safety and Reliability Act 2008*
- *Health Regulation 1996*
- Local government planning schemes

Referenced Standards

AS/NZS 3500:2003 – Plumbing and Drainage

AS/NZS4766:2006 – Polyethylene storage tanks for water and chemicals

AS1397:2001 – Steel sheet and strip - Hot-dipped zinc-coated or aluminium / zinc-coated

ASTM A240/A240M-05 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

AS3735:2001 – Concrete structures retaining liquids

AS/NZS1546.1:1998 – On-site domestic wastewater treatment units – Septic Tanks

AS/NZS1170.1:2002 – Structural design actions – Permanent, imposed and other actions

AS/NZS1170.2:2002 – Structural design actions – Wind actions

HB230-2006 – *Rainwater Tank Design and Installation Handbook*

Definitions

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

acceptable solution means a relevant building solution which is deemed to satisfy the relevant performance criterion for the purposes of section 14 (4) (a)(ii) of the *Building Act 1975*.

accommodation building means a *commercial building* where at least 50% of the floor area of that building is classified as a Class 3, 9(a) or 9(c) building under the Building Code of Australia.

alternative water source means any source of water except water from the *reticulated town water supply system*.

available roof area means the whole of the *roof* area of every building on the *lot* included in a development application.

available water sources means any sources of water on the *lot*, other than water from the *reticulated town water supply system* and blackwater, which can be treated to the relevant potential end uses as specified in *Table T1B* of the *Queensland Plumbing and Wastewater Code* or *Table D1* in *Appendix 1* and includes *rainwater*, *stormwater*, fire test water, *greywater* and cooling tower bleed water.

commercial building means a Class 3, 4, 5, 6, 7, 8 or 9 building under the Building Code of Australia (and a Class 10 building associated with or ancillary to those buildings), which contains at least two *pedestals*.

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

common tank means a *water storage tank* or *rainwater tank* which services more than one building.

external use means the use of water for outdoor application, including gardening, irrigation, ponds and outdoor cleaning but excludes filling of swimming pools.

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

greywater treatment plant means a treatment plant approved under the *Queensland Plumbing and Wastewater Code* installed on the *lot* for treating, on the premises, *greywater* generated on the *lot*.

lot means the area occupied by buildings shown as part of a building development application for a single title.

Minister means the Minister responsible for the *Building Act 1975*.

other building means a *commercial building* which is not an *accommodation building*.

pedestal means a toilet pan or urinal, other than a waterless urinal.

rainwater means natural precipitation collected from any surface of building, other than surfaces of the building that are:

- (i) intended or adapted for regular occupation, other than incidental maintenance;
- (ii) designed or intended for vehicular access;;

- (iii) less than 2 meters from the finished ground level; and
- (iv) subject to any source of contamination from the building which would make the water unfit to use in an untreated state for the intended uses.

rainwater tank means a covered *tank* or combination of covered *tanks* used to collect *rainwater* only from a building's *roof* or multiple *roofs*.

required fire-fighting capacity means the volume of water required to comply with Part E of the Building Code of Australia.

required pedestals means for:

accommodation buildings, all *total pedestals* in the building;

other buildings, at least half the *total pedestals* rounded up to a whole number;

small buildings, the *available roof area* divided by 50m², rounded up to a whole number.

Note: where this calculation identifies more *required pedestals* than actual *total pedestals* being installed in the building, the number of *required pedestals* will be the *total pedestals* being installed.

reticulated town water supply system means a pipe network managed by a water service provider registered under the *Water Supply, Safety and Reliability Act 2008* for delivering drinking water directly to premises.

roof means the upper surface of a building.

small building means any *commercial building* which:

- (i) is not an *accommodation building*;
- (ii) is not on a *lot* that has a *swimming pool*; and
- (iii) has less than 10 *total pedestals*.

stormwater includes water collected from any surface of the building other than *rainwater*.

suitable uses includes sanitary flushing, firefighting water supply, air conditioning, refrigeration and irrigation.

swimming pool means any structure, excavation or spa which is intended for swimming, wading, paddling or other human aquatic activity, other than a spa located in a sole occupancy unit or a bath in a bathroom.

tank means a *rainwater tank* or *water storage tank*.

water storage tank means a covered tank or combination of covered *tanks* used for the storage of treated, recycled, and/or reclaimed water.

total pedestals means the total number of *pedestals* in the part of the building which is a *commercial building*.

	PERFORMANCE CRITERIA		ACCEPTABLE SOLUTIONS
	Alternative Water Source		
P1	<i>Commercial buildings</i> supplied directly with water from the <i>reticulated town water supply system</i> , by a water service provider registered under the <i>Water Supply, Safety and Reliability Act 2008</i> , must have an <i>alternative water source</i> which provides water for <i>suitable uses</i> .	A1	<i>Commercial buildings</i> connected to a <i>reticulated town water supply system</i> - (a) use at least one of the following measures – (i) a <i>rainwater tank</i> ; (ii) a <i>water storage tank</i> ; (iii) a <i>common tank</i> ; or (iv) a <i>greywater treatment plant</i> ; and (b) supply top up water to any <i>swimming pool</i> on the <i>lot</i> with water from a <i>rainwater tank</i> before using any remaining <i>available roof area</i> to service <i>required pedestals</i> ; and (c) use the measures adopted in (a) to supply water to <i>required pedestals</i> and other <i>suitable uses</i> specified in this code.
	Rainwater tank - use, capacity, catchment area, water quality protection measures and point of discharge		
P2	<i>Rainwater tanks</i> must provide water for <i>suitable uses</i> on the <i>lot</i> .	A2	<i>Rainwater tanks</i> are connected to - (a) <i>swimming pools</i> on the <i>lot</i> (b) each <i>required pedestal</i> ; (c) an <i>external use</i> ; (d) washing machine cold water taps; and (e) other fixtures as specified by the local government in a local planning instrument.
P3	<i>Rainwater tanks</i> must have sufficient storage capacity to provide an acceptable contribution to water supply having regard to - (a) the <i>available roof area</i> ; and (b) the uses connected to the <i>rainwater tank</i> .	A3	<i>Rainwater tanks</i> have a minimum storage capacity of - (a) 1500L per <i>required pedestal</i> ; and (b) any additional capacity specified in Appendix B; and (c) any additional capacity specified by the local government in a local planning instrument.

	PERFORMANCE CRITERIA		ACCEPTABLE SOLUTIONS
P4	<i>Rainwater tanks</i> must be installed to provide an acceptable contribution to water supply having regard to - (a) <i>available roof area</i> ; and (b) the <i>suitable uses</i> for the water on the <i>lot</i> .	A4	<i>Rainwater tanks</i> - (a) are installed to receive <i>rainwater</i> from the lesser of – (i) the <i>available roof area</i> ; or (ii) 50m ² of <i>roof area</i> for each connected <i>required pedestal</i> . (b) which supply water to a <i>swimming pool</i> are installed to receive <i>rainwater</i> from an additional <i>roof catchment area</i> being the lesser of – (i) the <i>available roof area</i> ; or (ii) the additional area specified in Appendix B. (c) are installed to receive <i>rainwater</i> from any additional <i>roof area</i> specified by the local government in a local planning instrument.
P5	<i>Rainwater tanks</i> must have suitable measures to prevent contaminants from entering the <i>tank</i> having regard to the nature and level of contaminants within the locality.	A5	<i>Rainwater tanks</i> have a - (a) screened downpipe rainhead, having screen mesh 4 – 6mm and designed to prevent leaves from entering each downpipe; and (b) minimum of 20 litres of the first flush of <i>roof catchment rainwater</i> diverted/discarded before entering the <i>rainwater tank</i> where - (i) connected to showers, wash basins, kitchen or hot water services; or (ii) required by a local government in a local planning instrument.
P6	<i>Rainwater tank</i> placement and overflow is designed to ensure <i>stormwater</i> does not pond under building floors or flood around foundations of buildings.	A6	<i>Rainwater tank overflow</i> - (a) is connected to the existing <i>stormwater</i> system or kerb and channel, or inter-allotment <i>stormwater</i> pit; or (b) is drained to an on-site <i>stormwater</i> dispersion system approved by the local government if no <i>stormwater</i> system exists and the property slopes away from the street; (c) piping complies with AS/NZS 3500:2003 requirements for <i>stormwater</i> ; and (d) is installed with a physical air break or non-return valve on the outlet.

	PERFORMANCE CRITERIA		ACCEPTABLE SOLUTIONS
	Water Storage Tanks - treated water supply, use, capacity and water sources		
P7	<i>Water storage tanks receive only water treated for the connected suitable uses.</i>	A7	<p><i>Water storage tanks -</i></p> <ul style="list-style-type: none"> (a) receive treated water from an <i>available water source -</i> <ul style="list-style-type: none"> (i) including greywater with stored water treated to the standard required for the potential end uses specified in <i>Table T1B</i> of the <i>Queensland Plumbing and Wastewater Code</i>; or (ii) does not include greywater treated to the standard specified in <i>Table D1</i> of <i>Appendix D</i>; and (b) discharge excess water to an approved discharge point.
P8	<i>Water storage tanks must provide water to suitable uses on the lot.</i>	A8	<p><i>Water storage tanks are connected to –</i></p> <ul style="list-style-type: none"> (a) each <i>required pedestal</i>; (b) <i>an external use</i>; (c) washing machine cold water taps; and (d) other fixtures as specified by the local government in a local planning instrument.
P9	<p><i>Water storage tanks must have sufficient storage capacity to provide an alternative water source having regard to -</i></p> <ul style="list-style-type: none"> (a) <i>available water sources</i>; and (b) the connected uses. 	A9	<p><i>Water storage tanks have a minimum storage capacity of -</i></p> <ul style="list-style-type: none"> (a) 1500L per <i>required pedestal</i>; and (b) any additional capacity specified by the local government in a local planning instrument; and (c) any <i>required fire-fighting capacity</i>.
P10	<p><i>Water storage tanks must be installed to provide an acceptable contribution to water supply having regard to -</i></p> <ul style="list-style-type: none"> (a) volume of water from <i>available water sources</i>; and (b) the <i>suitable uses</i> for the water on the lot. 	A10	<p><i>Water storage tanks receive treated water from -</i></p> <ul style="list-style-type: none"> (a) one or a combination of <i>available water sources</i>; and (b) any additional <i>available water sources</i> specified by the local government in a local planning instrument.
	Tanks - Water quality protection measures,		

	PERFORMANCE CRITERIA		ACCEPTABLE SOLUTIONS
	system materials and openings		
P11	A <i>tank</i> must have suitable measures to prevent mosquitos breeding in the <i>tank</i> and vermin entering the <i>tank</i> .	A11	<p><i>Tanks</i> have -</p> <p>(a) either -</p> <p>(i) mosquito-proof screens of brass, copper, aluminum or stainless steel gauze not coarser than 1 mm aperture mesh; or</p> <p>(ii) flap valves at every opening of the <i>tank</i>; and</p> <p>(b) either -</p> <p>(i) a vermin trap; or</p> <p>(ii) mosquito-proofing in accordance with HB230-2006 when a wet system is used to harvest <i>rainwater</i>.</p>
P12	Internal fixtures supplied from a <i>tank</i> must have a continuous supply of water.	A12	<p><i>Tanks</i> have –</p> <p>(a) an automatic switching device providing supplementary water from the <i>reticulated town water supply system</i>; or</p> <p>(b) a top up system, providing supplementary water from the <i>reticulated town water supply system</i> with -</p> <p>(i) a minimum flow rate complying with Appendix C; and</p> <p>(i) top up valves installed in an accessible location; and</p> <p>(ii) a minimum storage volume, at which top up is triggered, greater than the total of:</p> <p style="margin-left: 40px;">A. any <i>required fire fighting capacity</i>; and</p> <p style="margin-left: 40px;">B. (i) either the volume specified in Appendix C; or</p> <p style="margin-left: 40px;">(ii) any greater volume specified by the local government in a local planning instrument.</p> <p>(c) the outlet for the internal fixtures is located above the point at which the <i>tank</i> still contains any <i>required fire-fighting capacity</i>.</p>

	PERFORMANCE CRITERIA		ACCEPTABLE SOLUTIONS
P13	Water from a <i>tank</i> must not contaminate the <i>reticulated town water supply system</i> .	A13	A backflow prevention device is installed to protect the <i>reticulated town water supply system</i> in accordance with AS/NZS 3500:2003 Plumbing and Drainage.
14	Materials used in a <i>tank</i> must be suitable for the intended use.	A14	<ul style="list-style-type: none"> (a) Polyethylene <i>tanks</i> comply with AS/NZS4766:2006 polyethylene storage <i>tanks</i> for water and chemicals. (b) Galvanised steel sheet complies with AS1397:201 steel sheet and strip – hot-dipped zinc-coated or aluminium/zinc-coated, and have a minimum coating of 55 g/m². (c) Stainless steel sheet complies with ASTM A240/A240M-05 standard specification for chromium and chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. (d) Concrete <i>tanks</i> comply with AS3735:2001 concrete structures containing liquids. (e) Collection well/underground water cell (non potable) or bladder <i>tank</i> complies with Vertical Axis Type Section 10 of AS/NZS 1546.1:1998 on-site domestic wastewater treatment units – <i>Septic Tanks</i>.
P15	<i>Tank</i> openings are constructed to prevent ingress of surface <i>stormwater</i> and groundwater.	A15	<ul style="list-style-type: none"> (a) <i>Tanks</i> are sealed to prevent surface <i>stormwater</i> and groundwater entering the <i>tank</i>; and (b) Non water-tight access lids are sealed, or terminate a minimum 150 mm above finished ground level <i>stormwater</i> flows with the ground sloped away from the <i>tank</i> and access lid; and (c) Water tight access lids are permitted to finish flush with the finished surface level.

	PERFORMANCE CRITERIA		ACCEPTABLE SOLUTIONS
	Signage on tanks		
P16	Where a <i>tank</i> is installed to supply water to the plumbing fixtures, the <i>tank</i> must be signed appropriately.	A16	<p>A <i>rainwater tank</i> has -</p> <ul style="list-style-type: none"> (a) one notice on the front of the <i>rainwater tank</i> and one notice on the cover, not less than 450 mm x 250 mm in size; and (b) text in capital letters of not less than 25 mm in height with the following identification: WARNING: RAINWATER. <p>A <i>water storage tank</i> has -</p> <ul style="list-style-type: none"> (a) one notice on the front of the <i>tank</i> and one notice on the cover, not less than 450 mm x 250 mm in size; (b) text in capital letters of not less than 25 mm in height with the following identification: WARNING: RECYCLED / RECLAIMED WATER – DO NOT DRINK; and (c) all outlet points clearly marked “WARNING: NOT FOR DRINKING” with safety signs to comply with AS 1319 and AS 1345; and (g) identification in accordance with AS/NZS 2865 where applicable.
	Greywater Treatment Plants		
P17	<i>Greywater treatment plants</i> provide water for <i>suitable uses</i> on the <i>lot</i> and must have sufficient storage and processing capacity to provide an alternative water source having regard to - (a) the amount of available <i>greywater</i> ; and (b) the <i>suitable uses</i> for treated <i>greywater</i> .	A17	<p><i>Greywater treatment plants</i> –</p> <ul style="list-style-type: none"> (a) are installed to receive all <i>greywater</i> from within the building; and (b) have a minimum processing capacity to treat total <i>greywater</i> input vessel volume in 24 hours; and (c) have a minimum storage capacity to hold– <ul style="list-style-type: none"> (i) in an <i>accommodation building</i>, 30 litres of <i>greywater</i> per <i>required pedestal</i>; or (ii) in <i>other buildings</i> and <i>small buildings</i>, 15 litres of <i>greywater</i> per <i>required pedestal</i>; and (d) are connected to supply treated water to – <ul style="list-style-type: none"> (i) each <i>required pedestals</i>; (ii) an <i>external use</i>; (iii) washing machine cold water taps; (iv) other fixtures as specified by the

	PERFORMANCE	CRITERIA	ACCEPTABLE SOLUTIONS
			local government in a local planning instrument; and (e) comply with <i>Table T1B</i> of the <i>Queensland Plumbing and Wastewater Code</i> for the effluent compliance value for end uses with a high level of human contact; and (f) have an automatic switching device providing supplementary water from the <i>reticulated town water supply system</i> ; and dispose of untreated <i>greywater</i> to the sewer.

Appendix A - Local Government Areas

From 1 January 2008

Beaudesert Regional Council Brisbane City Council Fraser Coast Regional Council Gold Coast City Council Gympie Regional Council Ipswich City Council Lockyer Valley Regional Council	Logan City Council Moreton Bay Regional Council Redland City Council Somerset Regional Council South Burnett Regional Council Sunshine Coast Regional Council Toowoomba Regional Council
--	--

Appendix B – Tank size and roof catchment area requirements where a swimming pool is installed on the lot

Gross Pool area (m ²)	Rainwater tank size requirements (litres)	Roof catchment area (m ²)
1-50	3,000	50
51-100	5,000	50
101-150	10,000	100
151-200	15,000	150
201-250	20,000	200
251-300	25,000	200
301-500	30,000	200
>500	50,000	300

Appendix C – Minimum flow rates and top up levels

Tank Size (litres)	Minimum Flow Rate (litres per minute)	Minimum Top Up Supply (litres)
0-5000	2	1000
5001-10000	8	2000
10001-30000	16	8000
30001 - 999999	32	16000

Appendix D - Water quality standards and monitoring frequency requirements for suitable uses¹

Table D1

Source ¹	Parameter	Compliance value	Minimum monitoring ⁵
Cooling tower bleed water ²	Heterotrophic colony count	< 100,000 cfu/mL (maximum)	Weekly
	<i>Legionella sp.</i>	< 10 cfu/mL (maximum)	Weekly
	Biocide	(See table note ²⁾)	(See table note ²⁾)
Fire test water	Total chlorine residual ³	> 0.5 mg/L	Weekly or online
	pH ⁴	6.5 – 8.5	Weekly or online
Stormwater ⁵	Turbidity	< 2 NTU (target) < 10 NTU (median) < 25NTU (95 th percentile)	Weekly or online
	Escherichia coli	< 1 cfu/100mL (median) < 10 cfu/100mL (maximum)	Weekly
	Total chlorine residual ³	> 0.5 mg/L	Weekly or online
	pH ⁴	6.5 – 8.5	Weekly or online

Notes to Table D1 -

- Where water is to be reused in high risk locations such as hospitals, aged care facilities, child care centres or correctional centres, a site specific risk assessment should be undertaken to ensure adequate control of potential exposure of vulnerable persons to hazards that are specific to each site.
- Reuse of cooling tower bleed water must be in accordance with Appendix 8 of *Workplace Health and Safety's Guide to Legionella Control in Cooling Water Systems, including Cooling Towers* (June 2008). Many different biocides are used in cooling tower water so no specific compliance values can be specified. See the above guideline for more information.
- Where chlorine is used as primary disinfection, residual must be maintained at point of use for sanitary flushing and laundry use. Ultra violet light may be used for additional disinfection as determined onsite depending on the quality of the water to be treated and the potential end uses.
- Maintain pH within a range to ensure effective disinfection. For example, if chlorination is the primary disinfectant step, pH should be maintained in the range 6.5-8.5.
- Stormwater may include contaminants such as hydrocarbons that represent a low risk for non-potable water reuse but which may be of aesthetic concern for certain uses, such as washing machines. Specific control or monitoring of these hazards may therefore be required, or specific uses should be avoided as appropriate.
- The building has a maintenance plan for its *alternative water source* use specifying minimum monitoring requirements and the required water quality values.

MP 4.3 Calculator

The Department of Infrastructure and Planning has a published calculator to assist in determining requirements under this Part at www.dip.qld.gov.au