MP 4.3 – SUPPLEMENTARY WATER SOURCES – COMMERCIAL BUILDINGS

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1 Purpose

To specify—

(a) when a *supplementary water source* must be installed for a new *commercial building*; and

(b) the design and installation requirements for a *supplementary water source* in a *commercial building*.

2 Commencement

This version of MP 4.3—

(a) commences on 1 February 2013; and

(b) replaces the version of this Part published on 10 September 2012.

3 Application

(1) This Part applies as specified by ticks (✓) in item 1 of Table 1 for a building development application for a new *commercial building* if—

(a) the building is to be located on a lot that is in a *reticulated town water area*; and

(b) an approval granted by the Minister under this Part applies to the *lot*.

Note

An approval may apply for all or a part of a local government area—see section 4. If an approval granted under this Part is in effect, the area affected by the approval will be specified on the department's website as an area to which all of the performance requirements set out in this Part apply.

(2) This Part applies as specified by ticks (✓) in item 2 of Table 1 if a *supplementary water source* is installed on a *lot* for a *commercial building* on or after 1 February 2013.

Table 1 – Application of MP 4.3

Item	Application	Performance Requirements																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	An approval granted by the Minister under this Part applies for a building development application for a new *commercial building*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	A *supplementary water source* is installed on a *lot* for a *commercial building*											✓	✓	✓	✓	✓	✓	✓

4 Approval to make Part mandatory for an area

(1) A local government may apply to the Minister for an approval to require the mandatory application of this Part to a building development application for a new *commercial building* to be located within a *reticulated town water area*.

(2) The local government may in its application also apply to vary the application of this Part.

(3) The Minister may grant an approval to the local government if the Minister is satisfied that granting the approval will result in a net benefit to the relevant community.

(4) In deciding whether to grant an approval, the Minister may take into account any matter the Minister considers relevant, including any advice that the Minister considers relevant.

(5) An approval granted under this Part—

(a) has effect until it is varied or cancelled by the Minister; and

(b) applies to a building development application lodged on or after the date when the approval is granted.

5 Varying or cancelling an approval

(1) A local government may apply to the Minister to vary or cancel an approval granted under section 4.

(2) The Minister's discretion for deciding an application to vary an approval is the same as the Minister's discretion for deciding an application for an approval under section 4.

6 Referral Agency

There is no referral agency for this Part.

7 Associated Requirements

- *Building Act 1975*
- Building Code of Australia
- *Building Regulation 2006*
- *Health Regulation 1996*
- *Plumbing and Drainage Act 2002*
- Queensland Plumbing and Wastewater Code
- Local government planning scheme provisions
- *Standard Plumbing and Drainage Regulation 2003*
- *Sustainable Planning Act 2009*
- *Sustainable Planning Regulation 2009*
- *Water Supply (Safety and Reliability) Act 2008*

8 Referenced standards and documents

Standard number	Date	Title
AS/NZS 3500 (Set)	2003	Plumbing and Drainage (Set)

AS/NZS 4766	2006	Polyethylene storage tanks for water and chemicals
AS 1319	1994	Safety signs for the occupational environment
AS 1345	1995	Identification of the contents of pipes, conduits and ducts
AS 1397	2011	Continuous Hot-dip metallic coated steel sheet and strip – Coatings of zinc and zinc alloyed with aluminium and magnesium
ASTM A240/ A240M-12	2012	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
AS 2865	2009	Confined spaces
AS 3735	2001	Concrete structures retaining liquids
AS/NZS 1546.1	2008	On-site domestic wastewater treatment units – Septic Tanks
AS/NZS 1170.1	2002	Structural design actions – Permanent, imposed and other actions
AS/NZS 1170.2	2011	Structural design actions – Wind actions
HB 230	2008	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 S14 (4)(a)(ii) of the *Building Act 1975.*

automatic switching device means a device that controls the water supply to plumbing outlets by automatically switching from *rainwater tank* water to the *reticulated town water supply system* when the water level in the *rainwater tank* is insufficient to meet demand.

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

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 the *Queensland Plumbing and Wastewater Code* or Table C1 in Appendix C and includes *rainwater*, *stormwater*, fire test water, *greywater* and cooling tower bleed water.

back-flow prevention device means a device to prevent the reverse flow of water from a potentially polluted source, such as a *tank*, into a potable water supply system.

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* that 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, kitchen, laundry or shower, whether or not the wastewater is contaminated with human waste.

greywater treatment plant means a treatment plant, approved and installed under the *Plumbing and Drainage Act 2002*.

lot means a separate, distinct parcel of land on which a building is to be built, or is built.

other building means a *commercial building* that 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 the 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 and store *rainwater* from a building's *roof* or multiple *roofs*, that may also be used to store potable water from a *reticulated town water supply system* for use when the stored *rainwater* supply is depleted

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:

- an *accommodation building* – all *total pedestals* in the building;
- *another building* – at least half the *total pedestals* rounded up to a whole number*;*
- a *small building* – the *available roof area* divided by $50m^2$, rounded up to a whole number.

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

reticulated town water area means an area supplied by a *reticulated town water supply system*.

reticulated town water supply system means a pipe network managed by a water service provider.

roof means the uppermost surface of a building.

small building means any *commercial building* that:

(i) is not an *accommodation building;* and

(ii) is not on a *lot* that has a *swimming pool;* and

(iii) has less than 10 *total pedestals*.

stormwater means run-off of water following a storm other than from the roof of a building.

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

supplementary water source means any source of water except potable water from a *reticulated town water supply system*.

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*.

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

water service provider means a person registered under the *Water Supply (Safety and Reliability) Act 2008* as a service provider for a water service.

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

WHEN A *SUPPLEMENTARY WATER SOURCE* IS REQURIED TO BE INSTALLED

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
Local government requires a *supplementary water source*	
P1 A *commercial building* must, in addition to being connected to a *reticulated town water supply system,* be connected to a *supplementary water source*.	**A1** A *commercial building*— (a) uses at least one of the following measures: (i) a *rainwater tank*; (ii) a *water storage tank*; (iii) a *common tank*; (iv) a *greywater treatment plant*; and (b) supplies top-up water to any *swimming pool* on the *lot* with water from a *rainwater tank* before using any remaining *available roof area* to service *required pedestals*; and (c) uses the measures mentioned in paragraph

		(a) to supply water to *required pedestals* and for other *suitable uses.*
	***Rainwater tank* installation and capacity**	
P2	*Rainwater tanks* must provide water for *suitable uses* on the *lot*.	**A2** *Rainwater tanks* are connected to— (a) *swimming pools* on the *lot*; (b) each *required pedestal*; (c) fixtures to enable *external use*; (d) washing machine cold water taps; and (e) any other fixture specified in an approval granted to the local government under this Part.
P3	*Rainwater tanks* must have sufficient storage capacity to provide an acceptable contribution to water supply having regard to— (a) the *available roof area*; and (b) the uses connected to the *rainwater tank*.	**A3** *Rainwater tanks* have a minimum storage capacity of 1500 litres per *required pedestal,* and any additional capacity specified in— (a) Appendix A*;* or (b) an approval granted to the local government under this Part.
P4	*Rainwater tanks* must be installed to provide an acceptable contribution to water supply having regard to— (a) *available roof area*; and (b) the *suitable uses* for the water on the *lot*.	**A4** *Rainwater tanks*— (a) are capable of storing *rainwater* from the lesser of— (i) the *available roof area*; or (ii) 50m^2 of *roof* area for each connected *required pedestal; and* (b) if the *commercial building* has a [swimming pool], are capable of storing *rainwater* from an additional *roof* catchment area, being the lesser of— (i) the available *roof area*; or (ii) the additional area specified in Appendix A; and (c) are capable of receiving *rainwater* from any additional roof area specified in an approval granted to the local government under this Part.

Greywater treatment plant installation and capacity

P5 A *greywater treatment plant* must have sufficient storage and processing capacity to provide a *supplementary water source to* provide water for *suitable uses* on the *lot* having regard to—

(a) the amount of available *greywater*; and

(b) the *suitable uses* for treated *greywater*.

A5 The *greywater treatment plant*—

(a) is installed to receive all *greywater* from within the building; and

(b) has a minimum processing capacity to treat total *greywater* input vessel volume in 24 hours; and

(c) has a minimum storage capacity to hold—

(i) in an *accommodation building*—30 litres of *greywater* per *required pedestal*; or

(ii) in *other buildings* and *small buildings*—15 litres of *greywater* per *required pedestal*; and

(d) is installed to supply treated water to—

(i) each *required pedestal*; and

(ii) a fixture to enable *external use*; and

(iii) washing machine cold water taps; and

(iv) any other fixture specified in an approval granted to the local government under this Part.

P6 If any internal fixtures for a *commercial building* are supplied with water from a *greywater treatment plant,* the fixtures must have a continuous supply of water.

A6 A *greywater treatment plant* for a *commercial* building has an *automatic switching device* able to provide potable water from a *reticulated town water supply system*.

Water Storage Tanks – installation and capacity

P7 *Water storage tanks* receive only water treated for the connected *suitable uses*.

A7 *Water storage tanks*—

(a) receive treated water from one or a combination of *available water sources* that:

(i) include greywater with stored water treated to the standard required for the potential end uses specified in the *Queensland Plumbing and Wastewater Code*; or

(ii) that do not include greywater treated to the standard specified in Table C1 of Appendix C; and

(iii) include any additional *available water sources* specified by the local government in a local planning instrument.

(b) discharge excess water to an approved

discharge point.

P8 *Water storage tanks* must provide water for *suitable uses* on the *lot*.

A8 *Water storage tanks* are connected—

(a) to each *required pedestal*; and

(b) *to* a fixture to enable *external use*; and

(c) washing machine cold water taps; and

(d) any other fixture specified in an approval granted to the local government under this Part.

P9 *Water storage tanks* must have sufficient storage capacity to provide a *supplementary water source* having regard to—

(a) *available water sources*; and

(b) the connected uses.

A9 *Water storage tanks* have a minimum storage capacity of—

(a) 1500L per *required pedestal*; and

(b) any additional capacity specified in an approval granted to the local government under this Part; and

(c) any *required fire-fighting capacity.*

P10 If an internal fixture for a *commercial building* is supplied with water from a *tank,* the *tank* must have a continuous supply of water.

A10 (1) *Tanks* have—

(a) an automatic switching device providing supplementary water from the *reticulated town water supply system*; or

(b) a top-up system, providing supplementary water from a *reticulated town water supply system* with—

(i) a minimum flow rate complying with Appendix B; and

(ii) top-up valves installed in an accessible location; and

(iii) a minimum storage volume, at which top-up is triggered, greater than the total of—

A. any *required fire fighting capacity*; and

B. either the volume specified in Appendix B or any greater volume specified in an approval granted to the local government under this Part.

(2) The outlet for the internal fixtures is located above the point at which the *tank* still contains any required *fire-fighting capacity*.

ALL INSTALLATIONS

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
Water quality protection	
P11 A *tank* must have suitable measures to prevent— (a) insects (mosquitoes) and other fauna from breeding inside the *tank*; and (b) vermin from entering the *tank*.	**A11** A *tank* is provided with— (a) either— (i) screen mesh with an aperture of no greater than 1mm, made of brass, copper, aluminum or stainless steel gauze to prevent the intrusion and breeding of insects (mosquitoes) and other fauna; or (ii) flap valves at each opening of the *tank*; and (b) a vermin trap; and (c) if a *wet system* supplies the tank—insect (mosquito) and fauna-proofing for each pipe opening that supplies the tank, with screen mesh with an aperture of no greater than 1mm.
P12 A *tank* must have suitable measures to prevent contaminants from entering the *tank* especially having regard to the potential nature and level of contaminants within the locality.	**A12** A *tank*— (a) has a minimum of 20 litres of first flush from the *roof* catchment so that potentially contaminated *rainwater* is diverted and discarded before entering the *tank* where the *tank* is connected to— (i) a shower or wash basin; or (ii) a swimming *pool*; or (iii) kitchen or hot water service; or (iv) another fixture required by a local government in a local planning instrument; and (b) for a *tank* that is supplied by a *wet system*, a screened rainhead is installed for each downpipe that supplies the *tank* to prevent leaves and debris from entering the tank. Note A rainhead installed on a downpipe reduces the amount of leaf litter caught by the screen mesh for a *tank* and thereby reduces the maintenance required. Although a rainhead is not required to be installed for a dry system, some homeowners may wish to install one.
P13 Water from a *tank* must not contaminate the potable water	**A13** Where a *tank* is installed, the *reticulated town water supply system* is protected from the

	within a *reticulated town water supply system*.		potential of backflow, by the installation of— (a) a *back-flow prevention device* that complies with AS/NZS 3500:2003; or (b) for a *tank*, a dual-check valve with an atmospheric port.
P14	*Tank* placement and *tank* overflow is designed to ensure *stormwater* does not pond under building floors or flood around foundations of buildings.	**A14**	*Tank* overflow— (a) is connected to the existing— (i) *stormwater* system; or (ii) kerb and channel; or (iii) inter-allotment *stormwater* pit; or (b) is drained to an on-site *stormwater* dispersion system approved by the local government if no *stormwater* system exists and the property slopes away from the street; and (c) piping complies with AS/NZS 3500:2003 requirements for *stormwater*; and (d) is installed with a physical air break or non-return valve on the outlet.

System materials

P15	Materials used for the design and construction of a *tank* must be suitable for its intended use.	**A15**	Where a *tank* is a— (a) polyethylene tank – it complies with AS/NZS 4766:2006; or (b) galvanised steel sheet – it complies with AS 1397:2011, and have a minimum coating of 550 g/m^2; or (c) stainless steel sheet – it complies with ASTM A240/A240M-12:2012; or (d) concrete tank – it complies with AS 3735:2001; or (e) collection well or underground water cell (non-potable), or bladder tank – it complies with Vertical Axis Type Section 10 of AS/NZS 1546.1:2008.

Tank openings

P16	Where a *tank* is installed in-ground (partially or fully), all openings are constructed to prevent ingress of surface *stormwater* and groundwater.	**A16**	(1) All *tank* openings are sealed to prevent surface *stormwater* and groundwater from entering the *tank*. (2) Non-watertight access lids are sealed, or terminate a minimum 150mm above finished ground level to account for *stormwater* flows, with the ground sloped away from the *tank* and its access lid. (3) Watertight access lids are permitted to finish flush with the finished surface level.

Signage on *tanks*

P17 Where a *tank* is installed to supply water to the plumbing fixtures, the *tank* must have appropriate signage.

A17 (1) A rainwater tank has—

(a) a readable sign in a visible position on the tank, not less than 450mm × 250mm in size; and

(b) text in capital letters of not less than 25mm in height with the following identification: "WARNING: RAINWATER".

(2) A *tank*, other than a *rainwater tank*, has—

(a) a readable sign in a visible position on the tank, not less than 450mm × 250mm in size; and

(b) text in capital letters of not less than 25mm in height with the following identification: "WARNING: RECYCLED WATER – DO NOT DRINK"; and

(c) all outlet points clearly marked "WARNING: NOT FOR DRINKING" with safety signs to comply with AS 1319:1994 and AS 1345:1995.

(d) identification in accordance with AS/NZS 2865 where applicable.

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

Gross Pool area (m^2)	*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 B – 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 – 10,000	8	2000
10,001 – 30,000	16	8000
30,001 – 999,999	32	16,000

Appendix C - Water quality standards and monitoring frequency requirements for *suitable uses*[1]

Table C1

Source[1]	Parameter	Compliance value	Minimum monitoring[5]
Cooling tower bleed water[2]	Heterotrophic colony count	< 100,000 cfu/mL (maximum)	Weekly
	Legionella sp	< 10 cfu/mL (maximum)	Weekly
	Biocide	(See note 2)	(See 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 (95th 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]		Weekly or online

Notes:

1. Suitable uses: where water is to be re-used 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.
2. Re-use 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.
3. 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.
4. 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.
5. Stormwater may include contaminants such as hydrocarbons that represent a low risk for non-potable water re-use 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.
6. The building has a maintenance plan for its *supplementary water source* use specifying minimum monitoring requirements and the required water quality values.

Version history

Version	Commencement date	Publication date
1.4	1 November 2012	10 September 2012
1.3	1 January 2010	26 November 2009
1.2	22 October 2008	1 January 2009
1.1	1 May 2008	10 April 2008
1.0	1 January 2008	16 November 2007