File Ref. : DEVB(CR)(W)1-10/49

LEGISLATIVE COUNCIL BRIEF

WATERWORKS (AMENDMENT) (NO. 2) REGULATION 2017

INTRODUCTION

The Administration has proposed a motion for the Legislative Council ("LegCo") to make a few amendments[1] to the Waterworks (Amendment) Regulation 2017 (L.N. 81 of 2017) ("the Amendment Regulation") by resolution under section 34(2) of the Interpretation and General Clauses Ordinance (Cap. 1), but the LegCo was unable to deal with the motion before expiry of the negative vetting period.

2. At the meeting of the Executive Council on 10 October 2017, the Council ADVISED and the Chief Executive ORDERED that, under section 37 of the Waterworks Ordinance (Cap. 102) ("WWO")[2], the Waterworks (Amendment) (No. 2) Regulation 2017 ("the Amendment (No. 2) Regulation"), at Annex A, should be made so that the same amendments in the proposed resolution may be incorporated into Waterworks Regulations (Cap. 102A) ("WWR").

A

JUSTIFICATIONS

3. The Administration has made the Amendment Regulation on 28 March 2017 in order to set out clearly the latest technical requirements and standards for all plumbing materials and components to be used in the fire services or inside services (collectively referred to as "plumbing system(s)"). The Amendment Regulation was first published in the Gazette on 19 May 2017 and tabled at the LegCo for negative vetting on 24 May 2017. A Subcommittee on Waterworks (Amendment) Regulation 2017 ("the Subcommittee") was formed with three meetings, including deputation, in June 2017 to scrutinise the Amendment Regulation.

4. In response to the views of the plumbing trade during deputation and suggestions made by the Members of the Subcommittee, the Administration has proposed a motion for the LegCo to make amendments to the Amendment Regulation

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1 The Administration's proposed resolution (vide LC Paper No. CB(1)1252/16-17(01)) was agreed and given under paragraph 37 of the Report of the Subcommittee (vide LC Paper No. CB(1)1255/16-17).

2 Section 37(1)(b) of WWO states that the Chief Executive in Council may make regulations for "the construction, installation, maintenance, cleanliness, alteration, repair or removal of a fire service or inside service".

by resolution under section 34(2) of the Interpretation and General Clauses Ordinance (Cap. 1) at the LegCo sitting of 12 July 2017. The proposed resolution includes amending regulations 20(2) and 25 of the WWR and other minor amendments to the Schedule 2 of the WWR ("Schedule 2") in respect of the technical requirements and standards for plumbing materials. The Administration supported the above amendments as it would further elaborate the considerations of the Water Authority ("WA") in exercising the respective powers before approving the installation of a pipe or fitting that does not comply with a prescribed specification and also make clear some technical requirements and standards for plumbing materials in the Schedule 2.

5. The LegCo was unable to deal with the motion for the proposed resolution at that sitting. Therefore, the Amendment Regulation has come into operation on 14 July 2017 without the amendments to be made by the proposed resolution.

6. In the light of above, we would introduce the same amendments in the proposed resolution to the WWR by way of the Amendment (No. 2) Regulation.

THE REGULATION

7. The main provisions[3] are –

(a) To amend regulation 20(2) of the WWR to emphasise that any departure from a prescribed specification for a pipe or fitting does not amount to non-compliance only if such departure does not, in the opinion of the WA, adversely affect the efficiency of the plumbing system(s) in providing a reliable and adequate supply of water and the quality of the water. The same conditions are also added to regulation 25 of the WWR to set out the consideration by the WA in exercising the power to relax regulations regarding the installation of a pipe or fitting;

(b) To delete the provisions related to cast iron pipe from the legislation as cast iron pipe is no longer used in the market due to its comparatively brittle nature;

(c) To make clear that British Standard 6920 series mentioned in the paragraph 23 of Part 1 of Schedule 2 are applicable to all non-metallic products for use in contact with water intended for human consumption in Part 2 and Part 3 of Schedule 2;

(d) To repeal paragraph 1 of Part 2 of Schedule 2 to avoid ambiguity as the requirements have already been mentioned in relevant prescribed standards under other paragraphs in Schedule 2; and

[3] Items (a), (b), (c) and (e) are proposed to address suggestions made by the Members of the Subcommittee while item (d) is proposed to address views of the plumbing trade during deputation.

(e) To make clear that the water heater used for heating water intended for human consumption, and related pipe and fitting, are not covered by Part 4 of Schedule 2

B The existing provisions being amended are at Annex B.

LEGISLATIVE TIMETABLE

8. The legislative timetable will be –

Publication in the Gazette	13 October 2017
Tabling at Legislative Council	18 October 2017

IMPLICATIONS OF THE PROPOSAL

9. The proposal is in conformity with the Basic Law, including the provisions concerning human rights. It has no financial and civil service, economic, competition, productivity, environmental, sustainability, family and gender implications. The Amendment (No. 2) Regulation will not affect the current binding effect of the WWR.

PUBLIC CONSULTATION

10. The proposed resolution to the Amendment Regulation has been considered by the Subcommittee at its meeting of 27 June 2017 and vide LC Paper No. CB(1)1252/16-17(01). Members of the Subcommittee have not raised any objection to such amendments.

11. As the proposal is minor in nature and is not controversial, further public consultation on the proposal is considered not necessary.

PUBLICITY

12. A press release is to be issued on 13 October 2017 and a spokesman will be available to handle the media and public enquiries.

BACKGROUND

13. The construction and installation of plumbing system(s) are required under section 14(3) of the WWO to comply with the requirements prescribed in the WWO and the WWR. Most technical requirements and standards for plumbing materials are cited in Schedule 2 and the Water Supplies Department has published a list of latest applicable standards for plumbing materials on its website for reference of the trade. Some of the material standards in the WWR in force before the Amendment Regulation came into operation on 14 July 2017 have become outdated or superseded by other standards.

14. While the WA is holistically reviewing the WWO and the WWR, we have examined the recommendations made in the Report of the Commission of Inquiry into Excess Lead Found in Drinking Water ("COI")[4] that the WA should set out clearly the latest standards for all plumbing materials and components to be used in the plumbing system(s) and update the same regularly and periodically. We therefore considered it prudent to prioritize legislative amendments to the WWR to update the standards of plumbing materials via the Amendment Regulation which has come into operation and the Amendment (No. 2) Regulation.

ENQUIRIES

15. For enquiries on this brief, please contact Mr Vitus NG, Principal Assistant Secretary (Works) 3 at 3509 8277.

Development Bureau
11 October 2017

[4] The COI was appointed by the Chief Executive in Council on 13 August 2015 to inquire into the incident of excess lead found in drinking water in public rental housing estates.

Waterworks (Amendment) (No. 2) Regulation 2017

(Made by the Chief Executive in Council under section 37 of the Waterworks Ordinance (Cap. 102))

1. Commencement

This Regulation comes into operation on 8 December 2017.

2. Waterworks Regulations amended

The Waterworks Regulations (Cap. 102 sub. leg. A) are amended as set out in sections 3, 4 and 5.

3. Regulation 20 amended (compliance with prescribed specification)

Regulation 20(2), after "if"—

Add

"(and only if)".

4. Regulation 25 amended (power to relax regulations)

After regulation 25(2)—

Add

"(2A) The Water Authority may approve the installation of a pipe or fitting under subregulation (2) only if the installation does not, in the opinion of the Water Authority, adversely affect—

(a) the efficiency of the fire service or inside service in which the pipe or fitting is installed in providing a reliable and adequate supply of water; and

(b) the quality of the water.".

5. Schedule 2 amended

(1) Schedule 2, Part 1, paragraphs 1, 3 and 4—

Repeal

"cast iron,".

(2) Schedule 2, Part 1, paragraph 21—

Repeal

"cast iron or".

(3) Schedule 2, Part 1, paragraph 23—

Repeal

"for use in"

Substitute

"that, when used, may come into".

(4) Schedule 2, Part 1, at the end of paragraph 23—

Add

"**Note—**

The products described in this paragraph include, but are not limited to, taps, valves and cold water cisterns mentioned in Parts 2 and 3 of this Schedule.".

(5) Schedule 2, Part 2—

Repeal paragraph 1.

(6) Schedule 2, Part 4, before paragraph 1—

Add

"1A. This Part applies to—

(a) a water heater used for heating water not intended for human consumption; and

(b) a pipe or fitting that, when used, may come into contact with water heated by the water heater.".

(7) Schedule 2, Part 4, paragraph 9—

Repeal

everything after "material.".

Clerk to the Executive Council

COUNCIL CHAMBER

2017

Explanatory Note

The purpose of this Regulation is to amend the Waterworks Regulations (Cap. 102 sub. leg. A) (***principal Regulations***) to—

(a) set out the conditions that must be met before the Water Authority approves the installation of a pipe or fitting that does not comply with a prescribed specification set out in Schedule 2 to the principal Regulations (see section 4);

(b) disallow the use of pipes and pipe flanges made of cast iron (see section 5(1), (2) and (7));

(c) remove the requirements relating to the resisting pressure of draw-off taps and stop valves (see section 5(5));

(d) clarify that Part 4 of Schedule 2 to the principal Regulations only applies to a water heater used for heating water not intended for human consumption and related pipes and fittings (see section 5(6)); and

(e) make other minor amendments to improve the clarity of the provisions concerned (see sections 3 and 5(3) and (4)).

20. Compliance with prescribed specification

(L.N. 81 of 2017)

(1) A requirement in Schedule 2 for a pipe or fitting to comply with a prescribed specification is a requirement to comply with the specification to the extent that the specification relates to the size, nature, materials, strength, test requirements and workmanship of the pipe or fitting.

(2) A departure from a prescribed specification for a pipe or fitting does not amount to non-compliance with the specification for the pipe or fitting if the departure does not, in the opinion of the Water Authority, adversely affect—

(a) the efficiency of the fire service or inside service in which the pipe or fitting is installed in providing a reliable and adequate supply of water; and

(b) the quality of the water.

(3) The Water Authority may at any time weigh, measure, inspect, examine or test a pipe or fitting to ascertain whether it complies with a prescribed specification.

(L.N. 81 of 2017)

25. Power to relax regulations

(1) The Water Authority may, either generally or in any particular case, relax the provisions of these regulations regarding the size, nature, materials or disposition of any pipe or fitting.

(2) Despite a requirement in Schedule 2 for a pipe or fitting to comply with a prescribed specification, the Water Authority may approve the installation of a pipe or fitting that does not comply with the specification. *(L.N. 81 of 2017)*

(3) Where water is—

(a) supplied through a meter;

(b) discharged into a cistern from a point not less than 150 mm above the overflowing level thereof; and *(L.N. 252 of 1977)*

(c) conveyed therefrom for use in some industrial or research process and is used solely in connection therewith,

the Water Authority may exercise his powers under subregulation (1) with regard to any pipe or fitting installed or used for such purpose.

Schedule 2

[regs. 19, 19A, 20 & 25]

(L.N. 81 of 2017)

Part 1

Pipes and Fittings

1. Pipes for a fresh water fire service must be made of cast iron, ductile iron, steel, stainless steel or copper.

2. Pipes for a salt water fire service must be made of steel and internally lined with chlorinated polyvinyl chloride or of ductile iron.

3. Pipes for a fresh water inside service must be made of cast iron, ductile iron, unplasticized polyvinyl chloride, polybutylene, steel, stainless steel, copper, polyethylene, crosslinked polyethylene or chlorinated polyvinyl chloride, but pipes made of unplasticized polyvinyl chloride or polyethylene must not be used for a hot fresh water inside service.

4. Pipes for a salt water inside service must be made of cast iron, ductile iron, unplasticized polyvinyl chloride or polyethylene.

5. A pipe must not be less than 20 mm in nominal diameter, except that a branch pipe may be of 15 mm or more in nominal diameter if its length is not longer than 3 m and it supplies only 1 draw-off point.

6. A bend or curve must not be made in any pipe so as to diminish the waterway or alter the internal diameter of the pipe.

7. Ductile iron pipes and fittings must be of a class appropriate to the duty required and comply with BS EN 545:2010.

8. Steel pipes must—

   (a) be galvanized;

   (b) comply with the requirements for tubes in medium or heavy series in BS EN 10255:2004;

   (c) for a cold fresh water inside service—be internally lined with unplasticized polyvinyl chloride, chlorinated polyvinyl chloride or polyethylene;

   (d) for a hot fresh water inside service—be internally lined with chlorinated polyvinyl chloride; and

   (e) for a fresh water fire service—be internally lined with chlorinated polyvinyl chloride or without any lining.

9. Malleable cast iron fittings for use with steel pipes must be galvanized and comply with the relevant requirements in BS 143 and 1256:2000.

10. Fittings made of wrought iron or steel for use with steel pipes must be galvanized and comply with BS EN 10241:2000.

11. Unplasticized polyvinyl chloride pipes and fittings must comply with the requirements for Class D or superior pipes in BS 3505:1986 or the relevant requirements in BS EN ISO 1452-1:2009, BS EN ISO 1452-2:2009, BS EN ISO 1452-3:2010, BS EN ISO 1452-4:2009 and BS EN ISO 1452-5:2009.

12. Copper pipes incorporating screw joints must comply with BS EN 12449:2016. The screws of the pipes must comply with BS 61:1969.

13. Cast copper alloy fittings, for copper pipes screwed in accordance with Table 1 of BS 61:1969, must comply with the relevant requirements in BS 143 and 1256:2000.

14. Copper pipes to be jointed with mechanical joint fittings or capillary fittings or, by bronze or autogenous welding, must comply with BS EN 1057:2006+A1:2010.

15. Mechanical joint fittings or capillary fittings made of copper or copper alloy must comply with the relevant requirements in BS EN 1254-1:1998, BS EN 1254-2:1998, BS EN 1254-4:1998, BS EN 1254-5:1998, BS EN 1254-6:2012, BS EN 1254-8:2012 and BS 8537:2010. Compression fittings made of copper or copper alloy for pipes laid underground must be of Type B. Soft soldering material must comply with BS EN ISO 9453:2014. Filler metal for brazing must comply with BS EN ISO 17672:2010.

16. Polybutylene pipes and fittings must comply with BS 7291-1:2010 and BS 7291-2:2010.

17. Polyethylene pipes and fittings must comply with BS EN 12201-1:2011, BS EN 12201-2:2011+A1:2013, BS EN 12201-3:2011+A1:2012, BS EN 12201-4:2012 and BS EN 12201-5:2011.

18. Crosslinked polyethylene pipes and fittings must comply with BS 7291-1:2010 and BS 7291-3:2010.

19. Chlorinated polyvinyl chloride pipes and fittings must comply with BS EN ISO 15877-1:2009+A1:2010, BS EN ISO 15877-2:2009+A1:2010 and BS EN ISO 15877-3:2009+A1:2010.

20. Stainless steel pipes must be of grade 304 or better and comply with the relevant requirements in BS 6362:1990, BS EN 10217-7:2014 and BS EN 10312:2002. Stainless steel fittings must comply with AS 3688:2016.

21. Pipe flanges made of steel must comply with BS EN 1092-1:2007+A1:2013. Pipe flanges made of cast iron or ductile iron must comply with BS EN 1092-2:1997.

22. Flexible pipe joints must comply with the hydraulic test requirements in BS EN 12266-1:2012.

23. Non-metallic materials and products for use in contact with water intended for human consumption must comply with the relevant requirements in BS 6920-1:2014, BS 6920-2.1:2014, BS 6920-2.2.1:2000+A3:2014, BS 6920-2.2.2:2000+A1:2014, BS 6920-2.2.3:2000+A2:2014, BS 6920-2.3:2000+A1:2014, BS 6920-2.4:2000+A1:2014, BS 6920-2.5:2000+A2:2014, BS 6920-2.6:2000+A2:2014 and BS 6920-3:2000.

(L.N. 81 of 2017)

Part 2

Taps and Valves

1. Draw-off taps and stop valves that are not of the ordinary screw-down pattern must be capable of resisting a pressure of at least 1 600 kPa. Valves, spindles and other internal parts of the draw-off taps and stop valves must be made of a corrosion-resisting material. If the nominal diameter of such a draw-off tap or stop valve does not exceed 50 mm, its body must be made of a corrosion-resisting material.

2. Cast iron or ductile iron waterworks gate valves or check valves of a nominal diameter of not less than 50 mm and with a pressure rating at PN 10 or above must comply with the relevant requirements in BS 5163-1:2004, BS 5163-2:2004, BS EN 1074-1:2000, BS EN 1074-2:2000 and BS EN 1074-3:2000. Gate valves for fire hydrant systems must comply with BS 5041-1:1987.

3. Ball float valves must comply with BS 1212-1:1990, BS 1212-2:1990, BS 1212-3:1990 or BS 1212-4:2016.

4. For ball float valves of a nominal diameter not exceeding 50 mm, their valve bodies must be made of copper alloy or stainless steel. For ball float valves of a nominal diameter exceeding 50 mm, their valve bodies must be made of copper alloy, stainless steel, epoxy coated cast iron or epoxy coated ductile iron.

5. Floats for use with fresh water must be made of copper alloy or stainless steel. Floats for use with salt water must be made of plastic or stainless steel.

6. Copper floats or plastic floats must respectively comply with BS 1968:1953 or BS 2456:1990 if the nominal diameter of the floats does not exceed 300 mm.

7. Ball float valves fitted to a cistern must have the size of the orifice, the size of the float and the length of the lever so proportioned to one another that, when the float is immersed to an extent not exceeding half its volume, the valve is watertight against the highest pressure at which the valve may be required to work.

8. A ball float valve or float-operated valve fitted to a cistern must be securely fixed to the cistern above the waterline of the float of the valve, and must be supported independently of the inlet pipe (unless the inlet pipe is itself rigid and securely fixed to the cistern), in a position that no part of the body of the valve is submerged when the cistern is charged to the overflowing level.

9. If a ball float valve or float-operated valve is provided with a pipe so arranged as to discharge water into a cistern below its overflowing level, an air hole must be provided in the outlet chamber of the valve above the overflowing level. The air hole must be of a size sufficient to prevent siphonage of water back through the valve.

10. Ball float valves must not be fitted to a cistern that is used to contain heated water.

11. Except with the written permission of the Water Authority, fitting with a threaded outlet, or any device facilitating the connecting of rubber hose or another type of flexible hose, must not be used.

12. Draw-off taps, valves and valve floats for use with salt water must be made of a corrosion-resisting material and comply with the relevant requirements governing the use of fittings with fresh water.

13. The minimum flow rate requirement for taps in any prescribed specification does not apply to draw-off taps.

14. Draw-off taps must—

(a) for those of a single tap type—comply with BS EN 200:2008;

(b) for those of a combination tap type—comply with BS EN 200:2008, BS EN 1286:1999 or BS EN 1287:1999;

(c) for those of a self-closing tap type—comply with BS EN 816:1997; or

(d) for those of a sensor tap type—comply with BS EN 15091:2013.

15. Gate valves must—

(a) for those with a copper alloy body—comply with BS EN 12288:2010;

(b) for those with a steel body—comply with BS EN 1984:2010; or

(c) for those with a cast iron or ductile iron body and used for general purpose—comply with the relevant requirements in BS EN 1171:2015, BS 5163-1:2004, BS 5163-2:2004, BS EN 1074-1:2000 and BS EN 1074-2:2000.

16. Mixing valves must—

(a) for those used for a basin or sink—comply with BS EN 200:2008 or BS EN 1286:1999;

(b) for those used for a shower or bath—comply with BS EN 200:2008, BS EN 1286:1999 or BS EN 1287:1999; or

(c) for those of a sensor type—comply with BS EN 15091:2013.

17. Globe valves must—

(a) for those with a copper alloy body—comply with BS 5154:1991;

(b) for those with a steel body—comply with BS EN 13709:2010; or

(c) for those with a cast iron or ductile iron body—comply with BS EN 13789:2010.

18. Check valves must—

(a) for those with a copper alloy body—comply with BS 5154:1991;

(b) for those with a steel body—comply with BS EN 16767:2016; or

(c) for those with a cast iron or ductile iron body—comply with BS EN 12334:2001 or BS EN 16767:2016.

19. Ball valves must—

(a) for those with a stainless steel body—comply with BS EN 13828:2003; or

(b) for those with a copper alloy body—comply with the relevant requirements in BS EN 13547:2013 and BS EN 13828:2003.

20. Butterfly valves must comply with BS EN 593:2009+A1:2011.

21. Pressure reducing valves must comply with BS EN 1567:1999.

(L.N. 81 of 2017)

Part 3

Cold Water Cisterns

(L.N. 81 of 2017)

1. No cistern for the storage of cold water shall be installed or used except with the permission in writing of the Water Authority who shall specify the maximum permitted capacity.

2. A cistern must be watertight, of adequate strength, properly supported and be made of concrete, stainless steel or fibre glass.

3. *(Repealed L.N. 81 of 2017)*

4. A cistern must be so located as to minimize the risk of contamination of stored water and be fitted with a suitable close fitting lockable cover that is not airtight. The cover must be so positioned as to facilitate inspection and cleaning.

5. If a cistern for non-potable water is placed adjoining to a cistern for potable water, a physical break must be provided between the cisterns, such that the walls and slabs of the cisterns are separated, however, tie beams linking the cisterns for structural requirements may be fitted and, if fitted, must be constructed in a way that cross contamination of the cisterns via the tie beams is not possible.

6. The inlet of a single cistern fed by a gravity supply must be fitted with a ball float valve and stop valve.

7. The inlet of a single cistern fed by a pumped supply must be fitted with an automatic control switch and without any stop valve.

7A. Each inlet of a twin cistern fed by a pumped supply must be fitted with an automatic control switch and a stop valve for temporary isolation purpose.

7B. A ball float valve or automatic control switch installed at the inlet of a cistern must shut off the supply when the water level is 25 mm below the invert of the overflow pipe or warning pipe. The invert of the inlet pipe or the outlet of the ball float valve must not be less than 25 mm above the top of the overflow pipe.

7C. All overflow pipes and warning pipes of a potable water cistern must be made of a corrosion-resisting material.

7D. An overflow pipe of one commercial size larger than the inlet pipe, and in no case less than 25 mm in nominal diameter, must be fitted to a cistern and be extended to terminate in a conspicuous position. The overflow pipe must not be connected to a drain or sewer or to the overflow pipe from another cistern.

7E. A stop valve must be provided at the outlet of a cistern. Provisions must be made for a drain-off pipe to enable the cistern to be emptied.

8. No cistern for the storage of fresh water supplied from the waterworks shall, without the written permission of the Water Authority, be so connected that it can be used for the storage of any water other than that supplied from the waterworks.

9. Every cistern shall be installed so that it is easily accessible for cleaning or repair. Where a cistern is installed inside a building and, due to limited headroom available, it is fixed with limited clearance from the ceiling or underside of the roof, a quickly detachable fitting must be used to enable it to be easily removed for cleansing and repair.

10. Safe access shall be provided to all cisterns by means of a secure permanent ladder or readily available portable ladder.

(L.N. 252 of 1977; L.N. 81 of 2017)

Part 4

Hot Water Inside Services

1. Subject to paragraph 2, a water heater must be supplied with water from a cold water cistern.

2. With the written permission of the Water Authority, a water heater may be connected direct to a main if—

   (a) it has been tested satisfactorily at factory to a pressure at least 1.5 times the maximum static working pressure of the water heater; and

   (b) it is of the following type—

      (i) a non-pressure type water heater in which no restriction of flow can be effected beyond the inlet control valve;

      (ii) a cistern type water heater;

      (iii) an instantaneous water heater;

      (iv) an unvented thermal storage type electric water heater that complies with the safety requirements under the Electrical Products (Safety) Regulation (Cap. 406 sub. leg. G).

3. If a water heater is connected direct to a main—

(a) every draw-off point of the water heater must not be less than 15 mm above the lowest part of the top edge of the receptacle supplied from the water heater; and

(b) if it is a gas water heater—the water heater must be constructed in a way that no leakage of gas into water can occur.

4. If mixing valves, water blenders or other combination of fittings are used with a water heater, the cold water supply to those fittings must be drawn from the same source that supplies the water heater in order to provide a balanced pressure and to obviate the risk of scalding if the water supply at the source fails or is restricted for any reason.

5. A thermal storage type water heater, other than a water heater of the type specified in paragraph 2(b)(iv), must be provided with an individual expansion pipe at its highest point and the pipe must continuously rise without obstruction until it discharges to atmosphere above the cistern at a sufficient height to prevent a constant outflow of hot water from the water heater via the pipe.

6. Taps or other fittings for drawing off water (other than a screwed plug with a removable key for emptying the system for cleansing or repair) must not be connected to any part of the hot water system below the top of the hot water cylinder in such a way that the level of the water in the cylinder can be lowered.

7. A tap used for drawing hot water must not be fixed at a greater distance (measured along the axis of the pipe by which the tap is supplied) from a hot water fitting, or from a flow and return system, than the distance opposite to the largest nominal diameter of the pipe as shown in the following table—

Table

Largest nominal diameter of pipe	Distance in metres
(a) Not exceeding 22 mm	12
(b) Exceeding 22 mm but not exceeding 28 mm.....	8
(c) Exceeding 28 mm.....	3

8. A loose jumper type valve fitted with a loose valve plate stopping any backflow, or a similar backflow stopping device, must be fitted at the inlet of a water heater if the water heater is not fitted with a non-return valve. This requirement does not apply to unvented thermal storage type electric water heaters.

9. Pipes used for conveying hot water must be made of steel and internally lined with chlorinated polyvinyl chloride, of copper or of a corrosion-resisting material. Cast iron pipes of not less than 50 mm in internal diameter may be used if suitable provision for their expansion is made.

10. A hot water cylinder or tank of a capacity of not less than 100 L must—

(a) if made of mild steel—comply with the requirements for cylinders or tanks in BS 417-2:1987; or

(b) if made of copper—comply with the relevant requirements in BS 1566-1:2002+A1:2011 and BS 1566-2:1984.

11. A system incorporating an unvented thermal storage type electric water heater must be provided with—

(a) a pipe that branches off from the supply pipe at a point above the top of the water heater, or some other devices that prevent water from draining down from the water heater if the water supply at the source fails;

(b) an anti-vacuum valve that complies with the relevant requirements in BS EN 13959:2004 and BS EN 14451:2005, or some other devices that prevent heated water from being syphoned back to the supply pipe; and

(c) a vessel that accommodates the expansion of heated water if that expansion is constrained by a non-return valve, or a similar device, incorporated at the inlet of the water heater.

(L.N. 81 of 2017)

Part 5

Flushing Apparatus

1. A flushing cistern must be fitted with a flushing device of the valveless syphonic or valve type. A stop valve must be fixed in a readily accessible position so as to control the water supply to the cistern.

2. A flushing cistern for a water-closet fitment or slop sink must be capable of giving a flush of not more than 15 L of water on each occasion the fitment is used.

3. The capacity of the flushing cistern in the case of trough water-closets and urinals shall be approved by the Water Authority subject to the discharge in the case of trough water-closets being not less than 9 litres of water for every metre of the channel and the discharge in the case of urinals being not less than 4.5 litres of water for every basin or stall, or in the case of a trough urinal, every metre thereof.

4. The internal diameter of flushing pipes shall—

   (a) in the case of water-closet fitments, trough water-closets and slop sinks, be not less than 30 mm;

   (b) in the case of urinals (other than trough urinals), be not less than 15 mm for each basin and stall; and

   (c) in the case of trough urinals, be not less than 15 mm for every metre thereof.

5. A flushing apparatus must be operated by mechanical means or a sensor. In the case of an automatic flushing apparatus, the method of control and the volume and frequency of the flushes must be designed to ensure adequate cleaning.

6. A flushing cistern operated by mechanical means or a sensor must be fitted with a ball float valve that is arranged to refill the cistern within 2 minutes.

7. A flushing cistern must in all cases be supplied from a cistern. Except with the written permission of the Water Authority, the cistern must not be used to supply any other apparatus, appliance or fitting. The cistern must be fitted with a suitable close fitting cover and provided with appropriate access to enable the cistern to be entered and cleaned.

8. Every flushing cistern shall have an overflow which shall discharge in a conspicuous position.

9. A trough water-closet or urinal must be fitted with a flushing cistern.

10. A water-closet fitment or slop sink must be fitted with a flushing cistern. However, a pressure flushing valve may be installed for flushing without the provision of a flushing cistern if there is a suitable head of water.

11. Flushing valves must comply with the relevant requirements in BS EN 997:2012+A1:2015 and BS EN 15091:2013.

(L.N. 252 of 1977; L.N. 81 of 2017)

Part 6

Baths, Lavatory Basins and Sinks

1. Every inlet to a bath, lavatory basin or sink shall be distinct from, and unconnected with, any outlet therefrom and every outlet for emptying such bath, lavatory basin or sink shall be provided with a well-fitting and easily accessible watertight plug or some other equally suitable apparatus.

2. The level of the point of discharge of hot or cold water to a bath, lavatory basin or sink shall be above the level of the overflow, or if there be no overflow, of the top edge of the bath, basin or sink.

3. The water supply to any bidet, sitz bath, slop or sluicing sink or similar apparatus, shall, if the inlet is liable to be submerged, be provided by—

   (a) a cistern supplying water to such apparatus only;

   (b) a cistern for flushing purposes only; or

   (c) a hot water distribution system supplying such apparatus only. *(L.N. 81 of 2017)*

4. All taps supplying baths, lavatory basins, sinks or similar apparatus shall have a stop valve fixed in a readily accessible position to control the supply to each fitting or branch pipe supplying a range of fittings.

LIST OF ABBREVIATIONS

COI	Commission of Inquiry into Excess Lead found in Drinking Water
LegCo	Legislative Council
plumbing system(s)	fire services or inside services
Schedule 2	Schedule 2 of the Waterworks Regulations (Cap. 102A)
the Amendment Regulation	the Waterworks (Amendment) Regulation 2017
the Amendment (No. 2) Regulation	the Waterworks (Amendment) (No. 2) Regulation 2017
the Subcommittee	the Subcommittee on Waterworks (Amendment) Regulation 2017
WA	Water Authority
WWO	Waterworks Ordinance (Cap. 102)
WWR	Waterworks Regulations (Cap. 102A)