

Guidelines for Drinking Water Safety Plans for Buildings in Hong Kong

Annex II – Template for Specific Developments (Residential Care Homes for the Elderly)

Drinking Water Safety Plan Template for Specific Developments (Residential Care Homes for the Elderly) in Hong Kong

for the application of Quality Water Supply Scheme for Buildings – Fresh Water (Management System)



Water Supplies Department

Hong Kong Special Administrative Region Government

Guidelines for Drinking Water Safety Plans for Buildings in Hong Kong

Annex II – Template for Specific Developments (Residential Care Homes for the Elderly)

Explanatory Notes:

1. This template is prepared based on recommendations of the World Health Organization (WHO) to assist the owner or house management staff of a residential care home for the elderly (RCHE) with an independent internal plumbing system¹ to develop and implement Water Safety Plan (WSP) to enhance water safety. It covers the essential elements of WSPs and common requirements applicable to plumbing layout of RCHEs. The template comprises the following components:
 - Introduction
 - Part A – General Description of the RCHE
 - Part B – Water Supply Flow Diagrams
 - Part C – Risk Assessment Summary Table for the RCHE
 - Part D – Routine Water Safety Checklist for the RCHE (Based on **Components** of Checking)
 - Part E – Routine Water Safety Checklist for the RCHE (Based on **Persons** Responsible for Conducting Checking)
2. A Designated Person (DP) should be assigned to oversee the development and implementation of the WSP. DP can be a person familiar with the operations of the RCHE, e.g. the staff-in-charge of house management. DP should be supported by other administrative, maintenance or technical staff to form a WSP team. If required, DP may seek technical advice from a Qualified Person (QP) (such as a Licensed Plumber (LP)) for the development and implementation of the WSP.²
3. DP should complete Parts A and B as far as possible with the support from the WSP team members. He/She should then review Part C and select those items applicable to the RCHE. For instance, items related to water storage tanks are not relevant to a building without such tanks. DP should similarly select relevant items in Part D and Part E³ to form a water safety checklist.
4. DP should perform general checking duties and engage QP to conduct specific checking according to the checklist.

¹ Applicable to an internal plumbing system, from connection point to taps, wholly managed by the RCHE and units within the RCHE.

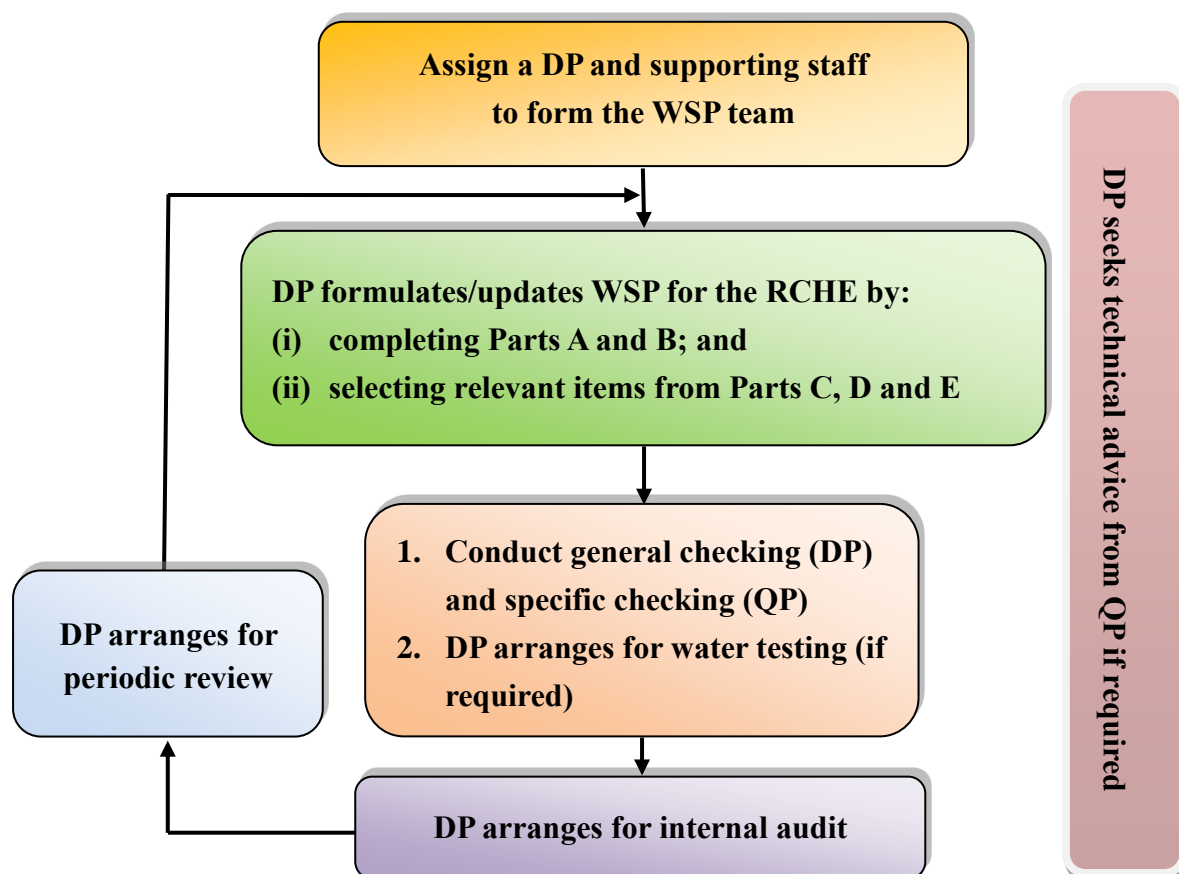
² If necessary, DP may engage relevant consultants to provide technical support. Lists of QPs and consultants trained in WSP for buildings are available from the Water Supplies Department's website (<https://www.wsd.gov.hk/en/water-safety/qualified-persons/index.html>).

³ Parts D and E contain the same checking items listed out in different formats.

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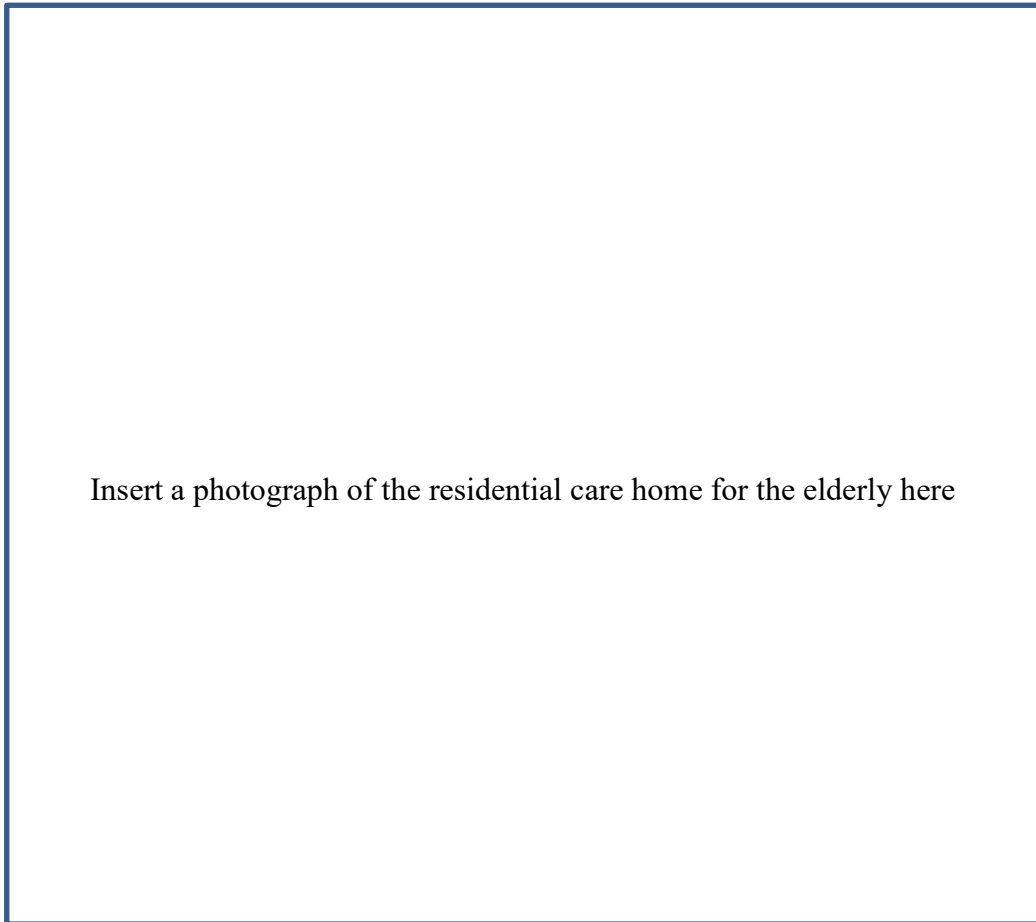
Annex II – Template for Specific Developments (Residential Care Homes for the Elderly)

5. Water testing is normally not required for an RCHE under WSP. Please see Section 4.16 of the Guidelines for details.
6. DP should arrange an internal audit at least once every two years. The auditor can be an internal staff or independent party who is not involved in the implementation of WSP. Among other aspects, the auditor should check whether (i) the WSP is up to date and generally accurate; (ii) conditions of the plumbing components tally with the checking records; (iii) staff are trained and competent to carry out the routine checking (e.g. how to check the strainers of taps and shower heads); and (iv) the documents and records are complete. Inspection of records and plumbing components by sampling should normally be sufficient.
7. DP should also arrange a periodic review at least once every two years and following major modifications of the plumbing systems for updating of the WSP as well as addressing the audit findings and other improvements, where applicable. Discussion over the WSP and follow-up actions in a scheduled staff meeting with records can serve the purpose.
8. The steps for the development and implementation of WSP for a RCHE are summarised in the following figure.



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Water Safety Plan
for <Name of Residential Care Home for the
Elderly>



<Month Year (of issuing)>

Version No.: _____
Holder: _____
Prepared by: _____ (Name)
 _____ (Post)

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Introduction

1. Water Safety Plan (WSP) was introduced by the World Health Organization (WHO) in 2004 as an effective means of consistently ensuring safety of drinking water supply through risk assessment and risk management.
2. Based on WHO's recommendations, this plan contains the essential elements of WSP with a view to preventing contamination of drinking water in the inside service. The plan is composed of the following parts:
 - Part A – General Description of the Residential Care Home for the Elderly (RCHE)
 - Part B – Water Supply Flow Diagrams
 - Part C – Risk Assessment Summary Table for the RCHE
 - Parts D and E – Routine Water Safety Checklist for the RCHE
3. Part A contains a brief description of the RCHE's characteristics including the Designated Person (DP) assigned to oversee the development and implementation of the WSP.
4. Part B contains the schematic flow diagrams indicating the essential plumbing components of the RCHE.
5. Part C contains a summary of risk assessment on the RCHE's plumbing system.
6. Parts D and E are the routine water safety checklists summarising the checking duties undertaken by DP and Qualified Person (QP) based on the risk assessment.
7. DP performs the general checking duties and a QP is engaged to conduct specific checking according to the checklist.
8. DP arranges internal audits at least once every two years to verify effectiveness of the WSP.
9. DP periodically reviews the WSP at least once every two years and following major modifications of the plumbing systems.

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Part A
General Description of the RCHE

Item	Details
Publication date and version of WSP	Publication Date: Version:
Person responsible for this WSP (Designated Person)⁴	Name: Position:
Contacts of DP	Telephone: Email:
Name of RCHE	
Address of RCHE	
Owner	
Management Agent	
Maintenance Agent	
Lot Boundary (or Location Map⁵)	
No. of Blocks	
No. of Floors	
No. of Units (if applicable)	
No. of the Elderly and Staff	
Water connection notification or certificate references	<input type="checkbox"/> No <input type="checkbox"/> Yes, file ref. of notification or certificate reference no. issued by the WSD:
Plumbing line diagrams ref. nos.⁶	<input type="checkbox"/> No <input type="checkbox"/> Yes, plumbing line diagrams ref. nos. :

⁴ It is recommended that a Designated Person (DP), such as the staff-in-charge of house management, be assigned to oversee implementation of the WSP.

⁵ For instance, extracted from Geoinfo Map (<https://www.map.gov.hk>).

⁶ If not available, it is recommended that suitable drawings be created for the RCHE.

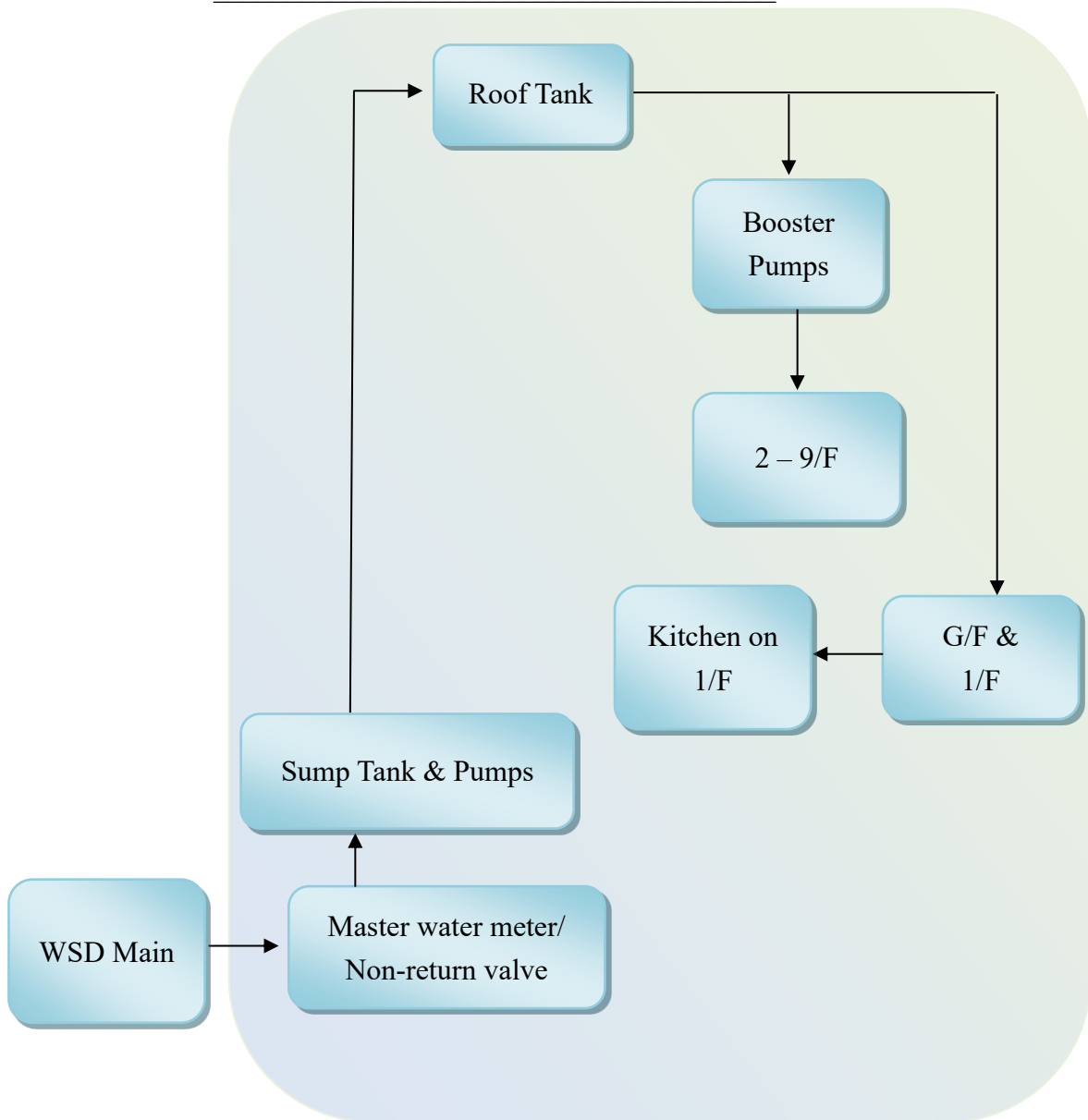
Item	Details
Types of water supply present on site (cross out or add items as appropriate)	(i) Potable water (ii) Seawater flushing water (iii) Air-conditioning cooling water (iv) Fire service water (v) Roof-harvested rainwater (vi) Process water (e.g. distilled or reverse-osmosiswater for boiler) (vii) Recycled/reclaimed rainwater or sewage (viii) Other (please specify)
Water Quality Testing	<input type="checkbox"/> No <input type="checkbox"/> Yes (please provide the following information) Test parameters (this may refer to a separate schedule): Last testing on: Test report ref. no.: Next testing scheduled:
WSP audit⁷	Auditor Name: Type (Please tick in the appropriate box): <input type="checkbox"/> Internal staff <input type="checkbox"/> Independent party Last audit on: Audit report ref.:

⁷ The auditor can be an internal staff or independent party who is not involved in the implementation of WSP. Preferably, the auditor shall have undergone training related to internal audit of quality management system.

Part B
Water Supply Flow Diagrams
Based on as-built plumbing line diagrams ref. nos. xxxx (if applicable)⁸
(Illustrative Examples)

1. Water supply flow diagram for the block

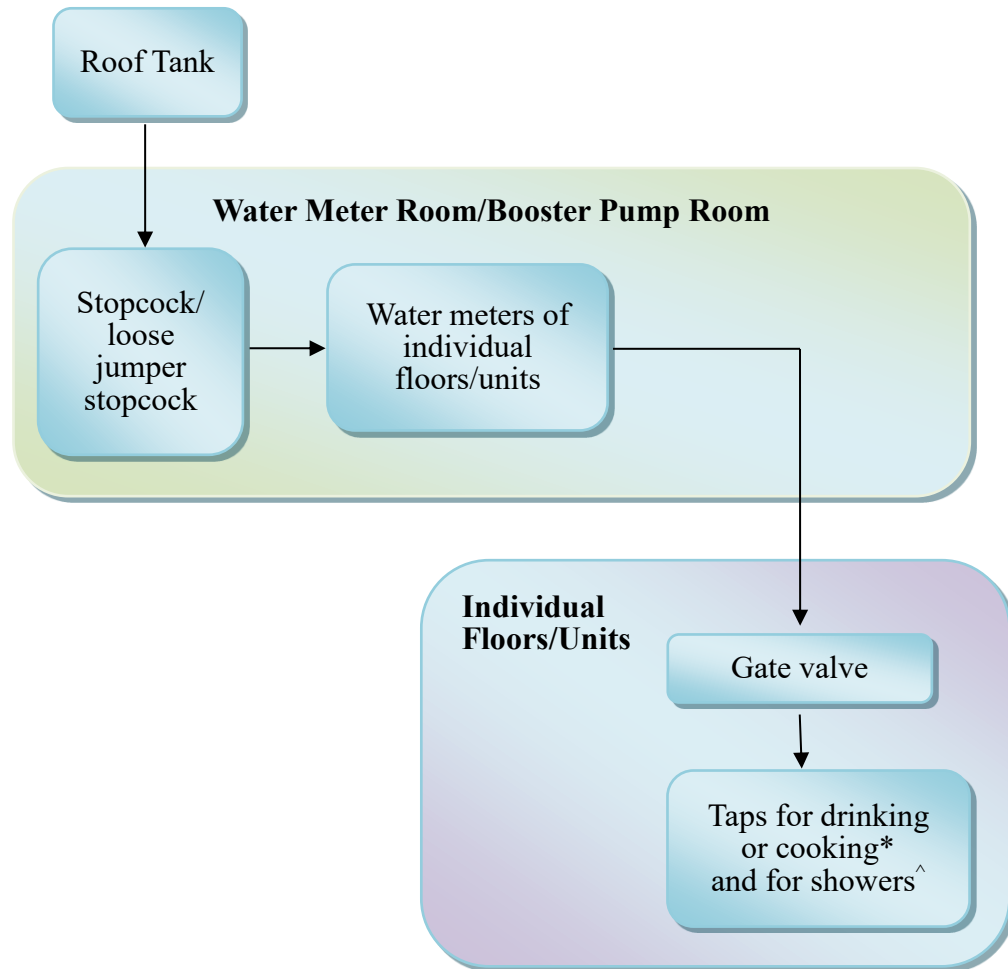
Name of block: _____



⁸ If the latest as-built drawings are not available, please indicate how the schematic diagrams are constructed, e.g. “Based on inspection undertaken by [name of QP] in [Month-Year].” (No need to indicate if prepared at time of conduct of risk assessment for Part C)

2. Water supply flow diagram for individual floors or units

Name of block: _____



*Water served to elderly for drinking are filtered and boiled in wall-mounted dispensers.

No filter or dispenser is installed for the kitchen tap on the 1st floor.

^Storage type water heaters are used and strainers are fitted to shower heads

Part C

Risk Assessment Summary Table for the Residential Care Home for the Elderly⁹

Name of block : _____

Hazards (chemical, microbial or physical contaminant) / Hazardous Events (causes of excessive levels of, or exposure to, hazards)	Likelihood	Consequence	Risk	Recommended Control Measures	Recommended Monitoring Procedures
1. Stagnation of water leading to stale water with possible slime or biofilm formation. This situation could cause unpleasant tastes or odours leading to users' complaints or reluctance to use the water.	Likely	Minor	Moderate	1. Minimise dead-legs in plumbing system 2. Respond to the elderly or staff's complaints on water quality 3. Remind staff to flush idle or infrequently-used taps and showerheads	1. Construct plumbing system following WSD's instructions and arrange for submissions and inspection as required. Maintain copies of the submitted documents (By DP and LP) 2. Review and set up flushing programme with LP and conduct flushing of:
2. Storing and supplying water at temperatures in the range 20°C to 46°C that are favourable to the growth of opportunistic pathogens (including, but not limited to, legionellae). These pathogens could potentially cause infections and serious illnesses, including Legionnaires' disease to which elderly people are more susceptible.	Rare	Major	Low	4. Flushing before first occupancy and after major plumbing works as well as after prolonged periods of non-use 5. Install backflow prevention devices to prevent backflow of water from known dead-legs into the main water supply system where applicable 6. Properly operate and maintain the hot and cold water systems to prevent Legionnaires' disease	a. known dead-legs (if present) b. idle or infrequently-used taps and showerheads (if present) c. prior to first occupancy after building construction or plumbing modification d. in response to the elderly or staff noticing water quality problems (By DP) 3. Inspect and maintain backflow prevention devices (By LP) 4. Regular inspection and maintenance of hot water storage devices (e.g. storage type water heaters) and operate the storage devices at 60°C or above (where applicable) (Caution: To prevent accidental scalding, the hot water temperature at the tap outlets that are accessible to the elderly should not be higher than 43°C) (By DP) 5. Regular cleaning (including descaling and disinfection if required) of strainers in water taps and shower heads (where applicable) (By DP) 6. If there are independently operating units in the building, check if relevant staff have been reminded through posting, notice boards or other means to carry out flushing and other actions (By DP)

⁹ Note:

- (i) A directory of approved plumbing components is available via: <http://www.wsd.gov.hk/en/plumbing-engineering/pipes-and-fittings-to-be-used-in-inside-service-or/index.html>
- (ii) DP refers to the Designated Person who oversees implementation of the WSP
- (iii) LP refers to Licensed Plumber as an example of those qualified professionals who are competent and engaged by DP to carry out the duties. LP is used as an example in the table primarily to enhance comprehensibility of users.
- (iv) Please see Part D for frequency of checking and corrective actions.
- (v) Content of the table may be modified as appropriate subject to the RCHE's risk assessment.
- (vi) Control measures, monitoring procedures and detailed information of prevention of Legionnaires' disease (in relation to items 1 and 2 above) are available in "Code of Practice for Prevention of Legionnaires' Disease" (available via https://www.emsd.gov.hk/en/supporting_government_initiatives/legionnaires_disease/publications/codes_of_practice/index.html)
- (vii) Tips for using wall-mounted dispensers are available via http://www.wsd.gov.hk/filemanager/en/share/pdf/tips_for_using_wall_mounted_dispensers_e.pdf
- (viii) Please refer to WSD's "Technical Requirement for Plumbing Works in Buildings" for the requirements of installing backflow prevention devices for water dispensers (<https://www.wsd.gov.hk/en/plumbing-engineering/requirements-for-plumbing-installation/technical-requirements-for-plumbing-works-in-bldgs/index.html>).
- (ix) Procedure for cleansing water tanks is available via: <https://www.wsd.gov.hk/en/faqs/index.html#12-205>. DP shall ensure that all rinsing water of the tanks is drained away before refilling with fresh water.

Hazards (chemical, microbial or physical contaminant) / Hazardous Events (causes of excessive levels of, or exposure to, hazards)	Likelihood	Consequence	Risk	Recommended Control Measures	Recommended Monitoring Procedures
<p>3. Excessive leaching of hazardous metals (e.g. lead, copper, cadmium, chromium, antimony, nickel, or iron from metal pipes or plasticisers from plastic pipes) from inappropriate plumbing materials or due to long stagnation of water.</p> <p>This may cause metallic tastes, discoloured water or stained washing and fittings (blue from copper, brown from iron), or even adverse health effects after prolonged exposure.</p>	Likely	Moderate	High	<ol style="list-style-type: none"> 1. Construct plumbing system and carry out plumbing modifications in accordance with WSD's instructions 2. Use plumbing materials approved by WSD for all new plumbing works and repair or replacement of plumbing 3. Remind staff to flush idle or infrequently-used taps 4. Flushing before first occupancy and after major plumbing works as well as after prolonged periods of non-use 5. Install backflow prevention devices to prevent backflow of contaminated water into the main water supply system where applicable 	<ol style="list-style-type: none"> 1. Engage LP to construct plumbing system and carry out plumbing works and arrange for submissions and inspection according to WSD's instructions. Maintain copies of the submitted documents (By DP) 2. Review and set up flushing programme with LP and conduct flushing of: <ol style="list-style-type: none"> a. known dead-legs (if present) b. idle or infrequently-used taps (if present) c. prior to first occupancy after building construction or plumbing modification d. in response to the elderly or staff noticing water quality problems (By DP) 3. Inspect and maintain backflow prevention devices (By LP) 4. If there are independently operating units in the building, check if relevant staff have been reminded through posting, notice boards or other means to use WSD-approved plumbing materials for all new plumbing works and repair or replacement, and to carry out the above mentioned flushing and inspection actions (By DP)
<p>4. Transfer of hazardous organics (e.g. petrochemicals or paint strippers) through plastic pipes due to use of inappropriate plumbing materials. This commonly results from, for instance, polyethylene pipes being laid in ground that is, or becomes, contaminated by fuel spills or spillage of other organic chemicals.</p> <p>This may cause petrochemical tastes or even adverse health effects after prolonged exposure.</p>	Likely	Moderate	High		
<p>5. Cross-connection between potable* and non-potable water supplies leading to possible contaminants from the non-potable water causing unpleasant taste (e.g. saltiness), odours or hazardous substances (e.g. pathogens from non-potable water) to enter the potable water system.</p> <p>The problem can arise due to drinking taps being connected to the wrong water pipe or due to the unauthorised inter-connection of potable and non-potable water pipes.</p> <p>This can cause tastes or odours that water users find unpleasant and that may in turn make water users feel unwell or could even cause illness due to hazardous substances (pathogenic microorganisms or chemicals) being present in the water.</p> <p>* Potable water refers to water for drinking, food preparation and hygienic uses such as bathing, showering, hand washing, etc.</p>	Rare	Major	Low	<ol style="list-style-type: none"> 1. Carry out plumbing works according to WSD's instructions and avoid cross-connection in plumbing system 2. If applicable, set pump pressures, so that the potable water is at higher pressure than all non-potable water (typically with the potable water system being at least 50 kPa above the non-potable water system pressure) to prevent non-potable water from flowing into the potable water. 3. Retain as-built drawings and plumbing diagrams for all plumbing works and plumbing modifications following completion of works as far as practicable 4. Install backflow prevention devices to prevent backflow of non-potable water into the potable water supply system 5. Clearly differentiate potable and non-potable water pipes/tanks using labels/colours as far as pract 6. Ensure potable water taps are not connected to the non-potable water system (if present) 	<ol style="list-style-type: none"> 1. Engage LP to carry out plumbing works and arrange for submissions and inspection according to WSD's instructions. Maintain copies of the submitted documents (By DP) 2. Set and check set points for pump pressure and pressure reducing valve (By LP) 3. Inspect and maintain water pumps (By DP and LP) 4. Regular inspection of roof tank levels (By DP) 5. Check if as-built plumbing drawings have been updated following plumbing works (By DP) 6. Inspect and maintain backflow prevention devices (By LP) 7. Check if potable and non-potable pipes/tanks have been differentiated with labels/colours (By DP and LP) 8. Check if labels/colour markings on potable and non-potable water pipes/tanks are intact (where applicable) (By DP) 9. Conduct flow tests after construction or modifications of plumbing system to demonstrate that potable water are not connected to the non-potable water system (where applicable) (By DP and LP)

Hazards (chemical, microbial or physical contaminant) / Hazardous Events (causes of excessive levels of, or exposure to, hazards)	Likelihood	Consequence	Risk	Recommended Control Measures	Recommended Monitoring Procedures
<p>6. Ingress of contaminants due to pipe breaks, leakages or plumbing modifications and loss of water pressure leading to possible contaminants causing unpleasant taste, odours or hazardous substances to enter the potable water system.</p> <p>The problem can arise if there is a leak in the potable water system that whilst it would normally cause water to flow out could equally allow contaminated water to flow in if the pressure in the pipe is lost or low.</p> <p>This can cause tastes or odours that water users find unpleasant and that may in turn make water users feel unwell or could even cause illness due to hazardous substances (pathogenic microorganisms or chemicals) being present in the water.</p>	Rare	Major	Low	<ol style="list-style-type: none"> 1. Construct plumbing system and carry out plumbing modifications in accordance with WSD's instructions 2. Maintain sufficient water pressure 3. Flush pipes and fittings to bring in clean water and flush out any possible contamination that may have entered via leaks following loss of water pressure 4. Repair and replace leaking pipes, joints or fittings 	<ol style="list-style-type: none"> 1. Engage LP to construct plumbing system or carry out plumbing modifications according to WSD's instructions (By DP) 2. Set and check set points for pump pressure, roof tank level and pressure reducing valve (By LP) 3. Inspect and maintain water pumps (By DP and LP) 4. Regular inspection of roof tank levels (By DP) 5. Ensure sufficient flushing after plumbing modifications or loss of water pressure (By DP and LP) 6. Inspection of inside service for leaks (By DP)
<p>7. Backflow of hazardous substance into potable water system leading to possible contaminants causing unpleasant taste, odours or hazardous substances to enter the potable water system.</p> <p>The problem can arise whenever the potable water system is physically connected to, for instance, point-of-use (POU) devices requiring chemical cleansing or a container of chemicals, particularly if the hazardous liquid is pressurised and pushes the hazardous chemical back into the water supply, or if the water supply loses pressure and sucks the hazardous chemical into the water supply.</p> <p>This can cause tastes or odours that water users find unpleasant and that may in turn make water users feel unwell or could even cause illness due to hazardous substances (chemicals) being present in the water.</p>	Rare	Major	Low	<ol style="list-style-type: none"> 1. Construct plumbing system in accordance with WSD's instructions 2. Maintain sufficient water pressure 3. Install backflow prevention devices between the water supply plumbing and any possible connection to any potentially hazardous liquid to prevent backflow of contaminated water into the potable water supply system (where applicable) 	<ol style="list-style-type: none"> 1. Engage LP to construct plumbing system or carry out plumbing modifications and arrange for submissions and inspection according to WSD's instructions. Maintain copies of the submitted documents (By DP) 2. Set and check set points for pump pressure, roof tank level and pressure reducing valve (By LP) 3. Inspect and maintain water pumps (By DP and LP) 4. Regular inspection of roof tank levels (By DP) 5. Inspect and maintain backflow prevention devices (By LP)
<p>8. Entry of hazardous substances into potable water tanks (sump tank or roof tank) leading to possible unpleasant tastes, odours or hazardous substances present in the potable water system.</p> <p>The problem can arise due to deliberate contamination of the water tank or due to birds, animals or insects getting into the water tank.</p> <p>This can cause tastes or odours that water users find unpleasant and that may in turn make water users feel unwell or could even cause illness due to hazardous substances (pathogenic microorganisms or chemicals) being present in the water.</p>	Rare	Catastrophic	Low	<ol style="list-style-type: none"> 1. Ensure proper design, construction and maintenance of water storages such as sump and roof tanks 2. Keep sump and roof tank room (if available) locked 3. Keep sump and roof tank access hatch locked and secure 4. Prevent entry of birds, animals or insects into the water tanks by sealing all holes and protecting any vents and overflow pipes using gnaw-proof mesh 5. Ensure cleanliness of sump and roof tanks e.g. through DP inspecting and arranging cleansing of sump and roof tanks as required 6. Ensure no water and debris (leaves, twigs, etc.) accumulation on exposed tank roof and rainwater drains free from blockage 	<ol style="list-style-type: none"> 1. Engage LP to construct storage tanks and arrange for submissions and inspection according to WSD's instructions. Maintain copies of the submitted documents (By DP) 2. Inspect sump and roof tank rooms (if available) and tank covers (By DP) 3. Inspect air vents and overflow pipes of sump and roof tanks (By DP) 4. Inspect sump and roof tank interiors (By DP) 5. Arrange for regular cleansing of sump and roof tanks in accordance with WSD's instructions (By DP) 6. Inspect exposed tank and rainwater drains (By DP)

Hazards (chemical, microbial or physical contaminant) / Hazardous Events (causes of excessive levels of, or exposure to, hazards)	Likelihood	Consequence	Risk	Recommended Control Measures	Recommended Monitoring Procedures
<p>9. Inappropriate alterations to plumbing by persons not authorised, licensed or trained to make such alterations. This can lead to contamination of the water supply through a range of pathways.</p> <p>Use of the wrong plumbing materials could result in hazardous chemicals (such as lead) being present in the water.</p> <p>Cross-connections could arise resulting in potable water taps supplying non-potable water.</p> <p>Connections could be made between potable water and hazardous liquids without the required backflow prevention systems being in place, which could result in hazardous chemicals being forced at pressure, or sucked in via backflow, into the water supply.</p> <p>This can cause tastes or odours that water users find unpleasant and that may in turn make water users feel unwell or could even cause illness due to hazardous substances (pathogenic microorganisms or chemicals) being present in the water.</p>	Likely	Moderate	High	<ol style="list-style-type: none"> 1. Carry out plumbing modifications in accordance with WSD's instructions 2. Use plumbing materials approved by WSD for all new buildings, new plumbing works and repair or replacement of plumbing 3. Install backflow prevention devices between the water supply plumbing and any possible connection to any potentially hazardous liquid to prevent backflow of contaminated water into the potable water supply system (where applicable) 4. Clearly differentiate potable and non-potable water pipes/tanks using labels/colours as far as practicable 5. Provide advice to staff about the importance of not carrying out inappropriate alterations to plumbing 	<ol style="list-style-type: none"> 1. Engage LP to construct plumbing system or carry out plumbing modifications and arrange for submissions and inspection according to WSD's instructions. Maintain copies of the submitted documents (By DP) 2. Inspect and maintain backflow prevention devices (By LP) 3. Check if potable and non-potable pipes/tanks have been differentiated with labels/colours (By DP and LP) 4. Check if labels/colour markings on potable and non-potable water pipes/tanks are intact (where applicable) (By DP) 5. If there are independently operating units in the building, check if relevant staff have been reminded through posting, notice boards or other means to use WSD-approved plumbing materials and not to carry out inappropriate plumbing alterations (By DP)
<p>10. Contamination of drinking water due to inappropriate installation, operation or maintenance of POU devices fitted to drinking taps or connected to water mains.</p> <p>The problem can arise if the POU devices such as reverse osmosis units, water filters, water dispensers or wall-mounted dispensers are not properly installed, operated or maintained, e.g. use of inappropriate filters, wall-mounted dispensers or plumbing materials, leakages, water stagnant in wall-mounted dispensers and the inlet pipes for prolonged periods, overloading of filter cartridges leading to release of hazardous substances, breakthrough, backflow of substances accumulated in filter cartridges into water supply during low or loss of water pressure, etc.</p> <p>This can cause tastes or odours that water users find unpleasant and that may in turn make water users feel unwell or could even cause illness due to hazardous substances (pathogenic microorganisms or chemicals) being present in the water.</p>	Rare	Major	Low	<ol style="list-style-type: none"> 1. Ensure selection and proper installation of appropriate model of POU devices 2. Ensure POU devices are properly operated and maintained 3. Regularly flush wall-mounted dispensers and the inlet pipes according to the drinking habits, e.g. conduct flushing before breakfast if the wall-mounted dispenser is idle after dinner until morning 	<ol style="list-style-type: none"> 1. Consult Qualified Persons (QPs) for selection of POU devices, e.g. appropriately certified products (By DP) 2. Engage LP to install POU devices according to manufacturer's product instructions and WSD's plumbing instructions (By DP) 3. Operate, inspect and maintain POU devices, including change of filter cartridges, according to manufacturer's instructions (By DP) 4. Review, set up and conduct flushing programme for wall-mounted dispensers and inlet pipes according to the drinking habits (By DP) 5. If there are independently operating units in the building, check if relevant staff have been reminded through posting, notice boards or other means to operate, inspect and maintain POU devices as well as flushing wall-mounted dispensers and inlet pipes (By DP)

Risk Assessment Summary Table prepared by QP:

_____ (Name)

_____ (Post)

_____ (LP No./

Professional Membership No., if applicable)

_____ (Signature)

_____ (Date)

Part D
Routine Water Safety Checklist for the Residential Care Home of the Elderly (Based on Components of Checking)¹⁰

Location of check or action	Typical frequency of check or action	Typical person responsible for check or action ¹¹	Item to check or action to be completed and target to be achieved	Hazard/ Hazardous Event No. in Part C	Corrective action to take if target is not achieved
1. Water storage tanks (sump tank, roof tank, header tank or any other storage tanks)	Monthly	DP	The tank room (if available) is locked and secure	8	Secure and lock the tank room
			The tank access hatch is locked and secure	8	Secure and lock the tank access hatch
			There are no holes, gaps or entry points through which insects, birds or animals could enter into the tanks	8	Repair any holes or replace part that has holes
			Tank vents and overflow pipes have fine, gnaw-proof insect-proof mesh and the mesh is secure and intact	8	Repair or replace any mesh
			Tanks are clean inside and are free of foreign materials or deposits	8	Arrange cleansing of the tanks
			No water and debris (leaves, twigs, etc.) accumulated on exposed tank roof and the rainwater drains are free from blockage	8	Remove accumulated water and debris and clear rainwater drains
	Half yearly	DP	Tanks are cleansed every 6 months ¹²	8	Arrange cleansing of the tanks
Annually	LP	Potable water roof (header) tank levels are set to provide sufficient water pressure and level switch top up control is functioning correctly	5-7	Adjust level settings if required and make any necessary repairs	
2. Water pumps (sump pumps or booster pumps)	Monthly	DP	There is no leakage	5-7	Repair or replace the leaking part
	Monthly	DP	There is no unusual noise during pump operations	5-7	Repair or replace the pump
	Annually	LP	Pump pressure set points are correctly adjusted to provide sufficient water pressure and the pressure measurement devices and pumps are functioning correctly	5-7	Adjust pressure settings if required and make any necessary repairs
	Annually	LP	Pressure and level set points for the potable water are higher (typically by at least 50 kPa, if feasible) than for non-potable water (where applicable)	5-7	
	Annually (or according to supplier's instructions)	LP	Maintain pumps as recommended by the supplier (this may entail actions such as replacing worn parts, bleeding air and lubricating to minimise noise and risk of failure) and check for evidence of parts being badly worn	5-7	Replace badly worn parts in good time so that the pump doesn't fail resulting in a loss of pressure
3. Pressure reducing valves	Annually	LP	Pressure reducing valve set points are correctly adjusted to provide sufficient water pressure and the pressure measurement devices are functioning correctly	5-7	Adjust pressure settings if required and make any necessary repairs
			Pressure and level set points for the potable water are higher (typically by at least 5 m or 50 kPa, if feasible) than for non-potable water (where applicable)	5-7	
4. Water meters	Annually	LP	Backflow prevention devices are in place as required under the WSD requirements and are found to be functioning correctly ¹³	1-5, 7 & 9	Install back flow prevention devices if missing and replace any faulty devices
5. Pipes, joints and fittings	Every 3 months	DP	Confirm that there are no leaks in pipes, joints or fittings that might indicate pipe failure and the possibility of ingress of contaminated water via the leaks if water pressure is lost	6	Ask LP to replace or repair leaking pipes or joints and to check other nearby pipes or joints of similar age to see if preventive replacement is required
	Annually	DP	Confirm that labels/colour markings on water pipes/tanks are clear to differentiate between potable and non-potable water systems (where applicable)	5 & 9	Add or replace any missing or unclear labels/colour markings

¹⁰ Owner or house management staff is encouraged to incorporate the Checklist into the building's routine maintenance schedule. The table may be rearranged according to location, check frequency or person responsible for the checking. Content of the checklist may be modified as appropriate subject to the building's risk assessment.

¹¹ LP refers to Licensed Plumber as an example of QPs and consultants who are competent and engaged by DP to carry out the duties. LP is used as an example in the table primarily to enhance comprehensibility of users.

¹² Water storage tanks may be cleansed more frequently if required. Procedure for cleansing water tanks is available via: <http://www.wsd.gov.hk/en/faqs/index.html#12-205>. DP shall ensure that all rinsing water of the tanks is drained away before refilling with fresh water.

¹³ It may not be feasible to check whether the backflow prevention devices are functioning correctly if the water supply system is on line

Location of check or action	Typical frequency of check or action	Typical person responsible for check or action ¹¹	Item to check or action to be completed and target to be achieved	Hazard/ Hazardous Event No. in Part C	Corrective action to take if target is not achieved
	In response to complaints	DP	Flush the tap at its maximum practicable flow rate until stagnant water has been replaced by fresh water. The flushing period is typically about 2 minutes or longer for larger systems. Flushing should continue until the water is visibly clear and colourless when viewed in a glass or white cup and has no noticeable taste or odour	1-4	Advise WSD if problem persists
	Annually	LP	Confirm that there are no cross-connections at the main plants that could lead to non-potable water (where applicable) flowing from potable water fittings by conducting checks such as flow tests	5	Remove any cross-connections if identified
6. Any communal taps supplying water that is to be used for drinking or food preparation (e.g. kitchen taps or water fountains) that haven't been used for prolonged period or that have very low levels of use and where water could stagnate	Every week or more frequent as required	DP	Flush the tap (where applicable) at its maximum practicable flow rate until stagnant water has been replaced by fresh water. The flushing period is typically about 2 minutes or longer for larger systems. Flushing should continue until the water is visibly clear and colourless when viewed in a glass or white cup and has no noticeable taste or odour.	1-4	Keep flushing until fresh water has been drawn through Increase flushing frequency if stagnant, metallic, discoloured or smelly water is noticed in between flushing events Advise WSD if problem persists
7. POU devices (e.g. water filters, water dispensers, wall-mounted dispensers) fitted to drinking taps or connected to the water mains ¹⁴	According to supplier's instructions	DP	Inspect and maintain the devices (where applicable) according to supplier's instructions to ensure proper operation. Mark filter cartridge expiry dates on the casings and replace cartridges accordingly	10	Ask supplier or qualified person to repair the devices if necessary. Mark filter cartridge expiry dates on the casings and replace cartridges accordingly Increase flushing frequency if stagnant, metallic, discoloured or smelly water is noticed. Advise WSD if problem persists
			Flush water dispensers (where applicable) according to supplier's instructions or Department of Health's health advice ¹⁵		
			Flush wall-mounted dispensers (where applicable) and the inlet pipes regularly ¹⁶		
8. Strainers in water taps and shower heads	Quarterly (or according to supplier's instructions)	DP	Remove strainers in water taps and shower heads for cleaning (including descaling and disinfection if required) according to supplier's instructions.	1	Arrange cleaning or replacement of strainers
9. Hot water storage devices (e.g. storage type water heaters)	Quarterly	DP	Confirm that the hot water storage devices operate at 60°C or above (Caution: To prevent accidental scalding, the hot water temperature at the tap outlets that are accessible to the elderly should not be higher than 43°C)	1	Adjust the operation temperature of the hot water storage devices. Arrange maintenance if the temperature cannot be suitably adjusted
	Annually (or according to supplier's instructions)	DP	Inspect and maintain the hot water storage devices according to the supplier's recommendations. Engage appropriate maintenance technician to carry out the tasks if required.	1	Arrange inspection and maintenance of hot water storage devices

¹⁴ Please refer to WSD's "Technical Requirement for Plumbing Works in Buildings" for the requirements of installing backflow prevention devices for water dispensers (<https://www.wsd.gov.hk/en/plumbing-engineering/requirements-for-plumbing-installation/technical-requirements-for-plumbing-works-in-bldgs/index.html>)

¹⁵ Department of Health's "Health Advice on Using Water Dispensers" is available via: https://www.chp.gov.hk/files/pdf/guidelines_on_use_of_drink_fountain_public.pdf

¹⁶ Tips for using wall-mounted dispensers are available via: http://www.wsd.gov.hk/filemanager/en/share/pdf/tips_for_using_wall_mounted_dispensers_e.pdf

Location of check or action	Typical frequency of check or action	Typical person responsible for check or action ¹¹	Item to check or action to be completed and target to be achieved	Hazard/ Hazardous Event No. in Part C	Corrective action to take if target is not achieved
10.For individual floors/units or on notice boards	Monthly or as required	DP	<p>If there are independently operating units in the building, check if updated versions of the following notification or advice, if appropriate, are available to relevant staff through notice board or other means:</p> <ul style="list-style-type: none"> i. Regular flushing of wall-mounted dispensers and the inlet pipes as well as infrequently-used taps¹⁷ ii. Do not take water from hot water tap for drinking water purpose. iii. Use of compliant plumbing components¹⁸ iv. Any scheduled/non-scheduled suspension of water supply. Flushing of taps for at least 2 minutes before use upon resumption of water supply. v. Comply with WSD’s instructions when carrying out plumbing modifications. vi. Maintain filters, wall-mounted dispensers or other POU devices (where applicable) in accordance with supplier’s instructions, e.g. replacement of filter cartridges. vii. Operate hot water storage devices (such as storage type water heaters) at 60°C or above and carry out regular maintenance (Caution: To prevent accidental scalding, the hot water temperature at the tap outlets that are accessible to the elderly should not be higher than 43°C). viii. Remove strainers in water taps and shower heads for cleaning (including descaling and disinfection if required) according to supplier’s instructions. ix. Refer to WSD’s “Water Use Tips” if necessary¹⁹ 	1-4, 9 & 10	Update any notification or advice on plumbing and inside services

¹⁷ Typical flushing advice is available via: http://www.wsd.gov.hk/filemanager/en/share/pdf/tips_to_reduce_lead_intake_e.pdf

¹⁸ A directory of approved plumbing components is available via: <http://www.wsd.gov.hk/en/plumbing-engineering/pipes-and-fittings-to-be-used-in-inside-service-or/index.html>

¹⁹ WSD’s “Water Use Tips” is available via: <https://www.wsd.gov.hk/en/core-businesses/water-quality/water-use-tips/index.html>

Part E

Routine Water Safety Checklist for the Residential Care Home for the Elderly (Based on Persons Responsible for Conducting Checking)²⁰

Name of block : _____

Table I. Routine checking/inspection by the Designated Person (such as the house management staff)

Inspection Month : _____

Location	Frequency	Item to check/action to be completed/target to be achieved	Observations (✓/✗)	Remarks in Findings (if “✗”)	Checking/Action Date		Corrective action to take if target is not achieved	Corrective action completed	
					Date	Signature		Date	Signature
1. Water storage tanks (sump tank, roof tank, header tank or any other storage tanks)	Monthly	The tank room (if available) is locked and secure					Secure and lock the tank room		
		The tank access hatch is locked and secure					Secure and lock the tank access hatch		
		No holes, gaps or entry points into the water tanks through which insects, animals or birds could enter					Repair any holes or replace part that has holes		
		Tank vents and overflow pipes have fine, gnaw-proof insect-proof mesh, and the mesh is secure and intact					Repair or replace mesh		
		Tanks are clean inside and are free of foreign materials or deposits					Arrange cleansing of the tanks		
	No water and debris (leaves, twigs, etc.) accumulated on exposed tank roof and the rain water drains are free from blockage					Remove accumulated water and debris and clear rain water drains			
	Half yearly	Tanks are cleansed every 6 months ²¹ -Cleansing record (e.g. copies of signed completion certificates or confined space – Permit-to-Work Certificates, which show the location and dates of cleaning and signatures of competent person) should be attached to the inspection record for the month of cleansing -Specify the last cleansing date in “Observations” column	Last cleansing date:				Arrange cleansing of the tanks		
2. Water pumps (sump pumps or booster pumps)	Monthly	There is no leakage					Repair leak or replacement		
	Monthly	There is no unusual noise during pump operations					Repair or replace the pump		
3. Pipes, joints and fittings	Every 3 months	There is no leak in pipes, joints or fittings					Replace or repair leaking pipes or joints		
	Annually	Labels/colour markings on water pipes/tanks are clear to differentiate between potable and non-potable water systems (where applicable)					Replace labels/colour markings		
	In response to complaints	Flush the tap at its maximum practicable flow rate until stagnant water has been replaced by fresh water. The flushing period is typically about 2 minutes or longer for larger systems. Flushing should continue until the water is visibly clear and colourless when viewed in a glass or white cup and has no noticeable taste or odour.					Advise WSD if problem persists		
4. Infrequently-used communal taps for drinking or food-preparation purposes	Every week or more frequent as required	Flush the tap at its maximum practicable flow rate until stagnant water has been replaced by fresh water. The flushing period is typically about 2 minutes or longer for larger systems. Flushing should continue until the water is visibly clear and colourless when viewed in a glass or white cup and has no noticeable taste or odour.					Increase flushing frequency if stagnant, metallic, discoloured or smelly water is noticed in between flushing events. Advise WSD if problem persists		

²⁰ Building owner/management is encouraged to incorporate the Checklist into the building’s routine maintenance schedule. The table may be rearranged according to location, check frequency or person responsible for the checking. Content of the checklist may be modified as appropriate subject to the building’s risk assessment.

²¹ Water storage tanks may be cleansed more frequently if required. Procedure for cleansing water tanks is available via: <http://www.wsd.gov.hk/en/faqs/index.html#12-205>. DP shall ensure that all rinsing water of the tanks is drained away before refilling with fresh water.

5. Communal POU devices (e.g. water filters, water dispensers, wall-mounted dispensers) fitted to drinking taps or connected to the water mains ²²	According to supplier's instructions	Inspect and maintain the devices (where applicable) according to supplier's instructions to ensure proper operation. Mark filter cartridge expiry dates on the casings and replace cartridges accordingly	Filter cartridge expiry date:				Ask supplier or qualified technician to repair the devices if necessary. Mark filter cartridge expiry dates on the casings and replace cartridges accordingly		
		Flush water dispensers (where applicable) according to supplier's instructions or Department of Health's health advice ²³	Last flushing date:				Increase flushing frequency if stagnant, metallic, discoloured or smelly water is noticed. Advise WSD if the problem persists		
		Flush wall-mounted dispensers (where applicable) and the inlet pipes regularly ²⁴	Last flushing date:						
6. Strainers in water taps and shower heads	Quarterly, or according to supplier's instructions	The strainers are removed and cleaned (including descaling and disinfection if required) according to supplier's instructions.					Arrange cleaning or replacement of the strainers		
7. Hot water storage devices (e.g. storage type water heaters)	Quarterly	The hot water storage devices operate at 60°C or above (Caution: To prevent accidental scalding, the hot water temperature at the tap outlets that are accessible to the elderly should not be higher than 43°C)					Adjust the operation temperature of the hot water storage devices. Arrange maintenance if the temperature cannot be suitably adjusted		
	Annually, or according to supplier's instructions	Inspect and maintain the hot water storage devices according to the supplier's recommendations.					Arrange inspection and maintenance of hot water storage devices		
8. For individual floors/units or on notice board	Monthly or as required	<p>If there are independently operating units in the building, check if updated versions of the following notification or advice, if appropriate, are available to relevant staff through notice board or other means:</p> <ul style="list-style-type: none"> i. Regular flushing of wall-mounted dispensers and the inlet pipes as well as infrequently-used taps²⁵ ii. Do not take water from hot water tap for drinking water purpose iii. Use of compliant plumbing components²⁶ iv. Any scheduled/non-scheduled suspension of water supply. Flushing of taps for at least 2 minutes before use upon resumption of water supply. v. Comply with WSD's instructions when carrying out plumbing modifications vi. Maintain filters, wall-mounted dispensers or other POU devices (where applicable) in accordance with supplier's instructions, e.g. replacement of filter cartridges vii. Operate hot water storage devices (such as storage type water heaters) at 60°C or above and carry out regular maintenance (Caution: To prevent accidental scalding, the hot water temperature at the tap outlets that are accessible to the elderly should not be higher than 43°C) viii. Remove strainers in water taps and shower heads for cleaning (including descaling and disinfection if required) according to supplier's instructions ix. Refer to WSD's "Water Use Tips" if necessary²⁷ 					Update any notification or advice on plumbing and inside services		

Checklist prepared by:

_____ (Name)
 _____ (Post)
 _____ (Signature)

²² Please refer to WSD's "Technical Requirement for Plumbing Works in Buildings" for the requirements of installing backflow prevention devices for water dispensers (<https://www.wsd.gov.hk/en/plumbing-engineering/requirements-for-plumbing-installation/technical-requirements-for-plumbing-works-in-bldgs/index.html>)

²³ Department of Health's "Health Advice on Using Water Dispensers" is available via: https://www.chp.gov.hk/files/pdf/guidelines_on_use_of_drink_fountain_public.pdf

²⁴ Tips for using wall-mounted dispensers are available via: http://www.wsd.gov.hk/filemanager/en/share/pdf/tips_for_using_wall_mounted_dispensers_e.pdf

²⁵ Typical flushing advice is available via: http://www.wsd.gov.hk/filemanager/en/share/pdf/tips_to_reduce_lead_intake_e.pdf

²⁶ A directory of approved plumbing components is available via: <http://www.wsd.gov.hk/en/plumbing-engineering/pipes-and-fittings-to-be-used-in-inside-service-or/index.html>

²⁷ WSD's "Water Use Tips" is available via: <https://www.wsd.gov.hk/en/core-businesses/water-quality/water-use-tips/index.html>

Table II. Routine checking/inspection by the Qualified Person (such as Licensed Plumber, Building Services Engineer or Building Surveyor)

Name of block : _____

Location	Frequency	Item to check/action to be completed/target to be achieved	Observations (✓/✗)	Remarks in Findings (if “✗”)	Checking / Action Date		Corrective action to take if target is not achieved	Corrective action completed	
					Date	Signature		Date	Signature
1. Water storage tanks (sump tank, roof tank, header tank or any other storage tanks)	Annually	Potable water roof (header) tank levels are set to provide sufficient water pressure and level switch top up control is functioning correctly					Adjust level settings if required and make any necessary repairs		
2. Water pumps (sump pumps or booster pumps)		Pump pressure set points are correctly adjusted to provide sufficient water pressure and the pressure measurement devices and pumps are functioning correctly					Adjust pressure settings if required and make any necessary repairs		
		Pressure set points for the potable water are at higher pressure (typically by at least 50 kPa, if feasible) than for non-potable water (where applicable)							
		Maintain pumps as recommended by the supplier					Replace badly worn parts in good time so that the pump doesn't fail resulting in a loss of pressure		
		Check for any parts being badly worn							
3. Pressure reducing valves		Pressure reducing valve set points are correctly adjusted to provide sufficient water pressure and the pressure measurement devices are functioning correctly					Adjust pressure settings if required and make any necessary repairs		
		Pressure set points for the potable water are at higher pressure (typically by at least 5m or 50 kPa, if feasible) than for non-potable water (where applicable)							
4. Water meters		Backflow prevention devices are in place as required under the WSD requirements and are found to be functioning correctly ²⁸					Install backflow prevention devices if missing and replace any faulty backflow prevention devices		
5. Pipes, joints and fittings		Confirm that there are no cross-connections at the main plants that could lead to non-potable water (where applicable) flowing from potable water fittings by conducting checks such as flow tests					Remove any cross-connections if identified		

Checklist prepared by:

 _____ (Name)
 _____ (Post)
 _____ (LP No./
 Professional Membership No., if applicable)

 _____ (Signature)

²⁸ It may not be feasible to check whether the backflow prevention devices are functioning correctly if the water supply system is on line