

Drinking Water Safety Plan Template for Specific Developments (Schools) 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

Explanatory Notes:

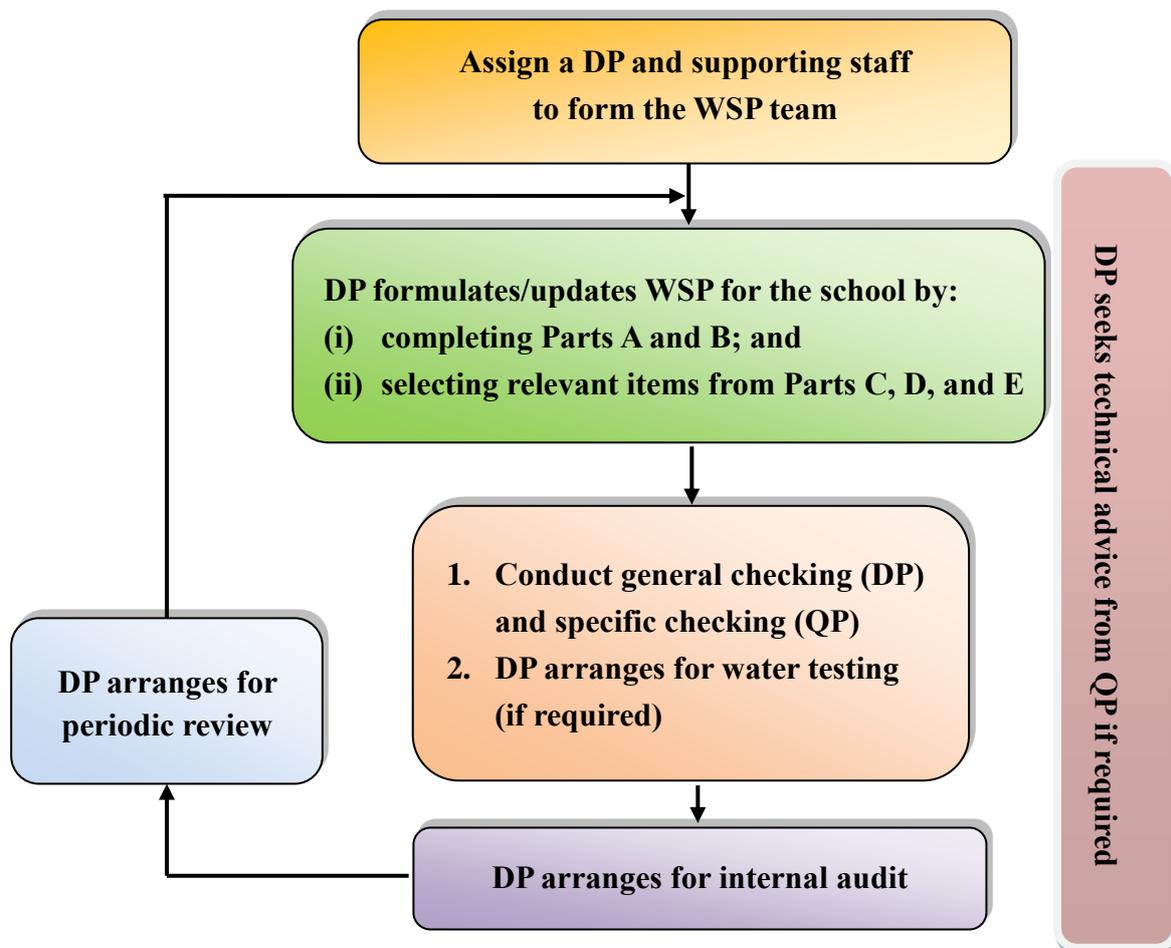
1. This template is prepared based on recommendations of the World Health Organization (WHO) to assist a school to develop and implement Water Safety Plan (WSP) to enhance water safety. It covers the essential elements of WSPs and common requirements applicable to plumbing layout of schools. The template comprises the following components:
 - Introduction
 - Part A – General Description of the School
 - Part B – Water Supply Flow Diagrams
 - Part C – Risk assessment Summary table for the School
 - Part D – Routine Water Safety Checklist for the School (Based on **Components** of Checking)
 - Part E – Routine Water Safety Checklist for the School (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 an administrative or teaching staff familiar with the day-to-day operations of the school, e.g. person-in-charge of the school's house management. DP should be supported by other administrative, teaching or technical staff to form a WSP team as appropriate. 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.¹
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 school. For instance, items related to water storage tanks are not relevant to a school without such tanks. DP should similarly select relevant items in Part D and Part E² to form a water safety checklist.
4. DP should perform general checking duties and engage QP to conduct specific checking according to the checklist.
5. Water testing is normally not required under WSP. For schools which use soldered copper pipes and serve students aged at 6 or below, it is recommended that water testing for lead be carried out due to this specific risk posed to young students.

¹ 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>).

² Parts D and E contain the same checking items listed out in different formats.

Please see footnote 6 of Part A for details.

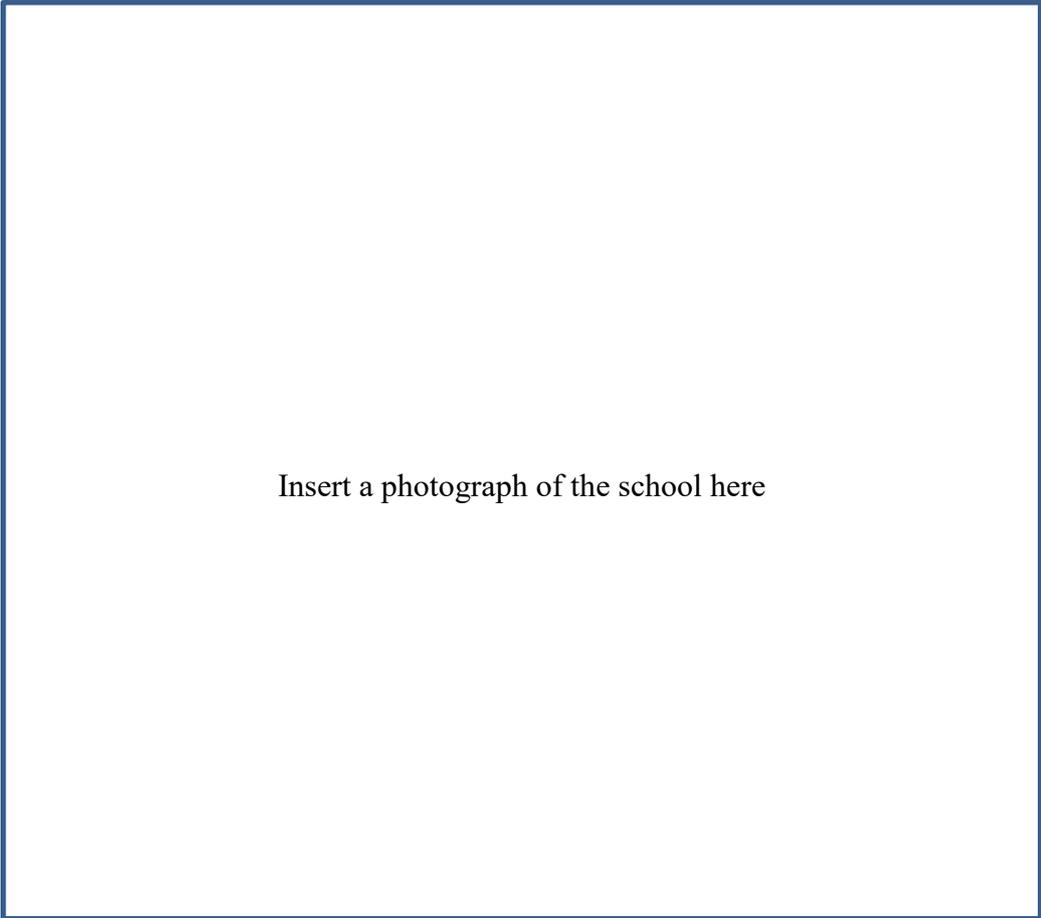
6. DP should arrange an internal audit at least once every two years. The auditor can be an internal staff who is not involved in the implementation of WSP. Among other aspects, the auditor should check whether (i) the WSP is up to date and generally accurate; (ii) conditions of the plumbing components tally with the checking records; (iii) staff are trained and competent to carry out the routine checking; and (iv) the documents and records are complete. Inspection of records and plumbing components by sampling should normally be sufficient.
7. DP should also conduct 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 in a scheduled staff meeting with records can serve the purpose.
8. The steps for the development and implementation of WSP for a school are summarised in the following figure.



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Water Safety Plan

for <Name of School>



Insert a photograph of the school here

<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 prevent contamination of drinking water in the inside service.

The plan is composed of the following parts:

- Part A – General Description of the School
 - Part B – Water Supply Flow Diagrams
 - Part C – Risk Assessment Summary Table for the School
 - Parts D and E – Routine Water Safety Checklist for the School
3. Part A contains a brief description of the school'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 school.
 5. Part C contains a summary of risk assessment on the school's plumbing system.
 6. Parts D and E are the routine water safety checklist summarising the checking duties undertaken by DP and Quality 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 School

Item	Details
Publication Date and version of WSP	Publication Date: Version:
Person responsible for this WSP (Designated Person)³	Name: Position:
Contacts of DP	Telephone: Email:
Name of School	
Address of School	
School Management Agent	
School Maintenance Agent	
Lot Boundary (or Location Map⁴)	
No. of Floors	
No. of Students 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.⁵	<input type="checkbox"/> No <input type="checkbox"/> Yes, plumbing line diagrams ref. nos. :

³ It is recommended that a Designated Person (DP), such as person-in-charge of the house management, be assigned to oversee implementation of the WSP.

⁴ For instance, extracted from Geoinfo Map (<https://www.map.gov.hk>).

⁵ If not available, it is recommended that suitable drawings be created for the school.

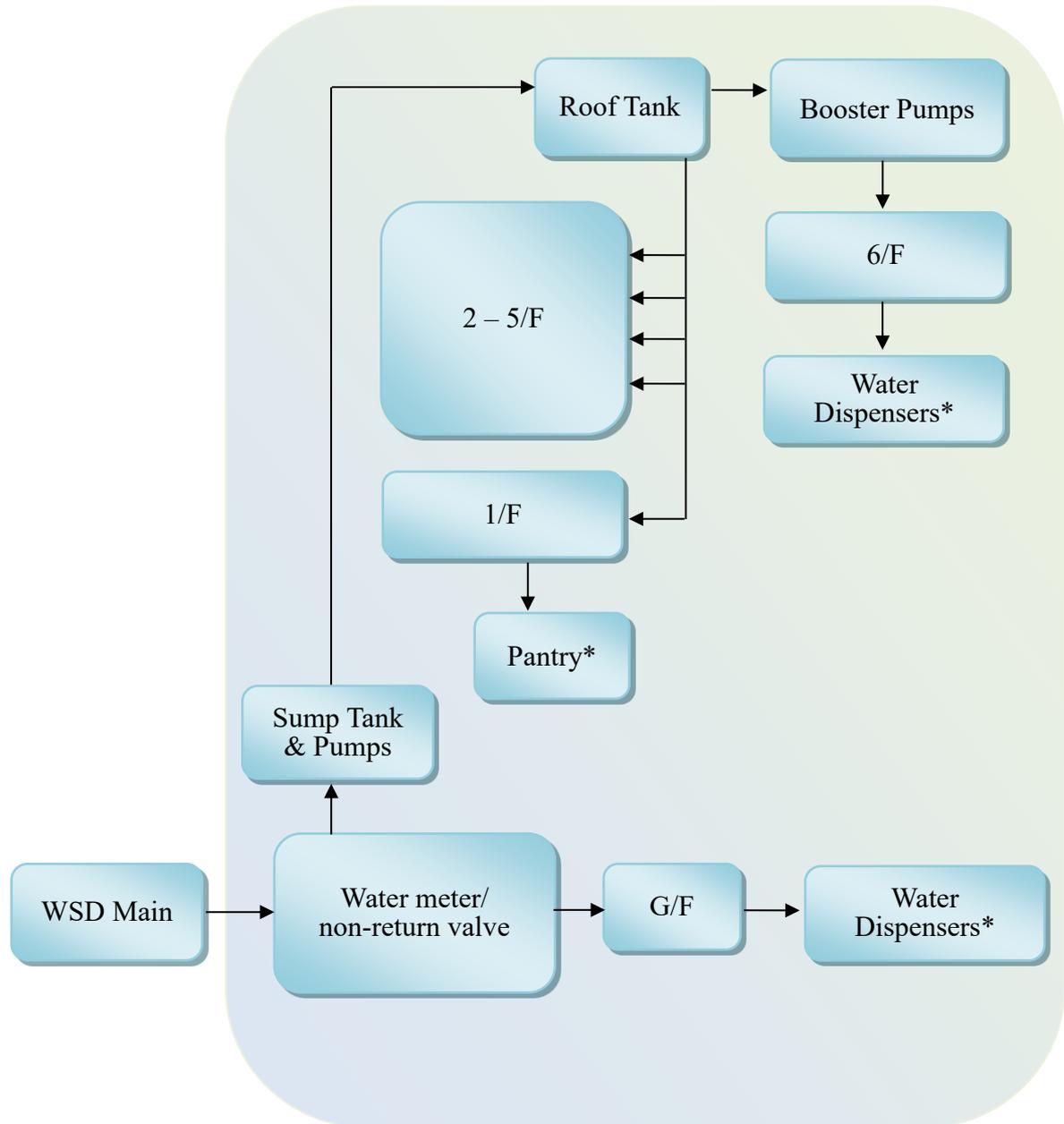
Item	Details
Types of water supply present on site (cross out or add items as appropriate)	(i) Potable water (ii) Seawater flushing water (iii) Air-conditioning cooling water (iv) Fire service water (v) Roof-harvested rainwater (vi) Process water (e.g. distilled or reverse-osmosis water for boiler) (vii) Recycled/reclaimed rainwater or sewage (viii) Other (please describe)
Water Quality Testing⁶	<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 due on:
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.:

⁶ For schools, excluding kindergarten, which use copper pipes connected with soldering and serve students aged at or below 6, e.g. primary and some special schools, it is suggested that annual water quality testing for lead be carried out for at least one tap for drinking and/or food preparation purposes for two consecutive years. The testing frequency may be reduced to once every five years if the testing results are satisfactory. The water samples should be taken using the 30-minute stagnation (30MS) protocol. For details of the sampling protocol, please refer to the testing laboratory or WSD's website.

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. no. xxxx (if applicable)⁸
(Illustrative Example)

Name of block: _____



*Water dispensers and pantry taps have been fitted with water filters.

⁸ If the latest as-built diagrams 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)

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Part C
Risk Assessment Summary Table for the School⁹

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 and possible slime or biofilm formation. This situation could cause unpleasant tastes or odours leading to water users' complaints or reluctance to use the water.	Likely	Minor	Moderate	1. Minimise dead-legs in plumbing system 2. Install backflow prevention devices to prevent backflow of water from known dead-legs into the main water supply system where applicable	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. Stagnation combined with excessive warming (exceeding 25°C) of water leading to possible growth of pathogens to elevated levels. These pathogens could potentially cause infections and serious illnesses.	Rare	Major	Low	3. Flushing dead-legs and infrequently-used taps regularly 4. Flushing drinking water taps after weekends, long holidays, building construction or plumbing modification	a. known dead-legs (if present) b. idle or infrequently-used taps (if present) c. after weekends, long holidays, building construction or plumbing modification d. in response to notification of water quality problems (By DP) 3. Inspect and maintain backflow prevention devices (By LP)
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. 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.	Likely	Moderate	High	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. Flushing drinking taps twice a day in the morning before school opens and in the mid-day before lunch break, and after major plumbing works 4. Install backflow prevention devices to prevent backflow of contaminated water into the main water supply system where applicable	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: a. known dead-legs (if present) b. idle or infrequently-used taps (if present) c. twice a day; in the morning before school opens and in the mid-day before lunch break, and after major plumbing works d. in response to notification of water quality problems (By DP) 3. Inspect and maintain backflow prevention devices (By LP)
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. This may cause petrochemical tastes or even adverse health effects after prolonged exposure.	Likely	Moderate	High		

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 school's risk assessment.

(vi) 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

(vii) Please refer to WSD's "Technical Requirement for Plumbing Works in Buildings" for the requirements of 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>)

(viii) 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>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 single 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 practicable 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 and/or 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 is not connected to the non-potable water system (where applicable) (By DP and LP)
<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 was 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. 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. 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 devices (POU) 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 (pathogenic microorganisms or 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 4. Ensure water filters are properly maintained 	<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) 6. Maintain water filters and change filter cartridges according to manufacturer's instructions (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>8. Entry of hazardous substance 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 rooms (if available) locked 3. Keep sump and roof tank access hatches 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)
<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 house management 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. Check if house management staff have been reminded to use WSD-approved plumbing materials by posting, notice boards or other means (By DP) 3. Inspect and maintain backflow prevention devices (By LP) 4. Check if potable and non-potable pipes/tanks have been differentiated with labels/colours (By DP and LP) 5. Check if labels/colour markings on potable and non-potable water pipes/tanks are intact (where applicable) (By DP) 6. Check if house management staff have been reminded not to carry out inappropriate plumbing alterations by posting, notice boards or other means (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 device 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 or plumbing materials, leakages, 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 	<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, water filters according to manufacturer's instructions (By DP) 4. Review, set up and conduct flushing programme for wall-mounted dispensers and inlet pipes according to drinking habits (By DP)

Risk Assessment Summary Table prepared by QP:

Professional Membership No., if applicable)

Part D
Routine Water Safety Checklist for the School (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 water tanks
	Half yearly	DP	No water and debris (leaves, twigs, etc.) accumulated on exposed tank roof and the rain water drains are free from blockage	8	Remove accumulated water and debris and clear rainwater drains
	Annually	LP	Tanks are cleansed every 6 months ¹²	8	Arrange cleansing of the water tanks
2. Water pumps (sump pumps or booster pumps)	Monthly	DP	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
	Monthly	DP	There is no leakage	5-7	Repair or replace the leaking part
	Annually	LP	There is no unusual noise during pump operations	5-7	Repair or replace pumps
	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 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 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 backflow prevention devices if missing and replace any faulty devices as appropriate
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 Schools are recommended to incorporate the checking items into their routine maintenance schedules. The table may be rearranged according to location, check frequency or person responsible for checking. Content of the checklist may be modified as appropriate subject to the school'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/tc/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 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
	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 if necessary	5	Remove any cross-connections if identified
	In response to reports of water discoloration or taste and odour problems	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
6. Any taps supplying drinking water to students (e.g. drinking taps at pantry or playground)	Every morning before school opens and at mid-day before lunch break, and after major plumbing works ¹⁴	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	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 or wall-mounted dispensers) fitted to drinking taps or connected to the water mains ¹⁵	According to supplier's instructions	DP	Inspect and maintain the devices (where applicable) according to supplier's instructions to ensure proper operation. Mark cartridge expiry dates on the casings and replace filter cartridges accordingly	10	Ask supplier or qualified technicians 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 ¹⁶		
			Flush wall-mounted dispensers (where applicable) and the inlet pipes regularly ¹⁷		

¹⁴ Routine flushing in the morning and at mid-day is not necessary if the taps are equipped with suitable and valid filters.

¹⁵ Please refer to WSD's "Technical Requirement for Plumbing Works in Buildings" for the requirements of 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>)

¹⁶ 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

¹⁷ 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

Part E
Routine Water Safety Checklist for the School (Based on Persons Responsible for Conducting Checking)¹⁸

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

Name of block : _____

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 rainwater drains are free from blockage					Remove accumulated water and debris and clear rainwater drains			
	Half yearly	Tanks are cleansed every 6 months ¹⁹ -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 reports of water discoloration or taste and odour problems	Flush the tap at its maximum practicable flow rate until stagnant water has been replaced by fresh water and the water is visibly clear and colourless. The flushing period is typically about 2 minutes					Advise WSD if problem persists		

¹⁸ Schools are recommended to incorporate the checking items into their routine maintenance schedules. The table may be rearranged according to location, check frequency or person responsible for checking. Content of the checklist may be modified as appropriate subject to the school’s risk assessment.

¹⁹ Water storage tanks may be cleansed more frequently if required. Procedure for cleansing water tanks is available via: <http://www.wsd.gov.hk/tc/faqs/index.html#12-205>. DP shall ensure that all rinsing water of the tanks is drained away before refilling with fresh water.

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
4. Any taps* supplying drinking water to students(e.g. drinking taps at pantry or playground) *Only applicable to taps without suitable and valid filters.	Every morning before school opens and then at mid-day before lunch break, and after major plumbing works ²⁰	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	✓ = Action completed and record probably kept N.A. = Taps with suitable and valid filters				Increase flushing frequency if stagnant, metallic, discoloured or smelly water is noticed in between flushing events. Advise WSD if problem persists		
5. POU devices (e.g. water filters, water dispensers or wall-mounted dispensers) fitted to drinking taps or connected to the water mains ²¹	According to supplier’s instructions	Inspect and maintain the devices (where applicable) according to supplier’s instructions. Mark filter cartridge expiry dates on the casings and replace cartridges accordingly	Filter cartridge expiry date:				Ask supplier or qualified technicians 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 ²²	Last flushing date:						
		Flush wall-mounted dispensers (where applicable) and the inlet pipes regularly ²³	Last flushing date:						

Checklist prepared by:

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

²⁰ Routine flushing in the morning and at mid-day is not necessary if the taps are equipped with suitable and valid filters.

²¹ Please refer to WSD’s “Technical Requirement for Plumbing Works in Buildings” for the requirements of 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>)

²² 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

²³ 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

Table II. Routine checking/inspection by 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 actions completed [sign and date]
					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 level 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 in use 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 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 ²⁴					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)

²⁴ It may not be feasible to check whether the backflow prevention devices are functioning if the water supply system is on line