

**WSP AUDIT  
FOR  
SAMDRUP JONGKHAR  
THROMDE**

<b>Name of water supply company: Samdrup Jongkhar Thromde</b>	<b>Audit dates: 6/5/2024-8/04/2024</b>
<b>Audit objective (tick all that apply):</b> <input checked="" type="checkbox"/> To provide support to the WSP team to improve the WSP <input checked="" type="checkbox"/> To check that the WSP is complete, up-to-date and implemented in practice <input type="checkbox"/> Organizational quality assurance <input type="checkbox"/> To prepare for an external audit (external audit dates: _____) <input checked="" type="checkbox"/> Regulatory compliance  <u>Other:</u>	<b>Type of audit:</b> <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External  <input type="checkbox"/> Informal <input checked="" type="checkbox"/> Formal

**Audit team member names and positions:**

1. Pema Chophel (Lead auditor, RCDC, DCLO)
2. Chimmi Dorji (HEAD, RCDC)
3. Sonam Gyeltshen (RCDC, Sr. Laboratory Technician and certified auditor)
4. Rinzin Wangdi (RCDC, Laboratory Technician)
5. Norbu Wangmo (DoW, MoENR, Meteorology/Hydrology Officer)
6. Sonam Tshering (Gelephu CRRH, Laboratory Technician)
7. Tashi Wangchuk (Samdrup Jongkhar Hospital, Laboratory Officer)

**Main WSP team contact person during audit (name and position):**

Tashi Thukten Tshering (Engineer, Samdrup Jongkhar Thromde)

**Field sites visited during the audit (list all sources, WTPs, storage tanks, etc.):**

1. Lemsorong chhu  
✓ Source
2. Zalakhe source  
✓ Source
3. Rickey chu  
✓ Source  
✓ Treatment plant

**Main strengths:**

1. Well documented and comprehensive WSP 2018  
The presence of well-documented WSP for 2018 indicates a structured approach to manage water safety. Although the document was not updated, it highlighted some of the critical components of WSP including, hazard identification, risk management procedures, supporting programs providing a strong foundation for ensuring the safety of drinking water.
2. Most of the hazards were identified and some corrective actions were implemented  
The identification of most hazards and subsequent implementation of corrective actions shows a proactive approach to addressing potential risks to water quality. This improves the reliability of the water supply system, ensuring safer drinking water supply for consumers.

3. System for monitoring consumer satisfaction.  
The availability of good documented system for monitoring consumer satisfaction is important for ensuring that the needs and concerns of water consumers are addressed effectively. Additionally, having evidence of the implementation of this system indicates a commitment to maintaining high standards of service and responsiveness to community feedback.
4. Defined and implemented supporting programs.  
Clearly defined and implemented supporting programs, such as the purchase of equipment and training of operators, this contributes to the effective management of water safety. These programs help to ensure that the necessary resources and expertise are available to maintain and improve water quality standards.
5. Regular compliance monitoring of the water supply system.  
The data from Samdrup Jongkhar hospital indicates regular compliance monitoring of critical parameters of drinking water which ensures regulatory compliance and transparency.
6. Proactive and cooperative team.  
Presence of a proactive and cooperative water team is another strong strength of Samdrup Jongkhar Thromde. Their willingness to collaborate, take initiative, and work together towards common goals shows a positive effort towards water safety initiatives.

#### **Main improvement opportunities:**

1. Need to update the WSP (team, system description and other information)  
It's important to regularly update the WSP to reflect changes in team composition, system description, and other relevant information. This ensures that the plan remains current and effective in addressing evolving challenges.
2. Update WSP including all key stakeholders.  
Expand the WSP team to include representatives from key stakeholders such as the Ministry of Health, Dzongkhag Environment Office, and other relevant agencies. This promotes collaboration and ensures that all perspectives are considered in decision-making processes.
3. Update WSP to include all water sources.  
Ensure that the WSP includes all water sources, including the new water source from Morong Chhu. This is to provide overall coverage and address potential risks associated with each sources.
4. Include authorities to carry out recommendations  
There is a need to involve individuals with the authority to implement WSP recommendations, such as Dasho Thrompoen, to ensure effective action when necessary.
5. Explore disinfection practices for Dewathang water source.  
As the sources were found grossly contaminated while testing during the time of auditing, the team recommend on exploring the feasibility of establishing disinfection practices for the Dewathang water supply to enhance water quality and safety.
6. Conduct documented WSP meetings

Hold regular WSP meetings with proper documentation to review progress, address challenges, and make informed decisions regarding water safety measures.

7. There is a need to refer to the National standard (Bhutan drinking water quality standard 2016) in place of WHO guideline.  
Currently in the existing WSP, the reference is given only for WHO guidelines. However, there is a need to adapt Bhutan drinking water quality standard 2016 to ensure compliance with national standards and to ensure specific local water quality challenges more effectively.
8. Implement a treatment system into existing water supply from infiltration galleries.  
Pump water from infiltration galleries into the treatment plant before supplying to consumers to ensure adequate treatment and safe water supply for the consumers.
9. Improve hazard mitigation measures  
Enhance the existing hazard mitigation measures, such as installing roofing in addition to netting over tanks at the treatment plant, to minimize the risk of contamination.
10. Ensure consistency between risk assessment and improvement plan  
In the WSP 2018, there are inconsistencies between risk assessment and improvement plans. Ensure that risk assessments are accurately linked to corresponding improvement plans to streamline implementation and track progress effectively.
11. Need to update improvement plans status.  
In the current WSP improvement plan status has not been updated. Regularly updating the status of improvement plans makes it easier to track progress and address any delays or issues promptly.
12. Operational monitoring frequency not defined as per national standard (BDWQS 2016).  
It is important to define and adhere to a specific frequency for operational monitoring as specified in national standard (BDWQS), such as residual chlorine should be monitored daily.
13. Continue and improve maintaining data for operational monitoring.  
Continue to maintain detailed records of operational monitoring activities, including water quality tests, tank cleaning, and maintenance, to facilitate informed decision-making and track performance.
14. For compliance monitoring, there is a need to include water samples from all water sources.  
The current compliance monitoring system although covers most of the vulnerable population, there is need to incorporate sampling from new water source (Morong chhu)
15. There is need to improve the existing SOPs and users should be effectively trained (eg. SOP for chlorination).  
In the current WSP, the SOPs are not up to date and updated and users must be trained on using that SOPs (eg. water technicians are not properly trained on proper disinfection using chlorination). This will ensure that all personnel are competent and procedures are performed consistently to enhance operational efficiency and safety.
16. Need for proper disinfection.  
As the treated water was found contaminated, the treatment is not effective in removing the microbes. In addition, the current method of treatment is not appropriate as dosage was not calculated as required (Figure 1). There is need for proper and consistent disinfection practices

and must maintain residual chlorine throughout the system to eliminate pathogens from the water supply, ensuring the water remains safe for consumption.



Figure 1 Inappropriate chlorine dosing practice (A. Before adjusting chlorine dose and B. After adjusting chlorine dose)

17. Emergency contacts should be current along with a plan for responding to the emergency.  
The existing emergency contacts are not current and some of the members are changed. Therefore, there is a need to keep emergency contact information current and having a clear, actionable plan for responding to emergencies.
18. Need to perform internal auditing and document.  
Regular internal audits and thorough documentation are important for maintaining compliance, identifying areas for improvement, and ensuring that the WSP is effectively implemented.
19. Ensure availability of reagents for daily operational monitoring.  
Currently the reagents are limited and may lead to inconsistent supply of reagents for testing, particularly for testing residual chlorine. There is a need to establish a system which ensures consistent availability of necessary reagents and testing materials that supports continuous monitoring and uninterrupted testing facilities.
20. Sharing of water quality data with Thromdes.  
Continue and enhance data sharing between Thromde and MoH to improve transparency and gain public trust in water management practices.
21. Explore and adopt a permanent water source.  
The existing source from Rickey chu was found to have inconsistent water supply as the intake gets washed away during heavy rain, having to change the whole intake system after the rainy season. Finding and using a permanent source of water, if feasible, can reduce the need to switch sources seasonally, thereby simplifying treatment and monitoring processes and potentially improving water quality.

**Other improvement opportunities (in addition to WSP 2018)**

1. Assess CCTV functionality.  
Evaluate the functionality of CCTV systems which is meant for security at the treatment plant and take necessary measures to ensure proper operation.

2. Ensure staff safety.  
Avoid staff residing in structures built for treatment plants for safety reasons, and provide alternative accommodation arrangements.
3. Address non-functional equipment.  
Some of the equipment was non-functional. Address issues with non-functional PLC panels and other equipment (such as chlorine dosing pumps) to prevent disruptions to water treatment processes (Figure 2).



Figure 2 Non-functional equipment for water treatment (Chlorine dosing pumps)

4. Implement regular tank cleaning.  
While the document for cleaning practices of the treatment plants were available, it was evident that practice of cleaning was not proper as there were lot of algal growth and back up treatment plant not properly maintained (Figure 3). There is a need to continue maintaining logs for daily cleaning of tanks for effective maintenance of water storage facilities at the same time somebody should monitor if the job is executed effectively.



Figure 3 Treatment plant not properly cleaned and maintained (A. Backup treatment plant not properly maintained, B. Open treatment system with high risk of contamination and C. Algae growth inside treatment plant)

5. Improve laboratory capacity.  
Currently there is a good structural facility for laboratory capacity enhancement and setup. The laboratory capacity could be enhanced to ensure accurate and timely water quality testing.

## Implementation plan

	<b>What should be done?</b>	<b>Who is responsible?</b>	<b>By when should it be done?</b>
1	Need to update the WSP (team, system description and other information)	WSP team (Water section)	By May 2024
2	Include other key stakeholders such as Health, dzongkhag environment etc. in WSP team	WSP team (Water section)	By May 2024
3	Update WSP including all water sources (Morong chhu)	WSP team	End of 2024
4	Include member with the authority to carry out WSP recommendations (eg. Dasho Thrompoen)	WSP team (Water section)	By May 2024
5	Explore to establish disinfection practice for Dewathang water supply	WSP team	End of 2024
6	Carryout WSP meeting with documentation	WSP team (Water section)	Annually or as specified in WSP
7	There is a need to refer to the National standard (Bhutan drinking water quality standard 2016) in place of WHO guideline.	WSP team (Water section)	By May 2024
8	Water from infiltration gallery to pump into treatment plant before supplying to consumer	WSP team (Water section)	By June 2024
9	Some of the hazards requires additional improvement measure, eg. netting over the tank at treatment plant may not be sufficient to reduce risk of contamination (needs roofing and netting)	WSP team	End of 2025
10	Some of risk assessment are not linked to IP eg. IP 11 in risk assessment does not link with IP 11 in improvement plan	WSP team (Water section)	By May 2024
11	Works are generally being implemented but not updated.	WSP team (Water section)	By May 2024
12	Operational monitoring frequency not defined as per national standard (BDWQS 2016). Eg. Residual chlorine should be monitored daily.	WSP team	By May 2024
13	Continue and improve maintaining data for operational monitoring including water quality test, tank cleaning, maintenance etc.	Water technicians (Santa)	Daily

	<b>What should be done?</b>	<b>Who is responsible?</b>	<b>By when should it be done?</b>
14	For compliance monitoring, there is a need to include water samples from all water sources.	Samdrup Jongkhar Hospital Lab	By June 2024
15	There is need to improve the existing SOPs and users should be effectively trained (eg. SOP for chlorination).	WSP team (Water section) and RCDC	By June 2024
16	Improve disinfection or water treatment practice.	Water technicians (Santa) and Tashi Thukten	Daily
17	Emergency contacts should be current along with plan for responding the emergency	WSP team	By May 2024
18	Need to perform internal auditing and documentation	WSP team (Water section)	Annually or as specified in WSP
19	Ensure availability of reagents for daily operational monitoring.	WSP team (Water section)	By FY 2024-2025
20	Sharing of water quality data with Thromdes	RCDC	By December 2024
21	Explore for permanent structure for intake	WSP team	Ongoing exploration
22	CCTV meant for security of the treatment plant is not functional (Explore its functionality)	WSP team (Water section)	By June 2024
23	For safety purpose, it is not recommended for staff to reside at the structures build for treatment plant	WSP team (Water section)	By FY 2025-2026
24	Address non-functional equipment (PLC panel, chlorine dosing pump)	WSP team (Water section)	By FY 2024-2025
25	Need for daily cleaning and maintaining a log for cleaning of tank.	Water technicians (Santa)	Daily
26	Improve laboratory set up and capacity	WSP team (Tashi Thukten) and RCDC	Initiate by June 2024 (complete by FY 2024-2025)

**Attachments:**

- List of all audit participants
- Audit plan
- Completed scoring form
- Other:



**Communication:**

Audit report has been shared with the water supplier

*Confirmed receipt:*

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Water supplier representative (sign and print name)



Pema Chopel,  
Certified WSP Auditor,  
Water and Environment Laboratory,  
Royal Center for Disease Control,  
Ministry of Health.

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Lead auditor (sign and print name)

## SCORING FORM

WATER SUPPLIER INFORMATION	
Information requested below should be provided for the water supply system(s) covered by the WSP being audited.	
WATER SUPPLIER NAME	Samdrup Jongkhar Thromde
TOWN(S) SERVED	Samdrup Jongkhar Thromde
NUMBER OF PEOPLE SERVED	10,545 (Thromde website)
PRIMARY SUPPLIER CONTACT DURING AUDIT	Er. Tashi Thukten Tshering
MONTH/YEAR WSP IMPLEMENTATION BEGAN (when WSP began to influence the actions of the supplier, e.g. introduction of changes to management procedures or monitoring practices, implementation of control measures to manage risks)	2018

AUDITOR INFORMATION	
DATE	6th to 8th May 2024
AUDITOR NAME(S)	Pema Chopel, Chimmi Dorji, Sonam Gyeltshen, Rinzin Wangdi, Norbu Wangmo, Sonam Tshering, Tashi Wangchuk
AUDITOR ORGANIZATION(S)	Royal Center for Disease Control (MoH), Department of Water (MoENR), Gelephu CRRH, Samdrup Jongkhar Hospital

## 1. WSP TEAM

**Objective:** assemble an appropriate team of professionals with knowledge and experience in all aspects of the water supply system and sufficient decision-making authority to develop and implement the WSP.

Question		Tips for auditor and scoring guidance	Score (0–4)	Comment/justification
1.1	<b>Is there a documented WSP team and is the team list current?</b>	Ask WSP team to make a list of current WSP team members (ideally without referring to the WSP). Compare this list with the WSP team list documented in the WSP. <b>Score 4</b> only for a perfectly up-to-date list; <b>score 2</b> for one member out of date (new member not added or resigned member not deleted); <b>score 0</b> for two or more team members out of date or no documented WSP team list. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	1	Only 3 out of 7 members are current.
1.2	<b>Are appropriate organizations represented on the team?</b>	Appropriate persons often include representatives of the health or environment sectors in addition to water supplier staff. Based on knowledge of optimum team composition (drawing on experience elsewhere in the country), auditor should <b>score 4</b> for a fully complete team; <b>score 2</b> for a team with one key organization missing; <b>score 0</b> for a team with two or more key organizations missing. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	1	Team represents only Samdrup Jongkhar Thromde. Other key agencies such as Health, dzongkhag environment etc. are not included.
1.3	<b>Does the team include people with the authority to carry out WSP recommendations as well as technical staff?</b>	The WSP team should include those with authority in matters related to budget and operations, for example. A balanced WSP team should also include technical staff to capture inputs and ensure awareness and buy-in. <b>Score 4</b> for a well-balanced team with technical and management-level staff; <b>score 2</b> for a team with one key position/discipline missing (e.g. either no technical staff or no managers); <b>score 0</b> for a team with two or more key positions/disciplines missing. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	2	Highest authority of Thromde (Dasho Thrompoen) for decision making is not included in the team.

1.4	<b>Is there evidence that regular team meetings held and recorded?</b>	Is the WSP team able to furnish evidence, e.g. meeting minutes, that WSP team meetings are held at the frequency indicated in the WSP? Auditor should review these records for the audit period (or for a period of at least one year). <b>Score 4</b> only if target frequency is documented in the WSP and there is evidence that meetings are held at this frequency; <b>score 2</b> if there is partial evidence that meetings are held at least six-monthly (or at the target frequency in WSP); <b>score 0</b> if there is no evidence of regular WSP team meetings. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	1	Meetings for water held not specific to WSP
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## 2. SYSTEM DESCRIPTION

**Objective:** thoroughly describe the water supply system to demonstrate complete system understanding and inform the risk assessment.

Question		Tips for auditor and scoring guidance	Score (0–4)	Comment/justification
2.1	<b>Are intended users/uses of the water supply defined?</b>	The WSP should indicate how the water supply is to be used (e.g. drinking directly, drinking only after household treatment, not for drinking) and by whom. <b>Score 4</b> if both intended users and uses of the water supply are clearly defined in the WSP; <b>score 2</b> if either intended users or uses are missing; <b>score 0</b> if both are missing. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations, e.g. definitions included but unclear or incomplete.)	4	Intended users and uses of water supply is clearly defined.
2.2	<b>Are drinking-water quality standards or targets described?</b>	Does the WSP include the nationally relevant water quality standards or targets that the water supply must meet? A general reference to WHO guidelines is not sufficient. <b>Score 4</b> if standards/targets are fully defined in the WSP (or a relevant national document is thoroughly/accurately referenced); <b>score 2</b> if this requirement is partially addressed in the WSP; <b>score 0</b> if there is no reference to standards in the WSP. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations, e.g. standards included but out of date.)	1	There is no reference to National standard (Bhutan Drinking water quality standard 2016)

2.3	<b>Are clear, accurate and up-to-date maps and/or schematics of the complete water system included?</b>	Follow the flow of water from catchment to consumer on the schematics/maps to confirm clarity and consistency. Field verify the information provided and note any errors or inconsistencies. Also, discuss the schematic details with staff and ask them if there have been any changes. <b>Score 4</b> if maps/schematics are detailed, clear, complete, accurate and fully up to date; <b>score 2</b> if included but not fully clear, complete, accurate or up to date; <b>score 0</b> if not included. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	1	The maps are not clear, complete, accurate or up to date.
2.4	<b>Are all major steps in the water supply chain described?</b>	Accurate information on the catchment, treatment and storage facilities, distribution system and household-level practices should be provided. <b>Score 4</b> if all steps are thoroughly and accurately described (including household practices where household storage and/or treatment are required, e.g. because of tap stand use or intermittent supply to homes); <b>score 2</b> if one major step is missing; <b>score 0</b> if two or more major steps are missing. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations, e.g. steps are included but inadequately or inaccurately described.)	1	Map are not accurate and updated. Information on the catchment, treatment and storage facilities, distribution system and household-level practices are not included.

### 3. HAZARD IDENTIFICATION AND RISK ASSESSMENT

**Objective:** identify hazards/hazardous events and assess related risk to water safety to determine if improvements are needed.

Question	Tips for auditor and scoring guidance	Score (0–4)	Comment/justification	
3.1	<b>Has the risk assessment approach been clearly described?</b>	The WSP should clearly describe the method and basis for the risk assessment, including key terminology and definitions (e.g. how likelihood and severity are defined). <b>Score 4</b> if the risk assessment methodology is clearly and thoroughly defined in the WSP; <b>score 2</b> if partially defined (e.g. if key definitions are missing or incomplete); <b>score 0</b> if not defined. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for in between situations.)	4	Risk assessment methodology is clearly and thoroughly defined in the WSP.

3.2	<b>Have all significant hazards been identified at all major steps?</b>	Based on discussions with the WSP team and field visits, determine if all important hazards/hazardous events have been documented. <b>Score 4</b> if all major hazards have been identified and documented for each step in the water supply chain; <b>subtract one point</b> for each significant hazard that in the auditor’s estimation should have been considered/documented and was not (down to a minimum score of 0).	2	Not all hazards are identified. 1. Lemsorong (near Arong) and Zalakhe intake reservoir: Microbiological risk not highlighted (no source protection from wild animals), no treatment plant. Dungsam Chu: Water bypassed from treatment.
3.3	<b>Have existing control measures been identified and validated?</b>	Ensure that the risk assessment considers controls that are already in place and whether or not those existing controls are capable of mitigating the risk. (‘Validation’ is the process of confirming the effectiveness of existing controls and is an important step in determining if additional controls are needed.) <b>Score 4</b> if existing controls are documented and validated for all hazardous events; <b>score 2</b> if existing controls have been documented but not validated; <b>score 0</b> if existing controls have not been documented. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	2	Some of the control measures were identified and not validated.
3.4	<b>Have risks been logically and systematically assessed for all hazards identified?</b>	Confirm that the risk assessment indicates a clear understanding of the risk assessment methodology and that the risk scoring is clear, consistently applied and logical. <b>Score 4</b> if the complete risk assessment is clear, consistent and logical; <b>score 0</b> if the risk assessment is significantly unclear, inconsistent or illogical and/or suggests that the WSP team does not have a clear understanding of the risk assessment process. ( <b>Scores 1, 2 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	3	Most of the risk assessment is clear, consistent and logical. However, some of the risks were not identified eg. Water bypassed from treatment for infiltration gallery (Dungsam Chhu)

3.5	<b>Is it clear which hazards require additional control or improvement?</b>	Confirm that the risk assessment clearly indicates which hazards require additional control (or improvements). Any additional controls needed should be clearly separated from the existing controls documented. <b>Score 4</b> if there are no challenges in determining which hazards require additional control; <b>score 2</b> if it is somewhat unclear which hazards need more control (e.g. existing and proposed controls are mixed together); <b>score 0</b> if it cannot be determined from the risk assessment which hazards require additional control. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	3	Some of the hazards requires additional improvement measure, eg. netting over the tank at treatment plant may not be sufficient to reduce risk of contamination (needs roofing and netting)
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#### 4. IMPROVEMENT PLAN

**Objective:** plan improvements based on system needs and priorities identified through the risk assessment process.

Question		Tips for auditor and scoring guidance	Score (0–4)	Comment/justification
4.1	<b>Has an improvement plan been developed that is clearly linked to the risk assessment process?</b>	There should be a clear and direct link between the risk assessment and the improvement plan. All improvements identified in the plan should follow directly from the risk assessment process. <b>Score 4</b> only if the following two conditions are met: a) an improvement has been proposed for each significant risk requiring additional control, and b) each improvement in the plan is clearly and directly linked to the risk assessment; <b>score 2</b> if the link between the risk assessment process and the improvement plan exists but is not fully clear and direct; <b>score 0</b> if there is no clear link between the risk assessment and the improvement plan, or if there is no improvement plan. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	2	<ol style="list-style-type: none"> <li>1. Some of the improvement plans from risk assessment are not included (IP15-IP20).</li> <li>2. Some of risk assessment are not linked to IP eg. IP 11 in risk assessment does not link with IP 11 in improvement plan.</li> </ol>

4.2	<b>Does the improvement plan describe the action, responsible party, cost, funding source and due date?</b>	The improvement plan should be specific to facilitate action. <b>Score one point for each of the following categories</b> of information included in the improvement plan (provided that meaningful information has been provided for each category): 1) action to be taken; 2) responsible party; 3) cost and/or funding source; and 4) target due/completion date. (If no improvement plan, <b>score 0.</b> )	4	The improvement plan is comprehensive and includes all critical components.
4.3	<b>Is the improvement plan being carried out as documented and kept up to date?</b>	Look for evidence that improvements are being made as per the defined schedule. The improvement plan is of little use if it is not being implemented. Talk through the full improvement plan with the WSP team to gauge the degree of implementation. Also look for evidence that the plan is revisited and revised by the WSP team, e.g. that completed works are marked as complete or that new schedules have been defined for lapsed deadlines. <b>Score 4</b> only where all works are being implemented as described in the schedule and where completed work are marked as complete or removed from the improvement schedule; <b>score 2</b> where works are generally being implemented as described but where there are a couple of lapsed deadlines or where completed works have not been marked; <b>score 0</b> where the improvement plan is generally out of date and not being followed, or there is no improvement plan. <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for “in between” situations.)	2	Works are generally being implemented but completed works have not been updated. Some of the improvement plan are not conducted (eg. IP 13)



## 5. OPERATIONAL MONITORING

**Objective:** describe monitoring to be carried out by the supplier (visual inspections and water quality testing) to ensure that key water supply system components and control measures continue to work effectively.

Question		Tips for auditor and scoring guidance	Score (0–4)	Comment/justification
5.1	<p><b>Has an operational monitoring plan been documented, addressing routine water quality monitoring and visual inspections by the supplier?</b></p>	<p>This addresses operational monitoring by the supplier to confirm control measure effectiveness, and it is distinct from compliance monitoring by health officials to confirm that health-based standards or targets are being met (which is covered in the next section – 6. Verification). Ideally, the operational monitoring plan should cover visual inspections, e.g. checking fences, storage tanks, spring boxes, etc., as well water quality testing by the supplier. Where possible, the supplier should monitor water quality at appropriate locations to inform operational decisions, e.g. monitoring raw, settled or filtered water. This is especially critical where treatment chemicals are being used, such as alum or chlorine. If an operational monitoring plan has not been documented to cover water quality testing and/or visual inspections by the supplier, <b>score 0</b>. Where a documented plan exists, <b>score one point for each of the following elements:</b></p> <ul style="list-style-type: none"> <li>● parameters (e.g. turbidity, pH, chlorine) and/or control measures/components to be monitored (e.g. fences)</li> <li>● monitoring locations and frequency</li> <li>● responsible party</li> <li>● target conditions and/or critical limits and corrective actions if critical limits are breached.</li> </ul>	3	<p>The frequency for some parameters are not accordance with national standard (eg. Residual chlorine must be monitored daily instead of weekly)</p>

5.2	<b>Is the supplier carrying out operational monitoring as per the documented plan?</b>	Review monitoring records, e.g. water quality logbooks and site inspection checklists for the audit period (or for a period of at least one year) to confirm that operational monitoring is being conducted by the supplier as per the plan. <b>Score 4</b> only where complete records clearly indicate full compliance with the monitoring plan; <b>score 2</b> where available records indicate general compliance with the schedule but where there are gaps in records; <b>score 0</b> where no records exist to confirm compliance with the monitoring plan or where there is no plan for operational monitoring by the supplier. (Scores 1 and 3 can be assigned at auditor’s discretion for ‘in between’ situations.)	1	Carrying out operational monitoring but no evidence (register misplaced)
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## 6. VERIFICATION

**Objective:** confirm that drinking-water quality standards are being met, consumers are satisfied and the WSP is complete and effective.

Question	Tips for auditor and scoring guidance	Score (0–4)	Comment/justification	
6.1	<b>Has a compliance monitoring plan been documented?</b>	The compliance monitoring plan is generally developed as a collaboration between health officials and the water supplier. Compliance monitoring is distinct from operational monitoring by the supplier (covered in the previous section – 5. Operational monitoring). It covers the water quality monitoring required to determine compliance with health-based water quality standards or targets. If a compliance monitoring plan has not been documented, <b>score 0</b> . Where a documented plan exists, <b>score one point for each of the following elements:</b> <ul style="list-style-type: none"> <li>● parameters monitored (e.g. <i>E. coli</i>) and relevant standard or target for each parameter</li> <li>● monitoring locations</li> <li>● monitoring frequency</li> <li>● responsible party.</li> </ul>	3	Documented but there is discrepancies between documentation and activity (eg. Testing is performed on monthly instead of quarterly as mentioned in WSP and sampling locations are also different)

6.2	<b>Is compliance monitoring being carried out as planned?</b>	Review water quality records for the audit period (or for a period of at least one year) to confirm that compliance monitoring is being conducted as planned. No monitoring (or no records) may indicate insufficient communication between water supplier staff and health sector members of the WSP team. <b>Score 4</b> only where complete records clearly indicate full compliance with the monitoring plan; <b>score 2</b> where available records indicate general compliance with the schedule but where there are gaps in records; <b>score 0</b> where no records exist to confirm compliance with the monitoring plan or where there is no plan for compliance monitoring. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	3	Missing compliance data for few months (February 2024)
6.3	<b>Are water quality standards or targets being met?</b>	Do compliance monitoring records indicate that water quality targets are being achieved? If not, the WSP is not achieving one of its primary objectives. The auditor should review available water quality records for the audit period (at least one year) and calculate compliance rates for key water quality indicators, e.g. faecal coliforms. <b>Score 4</b> where records indicate >95% compliance with standards; <b>score 3</b> for 85–95% compliance; <b>score 2</b> for 75–85%; <b>score 1</b> for 65–75%; <b>score 0</b> for ≤65%. (If no water quality records are available, <b>score 0</b> .) Where there is documented evidence of corrective action by the supplier during non-complying events, the auditor should <b>add one point</b> to the breakdown above (with a maximum score of 4). For instance, 70% compliance with regular, documented corrective action by the supplier during non-complying events would score 1 + 1 = 2.	0	Compliance rate 62.5% in 2022, and 32% in 2023

6.4	<b>Does the supplier have a documented and implemented system for regularly monitoring and recording consumer satisfaction?</b>	The WSP should define a system for regularly monitoring consumer satisfaction, e.g. customer surveys or complaints logs, and the supplier should be able to furnish evidence that the system is implemented in practice. <b>Score 4</b> if the supplier has clearly defined and documented a system of monitoring consumer satisfaction and can furnish thorough evidence that the system is implemented; <b>score 2</b> where the supplier has developed and regularly implements a system of consumer satisfaction monitoring but where there are some gaps in documentation and record; <b>score 0</b> where no documentation or records of consumer satisfaction monitoring exist, or no system has been defined. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	4	Has clearly defined and documented a system of monitoring consumer satisfaction and has evidence that the system is implemented.
6.5	<b>Has a plan for internal WSP auditing been defined and is it being implemented?</b>	The WSP should define the frequency of internal audits and the WSP team should be able to furnish evidence that internal audits are being conducted at the frequency indicated in the WSP. (The auditor should make this guidance note available to WSP teams to use for internal auditing.) <b>Score 4</b> only if target internal audit frequency is documented in the WSP and there is evidence that internal auditing is carried out at this frequency; <b>score 2</b> if there is partial evidence that an internal audit has been conducted during the audit period; <b>score 0</b> if there is no evidence of internal auditing. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	1	Documented but no evidence of internal auditing.

## 7. MANAGEMENT PROCEDURES

**Objective:** define procedures to be followed during routine operations and emergency situations.

Question		Tips for auditor and scoring guidance	Score (0–4)	Comment/justification
7.1	<b>Have clear standard operating procedures (SOPs) been defined for major operational activities?</b>	Based on the experience and site knowledge acquired during the audit, the auditor should be able to make a general list of key operational activities for which SOPs should be developed (e.g. filter backwashing, coagulant dosing, chorine dosing, storage tank cleaning, pipeline repair and replacement, equipment calibration, etc.). The auditor should make this list with WSP team members and review evidence that these SOPs have been developed. <b>Score 4</b> if the supplier has developed clear and detailed SOPs for the majority of the key operational activities listed by the auditor; <b>score 2</b> where the supplier has developed SOPs for many of the activities on the list and/or where the level of detail is not sufficient to guide field staff; <b>score 0</b> where few or no detailed SOPs exist. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	0	No SOPs exist
7.2	<b>Are SOPs up to date and accessible to field staff?</b>	The auditor should review a sample of the supplier’s SOPs in detail with the WSP team to gauge whether or not they are generally accurate and up to date. In addition, the auditor should determine whether or not the SOPs are easily accessible to field staff for their use and reference. (SOPs that exist only at the head office are of little use to field staff.) <b>Score 4</b> if all sample SOPs reviewed are up to date and easily accessible to relevant field staff; <b>score 2</b> if there are minor issues with SOP updating/accuracy or accessibility; <b>score 0</b> if SOPs are significantly out of date, inaccurate or inaccessible or if documented SOPs do not exist. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	0	No SOPs are available for daily operational monitoring

7.3	<b>Does the WSP include a current emergency response plan?</b>	<p>The WSP should include a documented emergency response plan describing water quality emergencies that would trigger implementation of the plan, as well as communication protocols and up-to-date contact information. If an emergency response plan has not been documented, <b>score 0</b>. Where a documented plan exists, <b>score one point for each of the following elements:</b></p> <ul style="list-style-type: none"> <li>• a list of water quality incidents or emergencies that would trigger plan activation;</li> <li>• current names, positions and contact details of persons within the water supplier to be notified (no point given for outdated contact information);</li> <li>• current names, positions and contact details of health officials to be notified (no point given for outdated contact information); and</li> <li>• plan for disseminating emergency messages to consumers.</li> </ul>	3	Contact names are not current
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## 8. SUPPORTING PROGRAMMES

Objective: identify programmes that indirectly support water safety.

Question	Tips for auditor and scoring guidance	Score (0–4)	Comment/justification	
8.1	<b>Have appropriate supporting programmes been clearly defined?</b>	Based on the experience and site knowledge acquired during the audit, the auditor should be able to make a general list of supporting programmes that should be included in the WSP, generally including operator training and consumer education as a minimum. <b>Score 4</b> if the supplier has clearly defined all relevant supporting programmes, including implementation details; <b>score 2</b> where the supplier has vaguely defined all relevant supporting programmes or has clearly defined only some of the key supporting programmes; <b>score 0</b> where few or no supporting programmes are defined. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	4	Has clearly defined all relevant supporting programmes, including implementation details

8.2	<b>Are supporting programmes being implemented as planned?</b>	The supplier should be able to furnish evidence that supporting programmes are being implemented as described in the WSP. Review relevant records to confirm. <b>Score 4</b> where records indicate that supporting programmes are being carried out as planned; <b>score 2</b> where available records indicate the supporting programmes are being carried out to some extent but where there are gaps in records or some departures from implementation plan in WSP; <b>score 0</b> where no records exist to confirm implementation of supporting programmes. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	4	Supporting programmes are being carried out as planned
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## 9. REVIEW AND REVISION

**Objective:** ensure that the WSP remains up to date and effective through regular review and revision.

Question	Tips for auditor and scoring guidance	Score (0–4)	Comment/justification	
9.1	<b>Is a schedule for regular review and revision of the WSP defined?</b>	Regular review and revision of the WSP by the WSP team is essential to ensuring that the WSP remains relevant and guides day-to-day operations. WSP review following an emergency or incident is also important. <b>Score 4</b> if the WSP includes a clearly defined schedule of regular WSP review and revision; <b>score 0</b> where a regular review schedule is not defined in the WSP. ( <b>Scores 1, 2 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	4	WSP includes a clearly defined schedule of regular WSP review and revision.
9.2	<b>Is the WSP being reviewed and revised as planned?</b>	The WSP team should be able to furnish evidence that the WSP is being reviewed and revised as per the review schedule defined in the WSP, e.g. minutes from review meetings and or old/updated WSP versions. <b>Score 4</b> only if the target frequency is documented in the WSP and there is evidence that it is being reviewed at this frequency; <b>score 2</b> if there is partial evidence that WSP is being reviewed at least annually (or at the target frequency in the WSP); <b>score 0</b> if there is no evidence of regular WSP review. ( <b>Scores 1 and 3</b> can be assigned at auditor’s discretion for ‘in between’ situations.)	0	No evidence of regular WSP review

## AUDIT SUMMARY SHEET

Audit area/WSP element	Current audit score		Score from previous audit (n/a for initial audit)	Current qualitative assessment (excellent, good, below average, etc.)
	Points received	Points possible		
1. WSP TEAM	5	16	NA	Priority attention needed
2. SYSTEM DESCRIPTION	7	16	NA	Priority attention needed
3. HAZARD ID AND RISK ASSESSMENT	14	20	NA	Average
4. IMPROVEMENT PLAN	8	12	NA	Average
5. OPERATIONAL MONITORING	4	8	NA	Priority attention needed
6. VERIFICATION	11	20	NA	Below average
7. MANAGEMENT PROCEDURES	3	12	NA	Priority attention needed
8. SUPPORTING PROGRAMMES	8	8	NA	Excellent
9. REVIEW AND REVISION	4	8	NA	Priority attention needed
<b>GRAND TOTAL SCORE</b>	<b>64</b>	<b>120</b>	<b>NA</b>	<b>Attention needed</b>

**Grand total score: 64 / 120**

Circle grand total score below:

<b>115–120</b>	<b>103–114</b>	<b>91–102</b>	<b>79–90</b>	<b>61–78</b>	<b>≤ 60</b>
<b>Excellent</b>	<b>Very good</b>	<b>Good</b>	<b>Average</b>	<b>Attention needed</b>	<b>Priority attention needed</b>



END OF REPORT

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