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| Audit Report | : Performance Audit Report on 'Provision of Drinking Water in Thimphu Municipality' (AIN 14732) |
| Date of Issue | : 14th August 2017 |
| Name of Agency | : Thimphu Thromde, Royal Centre for Disease Control (RCDC), Ministry of Health (MoH), Ministry of Works and Human Settlement (MoWHS) and National Environment Commission Secretariat (NECS) |
| No. of Review | : 3 rd Review |

| Recommendations | RAA's Last Comments | Action Taken Submitted by Thimphu Thromde | RAA's Further Comments |
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| <p>4.1 Thimphu Thromde should provide reliable and equitable water supply to its population</p> <p>Analyzing the water received in each zone of Thimphu Municipality as against the required amount, it was noted that the zones received varying amount of drinking water ranging from 28% to 94% of the requirement depicting inequity in water supply. Further, some areas do not have Thromde's water connection at all despite having enough water produced to meet the required amount of water.</p> <p>The RAA also noted inadequate storage capacity of service tanks leading to water shortages in certain areas. Strategic water distribution plan considering the size and density of population, area and different user groups to ascertain the amount of water</p> | <p>Partially Implemented</p> <p>While the RAA is appreciative of the various actions taken by the management through the construction of water tanks it is to reiterate that there is still a need to have a strategic plan to provide reliable and equitable water supply.</p> <p>The RAA has noted that various water supply tanks are being constructed to provide reliable and equitable water supply to its population. However, with regard to some areas that do not have Thromde's water connection at all despite having enough water produced to meet the required amount of water, nothing has been intimated on the action taken on this matter. And at the same time to ensure reliable and equitable drinking water considering the size and density of population,</p> | <p>Area - IX A 230cum RCC tank has been constructed at Zilukha.</p> <p>Area - VII A 230cum tank above Kuensel Phodrang road and a 100cum tank at Changedaphu are completed for Changzamtog</p> <p>Area - V Construction of 230cum tank above Langjuphaka under the WB Project is completed.</p> <p>Area - IV A 100cum tank has been constructed at Sunday market.</p> <p>A 230 cum tank at Changjiji has been completed.</p> <p>Distribution pipe network in all the mentioned locations are completed.</p> <p>Further necessary interventions have already been identified which shall be implemented during the 12th FYP.</p> <p><i>Holistic picture of the problem will be understood after developing the water master plan. The problem will be</i></p> | <p>Partially implemented</p> <p>The RAA noted that the construction of service tanks and distribution of pipe lines were completed at various zones. However, the Thimphu Thromde is yet to come up with the water master plan and strategic water distribution plan.</p> <p>Therefore, the RAA once again would like to reiterate that the Thimphu Thromde should come up with the strategic water distribution plan considering the size and density of population, area and different user groups to ascertain the amount of water supply required for each zone in order to ensure reliable and equitable drinking water.</p> |

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| <p>supply required for each zone in order to ensure reliable and equitable drinking water. Thromde should also construct adequate numbers of service tanks proportionate to water requirement.</p> | <p>area and different user groups to ascertain the amount of water supply required for each zone, nothing has been mentioned in the reply to RAA.</p> <p>While the recommendation is also to have adequate number of service tanks, it is partially also to formulate a strategic water distribution plan. Therefore, para has been treated as partially implemented since a thorough study still needs to be carried out to have equitable and reliable water supply.</p> | <p><i>addressed after the implementation of the master plan. 24x7 safe drinking water supply is expected to address the problem to a certain extent.</i></p> <p>In view of substantial measures taken towards achieving the provision of reliable and equitable water supply to the population of Thimphu Thromde, the recommendation may be considered implemented.</p> | <p>As such, the recommendation shall remain as partially implemented until the Thimphu Thromde comes up with the strategic water distribution plan.</p> |

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| 4.2 | <p>Thimphu Thromde should establish a robust system to monitor and supervise the water distribution network</p> <p>Absence of monitoring system for water sources and the distribution network has led to huge loss of water, water revenue and interruption in water supply. To ensure quality and reliable supply of drinking water and also to control water loss in the water distribution network, there should be robust monitoring system established for water distribution networks. The Thromde should come up with components of monitoring system such as monitoring standards and protocol, formation of monitoring team, schedule and reporting, etc. to have established system in place.</p> | <p>Partially Implemented</p> <p>The RAA noted that works are already under progress through a diagnostic study to ensure established monitoring system in place including monitoring standards and protocol, formation of monitoring team, schedule and reporting, etc.</p> <p>The recommendation shall be treated as partially implemented until the aforementioned study is completed and measures appropriately implemented in relation to the monitoring and supervision of the water distribution network.</p> | <p>Formal request was made to the project office in the MoWHS through Thromde's project coordinator. However, WB proposed to support only in terms of consultancy and would be unable to provide fund for infrastructure and other inputs. During the discussion with NA and RAA, it was informed that Thromde would be using its own resources even if there is no WB support.</p> <p>In this connection, Thromde has started to monitor the distribution network through by delineating specific water management zones and drawing up job description and responsibilities of engineers and technicians. The job responsibilities are incorporated in the IWPs to ensure quality and reliable supply including reduction of water losses in the distribution system.</p> | <p>Partially Implemented</p> <p>It was noted that the water section of Thimphu Thromde had come out with the job descriptions and responsibilities of the engineers, technicians and plumbers as one of the components of monitoring system. Further, the RAA during site visit noted that the bulk meters were installed at the treatment plants and service tanks and the readings were taken accordingly on the daily basis.</p> <p>Besides the initiatives taken, this activity is also in the 12th FYP under the Flagship program for 24x7 safe drinking water supplies.</p> |

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| | | | <p>This activity has also been incorporated in the 12th FYP under the Flagship program for 24x7 safe drinking water supplies.</p> <p>List of bulk water meters installed at treatment plants and service tanks is attached.</p> <p>Considering the actions taken towards establishing a robust system to monitor and supervise the water distribution network, the recommendation may be considered implemented.</p> | <p>Despite the fact that the works are underway for quality and reliable supply of drinking water, the Thimphu Thromde should come up with monitoring standards, protocol, and reporting system.</p> <p>As such, the recommendation shall remain partially implemented until the diagnostic study is carried out and report shared to the RAA.</p> |
| 4.3 | <p>Thimphu Thromde should maintain and safeguard water distribution network</p> <p>Several inadequacies were noted in the water distribution network relating to infrastructure and water protection such as inappropriate laying of water distribution pipes and Installation of water meters, improper fencing at</p> | <p>Partially Implemented</p> <p>It has been noted that geo-coordinated network data of the water distribution system for use in GIS is being developed.</p> <p>The RAA has noted that the issue shall be addressed through the diagnostic study on Thromde Water</p> | <p>First phase of the Installation of bulk/master water meters has been completed.</p> <p>Compound security fencing and gate constructions are completed for Yangchenphu, Zilukha and Tanks above swimming pool are completed.</p> <p>Other areas shall be continued in the 12th 5YP.</p> | <p>Partially Implemented</p> <p>While the inadequacies noted in the water distribution network such as installation of water meters and improper fencing at service tanks were carried out, the inappropriate laying of water distribution pipes and non-</p> |

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| <p>water source and service tanks and non-functional bulk meters . In order to address the inadequacies noted, Thimphu Thromde should develop blueprint of water network system, conduct periodic maintenance of water distribution network infrastructure and develop guidelines on water meter installation.</p> | <p>services conducted by the World Bank. Since the issue has already been conceptualized and measures initiated to maintain and safeguard water distribution network the para shall be treated as partially implemented. However, the Thromde should intimate RAA until actual implementation is done.</p> | <p>Procurement and installation of meter test bench has been initiated.</p> <p>Process for the digitization of water supply infrastructure is being done in 2018-19 for which TOR has already been drawn up.</p> <p>Provision of facilities such as workshop for operation & maintenance, tools and equipment including further strengthening of security fencing and lighting for water treatment plant and service tank compounds are made.</p> <p>The blue print for core city is available in GIS. Digitization of the as built infrastructure for North and South Thimphu is planned to be carried out during the 12th FYP. <i>The digitization of Dechencholing water network (blue print) has been completed.</i></p> | <p>functional of bulk meters are not fully rectified.</p> <p>The RAA noted that the blue print of water network system for core city available in GIS is stated to be out of date and needed an updated version. The Digitization of the as built infrastructure for North and South Thimphu is under process while the digitization of Dechencholing water network has been completed and yet to be updated in the GIS.</p> <p>Further, the Thromde is also in the process of developing guidelines and SOPs for O&M of water supply systems as software component in the 12th FYP.</p> |

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| | | | <p>Guidelines and SOPs are being developed for O&M of water supply systems as software component in the 12th FYP</p> <p>Inappropriate laying of pipelines has reference to the community/private water connections and lines. With gradual discontinuation of the community/private water supply lines, these existing pipelines are being lifted. <i>The community water supply in Lungtenphu, Olakha and Dechencholing has been lifted.</i></p> <p>Considering substantial actions taken to maintain and safeguard water distribution Network, the recommendation may be considered implemented.</p> | In view of the above, the recommendation is treated as partially implemented. |
| 4.4 | Irregularities noted in water network system should be corrected | Not Implemented The RAA has noted that the customer service centre has initiated discussion | Surveys have been carried out and interventions are ongoing to ensure | Partially implemented The Thimphu Thromde other than coming up with water |

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| <p>Instances of irregularities such as unauthorized tapping of water, water connection bypassing meters, water connection from transmission lines, allowing more than one connection per dwelling and diversion of water supply to community tanks were noted in the process of audit.</p> <p>Thimphu Thromde should further investigate and take appropriate action immediately. In addition, the Thromde should also institute corrective measures in order to prevent such cases in the future.</p> | <p>to streamline the deficiencies by coming up with a separate rules and regulations specific to Thromde. However, the Thromde has not taken any appropriate actions on the irregularities noted in the report because Customer Service centre was already there in place. Therefore, proper action plan with document evidences are required in order to implement the recommendation.</p> <p>No substantial action has been taken to implement the recommendation. Irregularities such as unauthorized tapping of water, water connection bypassing meters, water connection from transmission lines, allowing more than one connection per dwelling and diversion of water supply to community tanks needs to be corrected and intimated to RAA.</p> | <p>that all Thromde connections are metered.</p> <p>Connection process has been streamlined and necessary corrective measures are implemented.</p> <p>The 9th Thromde Tshogde has approved the proposal for water related fees such as reconnection charge, illegal connection water wastage and water contamination which are being implemented. <i>The list of approved water related fees is as follows:</i></p> <table border="1"> <thead> <tr> <th><i>Water connection related fees</i></th> <th><i>Existing</i></th> <th><i>Approved</i></th> </tr> </thead> <tbody> <tr> <td><i>Reconnection charge</i></td> <td><i>500</i></td> <td><i>2,000.00</i></td> </tr> <tr> <td><i>Illegal connection</i></td> <td><i>0</i></td> <td><i>5,000+estimated unpaid bills</i></td> </tr> </tbody> </table> | <i>Water connection related fees</i> | <i>Existing</i> | <i>Approved</i> | <i>Reconnection charge</i> | <i>500</i> | <i>2,000.00</i> | <i>Illegal connection</i> | <i>0</i> | <i>5,000+estimated unpaid bills</i> | <p>related fees and charges, no major actions were taken on the irregularities noted. Thus, it is recommended that the similar exercises must be carried out to locate such cases besides instituting corrective measures to prevent such irregularities in future.</p> <p>Therefore, until such exercises are carried out and actions taken accordingly, the recommendation shall remain as partially implemented.</p> |
| <i>Water connection related fees</i> | <i>Existing</i> | <i>Approved</i> | | | | | | | | | | |
| <i>Reconnection charge</i> | <i>500</i> | <i>2,000.00</i> | | | | | | | | | | |
| <i>Illegal connection</i> | <i>0</i> | <i>5,000+estimated unpaid bills</i> | | | | | | | | | | |

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| | | Until Thimphu Thromde intimates RAA with proper implementation status, it shall remain as not implemented. | <table border="1"> <tr> <td><i>Water wastage</i></td> <td><i>0</i></td> <td><i>1,000.00</i></td> </tr> <tr> <td><i>Water contamination</i></td> <td><i>0</i></td> <td><i>10,000.00</i></td> </tr> </table> <p><i>The unauthorized tapping of water at Hejo has been disconnected. With the lifting and discontinuation of community water supply in Olakha and Lungtenphu in May and August respectively, diversion of Thromde water supply has been stopped.</i></p> <p>Further; existing Thromde water regulation is being reviewed with regard to allowing more than one connection per dwelling.</p> <p>Considering the actions taken towards correcting the irregularities noted in water network system, the recommendation may be treated as implemented.</p> | <i>Water wastage</i> | <i>0</i> | <i>1,000.00</i> | <i>Water contamination</i> | <i>0</i> | <i>10,000.00</i> | |
| <i>Water wastage</i> | <i>0</i> | <i>1,000.00</i> | | | | | | | | |
| <i>Water contamination</i> | <i>0</i> | <i>10,000.00</i> | | | | | | | | |

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| 4.5 | <p>Thimphu Thromde should develop comprehensive and accurate database on buildings and water meters</p> <p>Maintaining a comprehensive and up to date database on property holdings and issuance of water meters within the Municipality's jurisdiction is very crucial for the Thromde to levy correct property taxes and water charges as mandated by law. Maintaining comprehensive and accurate database will not only help Thimphu Thromde to determine the actual number of water meters connected and those buildings that need to be connected. In addition, it will also help in assessing Thromde's water coverage and proper accounting of water consumption and water revenue. This in turn would help the Thromde in effective planning and decision making in water supply management. Thus, Thimphu Thromde</p> | <p>Partially Implemented</p> <p>The RAA has noted that the Thromde intends to address the issue through World Bank conducted diagnostic study on Thromde Water services.</p> <p>The RAA has noted that the Thromde has requested the World Bank to carry out diagnostic study on Thromde Water services.</p> <p>Comprehensive and accurate database on buildings and water meters are yet to be developed. Therefore, the recommendation shall remain partially implemented.</p> | <p>The updated number of buildings and number of metered water connections was 5258 and 4529 respectively as of 30th June 2018.</p> <p>All the properties having Thromde water supply connections are metered and data on metering is regularly updated.</p> <p>The number of buildings updated till 25th July 2018 was 5594. The updating is regularly continued as it is dynamic process.</p> <p>In view of the above, the recommendation may be considered implemented.</p> <p><i>Job responsibilities of water engineers, technicians, plumbers and care takers are attached.</i></p> | <p>Partially Implemented</p> <p>It has been noted that the database on building and water meters are developed in the Revenue Management System and updating is being done regularly.</p> <p>However, since the Thimphu Thromde is in the process of digitization of water network system in GIS, the accuracy of the database on building and water meters maintained in the revenue management system is not assured.</p> <p>Further, it was also noted that the diagnostic study on water services would include the data development on metering, monitoring of operation and maintenance aspects.</p> |

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| | should develop comprehensive and accurate database on building and water meters. | | | Thus, the recommendation shall remain as partially implemented until the Thimphu Thromde completes the GIS for all the zones besides carrying out the diagnostic study on water services. |
| 4.6 | <p>Thimphu Thromde should develop clear job roles and responsibilities for the officials working in Water Supply Section</p> <p>To ensure efficient and effective delivery of mandates of organization, divisions and sections should clearly understand their roles and responsibilities. There should be formal instructions for all units in the organization on how businesses are to be conducted. It shall be the collective responsibility of officials in the organization to facilitate achievement of Organizational goal.</p> | <p>Not Implemented</p> <p>Until Thimphu Thromde intimates RAA with proper implementation status, it shall remain as not implemented.</p> <p>Thimphu Thromde is yet to come up with clear job roles and responsibilities for the officials working in Water Supply Section.</p> <p>Therefore, the recommendation shall remain as not implemented.</p> | <p>Job responsibilities for Engineers and Technicians/Plumbers have been developed. These are being institutionalized through the individual work plan from 2018-19</p> <p>Capacity building of existing human resource, facilities for mobility, monitoring complaints and water quality has been improved. Additional HR requirement is being considered towards improving the service delivery.</p> <p>In view of the above, the recommendation may be considered implemented.</p> | <p>Implemented</p> <p>It was noted that the water section of Thimphu Thromde had come out with the job descriptions and responsibilities of the engineers, technicians and plumbers. The office order to this effect was issued in 2018.</p> <p>In view of the above, the recommendation is treated as implemented. However, the Thimphu Thromde should ensure that the officials deliver the services according to their roles and responsibilities.</p> |

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| | Thimphu Thromde should develop clear job roles and responsibilities for each position in Water Supply Section with accountability to address many inadequacies noted in this audit such as ineffective monitoring of the water network system, delay in providing water related services, inefficiency in addressing complaints, inadequacies in monitoring of water quality, etc. | | | |
| 4.7 | <p>Water meter needs to be installed for every water connection provided by Thromde and accordingly charged.</p> <p>Thromde's drinking water supplied to Babesa, Lungtenphu and Olakha from Megaypang water treatment plant since November 2014 was never charged. Furthermore, commercial car washing units did not have water meters installed despite having Thromde's water supply. As a result, there was a loss of government revenue amounting</p> | <p>Partially Implemented</p> <p>Thimphu Thromde reported that water meters are installed and billings started in Babesa, Lungtenphu and Olakha areas and commercial car washing units.</p> <p>However, there were no justifications provided for the forgone government revenue of Nu. 20.37 million.</p> | <p>Ever since the O&M came under the present water supply section in February 2018, the issue has been prioritized and action has been initiated to meter all the Thromde water connections through surveys in the field.</p> <p>As on date, all the treated water supply connections including commercial car washing units are metered and charges collected. Monitoring of illegal</p> | <p>Partially Implemented</p> <p>The RAA noted that the water metering at Babesa, Lungtenphu and Olakha were completed and bills are raised including the commercial car washing units.</p> <p>However, the water supplied to those areas were not charged since 2014 till 2017 which resulted into revenue loss of Nu.20.37 million.</p> |

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| | to Nu. 20.37 million. Thimphu Thromde should ensure to install water meter for every water connection provided and also justify for the forgone revenue. | Hence, RAA awaits justifications from Thimphu Thromde and accountability for the revenue forgone from the Thromde. Until then the recommendation shall remain partially implemented. | connections and bypassing of water meters are done effectively. <i>A total of 384 connections are metered in Babesa and Olakha.</i> | Since, there was no justification furnished for the forgone revenue of Nu.20.37 million, the recommendation shall remain as partially implemented. |
| 4.8 | <p>Thimphu Thromde should provide adequate water supply in order to discontinue private and community connections</p> <p>The residents in Thimphu Thromde currently gets water supply from three sources viz. Thromde's water supply, privately and community obtained water supply. Some residents just have one of the three water connections while the others have combination of two or all three of them. As per the Section 90 of the Water Regulation of Bhutan 2014, Thromde's water supply should be the only source of potable water supply and all other water supply should be discontinued when Thromde</p> | <p>Partially Implemented</p> <p>Thimphu Thromde has initiated to centralise the water sources and there are also plans to gradually discontinue usage of private and community connections by providing adequate water supply from Thromde.c. <i>Ensuring the quality of drinking water supply through enhanced coordination with RCDC which include taking prompt actions to remedy and minimize the risk and hazards associated with contamination of water supplies.</i></p> <p>Since the work are initiated and still under process, the recommendation</p> | <p>Thromde has initiated the implementation of the central water supply scheme from Dodena for provision of adequate water supply including developing available water sources, augmenting the distribution network coverage by providing new distribution networks, constructing additional water storage tanks within the Thromde area. The project is expected to be completed by December 2018.</p> <p>Consequently, the target is to ensure accessible, adequate and equitable water supply within Thimphu Thromde.</p> | <p>Partially Implemented</p> <p>The Thimphu Thromde unless provides equitable and sufficient water supply to the residents, the lifting of community and private water lines would be a challenge.</p> <p>Therefore, the Thimphu Thromde must expedite in commissioning the ongoing central water supply from Dodena and completely discontinue the private and community water line connections.</p> |

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| <p>supplies adequate water. Therefore, the Thromde should have plans to provide adequate water supply to all and eventually discontinue the private and community water supply connections.</p> <p>Further, quality of drinking water from the private and community source are grossly polluted, thus the concerns for human health also warrants discontinuation.</p> | <p>shall remain as partially implemented. Thimphu Thromde should complete the works as assured and intimate RAA.</p> | <p>The community water supply to Olakha has been lifted in May 2018. The community water supply to Lungtenphu has been lifted in August 2018.</p> <p>The community water supply to Dechencholing has been lifted in August 2018.</p> <p>The remaining community water supplies are being gradually discontinued.</p> <p>Thimphu Thromde shall be able to ensure provision of adequate water supply after commissioning of the ongoing Central water supply from Dodena and completely discontinue private and community connections.</p> <p>In view of substantial progress made in expediting the completion of ongoing water supply project and lifting the community water supplies, the recommendation may be considered implemented.</p> | <p>Until such actions are taken, the recommendation shall remain as partially implemented.</p> |

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| Name of Agency | : Thimphu Thromde, Royal Centre for Disease Control (RCDC), Ministry of Health (MoH), Ministry of Works and Human Settlement (MoWHS) and National Environment Commission Secretariat (NECS) |
| No. of Review | : 3 rd Review |

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| <p>4.9 Coordination amongst the relevant agencies and authorities should be strengthened</p> <p>The Water Act of Bhutan 2011 envisions the holistic management of water resources requiring collaboration and cooperation of all key stakeholders for making informed decision on water and its development. The main agencies involved in provision of drinking water in Thimphu Municipality include Ministry of Works and Human Settlement (MoWHS), Ministry of Health (MoH), National Environment Commission Secretariat (NECS), and Thimphu Thromde. Recognizing the importance of effective coordination, National Environment Commission formed the National Water Resources Board (NWRB) comprising of all the stakeholders. Since NWRB was inactive from 2014, the NECS should</p> | <p>Not Implemented</p> <p>Until Thimphu Thromde intimates RAA with proper implementation status, it shall remain as not implemented.</p> <p>Action taken if any has not been intimated to RAA.</p> | <p>The coordination amongst the relevant agencies and authorities need to revisit the issue in view of the recent formation of Wang Watershed Management Committee comprising NEC, MoWHS, MoH, MoAF and Thimphu Thromde regarding collaboration and cooperation of all key stakeholders.</p> <p>However, it may be noted that as per the Water Regulation of Bhutan 2014, NEC is the apex independent authority of the Royal Government with regard to holistic management of water resources. Therefore, Thromde shall continue to pursue coordination with NEC.</p> | <p>Not Implemented</p> <p>It is to reiterate that the provision of drinking water, being a cross-cutting task requires cooperation and coordination of various agencies in implementing water management activities to provide reliable and safe drinking water to the beneficiaries and also to ensure sustainable development and management of water resources in the country.</p> <p>Until such time, the recommendation shall remain as not implemented.</p> |

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| | initiate to revive the NWRB and ensure they function as per the Water Regulation of Bhutan 2014. | | | |
| 4.10 | <p>The Ministry of Works and Human Settlement (MoWHS) should develop the master plan for drinking water supply</p> <p>As required by the Water Regulation of Bhutan 2014, the MoWHS should develop master plan for the national drinking water and wastewater management system for Thromde in consultation with local government in order to identify available options to ensure sufficient water for future generations. The plan would also provide clear strategic direction and holistic approach in the management of water supply system in the country.</p> | <p>Partially Implemented</p> <p>The audit follow up team on 28th March 2018 verified that a Draft Water Master Plan for Thimphu Thromde water supply was drafted by Thimphu Thromde in consultation with MoWHS.</p> <p>The para shall remain partially implemented until a comprehensive Water Master Plan is prepared, approved and the actions taken in accordance to the plans.</p> | <p>MoWHS was requested. However, MoWHS has asked Thromde to engage consultant to prepare the master plan. MoWHS has offered to provide assistance.</p> <p>A Drinking water supply master plan for Thimphu Thromde shall be prepared in the 12th FYP through the water flagship program.</p> | <p>Partially Implemented</p> <p>The recommendation shall remain as partially implemented until a comprehensive water master plan is prepared, approved and actions taken in accordance to the plans.</p> |

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| 4.11 | <p>The National Environment Commission Secretariat (NECS) should finalize the Water Resources Inventory at the earliest</p> <p>Water Resources Inventory is the study carried out on the availability of water from different sources and its quality aspects. Having water resources inventory would help in providing information in proper allocation of water from various sources to meet the current and future water needs. Till the date of audit, the inventory on water resources conducted by the NECS was found to be in the draft form. Thus, the NECS should immediately finalize the Water Resources Inventory.</p> | <p>Not Implemented</p> <p>Action taken if any has not been intimated to RAA. Until Thimphu Thromde intimates RAA with proper implementation status, the status shall remain as not implemented.</p> | <p>It was learned that the NEC shall be finalizing the water resource inventory for Thimphu Thromde by end of July 2018.</p> <p>As per the Water Regulation of Bhutan 2014, Chapter II, Authorities and functions; the National Environment Commission Secretariat to coordinate among Competent Authorities to develop inventories on water resources, both on quality and quantity baseline data.</p> <p>However, Thimphu Thromde shall continue to pursue with NEC and render all necessary inputs that may be required for finalizing the water resource inventory.</p> | <p>Not Implemented</p> <p>The response has been noted. However, the recommendation shall remain as not implemented until the water resources inventory is finalized and shared to the RAA.</p> |
| 4.12 | <p>Thimphu Thromde and the Royal Centre for Disease Control (RCDC) should ensure routine testing of the water quality</p> | <p>Partially Implemented</p> <p>While water testing is conducted, there is a lack of systematic process for carrying out the testing,</p> | <p>RCDC is sharing the monthly water quality surveillance report with Thimphu Thromde.</p> | <p>Partially Implemented</p> <p>It has been noted that the water quality tests at the treatments plants and reservoir tanks are</p> |

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| <p>The Thromde does not carry out the water quality tests on regular basis especially in the South Thimphu. Further, there was no test conducted for the private and community water supply by the Thromde, except for few tests in schools and institutes by Royal Centre for Disease Control (RCDC). Absence of regular testing could lead to provision of unsafe drinking water which in turn could trigger outbreak of water-borne diseases. Therefore, the Thromde and the RCDC should institute system to conduct water quality testing regularly as required by the WSP to ensure that the water supplied is safe at all times. Special attention should be given to test the water quality of schools, institutes and hospitals irrespective of the water supply source.</p> | <p>monitoring and reporting on water quality.</p> <p>Therefore, Thimphu Thromde should ensure compliance to Bhutan Drinking Water Quality Standard 2016 and Water Safety Plan. Until such actions are taken and status informed to RAA with documentary evidence, the recommendation shall be treated as partially implemented.</p> | <p>Thimphu Thromde tests water quality at the water treatment plants on daily basis including most of the service tanks within the water supply system for residual free chlorine. Chlorination facilities for some of the remaining service tanks are being carried out including setting up of new water sampling stations within the system.</p> <p>Dechencholing HSS has already been connected to Thromde water supply system. Similarly, schools technically feasible to be connected to Thromde water supply system are being surveyed to facilitate provision of Thromde connections. The School principals are appraised on the findings of the RCDC water quality surveillance reports and necessary help is rendered by Thromde water supply section.</p> | <p>being carried out by the Thimphu Thromde on regular basis and RCDC on the monthly basis. The RCDC shares the monthly surveillance report to the Thromde. It was also noted that the thermotolerant coliform testing was carried out in the schools and institutions' water supply within the Thimphu Thromde.</p> <p>As per the laboratory result for water sample analysis of Thimphu schools and institutes showed that Dechenphodrang monastic institute, Lungtenzampa MSS, Nima HSS, Zilukha LSS and Zilukha nunnery were found grossly contaminated. The results were 86 CFU/100ml, 76, 86, 105 & 69 respectively which were beyond</p> |

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| | | | <p>Follow up actions on reports requiring attention are taken by water section. Implementation of water safety plan is a dynamic process. The water quality reports of all the water treatment plants are compiled as per BDWQS 2016.</p> <p>Thimphu Thromde and the Royal Centre for Disease Control (RCDC) have ensured routine testing of the water quality</p> <p>In view of the above, the recommendation may be considered implemented.</p> <p><i>Water test report details are furnished.</i></p> | <p>the acceptable value of 0 CFU/100ml.</p> <p>However, there was no action taken on the test results despite showing high presence of faecal coliform and residual chlorine. In the absence of such corrective measures in place, the very purpose of treating the water at treatment plants and reservoir tanks are defeated.</p> <p>Therefore, the Thimphu Thromde should furnish action taken report, if any for RAA review and verification. Until such reports are furnished to the RAA, the recommendation shall remain as partially implemented.</p> |
| 4.13 | Thimphu Thromde in collaboration with the Royal Centre for Disease Control (RCDC) should institute monitoring and reporting | Not Implemented The RAA has noted that the Bhutan Drinking Water Quality Standards | Thimphu Thromde is complying with Bhutan Drinking Water Quality Standards 2016 with effect from July 2017. | Partially Implemented Although the water quality tests are carried out and reports |

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| | <p>mechanism on water quality</p> <p>The report on the water quality tests conducted by technicians was neither monitored nor was the result submitted for review. Furthermore, there was no action taken on the test results despite showing high presence of faecal coliform and residual chlorine. In absence of monitoring and reporting mechanism, appropriate treatment and timely actions cannot be taken if the water is contaminated.</p> <p>Therefore, Thromde in collaboration with RCDC should institute proper monitoring and reporting mechanism on water quality.</p> | <p>2016 will be implemented with effect from July 2017. However, Thimphu Thromde & RCDC has not instituted monitoring and reporting mechanism on water quality.</p> <p>Thimphu Thromde & Royal Centre for Disease Control (RCDC) has not instituted monitoring and reporting Mechanism on water quality.</p> <p>Hence, the recommendation shall remain as not implemented until Thimphu Thromde intimates RAA with proper implementation status.</p> | <p>Corrective measures where necessary are taken by Thromde on the monthly water quality surveillance reports received from RCDC. The monitoring and reporting mechanism on water quality is as per the BDWQS 2016.</p> | <p>generated, there was no action taken on the test results despite showing high presence of faecal coliform and residual chlorine.</p> <p>Therefore, the Thimhu Thromde should furnish action taken report, if any for RAA review and verification. Until such reports are furnished to the RAA, the recommendation shall remain as partially implemented.</p> |
| 4.14 | <p>Thimphu Thromde should strengthen the storage facilities for water treatment chemicals</p> <p>It was observed there was lack of proper storage facilities for the</p> | <p>Partially Implemented</p> <p>Storage facilities for chemicals were provided in many water treatment plants.</p> | <p>Store has been constructed at Chamgang water treatment plant for safe storage of chemicals.</p> <p>The stores are available at Motithang and Jungshina treatment plants.</p> | <p>Implemented</p> <p>Since the storage facilities for chemicals was provided at Dechencholing treatment plant and discontinued at YHS</p> |

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| <p>chemicals used for water treatment, thereby deteriorating the chemical stability by exposing to direct sunlight. In some cases, it was also found stored at Caretakers' house posing risks to the families' of the Caretakers. Therefore, Thimphu Thromde should have appropriate storage facilities for the chemicals.</p> | <p>However, few were found to be inadequate. Until such time the recommendation has been implemented and intimated to RAA, it shall remain as partially implemented.</p> <p>Thimphu Thromde has provided storage facilities for chemicals at Motithang, Jungshina and Chamgang water treatment plants.</p> <p>However, storage treatment plant at Dechencholing and reservoir tank at YHSS was found inadequate.</p> | <p><i>Store built for DWTP. Storage of chemical at the tank above YHSS has been discontinued as it is not required as in the treatment plants.</i></p> <p>The recommendation may be considered implemented.</p> | <p>reservoir tank, the recommendation is treated as implemented.</p> <p>However, it is recommended that the chemicals are stored properly and safely to ensure effective stability and to prevent from deterioration in future.</p> |