



Technical Guidelines for Internal Plumbing Water Systems

Electricity and Water
Conservation Directorate

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Dear customer

Water Conservation is an issue of major concern to international public opinion which cannot be ignored. As a society, it is our responsibility to preserve the limited water resources by following civilized practices and adapting our customs/habits to the solutions and techniques that are presented by scientific studies relating to the conservation of water.

Electricity and Water Conservation Directorate (EWCD) is obliged to provide guidance to the citizens and residents in order to mitigate the continued wastage of water.

Rapid industrial and social development, along with high population growth has put considerable strain on our water resources. This necessitated the Electricity and Water Authority (EWA) to enact regulations and legislations to protect and preserve these valuable resources in order to provide potable water to all our customers without interruption.

Therefore, EWA represented by EWCD is pleased to present these Technical guidelines to assist plumbers, and our customers to better understand internal water plumbing systems.

Water Regulation System

Water regulations were issued on the 10th July 2004 according to Ministerial Decree No. 1 pertaining to a water regulation system.

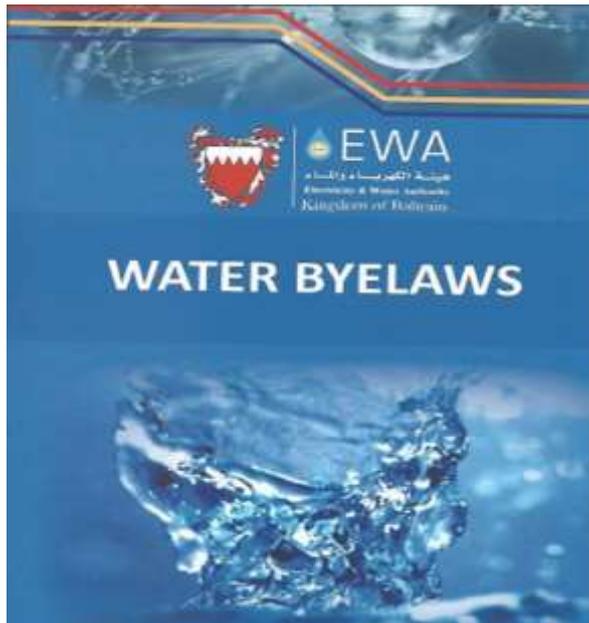
These regulations identify and regulate the most important issues and clarify procedures relating to the internal water network within premises.

The water regulations are aimed to minimize water wastage due to leaks in the customer's network through the use of appropriate materials and techniques according to the stipulated terms.

In addition to help protect the customer from the risk of water leaks and the high financial costs of repairs, the regulations provide protection of the EWA network from contamination that could result from backflow of water from customer's internal network to EWA network.

The actual implementation of the regulations began on 21st July 2009 only after careful review and verification of relevant engineering drawings and their conformity with water regulation system terms.





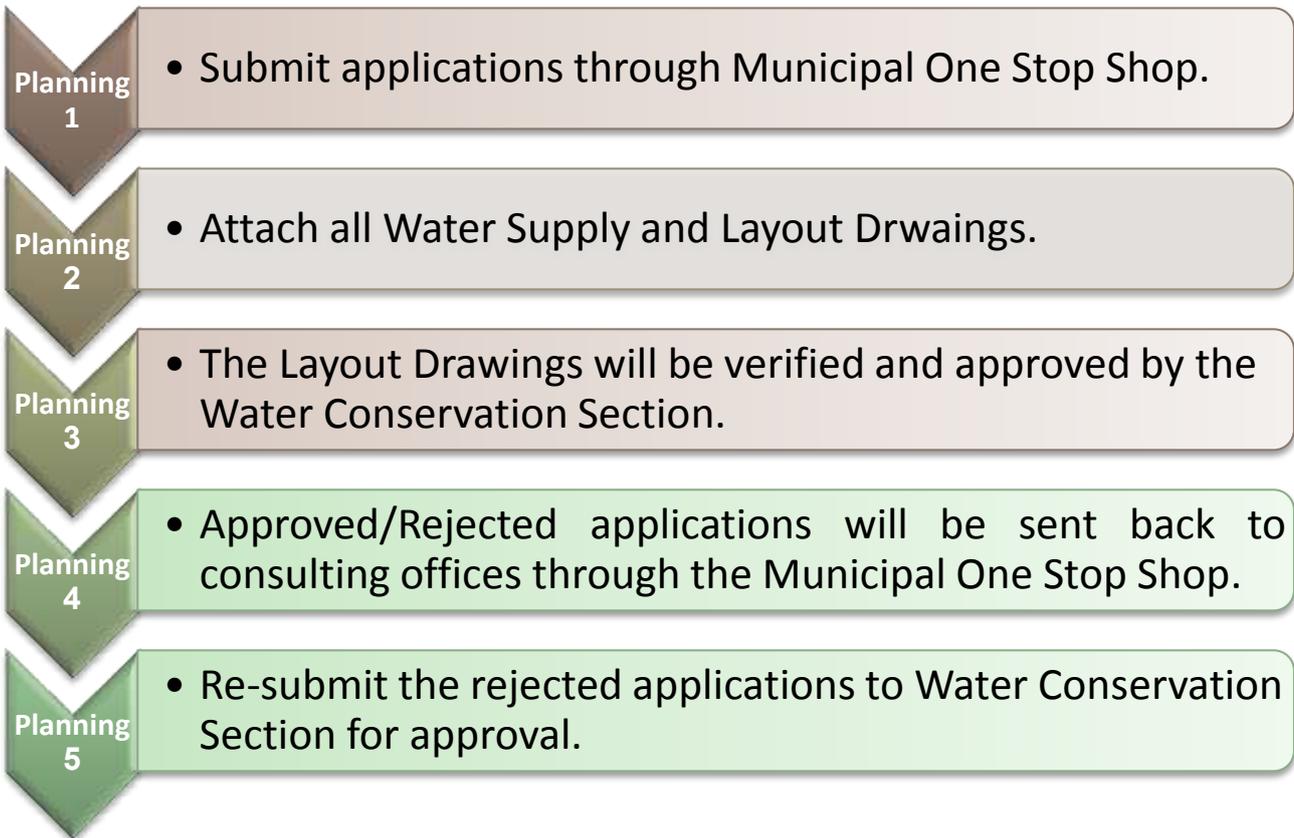
Water Byelaws are available at the Customer Service Offices and on the official website of the Electricity and Water Authority.



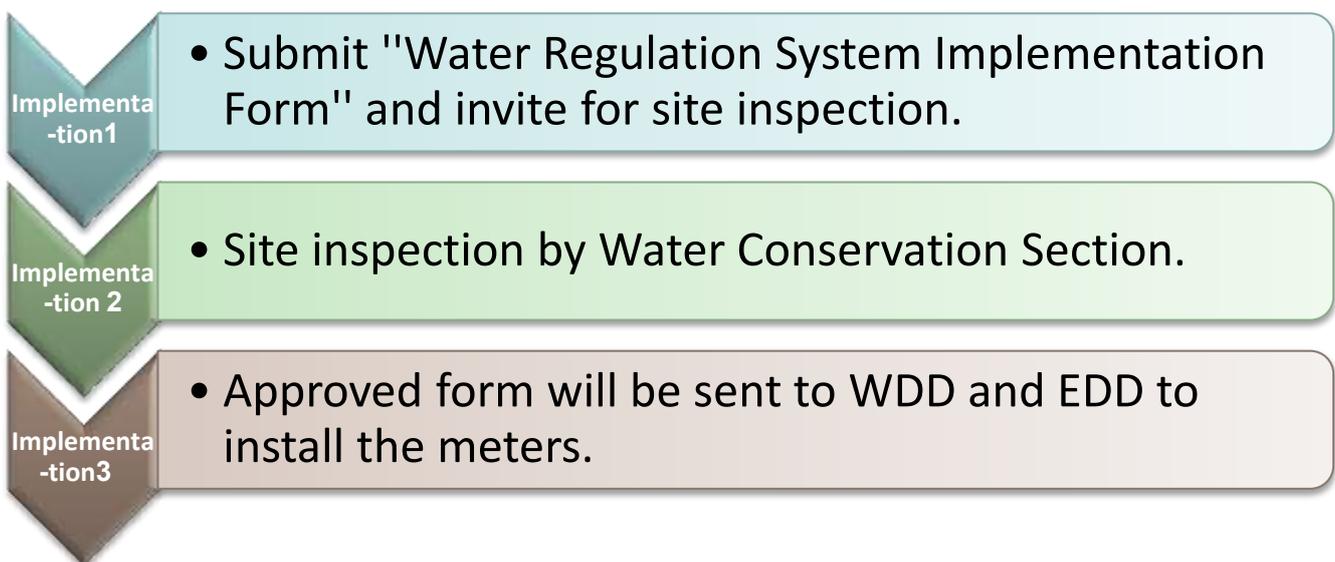
How to reach the Water Byelaws through the EWA website

Mechanism of receiving and revising the application electronically through Municipal One Stop Shop

Water Regulation System Procedures for Processing Applications **Planning Stage**



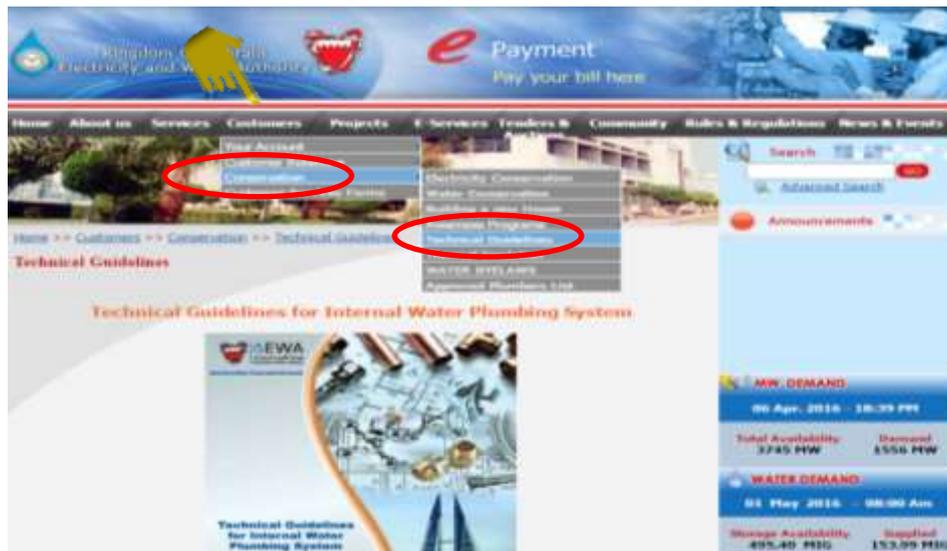
Water Regulation System Procedures for Processing Applications **Implementation Stage**



Site Visits

Water Conservation Section uses the specialized “water regulation system implementation form” during its visit to the premises to ensure compliance with all the points listed, and conformity to the regulations.

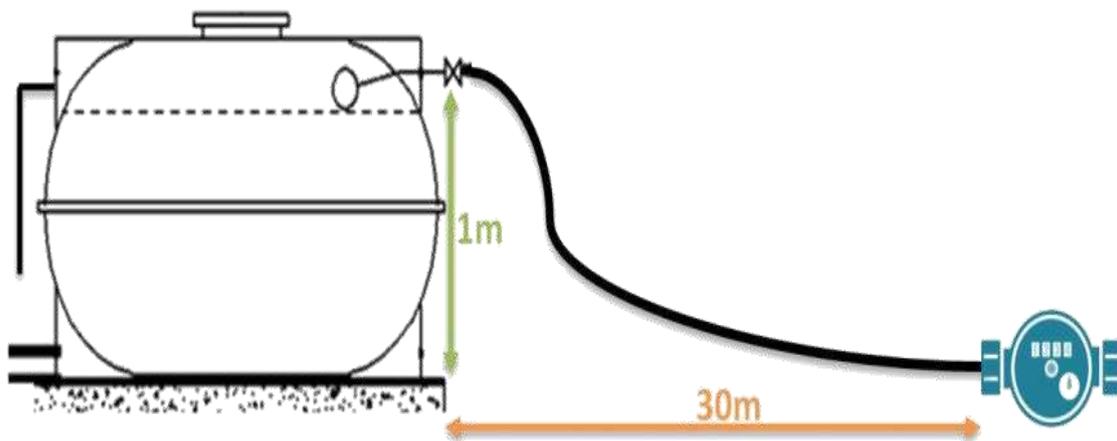
Based on the results of investigation, the application will be either approved or rejected.



How to reach ‘Water Regulation System Implementation Form’ through the EWA website

Internal Plumbing

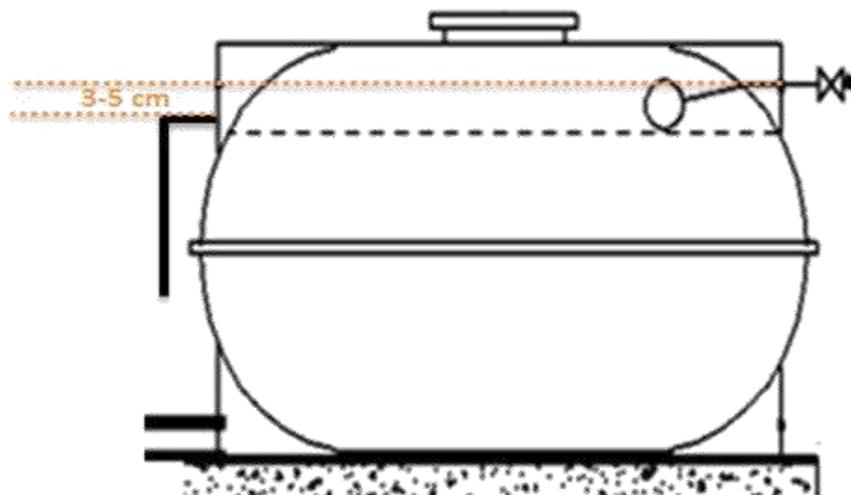
- For new construction or major renovation projects, plumbing materials must comply with the relevant **B.S. standards** or its equivalent.
- The main domestic ground storage water tank must be provided on the ground level. The inlet of the water connection to the main ground storage tank must not exceed one meter height. The ground storage tank should not be located more than 30 m from the water meter to ensure continuous water flow during the restricted hours.



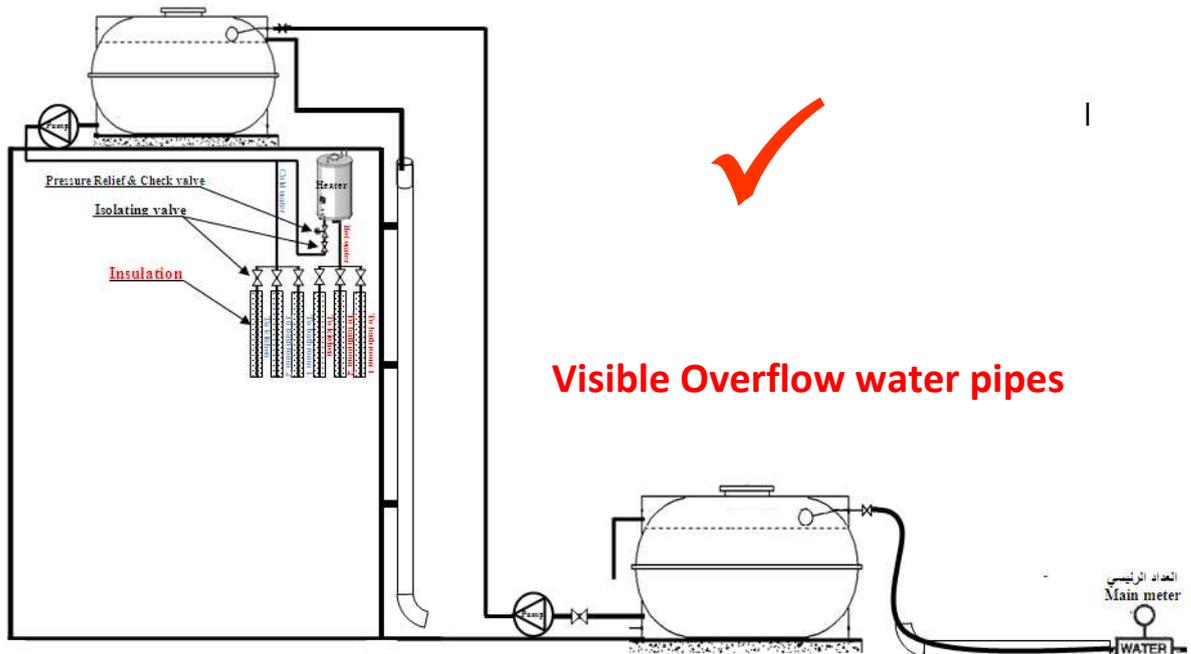
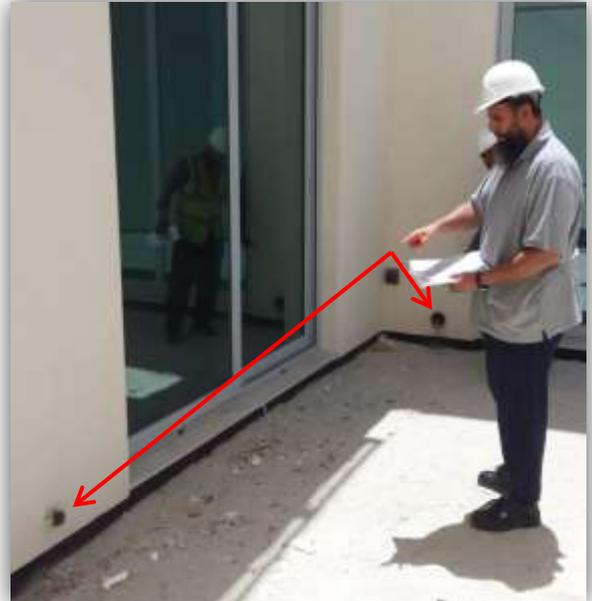
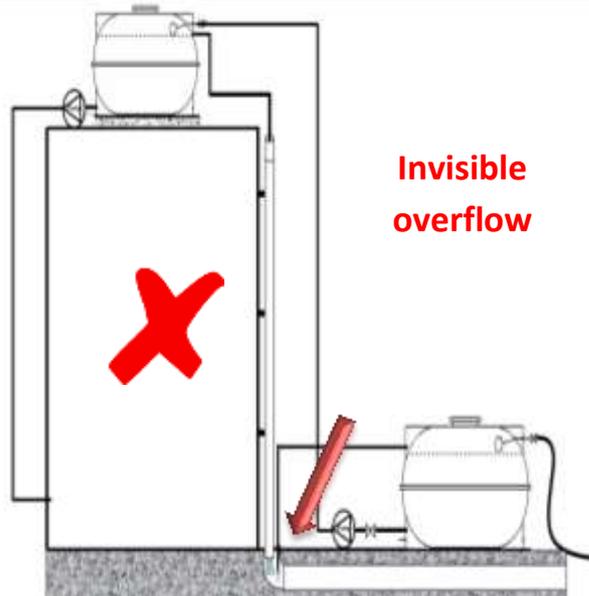
- All storage tanks should be accessible, white colour and under shade to avoid direct sun rays.



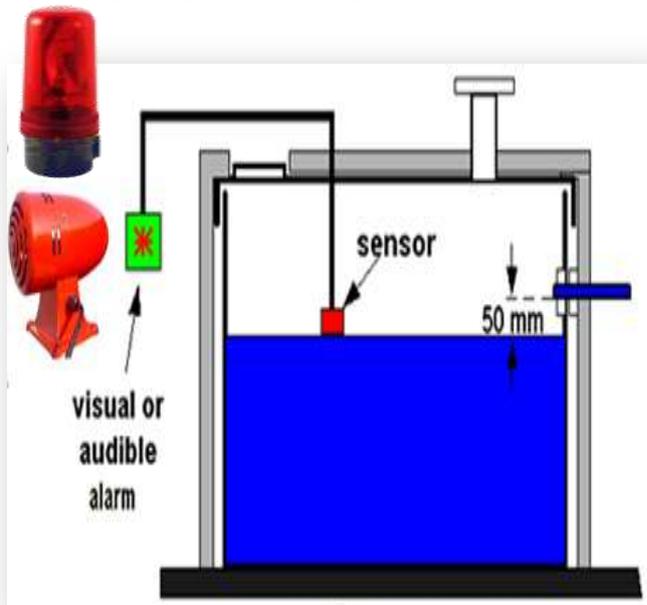
- The ground Water tank overflow line should be installed below the water inlet line by (3 – 5 cm).



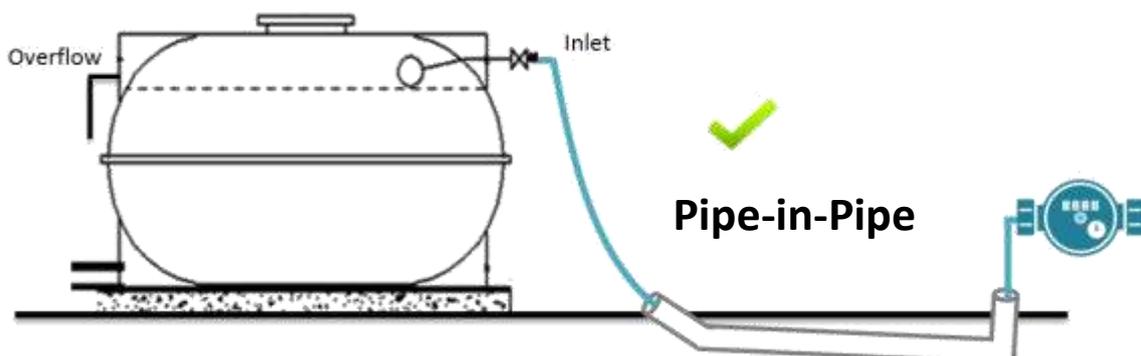
- Overflow water pipes should not be connected to the drainage, they must be in a visible location, where the discharge of water can be seen or noticed.



- An alarm system, which is either audible or visual, should be fixed in all underground or ground water tanks with a capacity of more than 10 m³. The alarm system should be activated when the water level reaches 50mm below the water tank inlet.



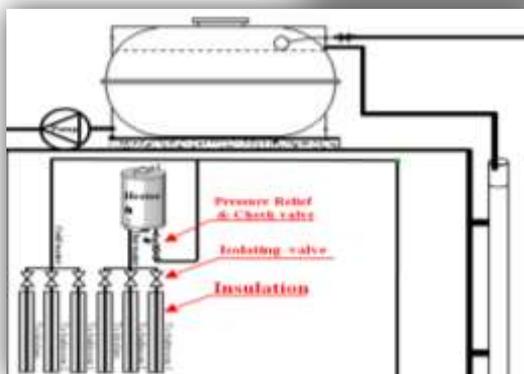
- All water pipelines in the internal network should be open or run through a sleeve (**Pipe-in-Pipe**) to ease repairing or replacing in case of water leaks.



- Isolating valves must be installed on all water lines supplying all the utilities of the premises.



- Safety Valves should be installed in all water heaters. Hot and cold pipes should be thermally insulated. It is preferable to shorten the water pipe distance between the faucets and the water heater.



- The internal pipelines in the network have to be hydraulically tested for 24 hours with a pressure of 150% times the internal pressure to ensure there is no leakage in the system.



Water Appliances

- Automatic sensor type mixers in public places must be considered.
- It is advisable to use single-arm mixers (single lever) in normal domestic toilets.

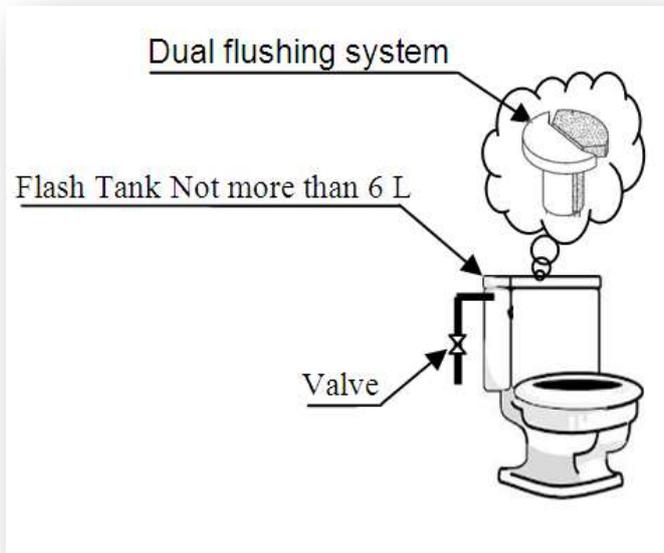


Single "lever" type



Automatic sensor type

- The volume of the flush tank should not exceed 6 litres with a dual-flushing mechanism and an isolating valve installed before the flush tank.



- Urinals should be flushed only after use either manually or by electronic sensor.



Sensor Type



Press Type

- Flow rate should not exceed the following values:

Fitting	Maximum Flow at outlet (Litres/minutes)
Sink Basin / Bib Tap 	10
Wash Basin Tap 	8
Bath Tap 	12
Shower Tap 	10

Irrigation

Although the Electricity & Water Authority (EWA) is not responsible for the supply of water for gardening/irrigation purposes, EWA obliges the following:

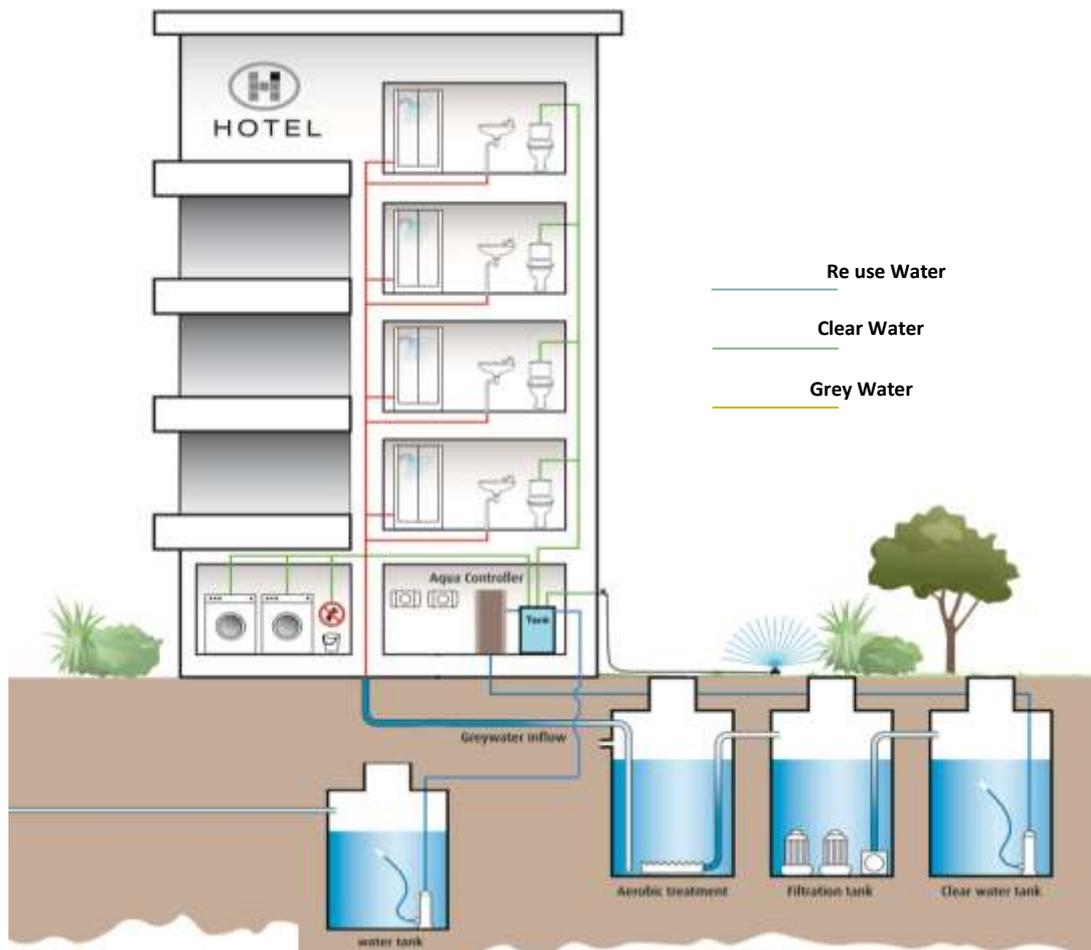
1. The agriculture tank inlet has to be little higher than the main inlet of ground storage tank by 0.5m.
2. Modern Irrigation Systems (Drippings or Sprinklers with timers) should be provided in gardens.
3. Set the timer to run between 20 - 30 minutes, twice a day; early morning and late evening.
4. The total number of drippers connected in line with the timer must not exceed 90 for 30 trees.
5. Choose low water consumption plants if you are planning for a new garden (Drought Tolerant plants/Drought Resistant Plants are preferable).

6. Lawn areas should be restricted in size to avoid high water consumption.
7. All lines used for sprinklers, must be well routed as much as possible, run through a sleeve to detect any leakage.
8. The size of the garden tap should not exceed ½” diameter.
9. Use the condenser drain water of the air conditioners directly to irrigate plants.
10. Use Grey water for Irrigation purposes after treatment and in line **with IS/BS standards / W.H.O specifications.**
11. Keep your filtration system as simple as possible.
12. Don't store grey water for more than 24 hours.
13. Install 3-way valve for switching between the grey-water system and the sewer/septic tank.



Re-use of Water

- In major projects such as industrial and commercial installations, grey water can be re-used for gardening and flushing purposes after suitable treatment and in line with International, British Standards and World Health Organization (WHO). To facilitate this, there should be two separate water supplies and two drainage systems with a standby fresh water supply in case of grey water supply periodic maintenance and outage due to technical defects.



- It is preferable to re-use air conditioner drain water for irrigation directly.



- It is advisable to use reject water from R.O. plants by diverting it to a separate ground tank and to be re-used for flushing, cleaning or irrigation etc.

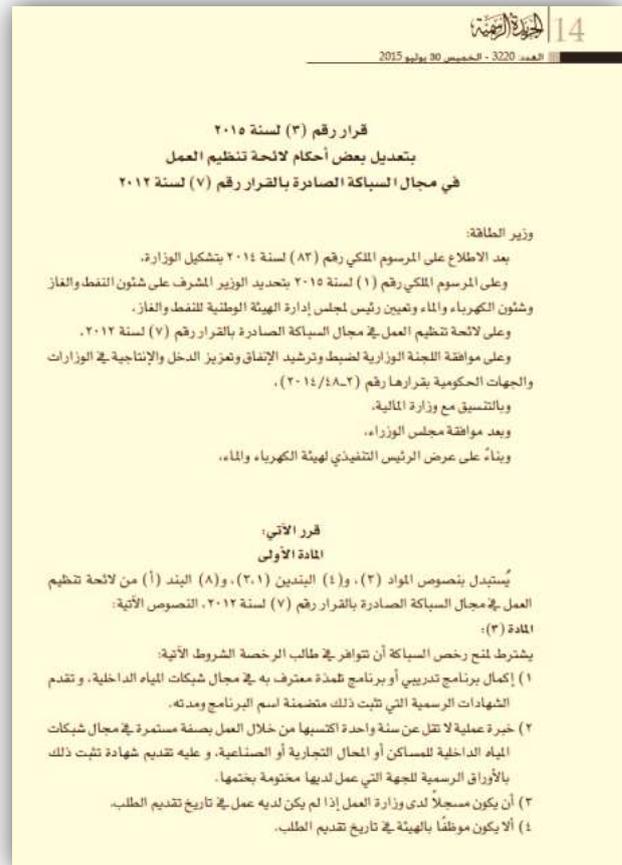


(R.O. Sweet Water Plant)

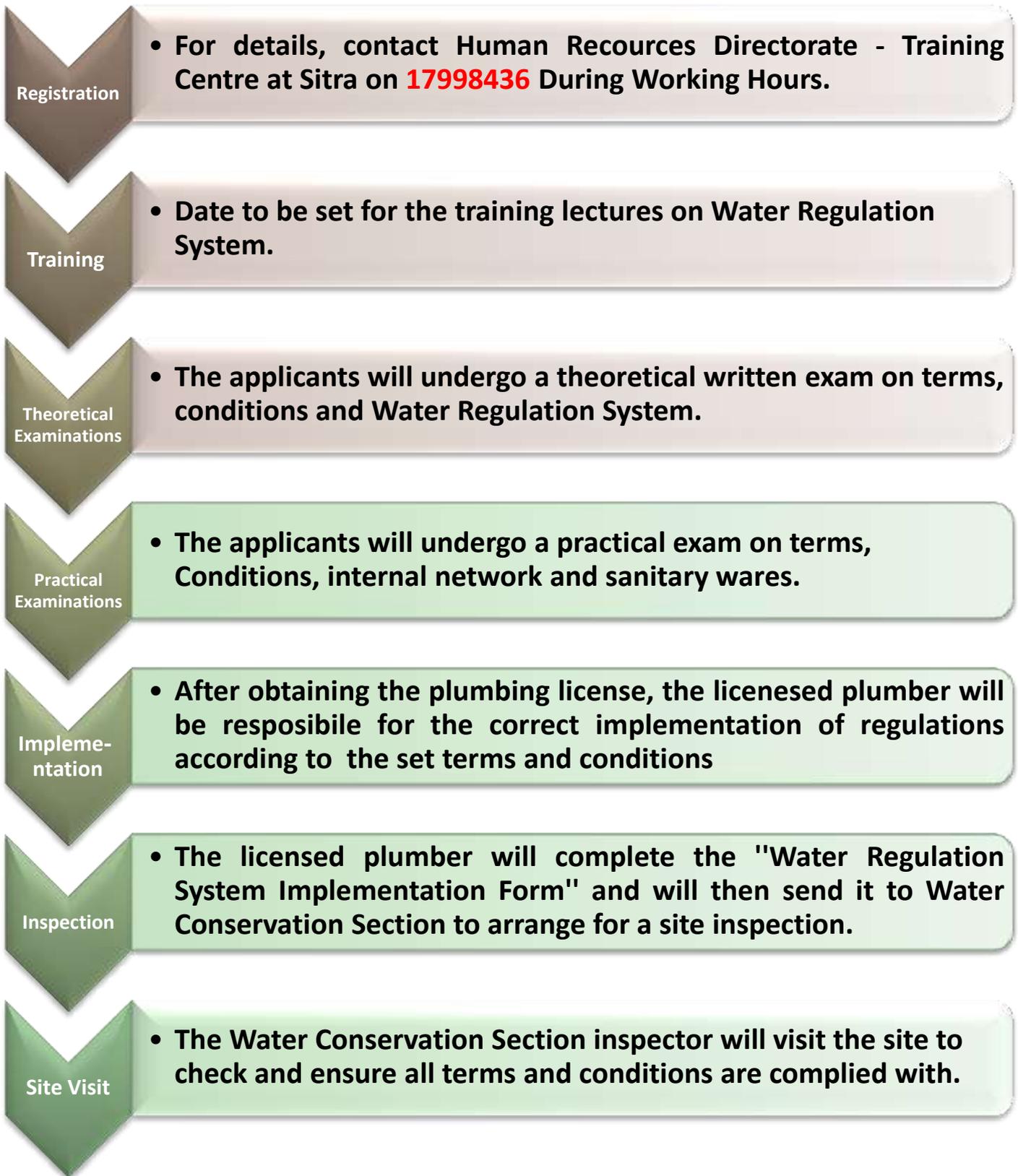
Plumbing Licensed Program

Organizing work in the field of plumbing was prepared and issued according to Ministerial Decree No.7 for the year 2012 and Decree No.3 for the year 2015 regulating the amendment of provisions of the regulation whose objective is to provide licensed plumber with the proper understanding and guidance to implement the water regulation system relating to the internal network within a premises.

The implementation of the ministerial decree started on 15th April 2015 in coordination with Training Section at EWA.



Registration procedures to obtain a Plumbers license



List of licensed Plumbers in EWA

EWA has licensed a number of plumbers, after they have passed the theoretical and practical examinations relating to the regulations. This process will continue as EWA strives to improve the overall standard and technical competency of the plumbing industry workforce as they comply with the regulations.

The names and contact numbers of these licenced plumbers are published on the EWA website WWW.EWA.bh to assist citizens and residents in securing the services of plumbers that have received training on the water regulations.

The screenshot shows the EWA website interface. At the top, there is a navigation menu with items: Home, About us, Services, Customers, Projects, E-Services, Tenders & Auctions, Community, Rules & Regulations, and News & Events. Below the menu, a dropdown menu is open under 'Customers', with 'Conservation' highlighted. A second dropdown menu is open under 'Conservation', with 'Approved Plumbers List' highlighted. The breadcrumb trail reads: Home >> Customers >> Conservation >> Approved Plumbers List. The main content area displays 'Approved Plumbers List' with a 'Click here' link. On the right side, there is a search bar, a search button, and several announcement boxes, including one for 'ELECTRICITY AND WATER TARIFF 2016' and another for 'MW DEMAND' with a table of availability and demand.

MW DEMAND	
06 Apr. 2016 - 18:39 PM	
Total Availability	Demand
3745 MW	1556 MW

WATER DEMAND	
01 May 2016 - 08:00 Am	
Storage Availability	Supplied
495.40 MIG	153.99 MIG

[How to access the list of licensed plumbers through the EWA website](#)

Violations

Any person who works on or renews plumbing installations must be responsible for the water regulation system implementation. A violation of these regulations will result in the customer, contractor or engineering/consultant offices liable to penalties as stated by EWA.

- Illegal draw off tapping (by-pass) before water meter.
- Direct pumping is strictly forbidden and is considered as a breach of the rules and regulations as it can cause contamination to the water network, and shortage of water to the neighbouring premises.
- Non-cross connections of domestic and non-domestic supplies are allowed (i.e. the domestic water system should not be connected to the T.S.E., bore holes, etc.) to avoid contamination of the authority water.

