



مكتب التنظيم و الرقابة  
Regulation & Supervision Bureau

# Code of Practice for the inspection and cleaning of customer water storage tanks



January 2015

Issued by:  
The Regulation and Supervision Bureau  
النسخة العربية متوفرة أيضاً



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# **Code of Practice for the inspection and cleaning of customer water storage tanks**

**(First Edition)**

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Issued by  
The Regulation and Supervision Bureau  
for the water, wastewater and electricity sector  
in the Emirate of Abu Dhabi  
[www.rsb.gov.ae](http://www.rsb.gov.ae)

January 2015



# Foreword

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The Regulation and Supervision Bureau (the Bureau) is established in Abu Dhabi law to oversee the economic and technical activities of the water, wastewater and electricity companies that are licensed to operate in the Emirate of Abu Dhabi.

The Bureau issued the Water Supply Regulations and the Water Quality Regulations which provide the legal framework to ensure adequate water supply and quality to end use customers.

This Code of Practice, for the Inspection and Cleaning of Customer Water Storage Tanks, is issued by the Bureau in support of the Water Supply Regulations and Water Quality Regulations. It has been developed to put in place Cleaning and Inspection requirements and guidance to ensure that water quality and wholesomeness supplied to, and subsequently received by, Customers is protected and maintained beyond the distribution network and to the Customer's taps.

This Code details the regulatory requirements for building owners or managers and for Customer Water Storage Tank Cleaning and Inspection companies. The Code also provides good practice guidance on methods for the safe and effective Cleaning, Disinfection, Inspection, Sampling and Testing of the most common types of Customer Water Storage Tanks in use in the Emirate of Abu Dhabi.

This Code will also be available in Arabic, but the reader should note it was first written in English. It may be downloaded from the Bureau's website at [www.rsb.gov.ae](http://www.rsb.gov.ae)

# Acknowledgements

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The Bureau has consulted with relevant Abu Dhabi Government Authorities and industry stakeholders in the development of this Code of Practice. The Bureau would like to acknowledge the valuable input and support of the Government and industry stakeholders in the development of this Code.

In particular, the Bureau would like to express its thanks and appreciation to the following Authorities and industry stakeholders for their contributions and continued support:

## **Abu Dhabi Government Authorities and Companies**

- Abu Dhabi Water & Electricity Authority
- Al Ain Distribution Company
- Abu Dhabi Distribution Company
- Department of Municipal Affairs
- Abu Dhabi Municipality
- Western Region Municipality
- Al Ain City Municipality
- Abu Dhabi Food Control Authority
- Abu Dhabi Education Council
- Health Authority of Abu Dhabi
- Musanada

## **Industry stakeholders**

- Kidmah
- Magic Touch
- Poly Clean

# List of revisions

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Revision	Date	Prepared by	Checked by	Issued to
1.0	January 2015	N. Al Ali K. Rzepczynski	J. Shadid	Publication





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# Introduction

## 1.1 Citation and commencement

- 1.1.1 This Code of Practice shall be cited as the Code of Practice for the Inspection and Cleaning of Customer Water Storage Tanks.
- 1.1.2 This Code comes into force on 1 January 2015.
- 1.1.3 This Code is issued by the Bureau pursuant to Article 55 of Law No (2) of 1998, as amended, to complement the Water Supply Regulations and Water Quality Regulations.

## 1.2 Purpose

- 1.2.1 The purpose of this Code of Practice is to outline the regulatory requirements and responsibilities for: (i) building owners or their registered building managers or agents; and (ii) Cleaning and Inspection companies, with respect to the Inspection, Sampling, Cleaning and Disinfection of Customer Water Storage Tanks within the Emirate of Abu Dhabi.
- 1.2.2 The Code provides guidelines for building owners or their registered building managers or agents, as well as Cleaning and Inspection Companies, to assist them in meeting the requirements stipulated under this Code.
- 1.2.3 The regulatory requirements and guidelines stipulated are intended to improve and raise the level and standards of Customer Water Storage Tank Inspection, Sampling, Cleaning and Disinfection, to ensure that water quality and wholesomeness are protected and maintained for Customer use.

## 1.3 Scope

- 1.3.1 This Code applies to all registered building owners or registered building managers or agents, engaged by way of legal contract or agreement, to maintain building water plumbing systems and Customer Water Storage Tanks in the Emirate of Abu Dhabi.
- 1.3.2 This Code applies to all persons, companies or organisations engaged in any activities relating to the Inspection, Sampling, Cleaning and Disinfection of Customer Water Storage Tanks in the Emirate of Abu Dhabi.

1.3.3 This Code applies only to Customer Water Storage Tanks that are up to 2,270 m<sup>3</sup> (or 500,000 IG) per individual Tank and not in aggregate, in all types of buildings within the Emirate of Abu Dhabi, regardless of the construction material, shape, or design of the Tank or its location.

1.3.4 Specifically the Code sets requirements and guidelines, for the following elements:

- a) Inspection;
- b) Sampling and Testing;
- c) Cleaning and Disinfection;
- d) Wastewater and Sludge discharge and disposal;
- e) environment, health & safety;
- f) pre-qualification and registration of Cleaning companies;
- g) roles and responsibilities of relevant authorities; and
- h) regulatory compliance.

The Code does not cover aspects relating to the design, construction, location, placement or commissions of new Customer Water Storage Tanks or general maintenance of Customer Water Storage Tanks, or any other non-Cleaning related issues. The issues of Customer Water Storage Tank general design, construction location, placement and general maintenance are covered under the Water Supply Regulations.

1.3.5 Nothing in this Code is intended to conflict with or affect the operation of:

- a) UAE Federal Law No (24) of 1999 for the Protection and Development of the Environment and its executive orders;
- b) Law No (21) of 2005 for Waste Management in the Emirate of Abu Dhabi;
- c) Decree of the Crown Prince, Chairman of the Executive Council No. (42) of 2009 Concerning the Environment, Health and Safety Management System (EHSMS) in the Emirate of Abu Dhabi and the Abu Dhabi EHSMS Regulatory Framework Version 2 of 2012;
- d) The Water Supply Regulations;
- e) The Water Quality Regulations; or
- f) the documents issued by EAD and DMA which are referred to in clauses 1.4.8 to 1.4.13 below.

- 1.3.6 This Code may be amended or revoked by the Bureau at any time in consultation with municipalities.

## **1.4 Current regulations and other related codes of practice in Abu Dhabi**

### **The Water Supply Regulations (RSB)**

- 1.4.1 The Water Supply Regulations establish the framework for the provision and assurance of safe and efficient water supply to Customers, including water fittings used for the connection of water supply to Customers.
- 1.4.2 The relevant Regulation 2.9 of the Water Supply Regulations concerning the operation of this Code is titled "Customer storage tanks".

### **Guide to Water Supply Regulations (RSB)**

- 1.4.3 The Guide to the Water Supply Regulations establishes the water connection arrangements and Water Fitting requirements a Distribution Company and its Customers must follow in order to prevent wastage, contamination and overconsumption of water.
- 1.4.4 The relevant Part 1 of the Guide to the Water Supply Regulations concerning the operation of this Code is titled "Water Storage Tanks".

### **The Water Quality Regulations (RSB)**

- 1.4.5 The Water Quality Regulations (WQR) establish the framework for the provision of Wholesome Water to consumers throughout the Emirate of Abu Dhabi and to reflect current guidance by the World Health Organization to ensure water is fit for human consumption.
- 1.4.6 These Regulations aim to ensure a high and consistent quality of product is delivered to Customers. The WQR define the permissible concentrations for a range of water quality parameters and the monitoring requirements for assessing compliance.
- 1.4.7 The relevant Part 2 of the WQR concerning the operation of this Code is titled "Wholesomeness".

### **Trade Effluent Control Regulations (RSB)**

- 1.4.8 The regulations establish a legal framework for the safe and economic collection, treatment and disposal of trade effluent in the Emirate of Abu Dhabi.

### **The Uniform Plumbing Code of Abu Dhabi (EAD)**

- 1.4.9 The Uniform Plumbing Code of Abu Dhabi Emirate defines the standards for the installation, alteration, repair and replacement of plumbing systems in the Emirate of Abu Dhabi.
- 1.4.10 The relevant section of the Uniform Plumbing Code concerning the operation of this Code is Section 607.1.12 "Disinfection of water storage tanks".

### **Abu Dhabi International Property Maintenance Code (DMA)**

- 1.4.11 The Abu Dhabi International Property Maintenance Code provides guidance on the maintenance of buildings within the Emirate of Abu Dhabi.
- 1.4.12 The relevant section of the Abu Dhabi International Property Maintenance Code concerning the operation of this Code is Section 504 – "Plumbing Systems and Fixtures" and Section 505 – "Water System".

### **Abu Dhabi International Building Code (DMA)**

- 1.4.13 The Abu Dhabi International Building Code provides guidance on the maintenance of building plumbing systems within the Emirate of Abu Dhabi.
- 1.4.14 The relevant sections of the Abu Dhabi International Building Code concerning the operation of this Code are:
- a) Chapter 29 – "Plumbing Systems"
    - i) Section 2901.1 – "Scope"
    - ii) Section 2901.2 – "Legionella management"
  - b) Chapter 34 – "Existing Buildings and Structures"
    - i) Section 3401.2.1 – "Maintenance Programme".

## 1.5 Other references

1.5.1 The following titles and references have been taken into consideration in the preparation of this Code of Practice.

- a) BS 8558:2011 Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages, Section 6.1.5 Guidance on BS EN 806-5:2012 and Section 13.1 – Cisterns.
- b) Building Services Research and Information Association (BSRIA) - Cold Water Storage Tanks, Technical Note TN13/98.
- c) Water Supply - Guidelines for Cleaning & Disinfecting Water Tanks and Piping Systems in Multi-story Buildings.
- d) Hong Kong Water Supplies Department - Freshwater Plumbing Maintenance Guide, Section 2.1 Cleaning of Water Tanks and Section 2.2 Inspections.
- e) ISO 17025 Laboratory Competence Quality Management System.
- f) ISO 5667 – Water Quality Sampling.
- g) Singapore National Water Agency, Water Supply Regulations and Singapore Standard SS CP48 – Code of Practice for Water Services, Inspection, Cleaning and Sterilisation of Water Storage Tanks.
- h) Canada, Yukon Health & Social Services, Guidelines for Cleaning and Disinfecting a Water Holding Tank.
- i) ASHRAE Guidelines 12-2000, Minimizing the Risk of Legionellosis Associated with Building Water Systems, Section 4 Potable and Emergency Water Systems and Section 4.1.6 Recommended Treatment.





# Definitions

## 2.1 Interpretation

- 2.1.1 Words defined in this part begin with capital letters when used in this Code of Practice.
- 2.1.2 Words and expressions other than those defined in this Code of Practice which are defined in:
- a) Law No (2);
  - b) The Water Supply Regulations shall have the meanings ascribed to them in those Regulations;
  - c) Guide to the Water Supply Regulations, shall have the meanings ascribed to them in those Regulations; and
  - d) Water Quality Regulations, shall have the meanings ascribed to them in those Regulations.
- 2.1.3 Words in the singular include the plural and those in the plural include the singular.
- 2.1.4 Unless otherwise specified, "days" shall mean "calendar days" and "year" a calendar year according to the Gregorian calendar.

## 2.2 Definitions

**Accredited Laboratory or Accredited Testing Company** – a laboratory or water Testing company or organisation that operates under ISO 17025 and is licenced in the Emirate of Abu Dhabi to conduct Testing of drinking water samples, and is accredited by the relevant authorities to conduct such operations.

**Bureau** – the Regulation and Supervision Bureau for the water, wastewater and electricity sectors in the Emirate of Abu Dhabi as established by Law No (2).

**Cleaning** – the act of removing dirt, sediment, Sludge, algae or any other contaminants from a Customer Water Storage Tank for the purpose of restoring or maintaining hygienic conditions.

**Cleaning Chemicals** – any detergents or cleaning agents used for the Cleaning of Customer Water Storage Tanks.

**Code of Practice or Code** – this Code of Practice for the Inspection, Sampling, Cleaning and Disinfection of Customer Water Storage Tanks.

**Commercial Building** – buildings or parts thereof that comprise any non-residential uses and activities, including retail, hotels, hospitals, schools, mosques, malls, shopping centres, food outlets, industrial facilities and manufacturing buildings.

**Customer** – the Person to whom the Distribution Company supplies water for domestic, industrial, agricultural and commercial purposes.

**Customer Water Storage Tank or Tank** – means any receiving Tank after the point of delivery to the Customer from the Distribution System for storing water for subsequent use.

**Disinfectant** – any chemical used for the purpose of disinfecting or sterilizing micro-biological agents or bacteria.

**Disinfection** – the act of applying Disinfectant to Customer Water Storage Tanks for the purpose of inactivating bacterial and micro- biological agents.

**Distribution Company** – a company or body holding a licence from the Bureau for the distribution and supply of potable water, pursuant to Law No (2).

**Distribution System** – means the system consisting (wholly or mainly) of water pipes owned or operated by a licensee and used for the distribution of Wholesome Water to the point of delivery to Premises or Customers and includes any plant and equipment, including metering equipment, owned or operated by the licensee in connection with the distribution of water.

**EHS** – Environment, Health and Safety.

**Good Industry Practice** – means the exercise of that degree of skill, prudence and foresight which would reasonably be expected from a skilled and experienced person engaged in the same type of undertaking under the same or similar circumstances.

**Ground Water Tank** – means a Customer Water Storage Tank whose base is located on ground level.

**Inspection** – the act of visually evaluating the external and internal condition of a Customer Water Storage Tank for the purpose of establishing the likely quality or wholesomeness of stored water and any likely sources of contamination.

**Inspection Companies** – companies licensed and engaged to conduct inspections (visual or otherwise), as well as Sampling and Testing of water for Customer Water Storage Tanks.

**Law No.2** – means Law No (2) of 1988 Concerning the Regulation of the Water and Electricity Sector in the Emirate of Abu Dhabi, as amended.

**Man-Entry Tank** – means a Customer Water Storage Tank which is large enough to allow a man to enter and work inside.

**Non-Man-Entry Tank** – means a Customer Water Storage Tank which is not large enough to allow a man to enter and work inside.

**Person** – means any person, corporate body, partnership, person or other entity having independent legal personality.

**Plastic Tank** – means a Customer Water Storage Tank made of Polyethylene.

**Premises** – means a tract or plot of land and includes the buildings and any appurtenances on the land. Premises may contain more than one property or dwelling and more than one Customer.

**Qudorat** – means the Abu Dhabi EHS Centre's Professional Entity and Practitioner Registration Scheme.

**Residential Building** – for the purpose of this Code, residential buildings are defined as buildings where owners, tenants or occupiers reside for the purpose of living, including residential towers, low to medium rise buildings, mixed use Residential and Commercial Buildings, labour camps, field camps and cabins.

**Responsible Company** – means a company or organisation that is licensed to conduct any operations or activities that relate to Customer Water Storage Tank Inspection, Sampling, Cleaning or Disinfection within the Emirate of Abu Dhabi.

**Responsible Person** – means the owner or the person who assumes responsibility for the installation of the Customer Water Storage Tank or Water Fitting including Registered Building Owners, Managers or Agents.

**Roof Water Tank** – means a Customer Water Storage Tank located on the roof of a building for the purpose of holding or storing water at atmospheric pressure.

**Sampling** – the act of collecting a small amount of water from a Customer Water Storage Tank for the purpose of representing the whole.

**Sludge** – any sediment or dense material that has settled inside a Customer Water Storage Tank.

**Testing** – the act of analysing a water sample taken from a Customer Water Storage Tank for the purpose of determining the level of specified contaminants or parameters.

**UAE** – United Arab Emirates.

**Underground Water Tank** – means a Customer Water Storage Tank whose base is below ground level.

**Wastewater** – the water-borne waste generated by the process of cleaning and disinfection of any Customer Water Storage Tank.

**Water Fitting** – means pipes, pipe fittings, joints, valves, back prevention devices and includes the Customer Water Storage Tank. Without limiting the foregoing, Water Fitting shall include a pump, meter or any other relevant fittings required to facilitate the connection arrangement to the Customer.

**Water Quality Regulations** – means the Water Quality Regulations published by the Bureau.

**Water Supply Regulation** – means the Water Supply Regulations published by the Bureau.

**Wholesome Water** – means water supplied for the purpose of drinking, washing, cooking and food production as defined in the Water Quality Regulations.

## 2.3 Abbreviations

AADC	Al Ain Distribution Company
AAM	Al Ain City Municipality
ADDC	Abu Dhabi Distribution Company
ADEC	Abu Dhabi Education Council
ADFCA	Abu Dhabi Food Control Authority
ADM	Abu Dhabi Municipality
ADSSC	Abu Dhabi Sewerage Services Company
CWM	Center for Waste Management- TADWEER
DMA	Department of Municipal Affairs (Abu Dhabi)
EAD	Environment Agency Abu Dhabi
ESMA	Emirates Authority for Standardisation & Metrology
FRP	Fibreglass reinforced plastic
GI	Galvanised iron
GRP	Glass reinforced plastic
GS	Galvanised steel
HAAD	Health Authority Abu Dhabi
OSHAD	Abu Dhabi Environment, Health & Safety Centre
QCC	Quality and Conformity Council
RCC	Reinforced cement concrete
RSB	Regulation and Supervision Bureau
WRM	Western Region Municipality

## 2.4 Units

l	litre
IG	imperial gallon
m	metre
m <sup>3</sup>	cubic metre
mg/l	milligram per litre
ml	millilitre
ppm	parts per million



# Activities subject to this Code

## 3

### **3.1 Tank Inspection**

- 3.1.1 This Code is applicable to any activity that involves the internal or external Inspection of a Customer Water Storage Tank.

### **3.2 Tank Sampling and Testing**

- 3.2.1 This Code is applicable to any activity that involves the Sampling and Testing of Customer Water Storage Tank for the purpose of establishing the quality or wholesomeness of stored water.

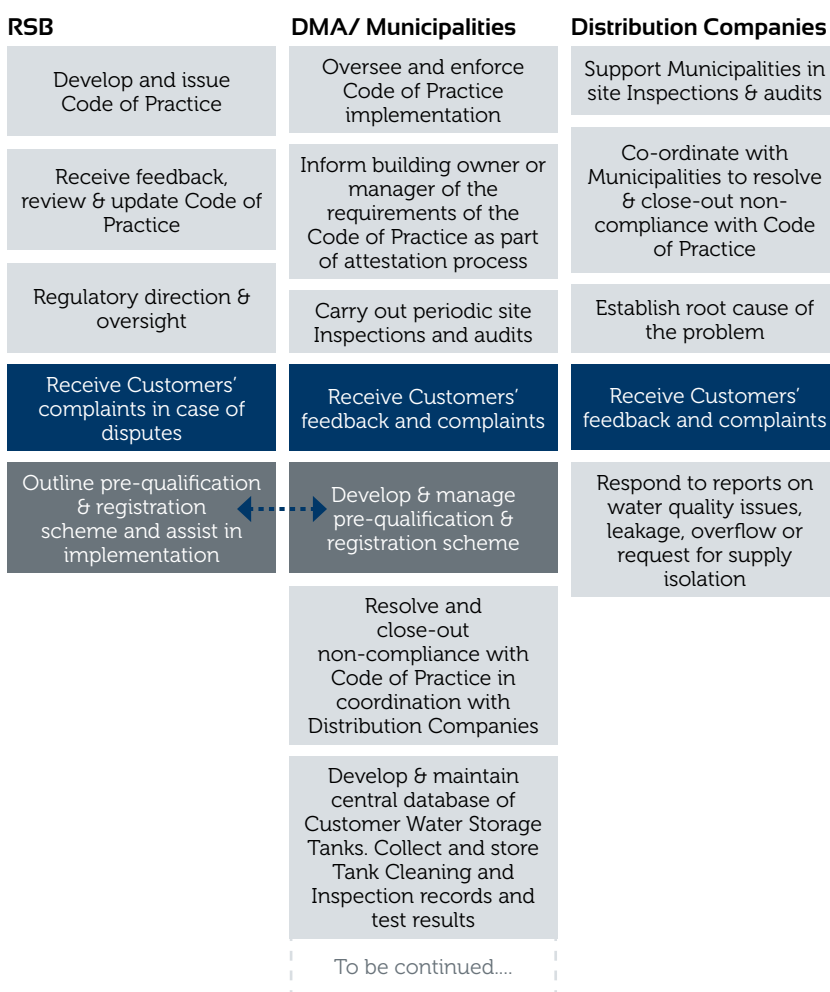
### **3.3 Tank Cleaning and Disinfection**

- 3.3.1 This Code is applicable to any activity that involves the Cleaning and Disinfection of Customer Water Storage Tanks, regardless of the manner or method of Cleaning or Disinfection, or the type, material, design, shape or location of the Tank.

## 4.1 Roles and responsibilities

4.1.1 Proposed roles and responsibilities of the main stakeholders are presented in Diagram 4.0. The highlighted fields represent shared responsibilities.

**Diagram 4.0 – Responsibilities of main stakeholders**



 Shared responsibilities



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**Diagram 4.0 - Responsibilities of main stakeholders (cont.)**

**Responsible Person**

Ensure Cleaning, Disinfection, Inspection & Sampling of Customer Water Storage Tanks

Engage qualified & registered Customer Water Storage Tank Cleaning, Inspection, Sampling & Testing company

Maintain records of Tank Cleaning & Inspection and report results to DMA/ Municipalities

Make Cleaning and Inspection records available to relevant Authorities e.g. DMA/ Municipality, ADFCA, HAAD, RSB

**Responsible Company**

Be a qualified and registered Cleaning & Inspection Company

Adhere to the Code of Practice

Notify Customers of Cleaning operations

Maintain Cleaning & Inspection records and report results to Responsible Person

Maintain proper training and competency assessment of personnel

Report water quality problems, leakage or overflow to Distribution Companies

Co-ordinate Cleaning & Inspection activities with Distribution Companies, if necessary



**5.1 Customer Water Storage Tank Cleaning and Disinfection frequency (normal conditions)**

5.1.1 The Responsible Person shall ensure regular and routine Cleaning and Disinfection of all Customer Water Storage Tanks within their Premises. The routine Tank Cleaning and Disinfection procedures are depicted in Diagram 5.1.

Note<sup>1</sup>: In case a Tank is in continuous use and subject to regular Cleaning and Disinfection procedures it can be put back to service without waiting for the results of water samples to become available.

5.1.2 The Responsible Person shall ensure Cleaning and Disinfection of all Customer Water Storage Tanks within their Premises at the minimum Cleaning and Disinfection frequency prescribed in Table 5.1.1 below.

**Table 5.1.1 – Minimum frequency for Customer Water Storage Tank Cleaning and Disinfection**

Type of building	Tank material	Tank location	Frequency of Cleaning & Disinfection
Residential and commercial	Concrete	*Underground	Bi-annually
		Ground	Bi-annually
		Roof	Annually
	Plastic	Ground	Annually
		Roof	Annually
	FRP	Ground	Annually
		Roof	Annually
	GRP	Ground	Bi-annually
		Roof	Annually
	GI or GS	Ground	Annually
		Roof	Annually

\*In December 2012 the Bureau issued a notice banning the construction of underground (buried) Customer Water Storage Tanks in low-rise residential buildings.

## 5.2 Customer Water Storage Tank Inspection frequency

- 5.2.1 Inspections will be carried out randomly by municipality inspectors or inspectors appointed by municipality or RSB based on a risk assessment in line with the following criteria:
- risk factor;
  - population density;
  - age of building;
  - type of building;
  - type and location of Tank; and
  - past inspection records.
- 5.2.2 In addition to verifying the tank Cleaning records the inspectors will also carry out routine visual Inspections of all Customer Water Storage Tanks within the Premises for the purpose of identifying the presence of common signs of contamination as identified, but not limited to, in Table 5.2.1. This includes any Underground Water Tank, Ground Water Tank or Roof Water Tank regardless of the type of Tank. The routine Tank Inspection procedures are depicted in Diagram 5.2.
- 5.2.3 The Responsible Person shall, in instances where the inspectors have identified signs of contamination, initiate Cleaning and Disinfection of the contaminated Tank.

**Table 5.2.1 – Common visual signs of contamination**

	Signs of contamination
<b>Tank interior</b>	Sediment/ Sludge
	Algae growth
	Micro-film or oils
	Dead animals or insects
	Extensive corrosion
<b>Tank surroundings</b>	Nearby oil, chemical or sewage leak
	Opening is uncovered
	Algal growth around the Tank opening/ manhole
	Accumulation of dirt around the Tank

### **5.3 Customer Water Storage Tank Cleaning and Disinfection requirement**

- 5.3.1 The Responsible Person shall, upon being informed of a non-compliant Inspection result or non-compliant water Sampling test results, based on the water quality parameter limits detailed in Table 5.4.1 below, engage a Responsible Company to conduct Cleaning and Disinfection within 48 hours of the Inspection data and time.
- 5.3.2 The Responsible Person shall notify all residents and tenants of any non-compliant Inspection results and shall inform tenants by way of a public notice displayed in common areas and on the door of each tenant, to refrain from drinking or using the water in food preparation or in other drinking water applications.
- 5.3.3 The Responsible Person shall notify two days in advance all residents or tenants of the planned date and time of the Cleaning and any precautions that must be taken to protect their health and safety. This notice shall specify the amount of time that the water supply will be shut down and shall be delivered to their premise or on the door and posted in all common entry points into the building.
- 5.3.4 The Responsible Person shall ensure that the Cleaning notice is provided in Arabic and English, or in additional languages as required.
- 5.3.5 The Responsible Person shall ensure that the Cleaning and Disinfection is conducted during normal working days and hours so as not to disturb residents or tenants as far as practicable.
- 5.3.6 The Responsible Person shall notify residents and tenants, by way of public notice of when Cleaning and Disinfection is completed, when it will be safe to use the water for domestic purposes, and any precautions that they must take before using the water, such as allowing the water from the taps or showers to run for at least five minutes after Cleaning, or as advised by the Responsible Company.

### **5.4 Sampling and Testing frequency**

- 5.4.1 The Responsible Person shall arrange for the Sampling and Testing of all Customer Water Storage Tanks by an Accredited Testing Company following the completion

of the Cleaning and Disinfection in circumstances where contamination is suspected or at the discretion of the inspector. RCC Underground Water Tanks, Ground Water Tanks and all Tanks larger than 100 m<sup>3</sup> have to always be tested without exception.

- 5.4.2 The Responsible Person shall ensure that the water samples taken are tested for the water quality parameters detailed in Table 5.4.1, and that the limits set are not exceeded.

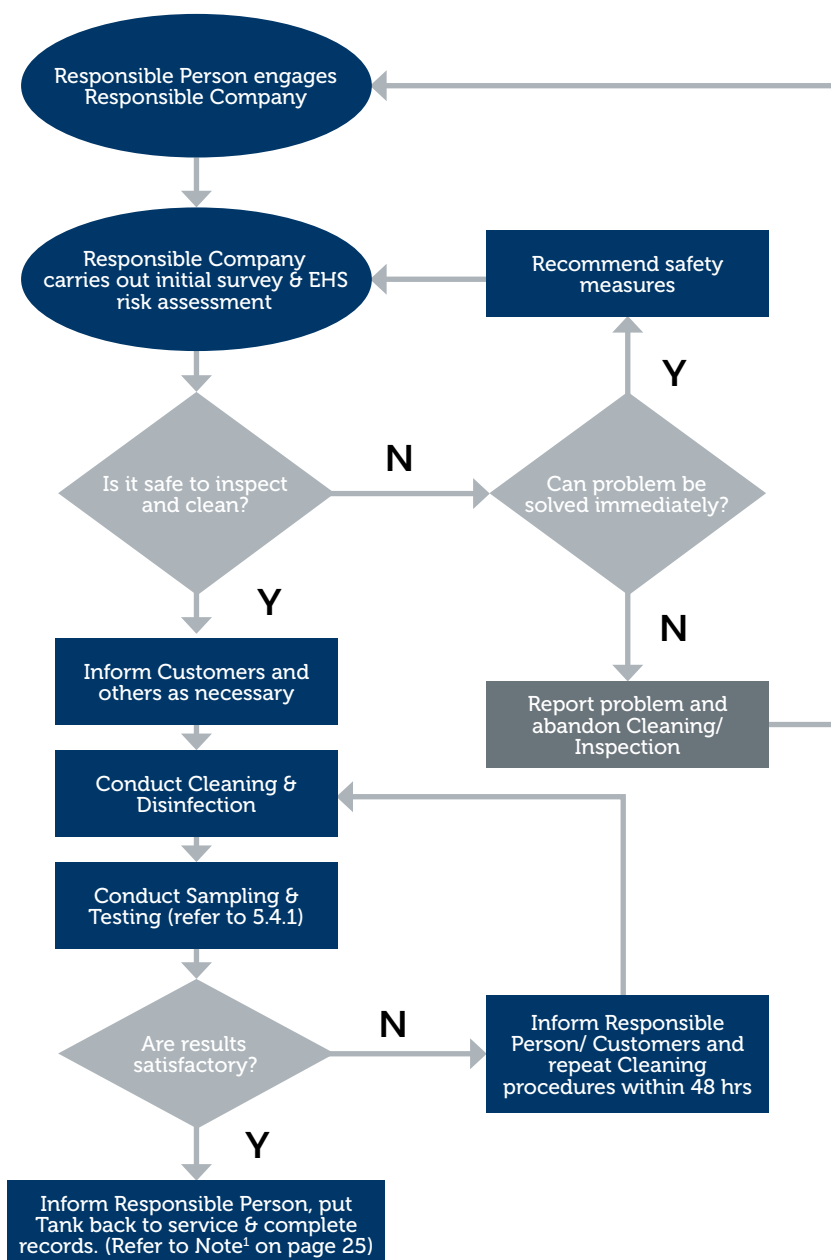
**Table 5.4.1 – Water quality parameters to be tested and limits**

Parameter	Units of measure	Limits
Total coliforms	Number/100 ml	0
E. coli	Number/100 ml	0
Total bacterial count	Number/ 1 ml at 37°C	10 at 37°C
Legionella	Colony forming units (cfu)/ml	0
Total residual chlorine	mg/l	0.2-1.0

- 5.4.3 The Responsible Person shall, upon being alerted to other possible sources of contamination of the Customer Water Storage Tank, such as disintegration of internal coating material or other chemical contamination, ensure the testing for such parameters and take the necessary Cleaning or maintenance action to resolve the cause of contamination.
- 5.4.4 The Responsible Person shall engage a third party accredited Testing company that is licensed in Abu Dhabi and approved by RSB, to conduct the Customer Water Storage Tank Sampling and Testing.
- 5.4.5 The Responsible Person shall ensure the appointed accredited Testing company completes the Customer Water Storage Tank 'Inspection and Sampling Checklist' (Appendix B) for each Customer Water Storage Tank sampled and that they retain signed copies of these checklists. The building owner or manager shall make these records available to the relevant Municipality and RSB upon request.
- 5.4.6 The Responsible Person shall acknowledge the results of the water samples by signing the sample reports and retaining them on file. These sample results shall be made available for review, inspection or audit by the relevant Municipality and RSB, as required.

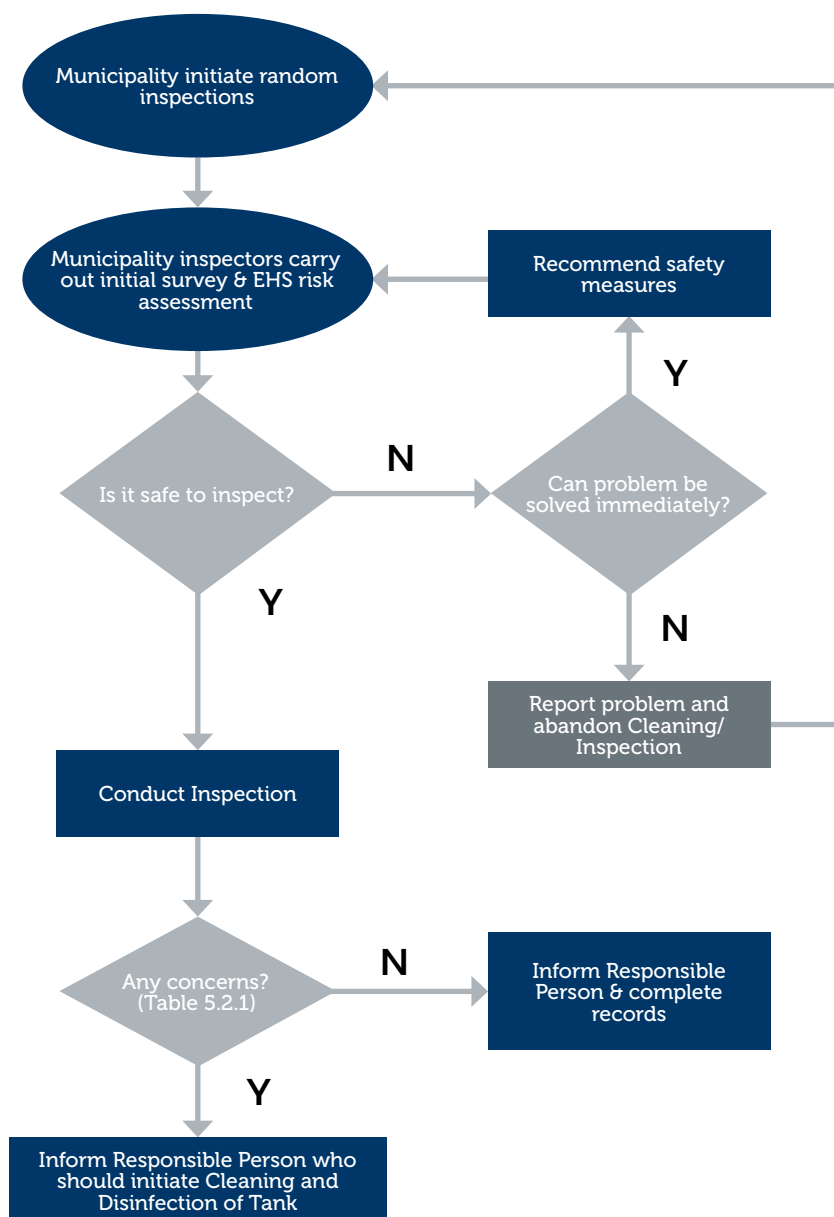
- 
- 5.4.7 The Responsible Person shall, upon receiving a non-compliant water test result notify all residents and/ or tenants within their building that the water is unfit for use and that they should refrain from using the water until further notice. This notice shall be issued as soon as reasonably practicable, but at least within two hours of receiving the non-compliant result.
- 5.4.8 The Responsible Person shall notify all residents and tenants by means of a visible letter and notice, delivered to their premise or to door and posted in all common entry points into the building.
- 5.4.9 The Responsible Person shall ensure that the notice is provided in Arabic and English, or in additional languages as required.
- 5.4.10 The Responsible Person shall ensure that, where the results of a water sample exceed the limits for specified water quality parameters set out in Table 5.4.1 above, an approved and registered Responsible Company is immediately engaged to conduct Cleaning and Disinfection within a 48 hour period.

**Diagram 5.1 – Routine Cleaning & Disinfection procedures**





**Diagram 5.2 – Risk-based Inspection procedures**





## **6.1 Cleaning and Disinfection requirements**

- 6.1.1 The Responsible Company shall, upon being engaged by the Responsible Person to conduct the Cleaning and Disinfection of a Customer Water Storage Tank, arrange an EHS risk assessment to establish any access or safety hazards and required control measures.
- 6.1.2 The Responsible Company shall conduct the EHS risk assessment in accordance with the requirements detailed in Part 8 of this Code.
- 6.1.3 The Responsible Company shall, where it is deemed safe, continue with the Cleaning and Disinfection in accordance with the procedure provided in Part 9.
- 6.1.4 The Responsible Company shall, where it has been required to clean and disinfect both an Underground Water Tank and Roof Water Tank belonging to the same building and where such Tanks are connected, ensure the Cleaning and Disinfection of the Underground Water Tank first to prevent cross contamination of the Roof Water Tank.

## **6.2 Customer Water Storage Tank Inspection Sampling and Testing**

- 6.2.1 The Responsible Company shall, where it has been requested or engaged by a Responsible Person to conduct Inspections and water Sampling and Testing of a Customer Water Storage Tank, ensure that it is licensed, registered and accredited as required by the laws of the Emirate of Abu Dhabi and the provisions of this Code.
- 6.2.2 The Responsible Company shall, upon being engaged by a Responsible Person provide the Responsible Person with evidence of its registration and accreditation as Responsible Company.
- 6.2.3 The Responsible Company shall ensure that all water samples are analysed at an Accredited Laboratory and that the results of water samples taken from their Customer Water Storage Tank are received within three days for total bacterial count, E. coli and total coliforms, and within six days for legionella.
- 6.2.4 The Responsible Company shall agree with the Responsible Person the date and time for the Inspection and Sampling of the building Customer Water Storage Tank.

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- 6.2.5 The Responsible Company shall ensure that all required access and permissions are granted from the Responsible Person and that a representative of the Responsible Person is designated to accompany the Responsible Company for the Inspection and Sampling.
- 6.2.6 The Responsible Company shall ensure it has all the necessary authorisations, equipment, paper work and tools to conduct the Inspection and Sampling.
- 6.2.7 The Responsible Company shall conduct an external Inspection of the Customer Water Storage Tank location and shall assess and determine if it is safe to continue with the internal Inspection and Sampling.
- 6.2.8 The Responsible Company shall, in deciding whether it is safe to continue to Inspect and Sample the Customer Water Storage Tank, have regard to environment, health and safety requirements detailed in Part 8 of this Code.
- 6.2.9 The Responsible Company shall be responsible for protecting the health and safety of all its employees involved in the Inspection or Sampling, and shall bear responsibility for any injuries or accidents to its employees or any member of the public.
- 6.2.10 The Responsible Company shall carry out an Inspection of the Customer Water Storage Tank and collection of the water samples and completion of the 'Customer Water Storage Tank Inspection and Sampling Checklist' (Appendix B).
- 6.2.11 The Responsible Company shall collect, store and transport all water samples in accordance with the ISO5667 standard on water quality Sampling or demonstrate that an international best practice is adopted for sample handling and preservation techniques.
- 6.2.12 The Responsible Company shall employ the services of an Accredited Laboratory to analyse the water samples.
- 6.2.13 The Responsible Company shall ensure the water sample results are provided to the Responsible Person immediately after they have been received from the Accredited Laboratory.
- 6.2.14 The Responsible Company shall advise the Responsible Person in writing of the findings of the Inspection and Sampling tests, including the details of any non-compliance and recommendations for Cleaning and Disinfection of the Customer Water Storage Tanks.

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- 6.2.15 The Responsible Company shall provide a copy of the 'Customer Water Storage Tank Inspection and Sampling checklist' for the records of the Responsible Person.
- 6.2.16 The Responsible Company shall on completion of the Inspection and Sampling retain a copy of the Inspection and Sampling and Testing results. A copy shall be kept in the 'building file' for Municipality inspectors. All record files shall be made available for regulatory compliance inspections or audits by the relevant Municipality and RSB.
- 6.2.17 The Responsible Company shall not conduct Inspection and Sampling of the same Customer Water Storage Tank which it has cleaned. This condition is provided in order to remove any potential, actual or perceived conflicts of interest.



## 7.1 Reporting obligations

- 7.1.1 The Responsible Person shall document and report any non-compliant Customer Water Storage Tank Inspection or Sampling test results to the relevant Distribution Company and Municipality.
- 7.1.2 The Responsible Company shall document and report any non-compliant Customer Water Storage Tank Inspection or Sampling test results to the Responsible Person.
- 7.1.3 The Responsible Company shall document and report all EHS risk assessments and incidents to the Responsible Person and the relevant Municipality.
- 7.1.4 The Responsible Person shall prepare and submit all reports in written form by email, fax or letter to the relevant Distribution Company and Municipality.

## 7.2 Records and certificates

- 7.2.1 The Responsible Person shall retain records of all Customer Water Storage Tank Inspection and Sampling reports provided by the Responsible Company for a period of five years.
- 7.2.2 The Responsible Company shall retain records of all Customer Water Storage Tank Inspection and Sampling reports, checklists (Appendix B) and EHS risk assessment incident reports provided to Responsible Persons.
- 7.2.3 The Responsible Person and Responsible Company shall retain records of any report sent to the Distribution Companies for a period of five years.
- 7.2.4 The Responsible Person shall make these records available to the relevant Municipality and RSB, if requested.
- 7.2.5 The Responsible Company shall maintain proper records of training and competency assessment of its personnel. These records can be subject to RSB and/ or municipalities' monitoring in consultation with the relevant qualification/ accreditation authorities.





## 8.1 Requirements for Responsible Person

- 8.1.1 The Responsible Person shall maintain Customer Water Storage Tanks in a clean and safe condition and shall ensure that water stored within such Tanks is wholesome and in compliance with the Bureau's Water Quality Regulations.
- 8.1.2 The Responsible Person shall ensure a safe working environment in and around Customer Water Storage Tanks.
- 8.1.3 The Responsible Person shall remove or control any environment, health & safety hazards on their Premises to ensure safe access or Inspection, Sampling, Cleaning and Disinfection of Customer Water Storage Tanks by Responsible Companies.
- 8.1.4 The Responsible Person shall ensure any EHS risk control measures identified by a Responsible Company are put in place in a timely manner to enable the Inspection, Sampling, Cleaning or Disinfection of a Customer Water Storage Tank.

## 8.2 Requirements for Responsible Companies

### EHS risk assessment

- 8.2.1 The Responsible Company shall, prior to conducting any Inspections, Sampling, Cleaning or Disinfection of a Customer Water Storage Tank, ensure the completion of an EHS risk assessment in accordance with the Process Risk Management Technical Guidelines outlined in the Abu Dhabi EHSMS Regulatory Framework, Version 2 of 2012.
- 8.2.2 The Responsible Company shall ensure that the EHS risk assessment is completed by a qualified and competent EHS professional or company that is registered as an EHS Practitioner, EHS Consultant, EHS Auditor and EHS Technical Specialist under Qudorat, the OSHAD's Professional Entity and Practitioner Registration Scheme.
- 8.2.3 The Responsible Company shall ensure that the EHS risk assessment is conducted in accordance with the Risk Management Element 02 and Technical Guideline on the 'Process for Risk Management' (Ref. No 8) contained within the Abu Dhabi EHSMS Regulatory Framework, Version 2 of 2012.

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- 8.2.4 The Responsible Company shall ensure that the EHS risk assessments and any associated recommended control measures for risks are documented and reported to a competent person within the company for approval prior to the commencement of activities.
- 8.2.5 The Responsible Company shall, upon completing the EHS risk assessment, determine whether it is safe to conduct Cleaning and Disinfection, and if so, ensure that all practical safety control measures, precautions or other measures are put into place to enable safe access, egress and working conditions.
- 8.2.6 The Responsible Company shall, in the instance where it is deemed unsafe to conduct the Cleaning and Disinfection, notify the Responsible Person of the risk assessments and the recommended control measures required to allow safe conditions for Cleaning and Disinfection.
- 8.2.7 The Responsible Company shall not, under any circumstances continue with any Customer Water Storage Tank Inspection, Sampling, Cleaning or Disinfection activities if a high risk has been identified which poses a danger to the life of any employees or members of the public, and has not been controlled or reduced to an acceptable level, as per the Risk Management Guidelines referred to in 8.2.1.
- EHS procedures and method statements**
- 8.2.8 The Responsible Company shall where it has identified high EHS risks, develop appropriate Standard Operating Procedures ("SOPs") or Method Statements to ensure these risks are appropriately managed through the implementation of safe and proper procedures.
- 8.2.9 The Responsible Company shall ensure that any activities or EHS hazards that are subject to the AD EHSMS Regulatory Framework Version 2 of 2012 Codes of Practices are managed in accordance with the requirements and provisions of these Codes and that documented evidence of such compliance is made available to relevant authorities upon request. Common hazardous activities governed by AD EHSMS Regulatory Framework Code of Practices are detailed, but not limited to, in Table 8.2.1 below.

**Table 8.2.1 – Common activities subject to AD EHSMS Codes of Practice**

Common hazards	Related AD EHSMS Code of Practice
Confined spaces	EHS RI CoP27 – Confined Spaces
Working at heights	EHS RI CoP23 – Working at heights
Ladders	EHS RI CoP37 – Ladders
Drowning	EHS RI CoP31– Working On, Over or Adjacent to Water EHS RI CoP45 – Underwater Activities
Poisoning/ burns/ respiratory illness	EHS RI CoP01 – Hazardous Materials
Electrocution	EHS RI CoP15 – Electrical Safety EHS RI CoP24 – Lock-out/ Tag-out (Isolation)
Trips, slips, falls	EHS RI CoP22 – Barricading of Hazards EHS RI CoP17 – Safety Signage and Signals
Physical injury (cuts, burns, abrasions)	EHS RI CoP02 – Personal Protective Equipment EHS RI CoP08 – General Workplace Amenities EHS RI CoP14 – Manual Handling and Ergonomics
Emergencies (fire, flood, injury)	EHS RI CoP06 – Emergency Management EHS RI CoP04 – First Aid and Medical Treatment
Heat stroke/ exhaustion	EHS RI CoP11 – Safety in the Heat
Wastewater/ Sludge disposal	EHS RI CoP54 – Waste Management
Legionnaires disease	EHS RI CoP12.0 – Prevention and Control of Legionnaires Disease
Health screening	EHS RI CoP5.0 – Occupational Health Screening and Medical Surveillance

**EHS training****8.2.10**

The Responsible Company shall ensure that its employees are appropriately trained on all EHS risks, safe management and control and on the SOPs or method statements including emergency management, and that their competencies are regularly assessed, as outlined in Part 9. EHS training shall be conducted by registered companies qualified through Qudorat according to the AD EHSMS – Mechanism 7.0 AD EHS Professional Entity Registration – V2.2 March 2014.

### **Personal protective equipment**

- 8.2.11 The Responsible Company shall ensure that it provides all appropriate personal protective equipment ("PPE") and other safety equipment, as required under the EHS risk assessment and relevant Abu Dhabi EHSMS Regulatory Framework Codes of Practice.
- 8.2.12 The Responsible Company shall ensure that all PPE used is fit for purpose and that it is regularly maintained in good working order and condition.

### **Wastewater discharge**

- 8.2.13 The Responsible Company shall discharge fresh water already stored in the Customer Water Storage Tank to the drain or sewer taking all necessary measures to avoid any cross-contamination.
- 8.2.14 The Responsible Company shall minimise any Wastewater by starting their Cleaning operation when there is a minimum water level in the Tank to be cleaned.
- 8.2.15 The Responsible Company shall not discharge water contaminated with Cleaning Chemicals or Disinfectants or Wastewater to the sewer or storm water drainage without prior treatment, dilution or neutralisation and without permission from ADSSC (discharge to the sewer) or the Municipality (discharge to the storm water drainage).
- 8.2.16 The Responsible Company shall measure the pH and residual chlorine in the cleaned and disinfected Tank to determine the required treatment prior to discharge.
- 8.2.17 The Responsible Company shall ensure that any Wastewater discharges do not exceed the residual chlorine and pH limits set in Table 8.2.2 below.
- 8.2.18 The Responsible Company, shall where it is deemed necessary to neutralise the Wastewater discharge, use approved neutralising chemicals at the concentrations directed for use, by the manufacturer, for application in Customer Water Storage Tanks.

**Table 8.2.2 – Wastewater discharge to sewer guide limits\***

Parameter	Limit
pH	>6.0 pH <9.0
Total residual chlorine	Not greater than 0.2 mg/l
TSS	500 mg/l
TDS	3000 mg/l
Temperature	45°C

\* In accordance with RSB's Trade Effluent Control Regulations except for total residual chlorine

### **Waste sediment/ Sludge disposal**

- 8.2.19 The Responsible Company shall ensure that Sludge is removed off-site and disposed of in an approved waste disposal site in accordance with the waste disposal requirements and regulations of the Emirate of Abu Dhabi. The Responsible Company shall refer to the Center for Waste Management – TADWEER in this regard.

### **Water conservation**

- 8.2.20 The Responsible Company shall, where possible, conserve water by making provisions for the stored water to be used by consumers prior to the Customer Water Storage Tank being emptied and cleaned by closing the inlet valve prior to starting Cleaning.
- 8.2.21 The Responsible Company shall consult with the Responsible Person to determine the average building water usage in order to calculate the amount of time required to empty the Tank prior to the scheduled date of Cleaning.



# Customer Water Storage Tank Cleaning and Disinfection procedures

## 9.1 General procedures

- 9.1.1 The general procedure for Cleaning a Customer Water Storage Tank will vary depending on whether it is deemed to be accessible and safe. The following are standard basic procedures which should be followed for Customer Water Storage Tanks that are accessible and safe for Cleaning and Disinfection.
- 9.1.2 A Customer Water Storage Tank that is assessed as not accessible and safe should not be cleaned or disinfected until such time as the Responsible Person has implemented the recommended provisions and safety control measures and confirmed that it is safe to continue.

Table 9.1 – Cleaning procedures

Accessible for Cleaning & Disinfection	Not accessible for Cleaning
<ol style="list-style-type: none"><li>1. Empty the Tank.</li><li>2. Scrub or pressure hose the Tank interior walls to remove all dirt (using approved Cleaning Chemicals if necessary).</li><li>3. Rinse the Tank and drain the Wastewater through the drain.</li><li>4. Apply Disinfectant to all internal Tank surfaces.</li><li>5. Allow Disinfectant to set for a minimum of 30 minutes or in line with the supplier's recommendations.</li><li>6. Rinse the Tank and drain the Wastewater.</li><li>7. Refill the Tank with potable water.</li></ol>	<ol style="list-style-type: none"><li>1. Notify the Responsible Person to implement the recommended provisions or safety control measures to make the Tank accessible and safe for Cleaning.</li><li>2. Once the Tank is assessed as accessible and safe, follow standard procedure for Cleaning and Disinfection.</li></ol>

## 9.2

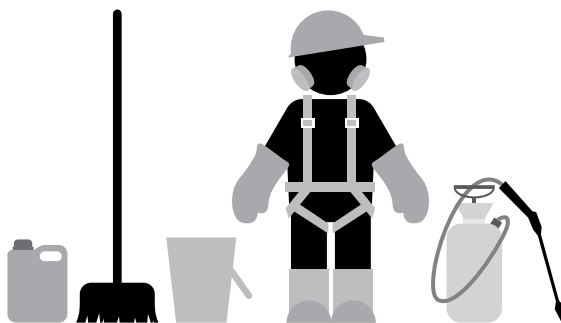
### Guideline for Cleaning and Disinfection of accessible Customer Water Storage Tanks

- a) Secure access and required authorisations to enter building and conduct the Tank Cleaning.
- b) Notify tenants of the proposed Tank Cleaning date and time at least 48 hours prior to Cleaning.



Examples of public notices

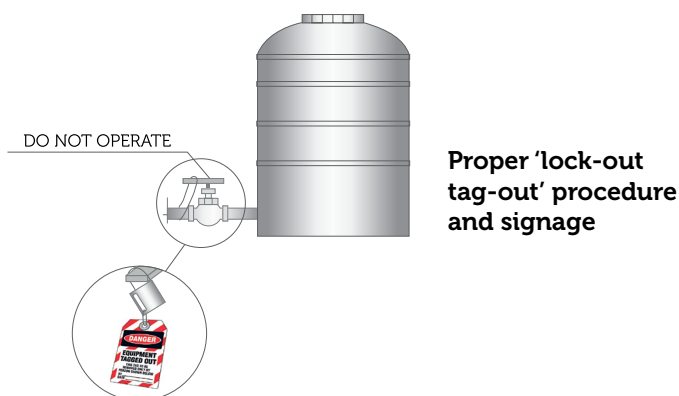
- c) Shut off inlet valve at least 24 hours prior to Cleaning to allow maximum water to be used (to ensure less wastage of water).
- d) Prepare all necessary Tank Cleaning equipment, Cleaning Chemicals and concentrations, and personal protective equipment (PPE) off-site and prior to Cleaning.



Proper PPE and equipment



- e) Arrive on-site and notify building residents and tenants through notices of the Cleaning and expected duration and precautions they should take.
- f) Place safety barriers around Cleaning equipment and working area, if required.
- g) If the Tank inlet valve has not already been turned off previously to allow Tank to empty, then turn off the water inlet.
- h) Lock-out/ tag-out all Tank inlets and outlets and make sure signs are placed notifying that they should not be opened.

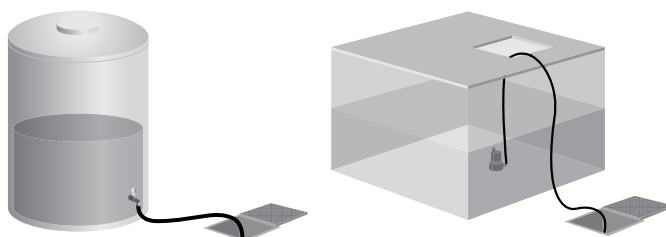


i) Open the Tank cover and allow the Tank to vent for 20 minutes.

j) Determine safe oxygen and gas levels using a gas detector. If safe, insert air exchange/ exhaust fan hose.

**Measuring safe gas levels before opening Tank cover**

- k) Drain the water remaining in the Tank using either the outlet valve (if available) or sump pumps (if outlet valve is not available) to below 100mm.



### Different draining arrangements

- l) Set up equipment, including any fall protection and confined spaces equipment and PPE.

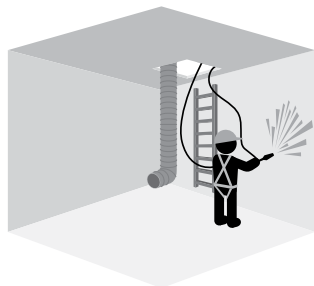


### Proper confined space and fall protection procedure and equipment

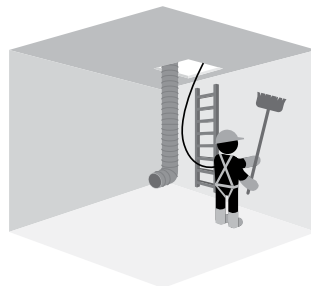
- m) Scrub or pressure hose and clean dirt and grime from Tank surfaces, including Tank cover and entry points. Use approved Cleaning Chemicals if necessary.

### Cleaning Non-Man-Entry Tanks with brush



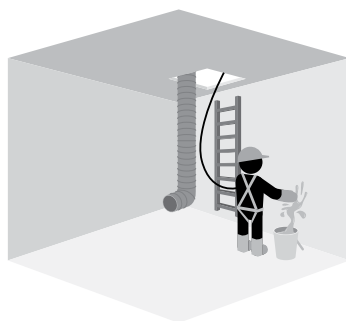


**Cleaning Man-Entry Tanks  
with pressure jet wash**



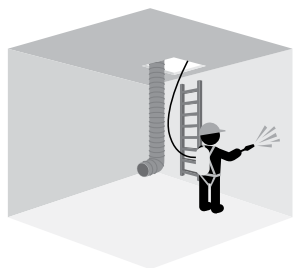
**Cleaning Man-Entry  
Tanks with brush**

- n) Rinse the Tank and drain the Wastewater.



**Rinsing Man-Entry Tank  
interior after cleaning**

- o) Spray disinfectant on all Tank surfaces, including Tank cover and entry point ensuring maximum coverage.

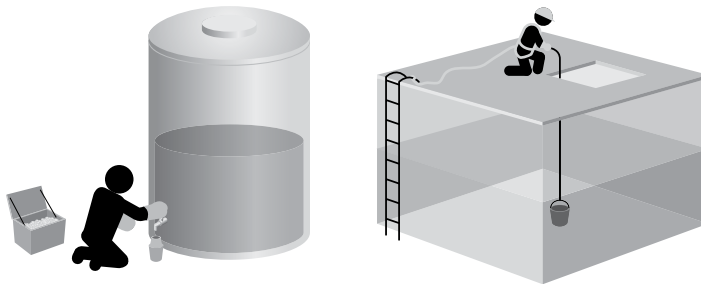


**Spraying disinfectant  
on Man-Entry Tank  
internal surfaces**



**Spraying disin-  
fectant on Non-  
Man-Entry Tank  
internal surfaces**

- p) Allow the disinfectant to remain for a minimum of 30 minutes.
- q) Rinse the disinfectant and empty the Tank.
- r) Fill the Tank with potable water.
- s) Take a water sample and send for analysis.



### **Sampling following Cleaning and Disinfection**

- t) If water samples are compliant, retain records on file for five years.
- u) If water tests are not compliant, repeat Cleaning and Disinfection within 48 hours and notify tenants that the water is 'not safe for drinking' and next intended date and time for Cleaning.

## **9.3 Disinfecting Customer Water Storage Tanks that are accessible**

- 9.3.1 Tanks that are 'accessible' and are safe to access shall be disinfected using a high concentrations of Disinfectant (than would be applied for full Tanks) which is sprayed or scrubbed onto all internal Tank surfaces including the internal Tank cover and any internal ladders. The permitted chemicals that can be used for the Disinfection of Customer Water Storage Tanks include the following:
- Sodium hypochlorite (food grade)
  - Calcium hypochlorite (food grade)
  - Other type of Disinfectant as may be approved by RSB
- 9.3.2 The typical concentrations for direct application of the above Disinfectants to Customer Water Storage Tank internal surfaces are recommended to be in the following ranges:
- Sodium hypochlorite and calcium hypochlorite – up to 20 mg/l
- 9.3.3 The Disinfectants shall be left onto all internal surfaces for at least 30 minutes before being rinsed.

## **9.4 Calculating the amount of Disinfectant**

- 9.4.1 The Responsible Company shall use food grade Disinfectants, suitable for use in Customer Water Storage Tanks.
- 9.4.2 The Responsible Company shall follow the directions and instructions of the manufacturer when determining the amount of Disinfectant needed to properly cover all internal surfaces of the Customer Water Storage Tank, as well as material safety data sheets ("MSDS").

## **9.5 Customer Water Storage Tank Cleaning and Disinfection equipment**

- 9.5.1 The Responsible Company shall ensure the provision of suitable and appropriate equipment to enable the effective Cleaning and Disinfection of the specific type and location of the relevant Customer Water Storage Tank.

- 9.5.2 The Responsible Company shall ensure all equipment used is fit for purpose and that they have been assessed as safe to use (under the EHS risk assessment).
- 9.5.3 The Responsible Company shall assess, as part of its EHS risk assessment, the transport, lifting and set up of Cleaning equipment and shall ensure that appropriate control measures are put in place to enable the safe transport and movement of equipment.
- 9.5.4 The Responsible Company shall ensure the regular maintenance and safety checks are conducted prior to any Customer Water Storage Tank Cleaning activities and that any faults are immediately reported to the Responsible Person and are resolved prior to use.
- 9.5.5 Typical Cleaning equipment may comprise the following:
- a) sump pumps;
  - b) wet/ dry vacuum pumps;
  - c) exhaust/ ventilation fans and hoses;
  - d) high pressure jet;
  - e) scrubber/ brooms;
  - f) buckets;
  - g) chemical spray cans;
  - h) ladders;
  - i) scaffolding (with platforms); and/ or
  - j) safety equipment.
- 9.5.6 The Responsible Company may, subject to approval from the relevant Municipality, utilise innovative Customer Water Storage Tank Cleaning and Disinfection technologies that have been demonstrated to be more effective than the traditional and widely used pressure jet and brush Cleaning prescribed in this Code.

## 9.6 Cleaning Chemicals

- 9.6.1 The Responsible Company shall, where it is using Cleaning Chemicals, ensure that these chemicals are food grade, and are suitable for use in the Cleaning of Customer Water Storage Tanks.

- 
- 9.6.2 The Responsible Company shall not use any Cleaning Chemicals unless they have been approved by RSB.
- 9.6.3 The Responsible Company shall comply with all directions and instructions provided by the manufacturer when determining concentrations, levels or applications for the Cleaning Chemicals to be used.
- 9.6.4 The Responsible Company shall ensure that Cleaning Chemicals and Disinfectants used are not reactive and harmful to the structure, material, lining or coating of the Customer Water Storage Tank.





# Customer Water Storage Tank Inspection and Sampling procedure

10

## 10.1 General procedures

- 10.1.1 The general procedure for Inspecting and Sampling a Customer Water Storage Tank will vary depending on whether it is deemed to be accessible and safe. The following are standard basic procedures which should be followed for Customer Water Storage Tanks that are accessible and those that are not.

**Table 10.1 – Inspection and Sampling procedures**

Accessible for Inspection and Sampling	Not accessible for Inspection and Sampling
<ol style="list-style-type: none"><li>1. Open Tank cover.</li><li>2. Take water sample from Tank bottom.</li><li>3. Transport sample to an Accredited Laboratory.</li><li>4. Complete 'Customer Water Storage Tank Inspection and Sampling checklist' (a sample is provided as Appendix B).</li><li>5. Inform Responsible Person of test results.</li></ol>	<ol style="list-style-type: none"><li>1. Visually inspect Tank from a safe distance.</li><li>2. Inform Responsible Person or authority that Tank is not safe to inspect and sample.</li><li>3. Arrange with Responsible Person to make it safe for sampling or take samples from an outlet valve or tap closest to the Tanks.</li></ol>

## 10.2 Guideline for Inspection or Sampling of Customer Water Storage Tanks

### Inspection

- a) Arrange authorisation for Tank Inspection and Sampling.
- b) Assess if it is safe to access the Tank.
- c) If safe to access approach the Tank.
- d) Visually inspect the outside of the Tank to assess structural integrity and safety.
- e) Conduct initial EHS risk assessment to determine any safety precautions or controls that should be put in place to access and open Tank cover.

- 
- f) Once it is safe to access the Tank cover and all necessary safety controls are in place (including any confined spaces controls) open the Tank cover.
  - g) Allow Tank air to be ventilated for 20 minutes.
  - h) Place a gas meter just below the Tank cover to measure gas levels.

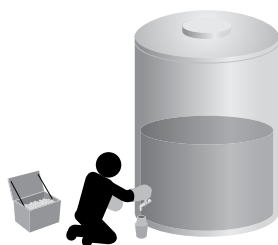


**Measuring safe gas levels before opening the Tank cover**

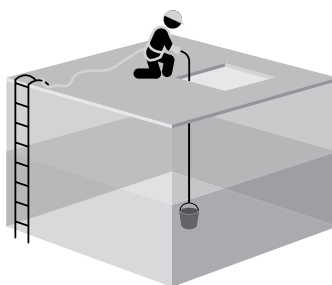
- i) If gas levels are safe, proceed to visually inspect the inside of the Tank whilst keeping your body at a safe distance.
- j) Complete the 'Customer Water Storage Tank Inspection and Sampling checklist'.
- k) Fix a label sticker on the Tank noting the ID number of the Tank and date it was inspected.

## Sampling

- l) Take a water sample (in accordance with the water Sampling guidelines in ISO5667 and ESMA standards), using a bottle attached to a pole ensuring that the Tank is not entered.



**Sampling from Tanks  
with flushing valve**



**Sampling from Tanks  
without flushing valve**



**Sampling from Tanks  
without flushing valve**

- m) Label water sample bottles with the Tank ID, date and time, store the water samples and transport them to the Accredited Laboratory for analysis.
- n) Complete the 'Customer Water Tank Inspection and Sampling checklist'.
- o) Fix a label sticker on the Tank noting the ID number of the Tank and date it was sampled.
- p) Inform the Responsible Person of sample and test results.
- q) Retain all records on file for five years.



## **11.1 Training requirements for Responsible Companies**

- 11.1.1 The Responsible Company shall ensure that they provide proper training to all employees engaged in the Inspection, Cleaning and Disinfection of Customer Water Storage Tanks. Training shall cover the following minimum topics:
- a) how to clean and disinfect a Customer Water Storage Tank;
  - b) EHS awareness;
  - c) working in confined spaces;
  - d) first aid;
  - e) emergency management;
  - f) working at heights; and
  - g) personal hygiene.
- 11.1.2 The Responsible Company shall ensure that all Customer Water Storage Tank Inspection, Cleaning and Disinfection training is conducted by a competent training provider that is licensed and registered to operate in the Emirate of Abu Dhabi.
- 11.1.3 The Responsible Company shall only engage EHS training providers and trainers that are registered as EHS Training Providers under Qudorat, the Abu Dhabi EHS Centre's Professional Entity and Practitioner Registration Scheme.

## **11.2 Competency assessment requirements for Responsible Companies**

- 11.2.1 The Responsible Company shall ensure that all employees engaged in Customer Water Storage Tank Inspection, Sampling, Testing, Cleaning and Disinfection are competent in the activity for which they are assigned.
- 11.2.2 The Responsible Company shall be registered by the relevant Sector Regulatory Authority (SRA) under the Abu Dhabi EHSMS Regulatory Framework.
- 11.2.3 The Responsible Company shall develop competency assessment schemes to regularly assess the competence of their employees in the tasks for which they have been assigned. Employees shall be assessed as 'competent' or 'not yet competent' to carry out tasks for which they have

been designated. Employees assessed as 'not yet competent' shall not carry out Customer Water Storage Tank Inspection, Sampling, Testing, Cleaning and Disinfection tasks until such time as they have been assessed as 'competent' to do so.

11.2.4 The Responsible Company shall conduct competency assessments of all staff engaged in Customer Water Storage Tank Inspection, Sampling, Testing, Cleaning and Disinfection at six monthly intervals, and the results of these assessments shall be retained on file and made available to the relevant Municipality and RSB upon request.

11.2.5 The Responsible Company shall ensure it meets the minimum qualification and competency requirements for their employees involved in the Inspection, Sampling and Testing, Cleaning and Disinfection of Customer Water Storage Tanks, as detailed in Table 11.2 below.

**Table 11.2 – Minimum qualifications and competencies for relevant practitioners**

Practitioner type	Qualifications	Competencies (knowledge, skill & aptitude)
Inspector	<ul style="list-style-type: none"> <li>- Certificate, Diploma or Bachelor's Degree in Engineering, Architecture, Building Services, Environmental Sciences or equivalent. Qualification documents shall be verified by the relevant authorities in the Emirate of Abu Dhabi.</li> </ul>	<ul style="list-style-type: none"> <li>- Understanding of water storage Tank design and plumbing.</li> <li>- Understanding of RSB's Water Supply</li> <li>- Regulations and Water Quality Regulations.</li> <li>- Experience in building water systems plumbing</li> </ul>
Water Sampler	<ul style="list-style-type: none"> <li>- Diploma or Bachelor's Degree in Science, Environment, Natural Resources or equivalent</li> </ul>	<ul style="list-style-type: none"> <li>- Understanding of international standards for water quality Sampling, preservation and transport.</li> <li>- Experience in water quality Sampling, gained with a professional laboratory, organisation or consultancy.</li> </ul>

Practitioner type	Qualifications	Competencies (knowledge, skill & aptitude)
Cleaner	<ul style="list-style-type: none"> <li>- Certificate in Cleaning and Disinfection of Water Storage Tanks.</li> <li>- Certificate in Basic EHS Awareness and Practice.</li> <li>- Certificate in Confined Spaces (where working in confined spaces).</li> <li>- Certificate in First Aid.</li> </ul>	<ul style="list-style-type: none"> <li>- Strong knowledge of best practice for Cleaning and Disinfection procedures and techniques.</li> <li>- Strong knowledge of Cleaning and Disinfection equipment and its use.</li> <li>- Strong knowledge of Customer Water Storage Tank types, basic design and operation.</li> <li>- Good hygiene practices.</li> <li>- Physically fit, healthy and able.</li> <li>- Free of water borne diseases.</li> </ul>
Cleaning Supervisor	<ul style="list-style-type: none"> <li>- Certificate in Cleaning &amp; Disinfection of Water Storage Tanks.</li> <li>- Certificate in Basic EHS Awareness and Practice.</li> <li>- Certificate in Confined Space Works.</li> <li>- Certificate in First Aid.</li> <li>- Certificate in Life Saver.</li> <li>- Certificate in Emergency Management.</li> </ul>	<ul style="list-style-type: none"> <li>- Strong knowledge of best practice for Cleaning and Disinfection procedures and techniques.</li> <li>- Strong knowledge of Cleaning and Disinfection equipment and its use.</li> <li>- Strong knowledge of Customer Water Storage Tank types, basic design and operation.</li> <li>- Good hygiene practices.</li> <li>- Physically fit, healthy and able.</li> <li>- Free of water borne diseases.</li> </ul>
EHS Officer	<ul style="list-style-type: none"> <li>- Diploma or degree in Engineering, Science, Environmental Science, Occupational Health &amp; Safety of equivalent.</li> <li>- Registered under Qudorat programme.</li> </ul>	<ul style="list-style-type: none"> <li>- Strong knowledge of Abu Dhabi EHSMS Regulatory Framework Version 2, 2012.</li> <li>- Strong working knowledge and experience in EHS Risk Assessment methodologies.</li> <li>- Registered as an EHS Practitioner, Lead Auditor or Technical Specialist with Qudorat.</li> <li>- Demonstrated experience in managing building related EHS issues and operational activities in the field or on-site.</li> </ul>





# Compliance with the Code

## 12.1 Regulatory background

- 12.1.1 Law No (2) of 1998 establishes the framework for regulations of the water and electricity sector of the Emirate of Abu Dhabi.
- 12.1.2 Article 55 of Law No (2) defines powers of the Bureau to:
- a) establish, maintain review and amend technical and performance standards for the water and electricity sector; and
  - b) monitor and enforce compliance with such technical standards.
- 12.1.3 This Code has been issued in accordance with Article 55 of Law No (2), and is intended to provide practical operational guidance for the execution of the explicit and mandatory requirements stipulated in the Water Supply Regulations and Water Quality Regulations.

## 12.2 Compliance obligations

- 12.2.1 The Responsible Person and Responsible Company shall ensure that it, and all affected representatives, personnel, managers, supervisors and employees are familiar with the relevant requirements and guidelines under this Code.
- 12.2.2 The Responsible Person and Responsible Company shall ensure compliance with the requirements and provisions of this Code.
- 12.2.3 The Responsible Person and Responsible Company shall retain documented evidence of compliance against prescribed requirements set out in this Code of Practice.
- 12.2.4 The Responsible Person and Responsible Company shall document evidence which shall be kept on file and shall be made available to the relevant Municipality and RSB upon request.

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## **12.3 Regulatory compliance audits and inspections**

- 12.3.1 Responsible Persons and Responsible Companies shall be subject to regulatory compliance audits and Inspections by the relevant Municipality and RSB.
- 12.3.2 Responsible Persons and Responsible Companies may be subject to un-announced and ad hoc Inspections or planned regulatory compliance audits to monitor compliance against the requirements and guidelines set out in this Code of Practice.

## **12.4 Managing non-compliance**

- 12.4.1 Where the relevant Municipality or RSB have established serious and repeated evidence of non-compliance with this Code, the Responsible Person or Responsible Company may be subject to penalties or enforcement under the Water Supply Regulations or Water Quality Regulations.
- 12.4.2 Repeated offenders may also be subject to other penalties or enforcement under other related regulations under this Code and may have their licences, registrations or accreditations suspended or cancelled.



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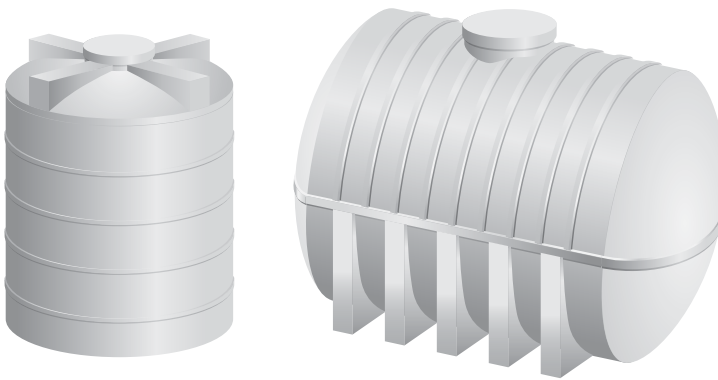
# **Appendix A**

## **Typical types of Customer Water Storage Tanks**

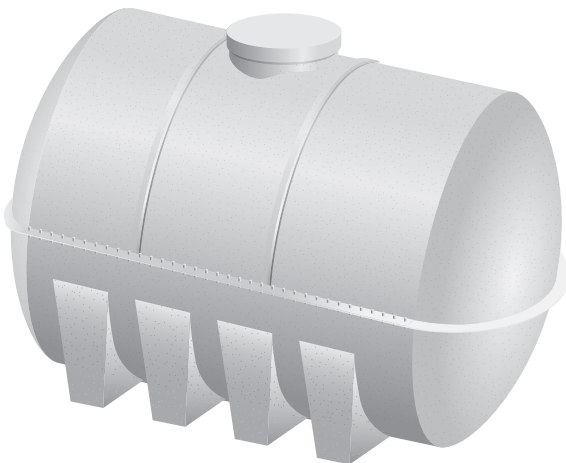
# Typical types of Customer Water Storage Tanks

A

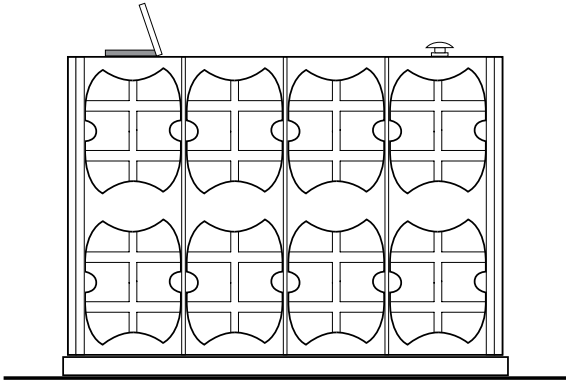
The majority of Customer Water Storage Tanks found in the Emirate of Abu Dhabi include five different material types: plastic (polyethylene), fibreglass reinforced plastic, glass reinforced plastic sectional panel, reinforced cement concrete and galvanised iron/ galvanised steel.



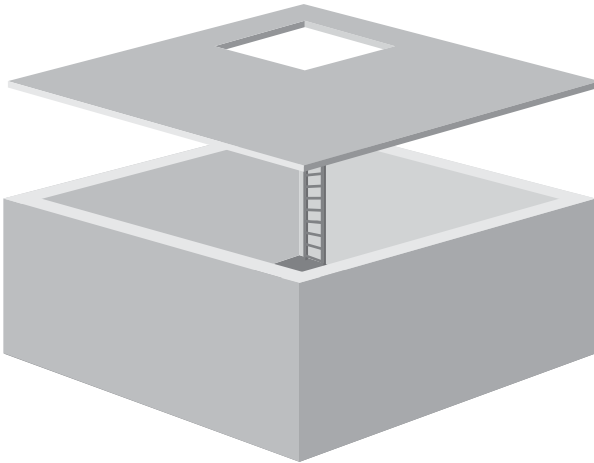
**Plastic Tanks**



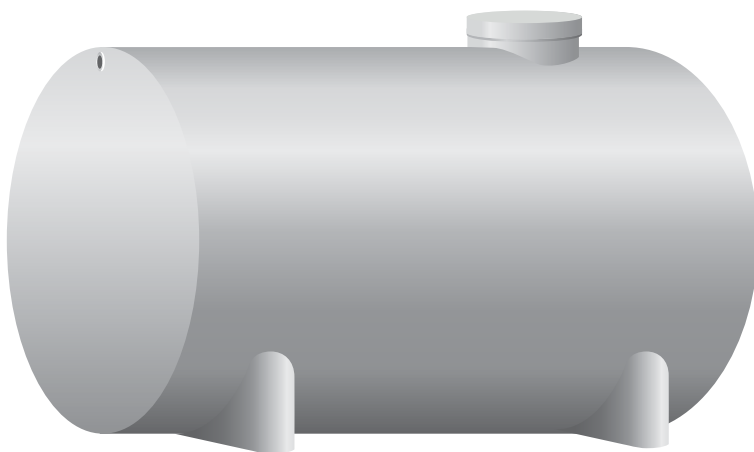
**Fibreglass reinforced plastic Tank**



**Glass reinforced plastic sectional panel Tank**



**Reinforced cement concrete Tank**



**Galvanised iron/ galvanised steel Tank**

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# **Appendix B**

## **Sample Customer Water Storage Tank Inspection and Sampling checklist**



# Sample Customer Water Storage Tank Inspection and Sampling checklist



Date		Time	
Building owner details			
Building Owner/ Manager name		Building Owner/ Manager contact details	
Building details			
Region		Area/ subdivision	
Building address		Building use commercial/ residential	
Building type e.g. villa/ high rise/ mosque		Building name	
GPS location		Number of Tanks at the location	
Inspection and Sampling details			
Inspection/ Water Sampling Company		Company address and contact details	
Name of Inspector/ Water Sampler		Inspector/ Sampler address and contact details	

Inspection findings and corrective actions				
Tank ID/ No.	Location of the Tank	Inspection finding (Please tick any contaminants observed inside the Tank)	Other observations/ comments	Recommended corrective actions
		<input type="checkbox"/> Sediment/ Sludge <input type="checkbox"/> Algae growth <input type="checkbox"/> Micro-film or oils <input type="checkbox"/> Dead animals or insects <input type="checkbox"/> Corrosion <input type="checkbox"/> Other signs of contamination. Please provide details _____		
		<input type="checkbox"/> Sediment/ Sludge <input type="checkbox"/> Algae growth <input type="checkbox"/> Micro-film or oils <input type="checkbox"/> Dead animals or insects <input type="checkbox"/> Corrosion <input type="checkbox"/> Other signs of contamination. Please provide details _____		
		<input type="checkbox"/> Sediment/ Sludge <input type="checkbox"/> Algae growth <input type="checkbox"/> Micro-film or oils <input type="checkbox"/> Dead animals or insects <input type="checkbox"/> Corrosion <input type="checkbox"/> Other signs of contamination. Please provide details _____		

Sampling and Testing findings and corrective actions				
Tank ID/ No.	Location of the Tank (underground, ground-level, roof)	Water Sampling and Testing Results (Please tick any contaminants observed inside the Tank)	Test results	Recommended corrective actions
		<input type="checkbox"/> Total coliform <input type="checkbox"/> E. coli <input type="checkbox"/> Total bacterial count <input type="checkbox"/> Legionella		
		<input type="checkbox"/> Total coliform <input type="checkbox"/> E. coli <input type="checkbox"/> Total bacterial count <input type="checkbox"/> Legionella		
		<input type="checkbox"/> Total coliform <input type="checkbox"/> E. coli <input type="checkbox"/> Total bacterial count <input type="checkbox"/> Legionella		
		<input type="checkbox"/> Total coliform <input type="checkbox"/> E. coli <input type="checkbox"/> Total bacterial count <input type="checkbox"/> Legionella		

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# **Appendix C**

## **Registration requirements and process for Responsible Company**

# Registration requirements and process for Responsible Company



Pre-qualifications requirements	Pre-qualification process
<ul style="list-style-type: none"> <li>a) Licensed with the Abu Dhabi Economic Department for areas of work relating to the conduct of water quality sampling or testing, and/ or building plumbing, and/ or Customer Water Storage Tank and Water Fittings Cleaning or general maintenance.</li> <li>b) Three (3) years of demonstrated experience in the Inspection, Sampling and Testing and/ or Cleaning and Disinfection of Customer Water Storage Tank in the Emirate of Abu Dhabi.</li> <li>c) Demonstrated and documented evidence of compliance with the provisions of this Code, including Section 8 'Environment, Health &amp; Safety' and Section 11 'Training and Competency'.</li> <li>d) Demonstrated and documented evidence of Good Industry Practice, as stipulated in Part 9 'Customer Water Storage Tank Cleaning and Disinfection procedures' and Part 10 'Customer Water Storage Tank Inspection and Sampling procedures'.</li> <li>e) Quality control or quality management system and policies, and Good Industry Practice with regards to document and record management and reporting.</li> </ul>	<ul style="list-style-type: none"> <li>a) Relevant authority invites applications for pre- qualification and- registration against set pre-qualification and assessment criteria.</li> <li>b) Responsible Company submits application addressing all pre- qualification criteria with documented evidence of compliance.</li> <li>c) Relevant authority assesses applications and notifies company of outcome.</li> <li>d) Relevant authority publishes list of approved Responsible Companies for Inspection, Sampling, Cleaning and Disinfection of Customer Water Storage Tanks.</li> <li>e) Relevant authority (Municipalities) conduct regulatory compliance audits.</li> </ul>

**Regulation and Supervision Bureau**  
for the water, wastewater and electricity sector  
in the Emirate of Abu Dhabi

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Code of Practice Code of Practice for the inspection  
and cleaning of customer water storage tanks