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# Recycled Water and Biosolids Regulations 2018

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**(Second Edition)**

**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)**

**1 January 2018**

# Foreword

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

In addition to its duties over licensed entities, the Bureau has certain responsibilities towards the general public including the assurance of safe and efficient electricity, water and wastewater services to customers. These Regulations have been produced with this primary aim in mind.

These Regulations (Second Edition) supersede the Recycled Water and Biosolids Regulations issued in 2010 and are effective from 1 January 2018 and shall be cited as the Recycled Water and Biosolids Regulations 2018 (Second Edition).

The Regulations establish a legal framework for the safe and economic Reuse and management of Recycled Water and Biosolids in the Emirate of Abu Dhabi and have been developed following an extensive consultation with sector companies and other relevant stakeholders.

These Regulations are also available in Arabic, but the reader should note they were first written in English. They may be downloaded from the Bureau's website at [www.rsb.gov.ae](http://www.rsb.gov.ae)

These Regulations shall be read in conjunction with the Guide for Recycled Water and Biosolids Regulations 2018 (Second Edition).

**Saif Saeed Al Qubaisi**

Director General

01 January 2018

# *Acknowledgements*

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The Bureau gratefully acknowledges the contributions and comments provided by the following organisations:

Government organisations:

- (i) Abu Dhabi Sewerage Services Company (ADSSC);
- (ii) Abu Dhabi Distribution Company (ADDC);
- (iii) Al Ain Distribution Company (AADC);
- (iv) Environment Agency - Abu Dhabi (EAD);
- (v) Abu Dhabi Food Control Authority (ADFCA);
- (vi) Health Authority - Abu Dhabi (HAAD);
- (vii) Department of Municipal Affairs and Transport (DMAT);
- (viii) Department of Economic Development (DED);
- (ix) Industrial Development Bureau of DED; and
- (x) Department of Urban Planning & Municipalities.

Private organisations:

- (i) Al Wathba Veolia Besix Waste Water PJSC; and
- (ii) Al Ain Zoo.

## *List of revisions*

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<b>Revision</b>	<b>date</b>	<b>prepared by</b>	<b>checked by</b>	<b>issued to</b>
2.0	January 2018	TD	JS	Publication
1.0	June 2010	RMS	MG & CH	Publication

This is the first revision to the Recycled Water and Biosolids Regulations, since their publication in June 2010. This revision incorporates the following:

- Distribution and Supply Licensee Activities for Recycled Water;
- Stakeholders' feedback regarding sampling Parameters and limits;
- Amendments to the roles and responsibilities of the Licensees regarding Procurement Agreements, Supply Agreements and Safety Plans;
- New Schedules C and D outlining monitoring frequencies for Recycled Water and Biosolids;
- New Schedule E providing Initial Data Entry Forms; and
- Other changes concerning the Regulations' structure.

# *Document numbering*

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These Regulations use the following numbering system:

<b>Parts</b>	are referenced by integers (e.g. 1, 2, 3, etc.)
<b>Regulations</b>	are referenced by one full stop between numbers (e.g. 1.1, 1.2, etc.)
<b>Clauses</b>	are referenced by two full stops between numbers (e.g. 3.1.2, etc.)
<b>Notes</b>	are indicated below the clause in square brackets and italic text. For example, [ <i>Note: this clause does not apply to Installations that have been ...</i> ]

# Contents

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Foreword .....	2
<b>1. Introduction .....</b>	<b>8</b>
1.1 Citation .....	8
1.2 Commencement.....	8
1.3 Purpose .....	8
1.4 Scope .....	8
1.5 Relevant Regulations .....	9
1.6 Fees and Charges .....	9
1.7 Provision of information .....	10
<b>2. Definitions.....</b>	<b>11</b>
2.1 Interpretation .....	11
2.2 Definitions .....	11
<b>3. Reuse and Disposal of Recycled Water and Biosolids.....</b>	<b>15</b>
3.1 Prohibition.....	15
3.2 Unrestricted and restricted Reuse.....	15
3.3 Discharge to the environment.....	15
3.4 Discharge to storm water networks .....	16
3.5 Self-supply schemes.....	16
<b>4. Supply of Recycled Water and Biosolids.....</b>	<b>17</b>
4.1 Supply of Recycled Water by a Disposal Licensee .....	17
4.2 Supply of Recycled Water by a Distribution and Supply Licensee.....	18
4.3 Supply of Biosolids .....	18
4.4 Supply Agreements.....	18
4.5 Procurement Agreements .....	19
4.6 Applying for a Supply Agreement .....	19
4.7 Issue of a Supply Agreement .....	19
4.8 Notification .....	20
4.9 Supply Agreement details .....	20
4.10 Varying a Supply Agreement .....	21
4.11 Variation notice.....	22
<b>5. Safety Plan.....</b>	<b>23</b>
5.1 Development of Safety Plan .....	23
5.2 Review of Safety Plan .....	23
5.3 Scope of Safety Plan .....	24
<b>6. Safety Plan monitoring programme.....</b>	<b>25</b>
6.1 Monitoring and sampling.....	25
6.2 Monitoring programme locations .....	25
6.3 Data collection and reporting.....	25
6.4 Sampling Points .....	26
6.5 Monitoring equipment.....	27
6.6 Sampling requirements .....	27
<b>7. Audits and assessment .....</b>	<b>28</b>
7.1 Self-audit .....	28
7.2 Bureau's assessment .....	28

7.3	Third party audit .....	29
<b>8.</b>	<b>Demand management .....</b>	<b>30</b>
8.1	Measuring production.....	30
8.2	Measuring supply.....	30
8.3	Submittal of registers .....	30
8.4	Meeting demand .....	31
8.5	Efficient use .....	31
<b>9.</b>	<b>Education and guidance.....</b>	<b>32</b>
9.1	Education and guidance.....	32
9.2	Awareness of Recycled Water and Biosolids quality.....	32
<b>10.</b>	<b>Compliance.....</b>	<b>33</b>
10.1	Quality compliance .....	33
10.2	Frequency compliance .....	33
10.3	General compliance .....	34
10.4	Improvement notices .....	34
10.5	Urgent action .....	35
10.6	Enforcement.....	35
10.7	Relaxation of requirements .....	35
<b>11.</b>	<b>Review of Bureau decision.....</b>	<b>37</b>
11.1	Application for review.....	37
11.2	Timescale for application for review and Bureau request for information.....	37
11.3	Extension of time for application for review .....	37
11.4	Bureau request for information .....	37
11.5	Bureau decision.....	37
<b>Schedules</b>	<b>.....</b>	<b>39</b>

# 1. Introduction

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## 1.1 Citation

1.1.1 These Regulations shall be cited as the Recycled Water and Biosolids Regulations 2018 (Second Edition).

1.1.2 These Regulations are issued by the Regulation and Supervision Bureau pursuant to Article (62) of Law No (2) of 1998, as amended.

## 1.2 Commencement

1.2.1 These Regulations come into force on 1 January 2018.

1.2.2 A Licensee who is party to an ongoing Wastewater treatment, Disposal, and/or Distribution and Supply Regulated Activity on 1 January 2018:

- (a) must comply with these Regulations on such date; or
- (b) agree in writing with the Bureau an alternative programme for compliance within six (6) months from such date.

1.2.3 These Regulations supersede and replace the Recycled Water and Biosolids Regulations 2010.

1.2.4 These Regulations may be amended or revoked by the Bureau at any time.

## 1.3 Purpose

1.3.1 The purpose of these Regulations is to establish a legal framework for the safe and economic Reuse and management of Recycled Water and Biosolids in the Emirate of Abu Dhabi.

## 1.4 Scope

1.4.1 These Regulations apply to all Sewerage Services Licensees, Distribution and Supply Licensees and any End-user who receives Recycled Water or Biosolids in the Emirate of Abu Dhabi.

1.4.2 Nothing in these Regulations is intended to conflict with or affect the operation of:

- (a) Law No (2) of 1998, as amended, for the regulation of the Water and Electricity Sector in the Emirate of Abu Dhabi;



- (b) UAE Federal Law No (24) of 1999 for the Protection and Development of the Environment and its executive orders;
- (c) Law No. (21) Of 2005 for Waste Management in the Emirate of Abu Dhabi; and
- (d) Decree of the Crown Prince, Chairman of the Executive Council No. (42) Of 2009 concerning The Environmental Health and Safety Management System in the Emirate of Abu Dhabi (EHSMS).

## **1.5 Relevant Regulations**

1.5.1 These Regulations should be read in conjunction with the following regulations, codes and guides:

- (a) Guide for Recycled Water and Biosolids Regulations;
- (b) Trade Effluent Control Regulations;
- (c) Wastewater Flow Monitoring Code of Practice;
- (d) The Customer Metering Regulations;
- (e) The Incident Reporting Regulations; and
- (f) Streetworks and Access Regulations.

1.5.2 Where a conflict appears to exist between these Regulations and other regulations, codes, or any governmental legislation, the matter should be referred to the Bureau for a binding decision in accordance with Part 11 of these Regulations.

## **1.6 Fees and Charges**

1.6.1 Any tariffs, fees, fines, charges, deposits, expenses or financial amounts to be imposed on End-users in accordance with these Regulations and the way they are meant to be imposed or collected by a Licensee must be submitted in prior to the Bureau for approval.

1.6.2 The Licensees are prohibited from imposing, amending or cancelling any tariffs, fees, fines, charges, deposits, expenses or financial amounts in accordance with these Regulations without the Bureau's prior approval.

## **1.7 Provision of information**

- 1.7.1 All Licensees, End-users or any other relevant Entities are required to furnish the Bureau with information to matters relating to these Regulations as the Bureau may from time to time direct or request.
- 1.7.2 Failure to provide the requested information in the time and manner decided by the Bureau shall be considered as a failure to comply with these Regulations.

## 2. Definitions

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### 2.1 Interpretation

- 2.1.1 Words which are defined under this Part 2 begin with capital letters when used in the Regulations.
- 2.1.2 Words or expressions defined in the singular have the same meaning when used in the plural and words or expressions defined in the plural have the same meaning when used in the singular.
- 2.1.3 A word or expression which is defined in Law No (2) and used, but not defined in these Regulations, has the same meaning as in Law No (2).

### 2.2 Definitions

**Biosolids** – sewage sludge produced by a Wastewater Treatment System that has been treated and stabilised to the extent that it can be safely supplied for Reuse activities.

**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).

**Collection Licensee** – the holder of a Licence issued by the Bureau for the collection of Wastewater from premises.

**Discharge** – the release of Recycled Water to the environment and Biosolids to landfill.

**Disposal** – the Regulated Activity which comprises Discharge, Reuse and/or Sale of various products produced from a Wastewater Treatment System.

**Disposal Licensee** – the holder of a Licence issued by the Bureau for the Disposal of Recycled Water and Biosolids.

**Disposal System** – a system consisting, wholly or mainly, of pipes, pumping stations, tankers and other plant and equipment owned, or operated, by a Licensee and used for the Disposal of Recycled Water and Biosolids.

**Distribution and Supply** – the Regulated Activities for the distribution and/or supply of Recycled Water through a Distribution System to the Point-of-delivery to End-users.

**Distribution and Supply Licensee** – the holder of a Licence, issued by the Bureau, for the Distribution and/or Supply of Recycled Water through a Distribution System to End-users.

**Distribution System** - a system consisting, wholly or mainly, of Recycled Water networks owned or operated by the Distribution and Supply Licensee and used for the transfer of Recycled Water by pipeline or otherwise to the Point-of-delivery of an End-user and includes any plant and equipment, including metering equipment, owned or operated by the Licensee in connection with the transfer by networks of Recycled Water;

**End-user** – an Entity eligible to receive and use Recycled Water and/or Biosolids.

**Entity** – an individual, establishment, company, association, society, partnership, corporation, municipality, institution, government organisation, agency or group.

**Exemption** – an exemption allowing an Entity to carry out a Regulated Activity without a Licence, in accordance with Article (79) of Law No (2).

**Geometric Mean** – the geometric mean of the values for all effluent samples collected during a month. The geometric mean shall be determined by calculating the  $n$ th root of the product of all measurements made in a calendar month, where  $n$  equals the number of measurements made. For any measurement equalling zero, a substituted value of one (1) shall be made for input into either computation method.

**Grey Water** – Wastewater sourced solely from baths, showers, hand basins, ablution facilities and domestic laundries.

**Guide** – Guide to Recycled Water and Biosolids Regulations 2018 (Second Edition).

**Law No (2)** – Law No (2) of 1998, as amended, concerning the regulation of the Water and Electricity Sector in the Emirate of Abu Dhabi.

**Licence** – means a licence to carry out a Regulated Activity granted by the Bureau to an Entity under Article 82 of Law No (2).

**Licensee** – refers jointly to the holder of a Collection Licence, Treatment Licence, Disposal Licence or a Distribution and Supply Licence issued by the Bureau.

**Licensed Activities** - the Regulated Activities permitted to be carried out by the Licensee pursuant to the conditions of the Licence.

**Parameter** – a property, element, organism or substance listed in Schedules A and B of these Regulations.

**Percentile Limit** - A 95 percentile limit that must be met for at least 95% of every Year as listed in Table C4 of Schedule C.

**Point-of-delivery** – the location or physical connection point at which Recycled Water or Biosolids are delivered to an End-user.

**Point-of-discharge** – the location at which Recycled Water is discharged to the environment or Biosolids are discharged to landfill.

**Point-of-transfer** – the location or physical connection point at which Recycled Water is transferred from a Treatment System.

**Point-of-use** – the location at which Recycled Water or Biosolids are used.

**Prescribed Concentration or Value (PCV)** – in relation to any Parameter, means the maximum or minimum concentration or value specified in relation to that Parameter in the Tables in Schedules A and B of these Regulations as measured by reference to the unit of measurement so specified.

**Priority Rights** – the allocation of a resource for efficient and socially or environmentally beneficial use according to the sequence of application for rights to that resource.

**Procurement Agreement** - the written agreement between a Disposal Licensee and a Distribution and Supply Licensee dealing with the terms and conditions of procuring or acquiring Recycled Water by a Distribution and Supply Licensee from a Disposal Licensee, and connecting the Distribution System to the Disposal System.

**Public Nuisance** – anything that disturbs the general public's reasonable use of property, endangers life and health, or is offensive to the general public.

**Recycled Water** – treated liquid effluent produced by a Wastewater Treatment System that is suitable for Discharge, Reuse and/or Sale to third parties.

**Recycled Water Licensee** – refers jointly to the holder of a Disposal Licence or a Distribution and Supply Licence issued by the Bureau.

**Recycled Water Supply Zone** – an area that is designated by a Distribution and Supply Licensee (whether by reference to source of Recycled Water supply, the number of End-users supplied from any source, or otherwise) for the purposes of the provisions of these Regulations.

**Reduced Number or Increased Number** - means any relevant reduced or increased sampling frequency shown in any of the Tables of Schedules C and D as an alternative to the Standard Number. The Bureau shall have the discretion to require the Licensee to sample according to a reduced or increased frequency as it finds necessary to do so; otherwise the Standard Number shall be the applicable frequency.

**Regulated Activity** – means an activity listed in Article 71 of Law No (2).

**Regulatory Authority** – the relevant federal or local government authority responsible for regulating a specific sector.

**Reuse** – the use of Recycled Water and/or Biosolids for industrial, commercial or agricultural purposes or any other type of reuse in the built environment.

**Safety Plan** – a plan for safeguarding the quality and quantity of Recycled Water and Biosolids.

**Sampling Point** – a point that is determined as such by a Licensee for the purpose of sampling as outlined in Part 6 of these Regulations.

**Sewerage Services Licensee** – the holder of a Licence, issued by the Bureau, for one or more of the Regulated Activities of collection, treatment or Disposal of Wastewater.

**Sewerage System** – a system consisting, wholly or mainly, of sewerage pipes, pumping stations, tankers and other plant and equipment owned or operated by a Collection Licensee and used for the transportation of Wastewater from premises to a Wastewater Treatment System.

**Standard Number** – means such number of sampling frequency specified in the column headed “Standard” in the Tables of Schedules C and D as is applicable to the Parameter in question.

**Sale** - any sale, gift, grant or any other supply or disposition to a third party.

**Supply Agreement** – an agreement between an End-user and Disposal Licensee or Distribution and Supply Licensee which defines the terms and conditions of supply for Recycled Water or Biosolids, as applicable.

**Trade Effluent** - any Wastewater discharged to a Sewerage System which is produced in the course of any industrial, commercial, agricultural, medical, scientific or trade activity, but does not include domestic Wastewater.

**Treatment Licensee** – the holder of a Licence, issued by the Bureau, for the treatment of Wastewater and its residuals.

**Treatment System** – a system consisting, wholly or mainly, of pipes, pumping stations, tankers and other plant and equipment that is owned, or operated, by a Treatment Licensee and used for the treatment of Wastewater and its residuals.

**UAE** – United Arab Emirates.

**Wastewater** – the water-borne wastes generated by any domestic, commercial or industrial activity including Grey Water and Trade Effluent.

**Year** – a calendar year, according to the Gregorian calendar.

### **3. Reuse and Disposal of Recycled Water and Biosolids**

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#### **3.1 Prohibition**

- 3.1.1 The use of Recycled Water for drinking, cooking, bathing, or swimming purposes is strictly prohibited.
- 3.1.2 A Licensee shall not provide, procure, acquire or supply:
- (a) Recycled Water that does not meet the criteria set out in Schedule A of these Regulations; and
  - (b) Biosolids that do not meet the criteria set out in Schedule B of these Regulations.
- 3.1.3 A Recycled Water Licensee must ensure safe Disposal, Distribution and Supply of Recycled Water and Biosolids to the Point-of-delivery with zero risk of contact with potable water supplies.

#### **3.2 Unrestricted and restricted Reuse**

- 3.2.1 For the purpose of quality monitoring, Reuse of Recycled Water and Biosolids is divided into two categories described as follows:
- (a) Unrestricted Reuse (referred to as P1 in the case of Recycled Water and B1 in the case of Biosolids) which involves frequent and uncontrolled exposure of the general public to Recycled Water and Biosolids; i.e. public access is not restricted; and
  - (b) Restricted Reuse (referred to as P2 in the case of Recycled Water and B2 in the case of Biosolids) which involves infrequent and controlled exposure of the general public to Recycled Water; i.e. public access is restricted.

#### **3.3 Discharge to the environment**

- 3.3.1 Discharge of Recycled Water or Biosolids to the environment is subject to the regulations of the Environment Agency - Abu Dhabi and the operations of The Center of Waste Management - Abu Dhabi and any other Regulatory Authorities.
- 3.3.2 A Disposal Licensee may, if necessary, discharge Recycled Water to the environment or Biosolids to landfill in fulfilment of the contingency planning requirements of Clause 5.3.1 (e) of these Regulations.

3.3.3 A Licensee shall not discharge Biosolids or Recycled Water to the environment unless consented to do so by the Bureau.

3.3.4 Any Discharge made by a Recycled Water Licensee under Clauses 3.3.2 and 3.3.3 must be:

- (a) made in accordance with the laws of Abu Dhabi Emirate and the Federal laws of the UAE;
- (b) made in accordance with the regulations and requirements of the Environment Agency – Abu Dhabi, and the requirements of the Center of Waste Management – Abu Dhabi and other relevant Regulatory Authorities; and
- (c) reported to the Bureau in accordance with Regulation 6.3.

### **3.4 Discharge to storm water networks**

3.4.1 Discharge of Recycled Water to storm water networks is subject to the regulations and requirements of the municipalities and any other relevant Regulatory Authority.

### **3.5 Self-supply schemes**

3.5.1 A Recycled Water Licensee may use Recycled Water and Biosolids on its own premises subject to the following conditions:

- (a) the Recycled Water Licensee must notify the Bureau of any self-supply scheme;
- (b) the Recycled Water Licensee must develop a Safety Plan for each self-supply scheme which extends to the Point-of-use and complies with Regulation 5.3;
- (c) any self-supply scheme must be recorded in the register defined in Regulation 8.2; and
- (d) any self-supply scheme must comply with Regulation 8.3.



## 4. Supply of Recycled Water and Biosolids

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### 4.1 Supply of Recycled Water by a Disposal Licensee

4.1.1 Without prejudice to Regulations 3.3, 3.4, and 3.5 of these Regulations:

- (a) a Disposal Licensee is only authorised to supply Recycled Water to a Distribution and Supply Licensee or to use Recycled Water for self-supply purposes;
- (b) a Disposal Licensee may be authorised to supply Recycled Water to End-users subject to:
  - (i) holding a Recycled Water Distribution and Supply Licence issued by the Bureau;
  - (ii) holding an Exemption from the Bureau for the Distribution and Supply of Recycled Water; or
  - (iii) being consented to do so by the Bureau in accordance with its Disposal Licence conditions; and
- (c) unless licensed or consented in prior by the Bureau, a Disposal Licensee shall not:
  - (i) purchase or otherwise acquire Recycled Water for the purpose of Sale or other disposition to third parties;
  - (ii) transfer, distribute or supply desalinated water or groundwater;
  - (iii) transmit Recycled Water or otherwise convey Recycled Water by any other means, except to the extent necessary to discharge Recycled Water to the environment or deliver Recycled Water into a Distribution System;
  - (iv) engage in the business of Recycled Water storage, except for operational balancing purposes; or
  - (v) engage in the Distribution and Supply of Recycled Water to End-users; and
- (d) a Disposal Licensee may not introduce charges or derive commercial benefits from the supply of Recycled Water unless

licensed or consented to do so by the Bureau and at such tariffs as to be approved by the Bureau from time to time.

## **4.2 Supply of Recycled Water by a Distribution and Supply Licensee**

4.2.1 Without prejudice to Regulation 3.5, a Distribution and Supply Licensee is authorised to supply Recycled Water to End-users or to use Recycled Water for self-supply purposes.

4.2.2 Unless licensed or consented in prior by the Bureau, a Distribution and Supply Licensee shall not:

- (a) discharge Recycled Water to the environment;
- (b) purchase or otherwise acquire Recycled Water from any person other than a Disposal Licensee;
- (c) transfer, distribute or supply desalinated water or groundwater;  
or
- (d) engage in the business of Recycled Water storage, except for operational balancing purposes.

4.2.3 The Distribution and Supply Licensee may supply Recycled Water at such tariffs as approved by the Bureau from time to time.

## **4.3 Supply of Biosolids**

4.3.1 Without prejudice to Regulation 3.3, a Disposal Licensee is authorised to supply Biosolids to End-users or any Entity.

4.3.2 A Disposal Licensee may supply Biosolids at such tariffs as approved by the Bureau from time to time.

## **4.4 Supply Agreements**

4.4.1 A Distribution and Supply Licensee must have a Supply Agreement with any End-user receiving Recycled Water.

4.4.2 A Disposal Licensee must have a Supply Agreement with any End-user or Entity receiving Biosolids.

4.4.3 The Recycled Water Licensee must make available to the public the supply terms and conditions of Recycled Water and/or Biosolids and the process for requesting supply, as approved and directed by the Bureau.

## **4.5 Procurement Agreements**

- 4.5.1 A Distribution and Supply Licensee must have a Procurement Agreement with each Disposal Licensee providing him with Recycled Water.
- 4.5.2 A Distribution and Supply Licensee shall not enter into any Procurement Agreement without the prior written approval of the Bureau.
- 4.5.3 The final terms and conditions of every Procurement Agreement shall be subject to the prior written approval of the Bureau.
- 4.5.4 Any Procurement Agreement for procuring or acquiring Recycled Water shall be at the best effective price reasonably obtainable having regard to the Recycled Water sources available.
- 4.5.5 A Distribution and Supply Licensee shall provide the Bureau in a timely manner with a copy of each Procurement Agreement and any amendment thereof and all relevant information in relation to any execution, amendment or termination of any Procurement Agreement.

## **4.6 Applying for a Supply Agreement**

- 4.6.1 Any End-user intending to use Recycled Water must apply for a Supply Agreement from a Distribution and Supply Licensee.
- 4.6.2 Any End-user intending to use Biosolids must apply for a Supply Agreement from a Disposal Licensee.
- 4.6.3 An application for a Supply Agreement must be made on the application form provided by the relevant Recycled Water Licensee.
- 4.6.4 An End-user applying for a Supply Agreement for Recycled Water or Biosolids must provide any information reasonably requested by the relevant Recycled Water Licensee to assess the application.
- 4.6.5 The format of a Supply Agreement application form must be approved by the Bureau.

## **4.7 Issue of a Supply Agreement**

- 4.7.1 A Disposal Licensee and a Distribution and Supply Licensee must issue a Supply Agreement to an applicant if satisfied that:
  - (a) the End-user can demonstrate the proposed Reuse activity will not:

- (i) harm the health and safety of the general public;
  - (ii) pollute the water, land or air; and
  - (iii) cause a Public Nuisance; and
- (b) the proposed use of Recycled Water or Biosolids will not:
- (i) exceed the existing demand for Recycled Water or Biosolids; and
  - (ii) breach any terms of these Regulations; and
- (c) the End-user, if required, has obtained approval for the proposed Reuse activity from the relevant Regulatory Authority.

4.7.2 A Disposal Licensee and a Distribution and Supply Licensee may request any additional information they reasonably believe is necessary to conclude a Supply Agreement with an End-user.

## **4.8 Notification**

4.8.1 A Disposal Licensee and a Distribution and Supply Licensee must inform the Bureau and the End-user, who has applied for a Supply Agreement, whether or not it has been successful within 60 days of the application being made.

4.8.2 A Disposal Licensee or a Distribution and Supply Licensee must give their reasons for refusing any application for a Supply Agreement.

4.8.3 A Disposal Licensee and a Distribution and Supply Licensee must include a draft Safety Plan and a draft Supply Agreement in their notification of a successful supply application.

## **4.9 Supply Agreement details**

4.9.1 The standard terms and conditions of the Supply Agreement template must be approved by the Bureau.

4.9.2 A Supply Agreement must:

- (a) describe the Recycled Water or Biosolids including:
  - (i) the source of the Recycled Water or Biosolids to be supplied;
  - (ii) the Point-of-delivery;
  - (iii) the volume or mass, frequency and rate of supply of the Recycled Water or Biosolids, as applicable; and

- (iv) the nature and composition of the Recycled Water or Biosolids; and
- (b) state the terms and conditions for the supply of Recycled Water and Biosolids including but not limited to:
  - (i) any restrictions or codes of practice that may apply to the Recycled Water or the Biosolids Reuse activity;
  - (ii) the records to be kept;
  - (iii) the start and end date of the agreement; and
  - (iv) the grounds on which the agreement may be terminated or varied; and
- (c) state that the End-user shall be liable for the payment of charges and tariffs to the Disposal Licensee or the Distribution and Supply Licensee, as applicable, for the supply of Recycled Water and/or Biosolids, if such charges and tariffs are approved by the Bureau in accordance with the licence of the Disposal Licensee or the Distribution and Supply Licensee; and
- (d) enable the Recycled Water Licensee to vary the Supply Agreement in accordance with Regulation 4.10.

4.9.3 The Disposal Licensee and the Distribution and Supply Licensee must provide the Bureau with a copy of new Supply Agreements at least 30 days before the supply of Recycled Water or Biosolids, as applicable, begins.

4.9.4 For ongoing supply activities at the effective date of these Regulations, the Recycled Water Licensees must ensure to conclude Supply Agreements with each End-user and amend any existing Supply Agreements in accordance with these Regulations within 90 days from the effective date of these Regulations.

## **4.10 Varying a Supply Agreement**

4.10.1 A Disposal Licensee and a Distribution and Supply Licensee may vary a condition of a Supply Agreement if:

- (a) there is a change in legislation or regulatory policies which makes it necessary to change a condition;
- (b) the Recycled Water or Biosolids Reuse activity has significantly changed since the Supply Agreement was made;

- (c) a period of two (2) Years has passed since the start of the Supply Agreement; or
  - (d) the Bureau issued directions requiring the Recycled Water Licensee to revise or vary the Supply Agreement.
- 4.10.2 Any variation to the Supply Agreement template general terms must be approved by the Bureau.

#### **4.11 Variation notice**

- 4.11.1 A Disposal Licensee and a Distribution and Supply Licensee must give written notice, to all parties to a Supply Agreement, if it intends to vary a condition of the Supply Agreement.
- 4.11.2 A notice to vary a condition of a Supply Agreement must:
- (a) list each condition to be varied;
  - (b) state each reason why a condition will be varied;
  - (c) state the date the variation will come into force; and
  - (d) give information on the application for review of Bureau Decision.
- 4.11.3 A notice to vary a condition of a Supply Agreement must be given at least 30 days before the date the variation comes into force, unless the legislation or Bureau's directions require action to be taken sooner.

## **5. Safety Plans**

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### **5.1 Development of Safety Plan**

- 5.1.1 A Licensee must develop a Safety Plan covering its Licensed Activities for the supply of Recycled Water and Biosolids as applicable.
- 5.1.2 The Safety Plan should describe the operational and management controls that will be employed by Licensees to protect public health, safeguard the environment and minimise Public Nuisance.
- 5.1.3 Where collection, treatment, Disposal and Distribution systems are inter-connected, the upstream Treatment or Disposal Licensee must:
- (a) provide any information and resources to a downstream Licensee as reasonably required to develop a Safety Plan; and
  - (b) advise the downstream Licensee, where applicable, of any changes to the Licensed Activities which will require a change to a Safety Plan.

### **5.2 Review of Safety Plan**

- 5.2.1 A new Safety Plan of a Licensee must be submitted to the Bureau for review at least 60 days before the supply of Recycled Water or Biosolids is due to start.
- 5.2.2 The Bureau shall complete a review of a Safety Plan within 30 days from the date of receiving the Plan.
- 5.2.3 For an on-going Regulated Activity, the Licensees shall agree in writing with the Bureau, if required, an alternative programme for submitting the Safety Plan within 6 months from the effective date of these Regulations.
- 5.2.4 The Bureau will identify and report to the Licensee any changes it believes are required to:
- (a) protect public health;
  - (b) safeguard the environment; or
  - (c) minimise Public Nuisance.
- 5.2.5 Before the supply of Recycled Water or Biosolids begins, the Licensee must:

- (a) adopt any recommendations made by the Bureau under Clause 5.2.4 and submit a revised Safety Plan; or
- (b) append the Bureau's recommendations to the Safety Plan and state the reasons why they have not been adopted.

### **5.3 Scope of Safety Plan**

5.3.1 The Safety Plan must define:

- (a) the systems and capabilities related to the Licensed Activities;
- (b) the roles and responsibilities of the Licensees under the Safety Plans;
- (c) the hazards associated with the treatment of Wastewater and Reuse of the Recycled Water or Biosolids that may affect human health, the environment or the availability of the Recycled Water or Biosolids at the Point-of-transfer or the Point-of-delivery, as applicable;
- (d) the hazards associated with the treatment of Wastewater and Reuse of Recycled Water or Biosolids that may affect human health, the environment or the availability of the Recycled Water or Biosolids within a self-supply scheme;
- (e) the operational and management controls and contingency plans for each hazard identified in Clause 5.3.1(c);
- (f) the monitoring programme referenced in Part 6 that will ensure the requirements of these Regulations are met and that the operational and management controls identified in Clause 5.3.1 (e) are effective;
- (g) reporting and auditing requirements for the monitoring programme identified in Clause 5.3.1(f) and in Part 6 and Part 7 of these Regulations; and
- (h) supporting programmes to improve employee awareness and involvement.



## **6. Safety Plan monitoring programme**

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### **6.1 Monitoring and sampling**

- 6.1.1 Each Year a Licensee shall sample and test each Parameter listed in Schedules A and B of these Regulations to confirm that the quality of the Recycled Water or Biosolids conforms to the criteria outlined therein.
- 6.1.2 The sampling frequency shall be not less than the Standard Number of samples as listed in the tables of Schedules C and D in relation to the Parameter in question.
- 6.1.3 The Bureau shall have the discretion to require the Licensee to sample according to the Reduced Number or Increased Number frequency as it finds necessary to do so; otherwise the Standard Number shall be the applicable frequency.
- 6.1.4 A Licensee can request from the Bureau, after submitting acceptable justification, a reduced frequency in the annual sampling for one or more Parameters required in its monitoring activities.
- 6.1.5 Any sampling or analysis done by a Licensee as a condition of a monitoring programme must be done at the Licensee's expense.

### **6.2 Monitoring programme locations**

- 6.2.1 Treatment Licensees shall monitor Recycled Water quality at the Point-of-transfer.
- 6.2.2 Distribution and Supply Licensees shall monitor Recycled Water quality at the Point-of-delivery to End-users in each of their Recycled Water Supply Zones.
- 6.2.3 Monitoring for self-supply schemes must be performed at the Point-of-use or at a location which is representative of the quality of the Recycled Water and Biosolids.
- 6.2.4 Monitoring for Biosolids must be performed at the Point-of-delivery.

### **6.3 Data collection and reporting**

- 6.3.1 A Licensee shall collate all monitoring and sampling data generated by its monitoring programme.

- 6.3.2 For each monitoring programme the Licensee must collect monitoring and sampling data in accordance with the sampling frequencies outlined in Schedule C or Schedule D as applicable.
- 6.3.3 A Licensee shall prepare and maintain, in respect of each of its sampling locations, a record containing:
- (a) the name or the identification number of the location, zone or area, as applicable;
  - (b) as relevant, the number of End-users and volume of Recycled Water supplied at the location;
  - (c) a programme of sampling;
  - (d) test method(s) for each of the Parameters included in Schedule A of the Regulations;
  - (e) particulars of any relaxation granted under Part 10 which applies to Recycled Water supplied at the location; and
  - (f) relevant information in the initial data entries forms in Schedule E.
- 6.3.4 The Licensees shall make available to the Bureau initial entries in the registers, discussed in Regulation 8.1 and 8.2, in respect of the matters mentioned in Clause 6.3.3 (a) to (f) no later than week 40 of each Year.
- 6.3.5 Entries relating to the results of the analysis of samples shall be made available to the Bureau within 30 days of the sample collection date according to the sampling programme in a form approved by the Bureau or in which the result is first known to the person or sooner where the data gives cause for concern.

## **6.4 Sampling Points**

- 6.4.1 Licensees must install and maintain Sampling Points which will:
- (a) enable an inspector to obtain a representative sample of the Recycled Water or Biosolids at any time;
  - (b) have good access and egress; and
  - (c) be safe and suitable for monitoring and sampling.

## **6.5 Monitoring equipment**

6.5.1 Licensees must install and maintain meters and equipment to monitor the:

- (a) volume, frequency and rate of flow of Wastewater, Recycled Water or Biosolids, as applicable;
- (b) composition and nature of Wastewater, Recycled Water or Biosolids at any time; and
- (c) performance of the Collection, Treatment, Disposal and Distribution and Supply Systems.

6.5.2 Licensees must ensure the:

- (a) accurate functioning of the meters and equipment; and
- (b) specifications of the meters and equipment are in accordance with relevant codes and regulations.

## **6.6 Sampling requirements**

6.6.1 Any sample taken to fulfil the requirements of these Regulations must be handled, transported and stored in such a way as to make sure it is:

- (a) representative of the nature and composition of the Recycled Water or Biosolids;
- (b) not contaminated at any stage in the sampling process; and
- (c) kept under conditions necessary to prevent changes to the concentration, structure or value of the Recycled Water or Biosolids.

6.6.2 A sample must be analysed:

- (a) by a person competent to carry out the task;
- (b) using analytical systems and methods capable of establishing the concentration of substances identified in the Safety Plan within acceptable limits of deviation; and
- (c) at a laboratory that has a system of analytical quality control audited by an independent third party.

## **7. Audits and assessment**

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### **7.1 Self-audit**

- 7.1.1 The Licensee must complete a self-audit, on an annual basis, of:
- (a) the Licensee's compliance with the monitoring programme requirements; and
  - (b) the effectiveness of the monitoring programme.
- 7.1.2 The Licensee shall submit the results of the self-audit carried out in accordance with Clause 7.1.1 to the Bureau.
- 7.1.3 The results of the self-audit shall be submitted along with a copy of the registers for the preceding Year by 1 April every Year in accordance with Regulation 8.3.
- 7.1.4 The form of the self-audit submission shall be approved by the Bureau before it is implemented.

### **7.2 Bureau's assessment**

- 7.2.1 To ensure compliance with these Regulations the Bureau may conduct from time-to-time a system assessment which covers treatment processes, analytical arrangements, sampling processes, testing, data quality and reporting. The assessment may:
- (a) assess the effectiveness of the existing Recycled Water and Biosolids quality testing regime;
  - (b) review and validate the results of the self-audit submission;
  - (c) evaluate the capability to perform tests on all Parameters required in these Regulations;
  - (d) evaluate, if required, the analytical systems and methods used by any laboratory testing samples of Recycled Water or Biosolids and where the Bureau identifies deficiencies in the analytical systems and methods used by a laboratory testing Recycled Water or Biosolids it will:
    - (i) issue a notice to any Licensee stating the deficiencies identified; and

- (ii) require any Licensee to assess, rectify and report on the impact of the laboratory deficiencies on their compliance with these Regulations; and
- (e) review the accuracy and reliability of the data collected by Licensees; and
- (f) review Licensee's performance in fulfilling their obligations with regard to monitoring and sampling activities.

### **7.3 Third party audit**

7.3.1 In order to establish whether Licensees are complying with their monitoring obligations, the Bureau may request Licensees to appoint an appropriate and technically competent third party auditor which must consider:

- (a) the accuracy and reliability of the data collected by Licensees; and
- (b) the Licensee's performance in fulfilling their obligations with regard to monitoring and sampling activities.

## **8. Demand management**

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### **8.1 Measuring production**

8.1.1 All Treatment Licensees must keep a register of their Wastewater treatment activities including details of the:

- (a) flows and loads received at each of their Treatment Systems;
- (b) volume or mass of Recycled Water and Biosolids produced at each of their Treatment Systems; and
- (c) quality of Recycled Water and Biosolids produced at each of their Treatment Systems.

### **8.2 Measuring supply**

8.2.1 All Distribution and Supply Licensees and Disposal Licensees must keep a register of all Points-of-delivery for Recycled Water or Biosolids, as applicable, in their authorised area, zone or location. The register must include details of the:

- (a) Point-of-delivery;
- (b) source of the Recycled Water and Biosolids supplied;
- (c) volume or mass of Recycled Water and Biosolids supplied;
- (d) quality of Recycled Water and Biosolids at the Point-of-delivery; and
- (e) other relevant data as stated in Clause 6.3.3.

### **8.3 Submittal of registers**

8.3.1 The Licensees must submit the registers to the Bureau on a monthly basis for the preceding calendar month.

8.3.2 The Licensees must also submit the consolidated registers to the Bureau for the preceding Year on 1 April every Year.

8.3.3 The Licensee will be required to report the results in hard copy, electronic format and/or via a web-based portal as directed by the Bureau.

8.3.4 The form of the submission must be approved by the Bureau before it is implemented.

8.3.5 The Licensee shall retain records of all sampling and monitoring data for at least ten (10) Years.

#### **8.4 Meeting demand**

8.4.1 A Recycled Water Licensee must allocate Recycled Water and Biosolids to End-users in accordance with the law or any policy issued by Regulatory Authorities.

8.4.2 Where there is no clear policy for allocating Recycled Water and Biosolids a Recycled Water Licensee must allocate using Priority Rights.

#### **8.5 Efficient use**

8.5.1 All Licensees shall promote the conservation and efficient use of Recycled Water and Biosolids.

8.5.2 All End-users shall comply with all policies, codes, regulations and guidelines in the UAE, and with best international practices to prevent the waste, deteriorating quality and over consumption of Recycled Water and Biosolids.

## **9. Education and guidance**

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### **9.1 Education and guidance**

9.1.1 Disposal Licensees and Distribution and Supply Licensees must develop and implement a strategy, as applicable, to raise understanding and awareness of:

- (a) the risks to public health and the environment associated with the Reuse of Recycled Water and Biosolids;
- (b) best practice for minimising risks associated with the Reuse of Recycled Water and Biosolids; and
- (c) best practice for preventing waste, deteriorating quality and over-consumption of Recycled Water and Biosolids.

9.1.2 The Bureau shall approve any strategy developed by a Licensee before it is implemented.

### **9.2 Awareness of Recycled Water and Biosolids quality**

9.2.1 A Disposal Licensee and a Distribution and Supply Licensee shall provide information, as applicable, to the End-user which defines the quality of the Recycled Water or Biosolids in relation to the proposed End-use.



# 10. Compliance

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## 10.1 Quality compliance

- 10.1.1 Percentile Limits will be applied to the Parameters outlined in Tables A1, A3, A4 and B2 of Schedules A and B.
- 10.1.2 The permitted number of exceedances for a particular number of required samples in a Year is outlined in Table C4 of Schedule C.
- 10.1.3 Although the Percentile Limits are calculated on a Yearly basis, compliance toward the permitted number of exceedances will be reviewed monthly.
- 10.1.4 Prescribed Concentrations and Geometric Means will be applied to the Parameters outlined in Tables A2 and B1 of Schedules A and B.
- 10.1.5 Compliance with the Geometric Means shall be determined monthly, based on all microbiological monitoring results for that month.
- 10.1.6 When determining quality compliance, the Bureau shall assess the frequency and magnitude of any non-compliant monitoring results and consider other relevant factors.
- 10.1.7 Compliance for Recycled Water will be assessed at the:
- (a) Points-of-transfer for Treatment Licensees;
  - (b) Points-of-delivery to End-users for Distribution and Supply Licensees;
  - (c) Points-of-delivery to End-users for Disposal Licensees, if consented by the Bureau; and
  - (d) Points-of-use for self-supply schemes.
- 10.1.8 Compliance for Biosolids will be assessed at the:
- (a) Points-of-delivery to End-users for Disposal Licensees;
  - (b) Points-of-use for self-supply schemes.

## 10.2 Frequency compliance

- 10.2.1 The required sampling frequencies for Recycled Water and Biosolids are outlined in Schedules C and D.
- 10.2.2 Compliance with the sampling frequencies will be reviewed monthly.

### **10.3 General compliance**

10.3.1 The Bureau shall determine whether or not Licensees are complying with these Regulations by reviewing, amongst other things:

- (a) Supply Agreements;
- (b) Safety Plans;
- (c) registers, audits and information submitted by Licensees;
- (d) outcomes of any inspection, monitoring or sampling activities carried out by the Bureau; and
- (e) any other information or documentation the Bureau considers to be relevant.

### **10.4 Improvement notices**

10.4.1 The Bureau may issue a written improvement notice to any Entity if:

- (a) the Entity has breached the Regulations; or
- (b) action is required to protect public health, minimise Public Nuisance or prevent damage to the environment.

10.4.2 Any improvement notice must be given in writing to the Entity and a copy sent to the relevant parties to the Procurement or Supply Agreement.

10.4.3 An improvement notice must:

- (a) state:
  - (i) the condition of the Regulations that has been breached; or
  - (ii) the threat to public health and safety or the environment; or
  - (iii) the cause of Public Nuisance; and
- (b) explain how:
  - (i) the condition has been breached; or
  - (ii) the threat or cause has been identified; and
- (c) state the action the Entity must take and when it must be taken;
- (d) give the date by which the Entity must complete any action;
- (e) state the consequences if the Entity does not take action in time; and

- (f) state what the Bureau may do to monitor progress with the terms of the improvement notice.

## **10.5 Urgent action**

10.5.1 The Bureau may take any enforcement action pursuant to Law No (2) without giving prior written improvement notice if urgent action is required to:

- (a) protect the health and safety of the general public or Licensee employees; or
- (b) prevent significant or lasting damage to the environment.

10.5.2 If the Bureau issues a verbal improvement notice because urgent action is required, then it must give written notice to the Entity as soon as practicable following the issue of such improvement notice.

## **10.6 Enforcement**

10.6.1 The Bureau reserves its right, upon failure of the Entity to comply with an improvement notice to the satisfaction of the Bureau, to take any enforcement action pursuant to Law No (2).

10.6.2 Failure to comply with an improvement notice of these Regulations shall be contrary to Law No (2) and enforced in accordance with Law No (2).

## **10.7 Relaxation of requirements**

10.7.1 The Bureau may, upon the written request of a relevant Entity, authorise a relaxation of certain requirements of these Regulations.

10.7.2 Subject to Clauses 10.7.3 and 10.7.4, the Bureau may at any time modify or revoke an authorisation (whether or not the authorisation is expressly given for a specified period) pursuant to Clause 10.7.1 above.

10.7.3 The Bureau shall not revoke or modify an authorisation without giving at least a 3-month notice or, if the holder of the authorisation agrees, at least 6 weeks' notice by the Bureau of its intention to do so but the Bureau may revoke or modify an authorisation without notice if it appears to the Bureau that the immediate revocation or modification of the authorisation is required for public health and interest.

10.7.4 A Licensee upon whose request an authorisation has been given under this Part shall notify the Bureau as soon as the circumstances

which gave rise to the request for the authorisation cease to exist, and, notwithstanding Clause 10.7.3 above, the Bureau shall thereupon revoke the authorisation.

10.7.5 Any request for a relaxation under Clause 10.7.1 shall provide sufficient information and data to allow the Bureau to assess the necessity and appropriateness of authorising a relaxation together with a risk assessment and mitigation plans. The requester shall also provide an impact assessment on any Procurement or Supply Agreements in place as needed, and the views and/or acceptance of the impacted entities. The Bureau requires a minimum of 3 months to assess any request made under Clause 10.7.1.

10.7.6 The Bureau may require an Entity who makes a request for a relaxation under Clause 10.7.1 to pay a charge which reflects the expenses incurred or likely to be incurred by the Bureau in connection with that request. In determining the amount of any charge, the Bureau may adopt such methods and principles for its calculation as appear to it to be appropriate and notify the Entity of the relevant expenses.

# **11. Review of Bureau decision**

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## **11.1 Application for review**

11.1.1 Any application for an enquiry, clarification, dispute, or claim relevant to these Regulations can be made to the Bureau by any Entity.

## **11.2 Timescale for application for review and Bureau request for information**

11.2.1 The Bureau may request from any Entity making an application for review under this Part any information or documentation it considers reasonable and necessary in the circumstances and the Entity must provide such information within an agreed period of time.

## **11.3 Extension of time for application for review**

11.3.1 Any Entity making an application for review under this Part may apply to the Bureau for an extension of the time to make the application for review, provided that the Entity:

- (a) lodges its application for an extension of not less than five business days before the expiry of the time limit to seek review; and
- (b) provides full details of its reason for seeking an extension.

11.3.2 The Bureau may extend the time limit to seek review and may set any conditions it sees fit. If the time to seek review is extended by the Bureau, the Entity must strictly comply with any condition attached to the extension.

## **11.4 Bureau request for information**

11.4.1 The Bureau may request from any Entity making an application for review under this Part any information or documentation it considers reasonable and necessary in the circumstances and the Entity must provide such information within an agreed period of time.

## **11.5 Bureau decision**

- (a) The Bureau shall make its decision within 30 days of receiving an application for review;

- (b) The Bureau shall notify the Entity which made the application for review of its decision within five (5) business days of making its decision.
- (c) The Bureau may:
  - (i) make any decision it sees fit in the circumstances; and/or
  - (ii) issue directions as it sees fit to the Entity which made the application for review and to any third party.

11.5.2 Any decisions or directions issued by the Bureau are binding on the Entity which made the application for review and any third party stated in these decisions or directions. Failure to comply with decisions or directions shall be considered as a failure to comply with the Regulations.

# **SCHEDULES**

## Schedules

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<b>Schedule A.</b>	<b>Parameters and limits for Recycled Water.....</b>	<b>42</b>
<b>Schedule B.</b>	<b>Parameters and limits for Biosolids .....</b>	<b>48</b>
<b>Schedule C.</b>	<b>Sampling frequency for Recycled Water.....</b>	<b>53</b>
<b>Schedule D.</b>	<b>Sampling frequency for Biosolids .....</b>	<b>60</b>
<b>Schedule E.</b>	<b>Initial data entries forms .....</b>	<b>62</b>



# **Schedule A**

## **Parameters and limits for Recycled Water**

## **Schedule A. Parameters and limits for Recycled Water**

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- A1 Recycled Water Standards**
- A2 Discharge of Recycled Water to the Environment**
- A3 Discharge of Recycled Water to storm water networks**

# Schedule A: Parameters and limits for Recycled Water

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## A1 Recycled Water standards

A1.1 The standards identified in Tables A1, A2, A3 and A4 define the minimum quality requirements for Recycled Water at the Points-of-transfer and Points-of-delivery.

A1.2 The Reuse of Recycled Water falls under two categories:

- a) Unrestricted Reuse which involves frequent and uncontrolled exposure of the general public to Recycled Water; i.e. public access is not restricted (referred to as P1 in Tables A1 & A2); and
- b) Restricted Reuse which involves infrequent and controlled exposure of the general public to Recycled Water; i.e. public access is restricted (referred to as P2 in Tables A1 & A2).

A1.3 Analysis and sampling are to be carried out in accordance with best practice as outlined in Part 6 of the Regulations and its Guide.

A1.4 The Bureau shall periodically review the quality standards for Recycled Water and Biosolids defined in Schedules A and B of these Regulations and may make amendments or additions as required.

**Table A1 Sanitary Parameters**

Standard		P1	P2
		Unrestricted Reuse	Restricted Reuse
Parameter	Unit	Prescribed Concentration	Prescribed Concentration
pH		6 to 8.5	6 to 8.5
BOD <sub>5</sub> (ATU)	mg/l	10	10
Total Suspended Solids	mg/l	10	20
Turbidity	NTU	5	10
Residual Chlorine (total available)	mg/l	0.5 to 1	0.5 to 1
Dissolved Oxygen	mg/l	≥ 1	≥ 1

# Schedule A: Parameters and limits for Recycled Water

**Table A2 Microbiological Parameters**

Standard		P1		P2	
		Unrestricted Reuse		Restricted Reuse	
Parameter	Unit	Geometric Mean	Prescribed Concentration	Geometric Mean	Prescribed Concentration
Faecal Coliform or E. Coli	CFU or MPN/100ml	14	23	200	800
Intestinal Enterococci	CFU or MPN/100ml	11	24	35	104
Helminth Ova	Number/l	N/A	0	N/A	0
Legionella (in circulating water)	CFU or MPN/ml	N/A	100	N/A	N/A

Notes:

1. Total available residual chlorine is that residual chlorine being the sum of free and combined residuals
2. NTU = Nephelometric Turbidity Unit; mg/l = milligrams per litre
3. CFU = Colony Forming Units; MPN = Most Probable Number
4. Marine and land discharges, including Nitrogen and Phosphorous, are also subject to Federal and Emirate laws as per Regulation 3.2.
5. Although the ideal concentration for Residual Chlorine shall be between 0.5 to 1.0 mg/l, the Licensee may, subject to justification, increase the concentration to above 1.0 mg/l where the Licensee determines that it is necessary for the purpose of reducing bacteriological contamination
6. Testing for Legionella will only be required if Recycled Water is used for chilled water cooling plants. The listed concentration is based on the following:
  - The Association of Water Technologies (<https://www.awt.org>) recommends a threshold level of legionella for triggering cleaning and/or biocide treatment of the condenser system of 100 CFU or MPN per ml; and
  - The Cooling Technology Institute (<https://www.cti.org>) recommends a threshold level of legionella for triggering routine on-line disinfection of 100 CFU or MPN per ml.

# Schedule A: Parameters and limits for Recycled Water

**Table A3 Trace elements Parameters**

Parameter	Unit	Prescribed Concentration
Aluminium (Al)	mg/l	5.0
Arsenic (As)	mg/l	0.1
Beryllium (Be)	mg/l	0.1
Cadmium (Cd)	mg/l	0.01
Chromium (Cr)	mg/l	0.1
Cobalt (Co)	mg/l	0.05
Copper (Cu)	mg/l	0.2
Fluoride (F <sup>-</sup> )	mg/l	1.0
Iron (Fe)	mg/l	5.0
Lead (Pb)	mg/l	5.0
Lithium (Li)	mg/l	2.5
Manganese (Mn)	mg/l	0.2
Mercury (Hg)	mg/l	0.001
Molybdenum (Mo)	mg/l	0.01
Nickel (Ni)	mg/l	0.2
Selenium (Se)	mg/l	0.02
Vanadium (V)	mg/l	0.1
Zinc (Zn)	mg/l	2.0

**Table A4 Salinity Parameters**

Parameter	Unit	Prescribed Concentration
Electrical conductivity	(dS/m @ 25 <sup>0</sup> C)	3.0
Total dissolved solids (TDS)	mg/l	2000
Sodium Adsorption Ratio (SAR)		2.9
Sodium (Na <sup>+</sup> )	meq/l	9
Chloride (Cl <sup>-</sup> )	meq/l	10
Boron (B)	mg/l	3
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )	meq/l	8.5

# **Schedule A: Parameters and limits for Recycled Water**

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## **A2 Discharge of Recycled Water to the Environment**

A2.1 Discharge of Recycled Water to the environment is subject to the control of the Environment Agency Abu Dhabi or any other relevant Regulatory Authority.

## **A3 Discharge of Recycled Water to storm water networks**

A3.1 Discharge of Recycled Water to storm water networks is subject to the regulations and requirements of the municipalities and any other relevant Regulatory Authority.

# **Schedule B**

## **Parameters and limits for Biosolids**

## **Schedule B. Parameters and limits for Biosolids**

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- B1 Biosolids standards**
- B2 Treatment requirements for Biosolids**
- B3 Biosolids in agriculture or landscaping**
- B4 Biosolids to landfill**



# Schedule B: Parameters and limits for Biosolids

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## **B1 Biosolids standards**

- B1.1 The standards in Tables B1 and B2 define the minimum quality requirements for Biosolids at the Point-of-delivery.
- B1.2 Section B2 defines the minimum performance requirements for systems used to treat Biosolids.
- B1.3 Sections B3 and B4 define the requirements for Biosolids quality in specific disposal activities.
- B1.4 Analysis and sampling are to be carried out in accordance with best practice as outlined in Part 6 of the Regulations and its Guide.
- B1.5 The Reuse of Biosolids falls under two categories:
  - a) Unrestricted Reuse which involves frequent and uncontrolled exposure of the general public to Biosolids; i.e. public access is not restricted (referred to as B1 in Tables B1 & B2); and
  - b) Restricted Reuse which involves infrequent and controlled exposure of the general public to Biosolids; i.e. public access is restricted (referred to as B2 in Tables B1 & B2).

## Schedule B: Parameters and limits for Biosolids

**Table B1 Microbiological Parameters (Biosolids Quality)**

Standard		B1	B2
		Unrestricted Reuse	Restricted Reuse
Parameter	Unit	Prescribed Concentration	Prescribed Concentration
E. Coli	CFU/g dm	<1000	<100,000
Salmonella	CFU/2g dm	<1	Not applicable
Helminth Ova	No./ 50g dm	<1	<10

**Table B2 Trace Elements Parameters (Biosolids Quality)**

Standard		B1	B2
		Unrestricted Reuse	Restricted Reuse
Parameter	Unit	Prescribed Concentration	Prescribed Concentration
Arsenic (As)	mg/kg	20	75
Cadmium (Cd)	mg/kg	1	20
Chromium (Cr)	mg/kg	400	1000
Copper (Cu)	mg/kg	150	1000
Lead (Pb)	mg/kg	300	750
Mercury (Hg)	mg/kg	1	10
Molybdenum (Mo)	mg/kg	20	75
Nickel (Ni)	mg/kg	60	300
Selenium (Se)	mg/kg	3	50
Zinc (Zn)	mg/kg	300	2500

Notes:

1. mg / kg = milligrams per kilogram dry matter, dm = dry matter
2. CFU = Colony Forming Units,

# Schedule B: Parameters and limits for Biosolids

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## B2 Treatment requirements for Biosolids

B2.1 Treatment Systems used to produce Biosolids must achieve one of the criteria defined in Table B3.

B2.2 Analysis and sampling are to be carried out in accordance with best practice as outlined in Part 6 of the Regulations and its Guide.

**Table B3- Biosolids stabilisation standards**

Option	Measure	Requirement
Treatment System to reduce volatile solids	% VS Reduction across process	> 38
Treatment System to dry raw sludge	% dm in final product	> 95
Treatment System to dry stabilised sludge	% dm in final product	>75
Treatment System to maintain pH	pH in final product	>11.5 for 24 hours

Notes: The arithmetic mean of the samples taken in any calendar month must comply with the standard

## B3 Biosolids Reuse beyond Point-of-delivery

B3.1 The Reuse of and quality of Biosolids beyond the Point-of-delivery are subject to control of the relevant Regulatory Authority.

B3.2 Where Biosolids are used for agricultural or landscaping purposes the Disposal Licensee must define the agronomic value by specifying, amongst other things, the typical range of:

- (a) total and available nitrogen, phosphorus and potassium; and
- (b) dry solids and volatile solids.

## B4 Biosolids to landfill

B4.1 The disposal of and quality of Biosolids in landfills is subject to the regulation of the Environment Agency - Abu Dhabi and operation of The Center of Waste Management - Abu Dhabi or any other relevant Regulatory Authority.

# **Schedule C**

## **Sampling frequency for Recycled Water**

# Schedule C. Sampling frequency for Recycled Water

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## List of Tables:

### Sampling frequency requirements for Recycled Water for Treatment Licensees

- Table C1.1 – Sampling frequency at Point-of-transfer for Sanitary and Microbiological Parameters
- Table C1.2 – Sampling frequency at Point-of-transfer for Trace Elements Parameters
- Table C1.3 – Sampling frequency at Point-of-transfer for Salinity Parameters

### Sampling frequency requirements for Recycled Water for Distribution and Supply Licensees

- Table C2.1 – Sampling frequency at Point-of-delivery for Sanitary and Microbiological Parameters
- Table C2.2 – Sampling frequency at Point-of-delivery for Trace Elements Parameters
- Table C2.3 – Sampling frequency at Point-of-delivery for Salinity Parameters

### Sampling frequency requirements for Recycled Water for self-supply schemes

- Table C3.1 – Sampling frequency for self-supply at Point-of-use for Sanitary and Microbiological Parameters
- Table C3.2 – Sampling frequency for self-supply at Point-of-use for Trace Elements and Salinity Parameters

### Look-up Table

- Table C4 – “look-up” table (based on 95-Percentile Limit)

# Schedule C: Sampling frequency for Recycled Water

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## Sampling frequency requirements for Recycled Water

Regulated activity	Relevant sampling testing criteria	
	Schedule A (Parameters & limits)	Schedule C (Sampling frequency)
Treatment for Reuse	Table A1, A2, A3 & A4	Table C1.1, C1.2, C1.3
Distribution & Supply	Table A1, A2, A3 & A4	Table C2.1, C2.2, C2.3
Self-supply	Table A1, A2, A3 & A4	Table C3.1, C3.2

# Schedule C: Sampling frequency for Recycled Water

## Sampling frequency requirements for Recycled Water for Treatment Licensees

**Table C1.1 Sampling frequency at Point-of-transfer for Sanitary and Microbiological Parameters**

STP Capacity M <sup>3</sup> /Day	Water Quality Sampling Frequency (number per annum)					
	Table A1 Sanitary			Table A2 Microbiological		
	Reduced	Standard	Increased	Reduced	Standard	Increased
5,000 & Less	24	48	96	24	48	96
5,001 – 50,000	48	96	192	24	48	96
Above 50,000	96	192	384	24	48	96
Helminth for all Capacities				6	12	24
Legionella for all Capacities				6	12	24

**Table C1.2 Sampling frequency at Point-of-transfer for Trace Elements Parameters**

STP Capacity M <sup>3</sup> /Day	Water Quality Sampling Frequency (number per annum)		
	Reduced	Standard	Increased
5,000 & Less	3	6	12
5,001 – 50,000	6	12	24
Above 50,000	12	24	48

**Table C1.3 Sampling frequency at Point-of-transfer for Salinity Parameters**

Parameter	STP Capacity M <sup>3</sup> /Day	Water Quality Sampling Frequency (number per annum)		
		Reduced	Standard	Increased
Electrical Conductivity	Above 50,000	120	240	360
Electrical Conductivity	Below 50,000	48	96	192
TDS & Chloride	Above 50,000	24	48	96
TDS & Chloride	Below 50,000	6	12	24
SAR, Sodium, Boron & Bicarbonate	For all capacities	6	12	24

Notes: Sampling must be distributed uniformly throughout the Year.

# Schedule C: Sampling frequency for Recycled Water

## Sampling frequency requirements for Recycled Water for Distribution and Supply Licensees

**Table C2.1 Sampling frequency at Point-of-delivery for Sanitary and Microbiological Parameters**

Volume delivered M <sup>3</sup> /Day	Water Quality Sampling Frequency (number per annum)					
	Table A1 Sanitary			Table A2 Microbiological		
	Reduced	Standard	Increased	Reduced	Standard	Increased
5,000 & Less	12	24	48	24	48	96
5,001 – 50,000	24	48	96	24	48	96
Above 50,000	48	96	192	24	48	96
Helminth for all volumes delivered				6	12	24
Legionella for all volumes delivered				6	12	24

**Table C2.2 Sampling frequency at Point-of-delivery for Trace Elements Parameters**

Volume delivered M <sup>3</sup> /Day	Water Quality Sampling Frequency (number per annum)		
	Reduced	Standard	Increased
5,000 & Less	1	3	6
5,001 – 50,000	3	6	12
Above 50,000	6	12	24

**Table C2.3 Sampling frequency at Point-of-delivery for Salinity Parameters**

Parameter	Volume delivered M <sup>3</sup> /Day	Water Quality Sampling Frequency (number per annum)		
		Reduced	Standard	Increased
Electrical Conductivity	Above 50,000	120	240	360
Electrical Conductivity	Below 50,000	48	96	192
TDS & Chloride	Above 50,000	24	48	96
TDS & Chloride	Below 50,000	6	12	24
SAR, Sodium, Boron & Bicarbonate	For all volumes delivered	6	12	24

Notes: Sampling must be distributed uniformly throughout the Year.



## Schedule C: Sampling frequency for Recycled Water

### Sampling frequency requirements for Recycled Water for self-supply schemes

**Table C3.1 Sampling frequency for self-supply at Point-of-use for Sanitary and Microbiological Parameters**

STP Design Capacity M <sup>3</sup> /Day	Water Quality Sampling Frequency (number per annum)					
	Table A1 Sanitary			Table A2 Microbiological		
	Reduced	Standard	Increased	Reduced	Standard	Increased
≤ 100	4	6	12	4	6	12
101 – 10,000	6	12	24	6	12	24

**Table C3.2 Sampling frequency for self-supply at Point-of-use for Trace Elements & Salinity Parameters**

STP Design Capacity M <sup>3</sup> /Day	Water Quality Sampling Frequency (number per annum)		
	Reduced	Standard	Increased
≤ 100	2	4	6
101 – 10,000	3	6	12

Notes: Sampling must be distributed uniformly throughout the Year.

## Schedule C: Sampling frequency for Recycled Water

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**Table C4 “look –up” table**

(Based on 95-Percentile Limit)

Number of samples (in any Year)	Permitted number of exceedances
4-7	1
8-16	2
17-28	3
29-40	4
41-53	5
54-67	6
68-81	7
82-95	8
96-110	9
111-125	10
126-140	11
141-155	12
156-171	13
172-187	14
188-203	15
204-219	16
220-235	17
236-251	18

# **Schedule D**

## **Sampling frequency for Biosolids**

## Schedule D. Sampling frequency for Biosolids

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**Table D1 Sampling frequency for Tables B1 - Microbiological Parameters & B2 - Trace Elements Parameters**

Quantity of Biosolids Tons per annum	Sampling Frequency (number per annum)		
	Reduced	Standard	Increased
Less than 290	1	1	2
290 to 1,500	2	4	8
1,501 to 15,000	3	6	12
Greater than 15,000	6	12	24

Note: Facilities must sample at the appropriate frequencies prescribed above, or as and when Biosolids are disposed of; whichever is less.

# **Schedule E**

## **Initial data entries forms**

## **Schedule E. Initial data entries forms**

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### Initial data entries forms

Form 1: Treatment Licensee

Form 2: Distribution & Supply Licensee

Form 3: Self-supply scheme

# Schedule E: Initial data entries forms

## Form 1 Treatment Licensee

<b>Licensee Name:</b>				
<b>Site information</b>				
Site Name				
Site Location				
Volume (m3/d)				
Year of Construction				
Region				
<b>Chemicals</b>				
Chemical No.				
Scientific name				
Brand name				
Required concentration				
Dosing rate				
Type of packing				
Type of storage and shelf life				
Remarks				
<b>Annual frequency plan</b>				
Sample location	STP capacity m3/d	Table		
		C1.1	C1.2	C1.3
<b>Testing Method (according to the sampling testing criteria table)</b>				
Test method No.				
Parameter				
Name of test method				
Method standard				
Description				
Internal or external lab (name of lab)				
Remarks				

Remarks: Please attach a schematic showing the flow diagram and Sampling Points locations

## Schedule E: Initial data entries forms

### Form 2

#### Distribution and Supply Licensee

<b>Licensee Name:</b>				
<b>Site information</b>				
Site ID				
Site description				
Site location				
Volume (m3/d)				
Region ID				
<b>Chemicals</b>				
Chemical No.				
Scientific name				
Brand name				
Required concentration				
Dosing rate				
Type of packing				
Type of storage and shelf life				
Remarks				
<b>Annual frequency plan</b>				
Sample location	STP capacity m3/d	Table		
		C2.1	C2.2	C2.3
<b>Testing Method (according to the sampling testing criteria table)</b>				
Test method No.				
Parameter				
Name of test method				
Method standard				
Description				
Internal or external lab (name of lab)				
Remarks				



## Schedule E: Initial data entries forms

### Form 3 Self-supply scheme

<b>Licensee Name:</b>			
<b>Site information</b>			
Site ID			
Site description			
Site location			
Volume (m3/d)			
Region ID			
<b>Chemicals</b>			
Chemical No.			
Scientific name			
Brand name			
Required concentration			
Dosing rate			
Type of packing			
Type of storage and shelf life			
Remarks			
<b>Annual frequency plan</b>			
Sample location	STP capacity m3/d	Table	
		C3.1	C3.2
<b>Testing Method (according to the sampling testing criteria table)</b>			
Test method No.			
Parameter			
Name of test method			
Method standard			
Description			
Internal or external lab (name of lab)			
Remarks			