



**PUBLIC HEALTH SEWAGE (CODE) REGULATIONS 2008**

---

Sir F. Goodwin, KBE

Queen's Representative

**ORDER IN EXECUTIVE COUNCIL**

At Avarua, Rarotonga, this 4<sup>th</sup> day of December 2008

**Present:**

**HIS EXCELLENCY THE QUEEN'S REPRESENTATIVE  
IN EXECUTIVE COUNCIL**

**PURSUANT** to Sections 41 and 42 of the Public Health Act 2004 the Queen's Representative, acting by and with the advice and consent of the Executive Council, makes the following regulations.

---

**ANALYSIS**

- |                           |                                |
|---------------------------|--------------------------------|
| 1. Title and commencement | 2. Prescribed code<br>Schedule |
|---------------------------|--------------------------------|
- 

**REGULATIONS**

- Title and commencement – (1) These regulations may be cited as the Public Health Sewage (Code) Regulations 2008.  
(2) These regulations shall come into force on the 1<sup>st</sup> day of November 2008.

**Price \$12.00**

2. Prescribed Forms - The prescribed Code is as set out in the Schedule to these regulations.

Grover L. Harmon  
Clerk of the Executive Council

---

These Regulations are administered by Ministry of Public Health

**BY AUTHORITY:**  
Cook Islands Government - 2008

**SCHEDULE**

Cook Islands



Te Marae Ora Ministry of Health

Public Health Sewage Code

Community Health Services Directorate  
Ministry of Health  
PO Box 109  
Rarotonga  
Cook Islands

July 2008

## Contents

AMENDMENTS .....	6
1.0 POLICIES .....	16
1.1 Processing of Sewage Construction Permit Applications on Each Island.....	16
1.2 Referenced Documents.....	16
2.0 GUIDELINES AND STANDARDS .....	16
2.1 Fees.....	16
2.1.1 Application for a Sewage Construction Permit – Regulation 19 (2) (f).....	16
2.2 Definition of Lagoon Protection Zone.....	17
2.3 Land Information Memorandum (Drainage).....	17
2.4 Zone Implementation of the Regulations.....	17
2.5 Alternative wastewater management systems.....	22
2.6 Septic Tank Capacities (litres).....	23
2.6.1 For 1 – 10 persons.....	23
2.6.2 For 11-20 persons.....	24
2.6.3 For more than 20 persons.....	24
2.7 Sludge Removal.....	24
2.7.1 Frequency of desludging – Regulation 33 (1) .....	24
2.7.2 Sludge Removal Reports – Regulation 33 (2).....	24
2.8 Sewage Flow Reporting.....	25
2.8.1 Moderate Load System – Regulation 28 (2).....	25
2.8.2 High Load System – Regulation 28 (2).....	25
2.9 Sampling Frequencies.....	25
2.9.1 Moderate Load Systems – Regulation 30 (2).....	25
2.9.2 High Load Systems – Regulation 30 (2) .....	25
2.10 Testing Procedure.....	25
2.11 Wastewater Flow Design Allowances.....	27
2.12 Classification of Buildings.....	30
2.13 Positioning of the Land Application System.....	31
2.14 Soil Classification.....	31

2.15 Appearance and Feeling of Various Soil Textural Classes..... 31

2.16 Setbacks ..... 32

2.17 Design Specification of Land Application System..... 32

2.18 Drain laying Standards ..... 32

2.19 Treatment Unit Categories and Effluent Quality Standards ..... 32

2.20 Effluent outlet filters..... 33

2.21 Noise..... 33

2.22 Septic Tank Construction Standards ..... 33

2.23 Sewage Discharge Standards ..... 34

3.0 TIME PERIODS..... 34

3.1 Request for Sewage System Inspection - Regulation 21 (3) and 21 (5)..... 34

4.0 REGISTERS ..... 34

4.1 Register of Sanitary Professionals and Technicians – Regulation 7..... 34

    4.1.1 Criteria for Installers and Servicing Agents..... 34

    4.1.2 Criteria for the Registration of Inspectors ..... 35

    4.1.3 Criteria for the Registration of Designers ..... 36

4.2 Register of Sewage Treatment Unit Designs – Regulation 9 ..... 37

    4.2.1 Criteria for the Registration of Sewage Treatment Unit Designs..... 37

    4.2.2 Aeration treatment plants ..... 37

    4.2.3 Applications for the Registration of Sewage Treatment Unit Designs – Regulation 9 (2)..... 37

4.3 Register of Septic Tank Manufacturers – Regulation 8 ..... 38

    4.3.1 Criteria for the Registration of Septic Tank Manufacturers ..... 38

5.0 REPORTS ..... 38

5.1 Abandonment or Disconnection Plan – Regulation 31 ..... 38

5.2 Operation and Maintenance Manual – Regulation 29..... 39

## Amendments

Previous Version (January 2008)	Current Version (July 2008)
<p align="center"><b>SECTION 1.1 PROCESSING OF SEWAGE CONSTRUCTION PERMIT APPLICATIONS ON EACH ISLAND</b></p>	<p align="center"><b>SECTION 1.1 PROCESSING OF SEWAGE CONSTRUCTION PERMIT APPLICATIONS ON EACH ISLAND</b></p>
<p><i>Section 1.1 Processing of Sewage Construction Permit Applications on Each Island previously read as follows:</i></p> <p>It is important that applications for sewage construction permits be made (as much as possible) on the island where the sewage system is being installed. This is because the approval process requires some knowledge of the site conditions such as soil permeability, baserock/impermeable layers of the soil profile, groundwater depth etc. Health Inspectors on each island will need to have a CI pass in the Sewage and Sanitation Course. For those islands where a CI pass hasn't been achieved, the application will need to be processed in Rarotonga. In addition, applications for Moderate Load and High Load systems are more complex and will require additional knowledge during the approval process. For this reason, applications for Moderate Load and High Load systems on all islands shall be made in Rarotonga in consultation with the Health Inspectors on the respective island.</p> <p>Before the regulations are promulgated, Public Health will implement this code under Section 13 of the Public Health Act 2004 as a policy document. During this period, the code will apply to the following properties only:</p> <ol style="list-style-type: none"> <li>1. Properties where the land application system is located within the Lagoon Protection Zone</li> <li>2. Properties that will require a Moderate or High Load system</li> </ol> <p>In all other cases, septic tanks to AS/NZS 1546.1 standards and absorption trenches or soak holes shall be sufficient until promulgation of the regulations.</p>	<p><i>Section 1.1 Processing of Sewage Construction Permit Applications on Each Island now reads as follows:</i></p> <p>It is important that applications for sewage construction permits be made (as much as possible) on the island where the sewage system is being installed. This is because the approval process requires some knowledge of the site conditions such as soil permeability, baserock/impermeable layers of the soil profile, groundwater depth etc. Health Inspectors on each island will need to have a CI pass in the Sewage and Sanitation Course. For those islands where a CI pass hasn't been achieved, the application will need to be processed in Rarotonga. In addition, applications for Moderate Load and High Load systems are more complex and will require additional knowledge during the approval process. For this reason, applications for Moderate Load and High Load systems on all islands shall be made in Rarotonga in consultation with the Health Inspectors on the respective island.</p>
<p align="center"><b>SECTION 1.2 REFERENCED DOCUMENTS</b></p>	<p align="center"><b>SECTION 1.2 REFERENCED DOCUMENTS</b></p>
<p><i>Section 1.2 Referenced Documents previously read as follows:</i></p> <p><b>1.2 Referenced Documents</b></p> <p>The following documents are referenced in this code:</p> <p>Public Health (Sewage) Regulations 2008</p>	<p><i>Section 1.2 Referenced Documents now reads as follows (changes are shown in bold):</i></p> <p>1.2 Referenced Documents</p> <p>The following documents are referenced in this code:</p> <p>Public Health (Sewage) Regulations 2008</p>

<p>AS/NZS 1547:2000 On-site domestic-wastewater management  AS/NZS 3500 National plumbing and drainage code  AS/NZS 1546.1:1998 On-site domestic wastewater treatment units Part 1: Septic tanks</p>	<p>AS/NZS 1547:2000 On-site domestic-wastewater management  AS/NZS 3500 National plumbing and drainage code  <b>New Zealand Building Code G13 Foul Water and E1 Surface Water</b></p>
<p>Copies of documents b, c and d may be purchased online at <a href="http://www.standards.co.nz">www.standards.co.nz</a>. Copies of the Public Health Sewage Regulations 2008 may be purchased from the Community Health Services Directorate, Ministry of Health, Tupapa, Rarotonga.</p>	<p>AS/NZS 1546.1:2008 On-site domestic wastewater treatment units Part 1: Septic tanks  <b>AS/NZS 1546.2:2008 Waterless Composting Toilets</b>  <b>AS/NZS 1546.3:2008 Aerated Wastewater Treatment Systems</b></p>
	<p>Copies of documents listed in d. may be downloaded free from <a href="http://www.dbh.govt.nz/building-code-compliance-documents#free-download">http://www.dbh.govt.nz/building-code-compliance-documents#free-download</a>. Copies of documents b, c, e, f, g may be purchased at <a href="http://www.standards.co.nz">www.standards.co.nz</a>. Copies of the Public Health (Sewage) Regulations 2008 may be purchased from Parliament Services, Rarotonga, Cook Islands</p>
<p><b>Previous Version (January 2008)</b></p>	<p><b>Current Version (July 2008)</b></p>
<p><b>SECTION 2.2 DEFINITION OF LAGOON PROTECTION ZONE</b></p>	<p><b>SECTION 2.2 DEFINITION OF LAGOON PROTECTION ZONE</b></p>
<p><i>Section 2.2 Definition of Lagoon Protection Zone regarding the LPZ of Aitutaki previously read as follows:</i></p>	<p><i>Section 2.2 Definition of Lagoon Protection Zone regarding the LPZ of Aitutaki now reads as follows (changes are shown in bold):</i></p>
<p>The Lagoon Protection Zone on Aitutaki is located where the soil type is sand.</p>	<p>The Lagoon Protection Zone on Aitutaki is located where the soil type is <b>either category 1, 2, 5 or 6 as described in AS/NZS 1547:2000</b> .</p>
<p><b>Previous Version (January 2008)</b></p>	<p><b>Current Version (July 2008)</b></p>
<p><b>SECTION 2.4 ZONE IMPLEMENTATION OF THE REGULATIONS</b></p>	<p><b>SECTION 2.4 ZONE IMPLEMENTATION OF THE REGULATIONS</b></p>
<p><i>Section 2.4 Zone Implementation of the Regulations previously read as follows:</i></p>	<p><i>Section 2.4 Zone Implementation of the Regulations now reads as follows (changes are shown in bold):</i></p>
<p>The principles of AS/NZS 1547:2000 and the specifications described in Table 1 shall be used when designing a sewage system. In cases where the specifications in Table 1 are contradictory to the specifications in AS/NZS 1547:2000, the specifications in Table 1 shall override the specifications in AS/NZS 1547:2000.</p>	<p>The principles of AS/NZS 1547:2000 and the specifications described in Table 1 shall be used when designing a sewage system. In cases where the specifications in Table 1 are contradictory to the specifications in AS/NZS 1547:2000, the specifications in Table 1 shall override the specifications in AS/NZS 1547:2000.</p>
	<p>Due to the density of development within Avarua town, Avarua town has been earmarked for the development of a sewerage system. For this reason, Table 1 shall apply to all areas of Rarotonga except for Avarua town (between the western side of Avatiu harbour and the eastern side of the National Auditorium, Library and Museum and between the back road of Avarua and seaward side of the foreshore). Persons owning properties within Avarua</p>

	town shall meet standards in the Public Health Sewage Regulations and Public Health Sewage Code as closely as is practicable.																								
<b>Previous Version (January 2008)</b>	<b>Current Version (July 2008)</b>																								
<b>SECTION 2.6 SEPTIC TANK CAPACITIES</b>	<b>SECTION 2.6 SEPTIC TANK CAPACITIES</b>																								
<i>Section 2.6, Tables 2-4 regarding septic tank capacities previously read as follows:</i>	<i>Section 2.6, Tables 2-4 regarding septic tank capacities will now reads as follows:</i>																								
Table 2: All-Waste Sept Tank Capacities	Table 2: All-Waste Sept Tank Capacities																								
<table border="1"> <thead> <tr> <th>Number of persons</th> <th>Average daily flow (litres)</th> <th>Tank capacity (litres)</th> </tr> </thead> <tbody> <tr> <td>1-5</td> <td>Up to 1000</td> <td>3000</td> </tr> <tr> <td>6-7</td> <td>1000 – 1400</td> <td>3500</td> </tr> <tr> <td>8</td> <td>1400 – 1600</td> <td>4000</td> </tr> <tr> <td>9-10</td> <td>1600 - 2000</td> <td>4500</td> </tr> </tbody> </table>	Number of persons	Average daily flow (litres)	Tank capacity (litres)	1-5	Up to 1000	3000	6-7	1000 – 1400	3500	8	1400 – 1600	4000	9-10	1600 - 2000	4500	<table border="1"> <thead> <tr> <th>Number of persons</th> <th>Average daily flow (litres)</th> <th>Tank capacity (litres)</th> </tr> </thead> <tbody> <tr> <td>1-10</td> <td>Up to 2000</td> <td>4500</td> </tr> </tbody> </table>	Number of persons	Average daily flow (litres)	Tank capacity (litres)	1-10	Up to 2000	4500			
Number of persons	Average daily flow (litres)	Tank capacity (litres)																							
1-5	Up to 1000	3000																							
6-7	1000 – 1400	3500																							
8	1400 – 1600	4000																							
9-10	1600 - 2000	4500																							
Number of persons	Average daily flow (litres)	Tank capacity (litres)																							
1-10	Up to 2000	4500																							
Table 3: Greywater Septic Tank Capacities	Table 3: Greywater Septic Tank Capacities																								
<table border="1"> <thead> <tr> <th>Number of Persons</th> <th>Average daily flow (litres)</th> <th>Tank capacity (litres)</th> </tr> </thead> <tbody> <tr> <td>1-5</td> <td>Up to 600</td> <td>1800</td> </tr> <tr> <td>6-7</td> <td>600 – 840</td> <td>2100</td> </tr> <tr> <td>8</td> <td>840 – 960</td> <td>2400</td> </tr> <tr> <td>9-10</td> <td>960 - 1200</td> <td>2700</td> </tr> </tbody> </table>	Number of Persons	Average daily flow (litres)	Tank capacity (litres)	1-5	Up to 600	1800	6-7	600 – 840	2100	8	840 – 960	2400	9-10	960 - 1200	2700	<table border="1"> <thead> <tr> <th>Number of Persons</th> <th>Average daily flow (litres)</th> <th>Tank capacity (litres)</th> </tr> </thead> <tbody> <tr> <td>1-5</td> <td>Up to 600</td> <td>1800</td> </tr> <tr> <td>6-10</td> <td>600-1200</td> <td>2700</td> </tr> </tbody> </table>	Number of Persons	Average daily flow (litres)	Tank capacity (litres)	1-5	Up to 600	1800	6-10	600-1200	2700
Number of Persons	Average daily flow (litres)	Tank capacity (litres)																							
1-5	Up to 600	1800																							
6-7	600 – 840	2100																							
8	840 – 960	2400																							
9-10	960 - 1200	2700																							
Number of Persons	Average daily flow (litres)	Tank capacity (litres)																							
1-5	Up to 600	1800																							
6-10	600-1200	2700																							
Table 4: Blackwater Septic Tank Capacities	Table 4: Blackwater Septic Tank Capacities																								
<table border="1"> <thead> <tr> <th>Number of persons</th> <th>Average daily flow (litres)</th> <th>Tank capacity (litres)</th> </tr> </thead> <tbody> <tr> <td>1-5</td> <td>Up to 300</td> <td>1500</td> </tr> <tr> <td>6-7</td> <td>300 – 420</td> <td>1800</td> </tr> <tr> <td>8</td> <td>420 – 480</td> <td>2100</td> </tr> <tr> <td>9-10</td> <td>480 - 600</td> <td>2500</td> </tr> </tbody> </table>	Number of persons	Average daily flow (litres)	Tank capacity (litres)	1-5	Up to 300	1500	6-7	300 – 420	1800	8	420 – 480	2100	9-10	480 - 600	2500	<table border="1"> <thead> <tr> <th>Number of persons</th> <th>Average daily flow (litres)</th> <th>Tank capacity (litres)</th> </tr> </thead> <tbody> <tr> <td>1-5</td> <td>Up to 300</td> <td>1500</td> </tr> <tr> <td>6-10</td> <td>300-600</td> <td>2500</td> </tr> </tbody> </table>	Number of persons	Average daily flow (litres)	Tank capacity (litres)	1-5	Up to 300	1500	6-10	300-600	2500
Number of persons	Average daily flow (litres)	Tank capacity (litres)																							
1-5	Up to 300	1500																							
6-7	300 – 420	1800																							
8	420 – 480	2100																							
9-10	480 - 600	2500																							
Number of persons	Average daily flow (litres)	Tank capacity (litres)																							
1-5	Up to 300	1500																							
6-10	300-600	2500																							

<b>Previous Version (January 2008)</b>	<b>Current Version (July 2008)</b>
<b>SECTION 2.18 DRAIN LAYING STANDARDS</b>	<b>SECTION 2.18 DRAIN LAYING STANDARDS</b>
<i>Section 2.18 Drain laying Standards, previously read as follows:</i>	<i>Section 2.18 Drain laying Standards, now reads as follows (changes are shown in bold):</i>
2.18 Drain laying Standards	2.18 Drain laying Standards
Regulation 15 (7)	Regulation 15 (7)
All drain laying shall be according to AS/NZS 3500 National plumbing and drainage code standards.	All drain laying shall be in accordance with the AS/NZS 3500 National plumbing and drainage code standards, and the <b>New Zealand Building Code E1 Surface Water and G13 Foul Water standards.</b>
<b>Previous Version (January 2008)</b>	<b>Current Version (July 2008)</b>
<b>SECTION 2.19 TREATMENT UNIT CATEGORIES AND EFFLUENT QUALITY STANDARDS</b>	<b>SECTION 2.19 TREATMENT UNIT CATEGORIES AND EFFLUENT QUALITY STANDARDS</b>



Section 2.19 Treatment Unit Categories and Effluent Quality Standards, previously read as follows:

### 2.19 Treatment Unit Categories and Effluent Quality Standards

#### Regulation 15 (4)

As a guide, raw sewage has a biochemical oxygen demand (BOD<sub>5</sub>) and Total Suspended Solids of TSS of 300 – 400 mg/litre and a faecal coliform count of  $10^{10}$ - $10^7$  cfu/100ml

Table 9: Treatment Unit Categories and Effluent Quality Standards

Treatment level	Effluent standards
Primary treatment	BOD <sub>5</sub> – 90% of samples taken over three test periods shall not exceed 180mg/litre and no sample shall exceed 200mg/litre TSS – 90% of samples taken over three test periods shall not exceed 80mg/litre and no sample shall exceed 100mg/litre FC – the median value shall be no more than $10^7$ cfu/100ml and no sample shall exceed $10^8$ cfu/100ml.
Secondary treatment	BOD <sub>5</sub> - 90% of samples taken over three test periods shall not exceed 20mg/litre and no sample shall exceed 30mg/litre TSS - 90% of samples taken over three test periods shall not exceed 30mg/litre and no sample shall exceed 45mg/litre. FC – Where disinfection is provided, the samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of 10 organisms per 100ml with 80% of the samples containing less than 20 organisms per 100ml and no sample exceeding 100 organisms per 100ml. Where disinfection is not provided, the samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of $10^4$ organisms per 100ml with 80% of the samples containing less than $10^5$ organisms per 100ml and no sample exceeding $10^6$ organisms per 100ml.

Section 2.19 Treatment Unit Categories and Effluent Quality Standards, now reads as follows (changes are shown in bold):

### 2.19 Treatment Unit Categories and Effluent Quality Standards

#### Regulation 15 (4)

As a guide, raw sewage has a biochemical oxygen demand (BOD<sub>5</sub>) and Total Suspended Solids of TSS of 300 – 400 mg/litre and a faecal coliform count of  $10^{10}$ - $10^7$  cfu/100ml

**Samples shall be collected over one test period consisting of three consecutive days during peak flow on each day (and in the case of visitor accommodation, during 75% to 100% capacity) as outlined in Section 2.10 “Testing Procedure” in this Sewage Code.**

Table 9: Treatment Unit Categories and Effluent Quality Standards

Treatment level	Effluent standards
Primary treatment	BOD <sub>5</sub> – 90% of samples shall not exceed 180mg/litre and no sample shall exceed 200mg/litre TSS – 90% of samples shall not exceed 80mg/litre and no sample shall exceed 100mg/litre FC – the median value shall be no more than $10^7$ cfu/100ml and no sample shall exceed $10^8$ cfu/100ml.
Secondary treatment	BOD <sub>5</sub> - 90% of samples shall not exceed 20mg/litre and no sample shall exceed 30mg/litre TSS - 90% of samples shall not exceed 30mg/litre and no sample shall exceed 45mg/litre. FC – Where disinfection is provided, the samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of 10 organisms per 100ml with 80% of the samples containing less than 20 organisms per 100ml and no sample exceeding 100 organisms per 100ml. Where disinfection is not provided, the samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of $10^4$ organisms per 100ml with 80% of the samples containing less than

	<p>TN - 90% of samples shall not exceed 40 mg/litre and no sample shall exceed 60 mg/litre Where chlorination is the disinfection process, the total chlorine concentration shall be greater than or equal to 0.5mg/litre in four out of five samples taken.</p>	<p><math>10^5</math> organisms per 100ml and no sample exceeding <math>10^6</math> organisms per 100ml. TN - 90% of samples shall not exceed 40 mg/litre and no sample shall exceed 60 mg/litre Where chlorination is the disinfection process, the total chlorine concentration shall be greater than or equal to 0.5mg/litre in four out of five samples taken.</p>
Advanced treatment	<p>BOD<sub>5</sub> -90% of samples taken over three test periods shall not exceed 10mg/litre and no sample shall exceed 20mg/litre TSS - 90% of samples taken over three test periods shall not exceed 10mg/litre and no sample shall exceed 20mg/litre FC - The samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of 10 organisms per 100ml with 80% of the samples containing less than 20 organisms per 100ml and no sample exceeding 100 organisms per 100ml. TN - 90% of samples taken over three test periods shall not exceed 15 mg/litre and no sample shall exceed 20 mg/litre TP -90% of samples taken over three test periods shall not exceed 10 mg/litre and no sample shall exceed 15mg/litre Where chlorination is the disinfection process, the total chlorine concentration shall be greater than or equal to 0.5mg/litre in four out of five samples taken.</p>	<p>BOD<sub>5</sub> -90% of samples shall not exceed 10mg/litre and no sample shall exceed 20mg/litre TSS - 90% of samples shall not exceed 10mg/litre and no sample shall exceed 20mg/litre FC - The samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of 10 organisms per 100ml with 80% of the samples containing less than 20 organisms per 100ml and no sample exceeding 100 organisms per 100ml. TN - 90% of samples shall not exceed 15 mg/litre and no sample shall exceed 20 mg/litre TP -90% of samples shall not exceed <b>5 mg/litre</b> and no sample shall exceed <b>10mg/litre</b> Where chlorination is the disinfection process, the total chlorine concentration shall be greater than or equal to 0.5mg/litre in four out of five samples taken.</p>
Advanced treatment	Advanced treatment	Advanced treatment

Previous Version (January 2008)	Current Version (July 2008)
<p align="center"><b>SECTION 4.1 REGISTER OF SANITARY PROFESSIONALS AND TECHNICIANS</b></p>	<p align="center"><b>SECTION 4:1 REGISTER OF SANITARY PROFESSIONALS AND TECHNICIANS</b></p>
<p><i>Section 4.1 Register of Sanitary Professionals and Technicians previously read as follows:</i></p>	<p><i>Section 4.1 Register of Sanitary Professionals and Technicians now reads as follows:</i></p>
<p><b>4.1 Register of Sanitary Professionals and Technicians</b></p>	<p><b>4.1 Register of Sanitary Professionals and Technicians – Regulation 7</b></p>
<p><b>4.1.1 Criteria for the Registration of Installers and Servicing Agents</b></p>	<p><b>4.1.1 Criteria for Installers and Servicing Agents</b></p>
<p>For the first year of implementation of the regulations, the criteria for the registration of installers and servicing agents shall be:</p>	<p>The registration of installers and servicing Agents shall not take effect until 1<sup>st</sup> October 2009. Until that time, the Sewage and Sanitation Board shall retain a list of Approved Installers and Servicing Agents who are qualified to install and service septic tanks and other sewage treatment systems.</p>
<p>A national certificate in plumbing or drainlaying from New Zealand or Australia or a qualification equivalent to the requirements set out by the Master Plumbers, Gasfitters and Drainlayers NZ Inc. Industry Training Organisation for a national certificate in plumbing and drainlaying. After the first year of implementation of the regulations, the criteria shall be:</p>	<p>The criteria for Approved Installers and Servicing Agents are:</p>
<p>Both a pass in the CET training programme, Category 3 and a national certificate in plumbing or drainlaying from New Zealand or Australia or a qualification equivalent to the requirements set out by the Master Plumbers, Gasfitters and Drainlayers NZ Inc Industry Training Organisation for a national certificate in plumbing and drainlaying.</p>	<p>1) A National Certificate in Drainlaying (Level 4) from an NZQA accredited institution* in New Zealand or a similar institution in Australia</p> <p>AND</p>
<p><b>4.1.2 Criteria for the Registration of Inspectors</b></p>	<p>2) At least two years of practical experience supervised by a drainlayer registered in New Zealand or Australia</p> <p>AND</p>
<p>For the first year of implementation of the regulations, the criteria for the registration of inspectors shall be:</p>	<p>3) Has completed a short course, set and approved by the Board, on the Public Health (Sewage) Regulations 2008 and the Public Health Sewage Code 2008 (the CET Sewage and Sanitation Course held in Rarotonga, Cook Islands 2006-2007 qualifies for this requirement)</p>
<p>Pass in the CET Sewage and Sanitation Course Category 1 AND</p>	<p><u>Discretionary Approval</u></p>
<p>Be able to demonstrate experience with and knowledge of the drainlaying and plumbing trade</p>	<p>Applicants who do not meet criteria 1) but who have a qualification in drainlaying from an institution outside of New Zealand or Australia may apply for discretionary approval. Applicants who do not meet criteria 2) and/or 3) may not be registered by the Sewage and Sanitation Board. Applications for discretionary approval are to include the following details:</p>
<p>After the first year of implementation of the regulations, the criteria shall be:</p>	<p>1) Name 2) Contact details 3) Formal qualification with full contact details of the institution certifying the qualification 4) Details of professional registration (type of license, license number, name and full</p>
<p>A pass in the CET Sewage and Sanitation Course Category 1 and a national certificate in plumbing or drainlaying from New Zealand or Australia or a qualification equivalent to the requirements set out by the Master Plumbers, Gasfitters and Drainlayers NZ Inc. Industry Training Organisation for a</p>	

<p>national certificate in plumbing and drainlaying.</p> <p><b>4.1.3 Criteria for the Registration of Designers</b></p> <p>Pass in the CET Sewage and Sanitation Course Category 2</p> <p>AND</p> <p>An appropriate engineering or applied science degree or diploma</p> <p><u>Exemptions:</u></p> <p>There will be some applicants who will consider that they have qualifications and experience in sanitation equivalent to, or of a higher standard than, the qualifications specified above.</p> <p>The Board will consider applications from such professionals and tradespeople. The applicant will be required submit details of the qualifications and experience. Applications should be made to:</p> <p>Sanitary Planner Ministry of Health PO Box 109 Rarotonga</p> <p>The application is to include the following details:</p> <p>Name Contact details Formal qualification with details of the institution certifying the qualification Details of professional registration Membership of professional and/or trade bodies Summary of experience in sanitation engineering Details of experience within the Cook Islands Contact details for three professional and/or industry referees</p> <p>The Board reserves the right to require the applicant to sit an assessment paper.</p>	<p>contact details of the authority issuing the license)</p> <ol style="list-style-type: none"> <li>5) Membership of professional and/or trade bodies (if any) and their full contact details</li> <li>6) Summary of experience in drain laying</li> <li>7) Details of experience within the Cook Islands (if any)</li> <li>8) Full contact details for three professional and/or industry referees</li> <li>9) Full contact details for three clients for jobs completed within the last three years</li> <li>10) Notarized copy of formal qualifications and birth certificate</li> </ol> <p>The Sewage and Sanitation Board reserves the right to require the applicant to sit an assessment paper and/or to have their work assessed by a New Zealand/Australian Registered drainlayer.</p> <p>A listing as an Approved Installer and/or Servicing Agent will become void upon 1<sup>st</sup> October 2009.</p> <p><b>Registration of Installers and Servicing Agents (Septic Tanks)</b></p> <p>After 1<sup>st</sup> October 2009, Public Health will only approve the installation of primary treatment systems (septic tanks) that are installed by Cook Islands Registered Installers of septic tanks. Furthermore, after 1<sup>st</sup> October 2009, only Cook Islands Registered Servicing Agents of primary treatment systems (septic tanks) will be permitted to service septic tanks. The criteria for Registered Installers and Servicing Agents of septic tanks are the same criteria used to determine Approved Installers and Servicing Agents (outlined in 1 – 3 above).</p> <p>Registration for installers and servicing agents of septic tanks who receive registration on or after 1<sup>st</sup> October 2009 will be valid until 1<sup>st</sup> October 2010. Thereafter, annual renewal of registration will be required and will be due on the 1<sup>st</sup> October of each year.</p> <p><b>Registration of Installers and Servicing Agents (Secondary/Advanced Sewage Treatment Systems)</b></p> <p>After 1<sup>st</sup> October 2009, Public Health will only approve the installation of Secondary/Advanced treatment systems that are installed by Cook Islands Registered Installers of Secondary/Advanced treatment systems. Furthermore, after 1<sup>st</sup> October 2009, only Cook Islands Registered Servicing Agents of Secondary/Advanced treatment systems will be permitted to service Secondary/Advanced treatment systems. The criteria for Registered Installers of</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Secondary/Advanced treatment systems are the same criteria used to determine Approved Installers and Servicing Agents (outlined in 1 – 3 above) with the ADDITIONAL criterion which shall be:

- 4) Has been trained and certified by the manufacturers of the Secondary/Advanced treatment system as an installer and servicing agent for the respective model of that treatment system.

Registration for installers and Servicing Agents of Secondary/Advanced treatment systems who receive registration on or after 1<sup>st</sup> October 2009 will be valid until 1<sup>st</sup> October 2010. Thereafter, annual renewal of registration will be required and will be due on the 1<sup>st</sup> October of each year.

\*accredited institutions which provide this qualification in New Zealand are:

Christchurch Polytechnic Institute of Technology  
UniTec New Zealand  
Waikato Institute of Technology  
Wellington Institute of Technology  
Plumbing, Gasfitting and Drainlaying ITO Ltd.

#### 4.1.2 Criteria for the Registration of Inspectors

Between 31<sup>st</sup> January 2008 and 1<sup>st</sup> October 2009, the criteria for the registration of inspectors are:

- 1) The applicant has obtained a pass in the exams for the CET Sewage and Sanitation Course Category 1

AND

- 2) The applicant has submitted at least one CET Stage 3 project and received a pass for that project

AND

- 3) The applicant is able to demonstrate experience with and knowledge of the drainlaying and plumbing trade

Registration for inspectors who are registered during this period will be valid for 12 months from the date of approval.

After 1<sup>st</sup> October 2009, the criteria for the registration of inspectors are:

- 1) The applicant has a pass in the CET Sewage and Sanitation Course Category 1

AND

- 2) The applicant has a Certificate for Drainlaying Theory Assessment from an NZQA accredited institution in New Zealand or an equivalent institution in Australia or a qualification equivalent to the requirements set out by the Master Plumbers, Gasfitters and Drainlayers NZ Inc. Industry Training Organisation for a Certificate for Drainlaying Theory Assessment.”

Registration for inspectors who are registered during this period will be valid for 12 months from the date of approval.

#### 4.1.3 Criteria for the Registration of Designers

Between 31<sup>st</sup> January 2008 and 1<sup>st</sup> October 2009, the criteria for the registration of designers are:

- 1) The applicant has obtained a pass in the exams for the CET Sewage and Sanitation Course Category 2

AND

- 2) The applicant has submitted at least one CET Stage 3 project and received a pass for that project

AND

- 3) The applicant has an appropriate engineering or applied science degree or diploma

Registration for designers who are registered during this period will be valid for 12 months from the date of approval.

After 1<sup>st</sup> October 2009, the criteria for the registration of designers are:

- 1) The applicant has obtained a pass in the CET Sewage and Sanitation Course Category 2

AND

- 2) The applicant has an appropriate engineering or applied science degree or diploma

Registration for designers who are registered during this period will be valid for 12 months from the date of approval.

#### Exemptions:

There will be some applicants who will consider that they have qualifications and experience in sanitation equivalent to, or of a higher standard than, the qualifications specified above.

The Board will consider applications from such professionals and tradespeople. The applicant will be required submit details of the qualifications and experience. Applications should be made to:

Health Planner (Sanitation)  
Ministry of Health  
PO Box 109  
Rarotonga

The application is to include the following details:

- 1) Name
- 2) Contact details
- 3) CET or similar course(s) attended including year and venue of each course
- 4) Any other formal qualification with details of the institution certifying the qualification
- 5) Details of professional registration, if any
- 6) Details of any membership of professional and/or trade bodies
- 7) Summary of experience in sanitation engineering
- 8) Details of experience within the Cook Islands
- 9) Contact details for three professional and/or industry referees

The Board reserves the right to require the applicant to sit an assessment paper.

## 1.0 Policies

### 1.1 Processing of Sewage Construction Permit Applications on Each Island

It is important that applications for sewage construction permits be made (as much as possible) on the island where the sewage system is being installed. This is because the approval process requires some knowledge of the site conditions such as soil permeability, baserock/impermeable layers of the soil profile, groundwater depth etc. Health Inspectors on each island will need to have a CI pass in the Sewage and Sanitation Course. For those islands where a CI pass hasn't been achieved, the application will need to be processed in Rarotonga. In addition, applications for Moderate Load and High Load systems are more complex and will require additional knowledge during the approval process. For this reason, applications for Moderate Load and High Load systems on all islands shall be made in Rarotonga in consultation with the Health Inspectors on the respective island.

### 1.2 Referenced Documents

The following documents are referenced in this code:

- a. Public Health (Sewage) Regulations 2008
- b. AS/NZS 1547:2000 On-site domestic-wastewater management
- c. AS/NZS 3500 National plumbing and drainage code
- d. New Zealand Building Code G13 Foul Water and E1 Surface Water
- e. AS/NZS 1546.1:2008 On-site domestic wastewater treatment units Part 1: Septic tanks
- f. AS/NZS 1546.2:2008 Waterless Composting Toilets
- g. AS/NZS 1546.3:2008 Aerated Wastewater Treatment Systems

Copies of documents listed in d. may be downloaded free from <http://www.dbh.govt.nz/building-code-compliance-documents#free-download>. Copies of documents b, c, e, f, g may be purchased at [www.standards.co.nz](http://www.standards.co.nz). Copies of the Public Health (Sewage) Regulations 2008 may be purchased from Parliament Services, Rarotonga, Cook Islands

## 2.0 Guidelines and Standards

### 2.1 Fees

#### 2.1.1 Application for a Sewage Construction Permit – Regulation 19 (2) (f)

Fees will cover the costs of a site visit prior to approval of the sewage construction permit, the assessment of the application and a site visit to inspect the system after it is connected and before it is covered. Moderate and High Load Systems will require additional expert assessment.

Low Load Systems:	\$55
Moderate Load Systems:	\$200
High Load Systems:	\$500

Should another site visit be needed, the owner will be required to submit an additional request for sewage system inspection and pay an additional fee.

Additional Requested Sewage System Inspection:	\$25
------------------------------------------------	------



## 2.2 Definition of Lagoon Protection Zone

### Regulation 3

The Lagoon Protection Zone is an area where higher standards of sewage treatment are needed to protect the coastal lagoon from sewage pollution.

The Lagoon Protection Zone on Rarotonga is located around the coast and is defined by those areas where the soil type is characterised as Koromiri soils, Muri soils, Muri soils stony phase, Vaikai soils and Vaikai soils mottled phase. Applications for Sewage Construction Permits on Vaikai Soils and Vaikai Soils mottled phase may frequently be declined due to the vulnerability of the sewage system to flooding in these zones.

The Lagoon Protection Zone on Aitutaki is located where the soil type is either category 1, 2, 5 or 6 as described in AS/NZS 1547:2000 .

For those properties where the boundary of the Lagoon Protection Zone cuts through the property, the location of the effluent land application area within that property shall determine whether or not the sewage system is located within the Lagoon Protection Zone. If the effluent land application area is within the Lagoon Protection Zone, then the sewage system shall follow the rules for sewage systems located within the Lagoon Protection Zone.

## 2.3 Land Information Memorandum (Drainage)

### Regulations 13 (1) and (2), 19 (5) (b) (iii)

The purpose of a Land Information Memorandum (Drainage) is to maintain information on every sewage system inspected after the commencement of the Regulations. This information is valuable for managing the regulation of sewage at the individual property level as well as at a greater scale such as the village level. The Public Health Department is responsible for maintaining the Land Information Memorandum (Drainage) for each property. Upon the sale or transfer of a property, a copy of the Land Information Memorandum (Drainage) is to be transferred from the previous owner to the new owner. Copies of Land Information Memorandum (Drainage) must be made available to the public upon request.

A Land Information Memorandum (Drainage) may include details such as the ownership of the system, type of system, date of installation, desludging record, capacity, design loading, plans of tanks, land application system and other fixtures, and seasonal high groundwater table depth in the effluent land application area, proximity to surface water, soil type at effluent land application area, post-treatment disposal method and any system maintenance contract pertaining to that system including results of tests and inspections conducted on that system.

## 2.4 Zone Implementation of the Regulations

The principles of AS/NZS 1547:2000 and the specifications described in Table 1 shall be used when designing a sewage system. In cases where the specifications in Table 1 are contradictory to the specifications in AS/NZS 1547:2000, the specifications in Table 1 shall override the specifications in AS/NZS 1547:2000.

Due to the density of development within Avarua town, Avarua town has been earmarked for the development of a sewerage system. For this reason, Table 1 shall apply to all areas of Rarotonga except for Avarua town (between the western side of Avatiu harbour and the eastern side of the National Auditorium, Library and Museum and between the back road of Avarua and seaward side of the foreshore). Persons owning properties within Avarua town shall meet standards in the Public Health Sewage Regulations and Public Health Sewage Code as closely as is practicable.

Table 1: Zone Implementation of the Regulations

## Stage 1 (first 3 years of implementation of Regulations)

	Wastewater system load		
	Low load <2000L/day	Moderate load 2,000 to 10,000 litres per day	High load >10,000 litres per day
Lagoon protection zone LPZ	<p><b>Existing</b> Over the next 3 years retrofit septic tanks with approved septic tank filters during maintenance and inspections.</p> <p><b>New, failed<sup>1</sup> or alteration to existing buildings:</b></p> <ul style="list-style-type: none"> <li>• Primary treatment with septic tank filter or better.</li> <li>• Soak pits prohibited</li> <li>• Dose loading to land application system.</li> <li>• Land application to trench or mound with loading rates in accordance with AS/NZS 1547:2000</li> <li>• For those choosing secondary treatment, subsurface irrigation is permitted with DIR to be less than 8 mm/day</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu/100mls at 1 m below point of entry to land.</li> <li>• No surface ponding or liquid breakout</li> <li>• No odours</li> <li>• Must meet required setbacks as in code</li> </ul>	<p><b>Existing</b> By the 3<sup>rd</sup> year start upgrading to advanced treatment levels</p> <ul style="list-style-type: none"> <li>• with land application to achieve &lt; 1000FC cfu at 1m below point of entry to land.</li> <li>• &gt;50% TN removal 1m below the point of entry to land, within 3 years</li> </ul> <p><b>New, failed or alteration to existing</b></p> <ul style="list-style-type: none"> <li>• Advanced treatment</li> <li>• Land application to trench or mound with loading rate less than 50mm/day</li> <li>• Land application to subsurface irrigation to be less than 8 mm/day</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu/100ml at 1 m below point of entry to land.</li> <li>• 50% TN removal 1 m below point of entry to land.</li> <li>• No odours</li> <li>• No surface ponding</li> <li>• Must meet required setbacks as in code</li> </ul> <p><u>Monitoring</u></p> <ul style="list-style-type: none"> <li>• Monitor and submit flow data as in Reg. 28(2)</li> <li>• Performance monitoring as in Reg. 30 beginning 3 years from commencement of regulations</li> </ul>	<p><b>Existing</b> Over the next 3 years, upgrade to advanced treatment levels with land application to achieve</p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 1 m below point of discharge</li> <li>• &gt;50% TN removal 1 m below the point of entry to land, within 2 years.</li> </ul> <p><b>New, failed or alteration to existing</b></p> <ul style="list-style-type: none"> <li>• Advanced treatment</li> <li>• Land application to trench or mound with loading rate less than 50mm/day</li> <li>• Land application to subsurface irrigation to be less than 8 mm/day</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu/100mls at 1 m below point of entry to land.</li> <li>• 75% TN removal 1 m below point of entry to land.</li> <li>• 50% TP removal 1m below point of entry to land</li> <li>• No odours</li> <li>• No surface ponding</li> <li>• Must meet required setbacks as in code.</li> </ul> <p><u>Monitoring</u></p> <ul style="list-style-type: none"> <li>• Monitor and submit flow data as in Reg 28(2)</li> <li>• Performance monitoring as in Reg 30 beginning 3 years from commencement of regulations</li> <li>• Provide implementation</li> </ul>

			and facility plans (Reg 16)
<b>Note 1:</b> Within the next 3 years, all property owners (including those with an existing system) are to be provided with user friendly operators manual, appropriate to their system type.			
<b>Note 2:</b> <i>Failed</i> means any system that repeatedly results in any of the following failure modes: system blockages, flooding, ponding, health risk, nuisance odours and/or significant ecosystem damage.			

	Wastewater system load		
	Low load <2000L/day	Moderate load 2,000 to 10,000 litres per day	High load >10,000 litres per day
Outside LPZ., sandy soils	<p><b>Existing</b> Over the next 3 years retrofit septic tanks with approved septic tank filters during maintenance and inspections</p> <p><b>New, failed or alterations to existing buildings:</b></p> <ul style="list-style-type: none"> <li>• Primary treatment with septic tank filter or better.</li> <li>• Soak pits permitted if groundwater is greater than 6 m below ground level</li> <li>• Dose loading to land application system.</li> <li>• Land application to trench, mound with loading rate less than 50mm/day</li> <li>• For those choosing secondary treatment, subsurface irrigation is permitted with DIR to be less than 8 mm/day</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 900mm below point of discharge.</li> <li>• No surface ponding or liquid breakout</li> <li>• No odours</li> <li>• Must meet required setbacks as in code unless land area is limited in which case a higher level of treatment is required</li> </ul>	<p><b>Existing</b> Over the next 3 years upgrade to advanced treatment levels with land application to achieve</p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 1 m below point of entry to land.</li> </ul> <p><b>New, failed or alteration to existing</b></p> <ul style="list-style-type: none"> <li>• Advanced treatment</li> <li>• Land application to trench or mound with loading rate less than 50mm/day</li> <li>• Land application to subsurface irrigation to be less than 8 mm/day</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 1 m below point of entry to land.</li> <li>• 50% TN removal 1 m below point of entry to land.</li> <li>• No odours</li> <li>• No surface ponding</li> <li>• Must meet required setbacks as in code</li> </ul> <p><u>Monitoring</u></p> <ul style="list-style-type: none"> <li>• Monitor and submit flow data as in Reg 28(2)</li> <li>• Performance monitoring as in Reg 3 beginning 3 years from commencement of regulations</li> </ul>	<p><b>Existing</b> Over the next 3 years, upgrade to advanced treatment levels with land application to achieve</p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 900mm below point of discharge</li> <li>• 50% TN removal 900 mm below the point of entry to land within 3 years</li> </ul> <p><b>New, failed or alteration to existing</b></p> <ul style="list-style-type: none"> <li>• Advanced treatment</li> <li>• Land application to trench or mound with loading rate less than 50mm/day</li> <li>• Land application to subsurface irrigation to be less than 8 mm/day</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 1 m below point of entry to land.</li> <li>• 75% TN removal 1 m below point of entry to land.</li> <li>• 50% TP removal 1 m below point of entry to land.</li> <li>• No odours</li> <li>• No surface ponding</li> <li>• Must meet required setbacks as in code</li> <li>• Provide implementation and facility plans (Reg 16)</li> </ul> <p><u>Monitoring</u></p> <ul style="list-style-type: none"> <li>• Monitor and submit flow data as in Reg 28(2)</li> </ul>

			<ul style="list-style-type: none"> <li>Performance monitoring as in Reg 3 beginning 3 years from commencement of regulations</li> </ul>
<p><b>Note 1:</b> Within the next 3 years, all property owners (including those with an existing system) are to be provided with user friendly operators manual, appropriate to their system type.</p>			
<p><b>Note 2:</b> <i>Failed</i> means any system that repeatedly results in any of the following failure modes: system blockages</p>			

	Low load <2000L/day	Moderate load 2,000 to 10,000 litres per day	High load >10,000 litres per day
Outside LPZ. With moderately draining soils	<p><b>Existing</b> Over the next 3 years retrofit septic tanks with approved septic tank filters during maintenance and inspections.</p> <p><b>New, failed or alterations to existing buildings:</b></p> <ul style="list-style-type: none"> <li>Primary treatment with septic tank filter or better.</li> <li>Soak pits subject to hydraulic soakage testing.</li> <li>Land application to trench, mound or ET bed with loading rate in accord with AS/NZS 1547 criteria.</li> <li>For those choosing secondary treatment, subsurface irrigation is permitted with DIR to be less than 4 mm/day.</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>&lt; 1000FC cfu/100ml at 1 m below point of entry to land.</li> <li>No surface ponding or liquid breakout</li> <li>No odours</li> <li>Must meet required setbacks as in code unless land area is limited in which case a higher level of treatment is required</li> </ul>	<p><b>Existing</b> Over the next 3 years upgrade to advanced treatment levels with land application to achieve:</p> <ul style="list-style-type: none"> <li>&lt; 1000FC cfu at 1 m below point of entry to land.</li> </ul> <p><b>New, failed or alteration to existing</b></p> <ul style="list-style-type: none"> <li>Advanced treatment</li> <li>Land application to trench, mound or ET bed with loading rate in accord with AS/NZS 1547 criteria.</li> <li>Subsurface irrigation is permitted with DIR to be less than 4 mm/day.</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>&lt; 1000FC cfu at 1 m below point of entry to land.</li> <li>50% TN removal 1000 mm below the point of entry,</li> <li>No odours</li> <li>No surface ponding</li> <li>Must meet required setbacks as in code</li> </ul> <p><u>Monitoring</u></p> <ul style="list-style-type: none"> <li>Monitor and submit flow data as in Reg 28(2)</li> <li>Performance monitoring as in Reg 3 beginning 3 years from</li> </ul>	<p><b>Existing</b> Over the next 3 years, upgrade to advanced treatment levels with land application to achieve</p> <ul style="list-style-type: none"> <li>&lt; 1000FC cfu at 1 m below point of entry to land.</li> <li>50% TN removal 1 m below point of entry to land.</li> </ul> <p><b>New, failed or alteration to existing</b></p> <ul style="list-style-type: none"> <li>Advanced treatment</li> <li>Land application to trench, mound or ET bed with loading rate in accord with AS/NZS 1547 criteria.</li> <li>Subsurface irrigation is permitted with DIR to be less than 4 mm/day</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>&lt; 1000FC cfu at 1 m below point of entry to land.</li> <li>75% TN removal 1 m below point of entry to land.</li> <li>50% TP removal 11 m below point of entry to land.</li> <li>No odours</li> <li>No surface ponding</li> <li>Must meet required setbacks as in code.</li> <li>Provide implementation and facility plans (Reg 16)</li> </ul>

		commencement of regulations	<u>Monitoring</u> <ul style="list-style-type: none"> <li>• Monitor and submit flow data as in Reg 28(2)</li> <li>• Performance monitoring as in Reg 3 beginning 3 years from commencement of regulations</li> </ul>
<p><b>Note 1:</b> Within the next 3 years, all property owners (including those with an existing system) are to be provided with user friendly operators manual, appropriate to their system type.</p>			
<p><b>Note 2:</b> Failed means any system that repeatedly results in any of the following failure modes: system blockages</p>			
	<b>Low load</b> <2000L/day	<b>Moderate load</b> 2,000 to 10,000 litres per day	<b>High load</b> >10,000 litres per day
<b>Outside LPZ with poorly draining soils</b>	<p><b>Existing</b> Over the next 3 years retrofit septic tanks with approved septic tank filters during maintenance and inspections.</p> <p><b>New, failed or alterations to existing buildings:</b></p> <ul style="list-style-type: none"> <li>• Primary treatment with septic tank filter or better.</li> <li>• Soak pits prohibited</li> <li>• Land application to trench, mound or ET bed with loading rate in accord with AS/NZS 1547 criteria.</li> <li>• For those choosing secondary treatment, subsurface irrigation is permitted with DIR to be less than 3 mm/day.</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 900mm below point of discharge.</li> <li>• No surface ponding or liquid breakout</li> <li>• No odours</li> <li>• Must meet required setbacks as in code unless land area is limited in which case a higher level of treatment is required</li> </ul>	<p><b>Existing</b> Over the next 3 years upgrade to advanced treatment levels with land application to achieve:</p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 1 m below point of point of entry to land.</li> </ul> <p><b>New, failed or alteration to existing</b></p> <ul style="list-style-type: none"> <li>• Advanced treatment</li> <li>• Land application to trench, mound or ET bed with loading rate in accord with AS/NZS 1547 criteria.</li> <li>• Subsurface irrigation is permitted with DIR to be less than 3 mm/day.</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 1 m below point of point of entry to land.</li> <li>• 50% TN removal 1 m below point of point of entry to land.</li> <li>• No odours</li> <li>• No surface ponding</li> <li>• Must meet required setbacks as in code</li> </ul> <p><u>Monitoring</u></p> <ul style="list-style-type: none"> <li>• Monitor and submit flow data as in Reg 28(2)</li> </ul>	<p><b>Existing</b> Over the next 3 years, upgrade to advanced treatment levels with land application to achieve</p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 1 m below point of point of entry to land.</li> <li>• 50% TN removal 1 m below point of point of entry to land.</li> </ul> <p><b>New, failed or alteration to existing</b></p> <ul style="list-style-type: none"> <li>• Advanced treatment</li> <li>• Land application to trench, mound or ET bed with loading rate in accord with AS/NZS 1547 criteria.</li> <li>• Subsurface irrigation is permitted with DIR to be less than 3 mm/day</li> </ul> <p><u>Land application performance criteria</u></p> <ul style="list-style-type: none"> <li>• &lt; 1000FC cfu at 1 m below point of point of entry to land.</li> <li>• 75% TN removal 1 m below point of point of entry to land.</li> <li>• 50% TP removal 1 m below point of point of entry to land.</li> <li>• No odours</li> <li>• No surface ponding</li> <li>• Must meet required setbacks as in code</li> </ul>

		<ul style="list-style-type: none"> <li>Performance monitoring as in Reg 3 beginning 3 years from commencement of regulations</li> </ul>	<ul style="list-style-type: none"> <li>Provide implementation and facility plans (Reg 16)</li> </ul> <p><u>Monitoring</u></p> <ul style="list-style-type: none"> <li>Monitor and submit flow data as in Reg 28(2)</li> <li>Performance monitoring as in Reg 3 beginning 3 years from commencement of regulations</li> </ul>
--	--	-----------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Note 1:** Within the next 3 years, all property owners (including those with an existing system) are to be provided with user friendly operators manual, appropriate to their system type.

**Note 2:** *Failed* means any system that repeatedly results in any of the following failure modes: system blockages, flooding, ponding, health risk, nuisance odours and/or significant ecosystem damage.

### 2.5 Alternative wastewater management systems

There may be proposals that depart from the specification above. For example; stream separation systems (such as greywater, blackwater, urine), dry systems such as composting toilets and greywater treatment using constructed wetlands. These will be admissible to the Board, as special cases, for approval and will be assessed against the following criteria:

Applicants will be required to clearly demonstrate the following, using scientific evidence and principles, and in the context of Cook Islands social and biophysical conditions

- Site conditions for example:
  - Is the proposal within the lagoon protection zone? – more stringent performance criteria will be imposed.
  - Is the proposal site on free draining soils with high water table?
  - Is the proposal on poorly draining soils?
- Very low health risk to users, neighbours, community, lagoon users over the life of the service.
- Very low risk of impact on connected land and water ecosystems in terms of ecosystem goods, services, and products and integrity of habitats over the life of the service
- Very low risk of nuisance factors, over the life of the service, such as
  - Odours
  - Noise
  - Visual
- Efficient resource use, particularly energy.
- System resilience to variable loading (i.e. variable daily/seasonal quality and quantity)
- Affordability, including annual costs over the life of the system

Additionally the application should, where appropriate, be supported with the following documentation

- System specifications including system capacity (average and short-term peak loading)
- Scaled drawing of system
- Test performance results (preferably from an independent and certified testing agency)
- Independent system certification by an approved agency:
- Operator/owner manual
- Servicing and maintenance manual
- Warranty details
- Designer producer statement
- List of 3 to 4 referees

systems will be required to meet required setbacks as specified in the Code

for moderate and high load systems

Monitor and submit flow data as in Regulation 28(2)

Performance monitoring as in Regulation 30

## 6 Septic Tank Capacities (litres)

### 6.1 FOR 1 – 10 PERSONS

#### *All-Waste Septic Tank Capacities*

The minimum capacity tank for any all-waste domestic wastewater on-site application is recommended to be 4500 litres. This provides for approximately a 24-hour settling volume for a daily flow of up to 2000 litres from an equivalent population of up to 10 persons, and 2500 litres scum-and sludge-storage capacity providing for a maximum interval prior to desludging/pumpout of 3 years. A 5-year desludging/pumpout interval would require a 6000 litre tank.

Tank capacities are shown in Table 2.

**Table 2: All-Waste Sept Tank Capacities**

Number of persons	Average daily flow (litres)	Tank capacity (litres)
1-10	Up to 2000	4500

#### *Greywater Septic Tank Capacities*

The minimum capacity tank for any domestic greywater on-site application is recommended to be 1800 litres.

The 1800 litre greywater tank allows for approximately a 24-hour settling volume plus an allowance of 8 hours hydraulic buffering volume for the daily greywater flows from 5 persons. About 1000 litres capacity is allowed for sludge and scum accumulation over a 5-year period.

Minimum sizes are given in Table 3.

**Table 3: Greywater Septic Tank Capacities**

Number of Persons	Average daily flow (litres)	Tank capacity (litres)
1-5	Up to 600	1800
6-10	600-1200	2700

*Blackwater Septic Tank Capacities*

The minimum capacity tank for any domestic blackwater on-site application is recommended to be 1500 litres.

The 1500 litre blackwater tank allows for approximately a 24-hour settling volume for the daily water-closet flows of 5 persons. About 1200 litres capacity is allowed for scum and sludge accumulation over a 5-year period.

Minimum sizes are given in Table 4.

**Table 4: Blackwater Septic Tank Capacities**

Number of persons	Average daily flow (litres)	Tank capacity (litres)
1-5	Up to 300	1500
6-10	300-600	2500

### 2.6.2 FOR 11-20 PERSONS

For 11-20 persons (inclusive), the capacity C of a septic tank shall be determined by the following formula provided that the total flow does not exceed 2,000 litres/day on any day:

$$C = (P \times A) + 2000 \text{ litres}$$

Where P = the number of persons to be served and A = the daily wastewater flow allowance in litres/person/day as outlined in Table 5 "Wastewater Flow Design Allowances"

### 2.6.3 FOR MORE THAN 20 PERSONS

If the flow is calculated to be more than 2,000 litres per day, primary treatment and then drainage to a land application system is not permitted. Advanced treatment is required for flows of more than 2,000 litres per day.

## 2.7 Sludge Removal

### 2.7.1 Frequency of desludging – Regulation 33 (1)

Septic tanks should be desludged either

- (a) Every three to five years OR
- (b) When the scum layer (layer of crust on top) comes down to within 100mm of the bottom of the tee junction or filter at outlet OR
- (c) When the sludge (build up of material on bottom of tank) and scum have accumulated to the extent that the scum and sludge take up 2/3 of the volume of the tank's first chamber

whichever occurs first.

### 2.7.2 Sludge Removal Reports – Regulation 33 (2)

A sludge removal contractor shall submit a sludge removal report to the Public Health Department within 30 days of desludging a septic tank.

An example of a Sludge Removal Report is shown in the Appendix.



**2.8 Sewage Flow Reporting****2.8.1 Moderate Load System – Regulation 28 (2)**

The owner of a Moderate Load System shall submit data on sewage flow to the Public Health Department on an annual basis. A graph of the daily volume of sewage produced on the property for that year shall be included in the sewage flow report.

**2.8.2 High Load System – Regulation 28 (2)**

The owner of a High Load System shall submit data on sewage flow to the Public Health Department on an annual basis. A graph of the daily volume of sewage produced on the property for that year shall be included in the sewage flow report.

**2.9 Sampling Frequencies****2.9.1 Moderate Load Systems – Regulation 30 (2)**

Beginning three years after the date of commencement of the regulations, and at a frequency of once every three years the owner of a Moderate Load System shall sample effluent from their sewage system in the manner described in 2.10 below and have the samples tested in an accredited laboratory for BOD<sub>5</sub> (mg/l), TSS (mg/l), FC (cfu/100ml), TN (mg/l), TP (mg/l).

**2.9.2 High Load Systems – Regulation 30 (2)**

Beginning three years after the date of commencement of the regulations, and at a frequency of once every three years the owner of a High Load System shall sample effluent from their sewage system in the manner described in 2.10 below and have the samples tested in an accredited laboratory for BOD<sub>5</sub> (mg/l), TSS (mg/l), FC (cfu/100ml), TN (mg/l), TP (mg/l).

**2.10 Testing Procedure**

1. The sewage system shall be assembled, installed and operated in accordance with the manufacturer's instructions. Prior to testing, a certified and registered servicing agent shall inspect the sewage system to ensure it is operating as it should.
2. The raw influent shall not be pre-treated by chemical addition and as a guideline should have the characteristics as set out in the table below:

Table 5: Characteristics of raw influent

Component	Characteristic
BOD <sub>5</sub>	150-300 mg/litre
TSS	150-300 mg/litre
Total nitrogen	20-100 mg/litre
Total phosphorus	6-25 mg/litre

3. There shall be two testing periods:

Test period 1: before the primary treatment chamber is desludged

Test period 2: nine weeks after test period 1

4. The hourly flow rate shall be recorded in litres per hour. A higher flow rate is expected between 6am and 11am and 6pm and 9pm.

5. The tests required are as follows:

- (a) Raw wastewater: BOD<sub>5</sub>, TSS, TN, TP
- (b) During test period: BOD<sub>5</sub>, TSS, FC, DO, disinfectant levels (if applicable)
- (c) TN and TP
- (d) Ambient temperature and liquid temperature inside the secondary treatment tank or chamber

6. Sampling points are as follows:

- (a) Samples for BOD<sub>5</sub>, TSS shall be taken from the disinfection/irrigation chamber
- (b) The final effluent samples for FC and disinfectant levels (if applicable) shall be taken from the outlet of the treatment unit
- (c) Samples for DO shall be taken from the aeration chamber (if applicable)

7. The samples shall be transported to an accredited laboratory for analysis within 24 hours of sampling.

8. Samples are to be analysed in accordance with a method specified in one of the following texts or references:

- (a) Standards Methods for Examination of Water and Wastewater, 18<sup>th</sup> edition (1992), or more recent editions or supplements as they become available;
- (b) Relevant Australian Standards published by Standards Australia, as amended or varied from time to time or other method that has been demonstrated to provide equivalent results;
- (c) Relevant New Zealand Standards published by Standards New Zealand as amended or varied from time to time

9. The effluent compliance criteria are given in Table 9.

10. Test Period Procedure

For three days the following tests shall be performed under the supervision of a Sanitary Inspector during peak flow (normally peak flow is between 6am and 11am and between 6pm and 9pm) and again during the lowest flow period of daylight hours.

Table 6: Test Period Procedure

Time interval	Action
00 min	Adjust flow to 30 litres/person/HOUR
30 min	Sample for BOD <sub>5</sub> , TSS, FC and measure DO and disinfectant
60 min	Sample for BOD <sub>5</sub> , TSS, FC and measure

	DO and disinfectant
90 min	Sample for BOD <sub>5</sub> , TSS, FC and measure DO and disinfectant
120 min	Sample for BOD <sub>5</sub> , TSS, FC and measure DO and disinfectant, and then adjust flow to 600 litres/hour
150 min	Measure disinfectant, and FC and adjust to normal flow

### 2.11 Wastewater Flow Design Allowances

The occupancy allowances and design flow allowances for wastewater flow design shown in Tables 7 and 8 are adapted from Chapter Six of the Auckland Regional Council Technical Publication 58 (TP58). The occupancy allowances and design flow allowances in AS/NZS 1547:2000 shall not apply in the Cook Islands.

**Table 7: Occupancy Allowances**

Facility	Occupancy for Design Purposes
Homes	
Number of Bedrooms (Notes 1,2 & 3)	
1	2
2	4
3	5
4	6
5	8
6	9
Hotels and Motels	
Guests	Maximum Occupancy/Number of beds
Staff	Maximum Staff
Hospitals (Note 4)	
Patients	1 per bed (Note 3)
Staff	Maximum Number of Staff
<b>Notes:</b>	
1. It is usual to adopt a minimum occupancy of 4 persons (equivalent to a 2 bedroom dwelling) for existing rural residential cluster developments.	
2. In situations where large modern dwellings are proposed which have additional rooms beyond those allocated as dining, lounge, bedrooms, (e.g. "family", "recreation", "games", "office", "study", "sewing", "work" rooms) which could have potential to be utilised as bedrooms with different furnishings, an additional occupancy allowance is to be made on the basis of 1 extra person times the ratio of the total floor area of the additional room(s) to that of the smallest designated bedroom and rounded up to the next whole number.	
3. Design occupancy should allow for a seasonal peak, not just the average daily flow. Holiday homes tend to have intermittent occupancy but when occupied are likely to have a higher occupancy than a continuously occupied dwelling. An allowance in design occupancy should be made for the seasonally higher flows.	
4. Occupancy data in this table is from the literature and observed levels. A higher water use/person should be allowed in facilities providing community care unless specific water meter data is available.	
5. In the event that the designer does not design for the predicted flow from the full potential occupancy, it will be necessary to record wastewater discharge flows and submit to Public Health.	

Table 8: Wastewater Flow Allowances – Per Capita

Source	Typical Wastewater Flow Allowance	
	Litres/Person/Day (Note 1 and Note 2)	
	On-site Roof Water Tank Supply	Reticulated Community or Bore Water Supply
Flow Allowances		
<b>A. Upmarket Luxury Households with Extra Wastewater producing fixtures</b> including fixtures such as garbage grinders, dishwashers, modern shower or bath facilities or other comparable fixtures	220	220
<b>B. Households with Standard Fixtures</b> including 11litre flush water cisterns; automatic washing machine and dishwasher [Note 5]	180-200	200
<b>C. Households with 11/5.5 or 6/3 Flush Toilet(s) and Standard Fixtures</b> , low water use dishwasher and NO garbage grinder [Note 6]	160	180
<b>I. Households – Black water Only</b> (Based on an 11litre flush toilet) [Note 7]		66
<b>J. Households – Black water Only</b> (Based on a 11/5.5 flush toilet)		45
<b>K. Households – Black water Only</b> (Based on a 6/3 flush toilet)		25
<b>L. Households – Grey water Only</b> (with Extra Water Reduction Fixtures) [Note 8]	95 to 100	100 to 115
Commercial Flow Allowances for Standard Fixtures		
<b>Motels/Hotels</b> [Note 9]		
- Guests, resident staff		220
- Reception rooms		30
- Bar trade (per customer)		15 to 20
- Restaurant (per diner)		30
<b>Restaurant/Bar/Cafe</b> [Note 10]		
- Per dinner patron		30
- Per lunch patron		25
- Per bar patron		15 to 20
<b>Lunch Bar</b> (per customer)		
- Without restroom facilities	10	15
- With restroom facilities	15	25
<b>Community Halls</b>		
- Banqueting	20	30
- Meetings	10	15
<b>Hostels</b> [Note 11]		
- Day only visitors		40
- Day plus overnight visitors		150
<b>Schools</b> (pupils plus staff) [Note 12]	12 to 15	15 to 20
<b>Public Toilets</b> (including hand	10 – 20	10 – 20

wash) [Note 13]		
<b>Camping Grounds</b> [Note 14]		
- Fully serviced	100	130
- Recreation areas	50	65
<b>Rest Homes/Hospitals</b> [Note 15]	220	250
<b>Retirement Home</b>		
- Per Resident [Note 15]	200	220
- Per Day Staff	40	50
<b>Day Staff</b>		
- High Water Usage e.g. some factories [Note 16]		60
- For ALL Standard Facilities (above)		40

**Notes:**

1. These flows are recommended **minimums** for design purposes (unless actual comprehensive water usage/flow records along with actual occupancy numbers are available). In some instances ranges of design flow rates are provided to reflect the inherent uncertainty associated with actual per capita wastewater production.
  2. Where a site is reliant on water supply being supplemented by water tanker, the design flow allowances based on reticulated water supply must be applied.
  3. Use of the following household flow allowances apply to on-site system designs for dwellings with special approval from the Sewage and Sanitation Board.
  4. Extra Wastewater producing fixtures include fixtures such as garbage grinders; dishwashers, modern shower or bath facilities or other comparable fixtures.
  5. These include 11litre flush water cisterns; automatic washing machine and dishwasher. No garbage grinder unless other water saving measures such as low flush 6/3litre toilet cisterns.
  6. Standard Fixtures include dual flush 11/5.5 or 6/3litre toilet cisterns, and includes standard automatic washing machine, but a low water use dishwasher, no garbage grinder.
  7. Flow rates to be applied where only the blackwater from toilets is to be treated and discharged to land disposal.
  8. Flow rates to be applied where only the greywater is to be treated and discharged to land disposal. The lower design flow is only to be applied where there is no bath. Applicable where solids from kitchen and toilet waste flows are excluded from the wastewater stream. For households with low water use facilities in accordance with Note 6, the lower end of the range applies; for standard household domestic facilities, the higher range applies [see Note 8].
- \* At the time of printing, trade names of effective FOFC devices include Trident and Jemflow**
9. Evidence does not support lower water usage by staff or guests of commercial premises, so no differentiation is made to the flow allowances according to the water supply source. Some reduction (up to 25%) may apply to the per guest water usage allowance if laundry, is undertaken off-site.
  10. Evidence does not support lower water usage between roof water and reticulated water supplies usage by staff or guests of commercial premises, so no differentiation is made to the flow allowances according to the water supply source. For bar patrons, it is assumed that there is minimal if any food served, other than odd bar snacks. Where meals are served, meal water usage allocations apply per patron. In bar facilities, where water full reduction fixtures are installed on all water usage outlets and patrons are only present for short periods, a water usage allowance of 10litres per person may be appropriate.
  11. Assumes that lunches and lunch/dinners will be served, and that overnight visitors have access to showers but not to laundry facilities. Water meter readings should be installed to provide added certainty to the accuracy in the design flow allowance. The designer should be aware that water conservation measures installed in commercial premises eg; bars, restaurants may not provide the same level of savings as achieved by domestic uses. Unless specific metered water consumption

information is available conservative flow allowances should be applied

12. Based upon experience in the Auckland area, these values for schools are conservative. Recorded flows appear to be up to 15litres/person/day on rainwater tank supply, and 15 to 20 litres/person/day on community or borewater supply. For design purposes, figures from the lower end of the range should be supported by actual water usage records otherwise the higher figure should be used. Additional allowances also need to be made in the design flows for schools that also have cafeterias (with on-site catering) and/or gyms with shower facilities.

13. For low water use toilets with 6/3litre flush cisterns, standard public facilities, the lower end of the range applies; for modern upmarket toilet facilities, the higher range applies.

14. Recreation areas with no showers or communal cooking facilities.

15. Flow allowances for individual dwellings within a retirement village may be based on the recommended flow allowances for households or alternatively on flow meter rates where these are available. Where extra care facilities are provided the actual per capita rates will be higher than standard rates provided and a conservative design allowance should be applied.

16. Increased water usage allowances are appropriate where staff activities likely to involve regular cleaning of themselves and/or the facilities e.g. rural food preparation factory. Where staff are likely to use showers, the designer should consider all the activities being undertaken by staff and rates higher than 60litres per person per day may apply.

## 2.12 Classification of Buildings

### Regulation 25 (4)

An understanding of the nature of wastewater from a particular building can be gained by collecting information on the type of building that the sewage system will serve. This information can also help to manage situations where a sewage system is designed for one particular class of building but the use of the building is later changed and the sewage system can no longer cope with the new wastewater flow (for example converting a residential house into a restaurant). Under the Public Health (Sewage) Regulations 2008, no person shall change the use of their building in such a way that the new use will result in additional sewage flow without the permission of the Public Health Department (Regulation 25 (2) ). A person is changing the use of a building when the new use will result in the placement of the building in a different class. Therefore, during the application process for a Sewage Construction Permit or Sewage System Modification Permit, every building that is served by a sewage system must be declared as being of a particular class or combination of classes. Classes of use are as follows:

- A Residential House
- B Tourist Accommodation Rental
- C Long Term Accommodation Rental
- D Office
- E Bar
- F Restaurant/Cafe
- G School
- H Factory
- I Public toilet
- J Service station
- K Retail store
- L Laundry
- M Gymnasium
- N Laboratory
- O Hospital
- P Health Clinic
- Q Entertainment centre
- R Church
- S Community hall

### 2.13 Positioning of the Land Application System

The Land Application System shall be positioned:

- (i) to maximize the distance between the outlets of the land application system and the seasonal high ground water table;
- (ii) to ensure there will be an adequate area of ground with the appropriate soil type for the effluent land application area and reserve area when required;
- (iii) to ensure there will be no restrictive soil horizon below the land application system;
- (iv) to ensure there will be no barrier to horizontal soil soakage.

### 2.14 Soil Classification

Soils are to be assessed and categorized as specified in AS/NZS1547 4.1 A-F

### 2.15 Appearance and Feeling of Various Soil Textural Classes

**Table 8: Appearance and Feeling of Various Soil Textural Classes**

Soil Textural Class	Appearance and Feeling	
	Dry Soil	Moist Soil
Sand	Loose, single grains which feel gritty. Squeezed in the hand, the soil mass falls apart when the pressure is released.	Squeezed in the hand it forms a cast which crumbles when lightly touched. Does not form a ribbon between thumb and forefinger.
Loamy Sand	Loose, single grains, which feel gritty but enough fine particles to stain fingerprints in the palm of hand.	Squeezed in the hand. It forms a cast that crumble when touched and only bears very careful handling.
Sandy Loam	Aggregates are easily crushed. Very faint, velvety feeling initially, but as rubbing is continued; the gritty feeling of sand soon dominates.	Forms a cast that bears careful handling without breaking. Doesn't form a ribbon between thumb and forefinger.
Loam	Aggregates are crushed under moderate pressure; clods can be quite firm. When pulverised, loam has a velvety feel that becomes gritty with continued rubbing.	Cast can be handled quite freely without breaking. Slight tendency to ribbon between thumb and forefinger. Rubbed surface is rough,
Silt Loam	Aggregates are firm but may be crushed under moderate pressure. Clods are firm to hard. Smooth, flour-like feel dominates when soil is pulverised.	Cast can be freely handled without breaking. Slight tendency to ribbon between thumb and forefinger. Rubbed surface has a broken or rippled appearance.
Silty Clay Loam	Aggregates are very firm. Clods are hard to very hard.	Cast can be handled very firmly without breaking. Tendency to ribbon between thumb and forefinger with some flaking, greasy feeling, moderately sticky.
Silty Clay		Squeezed with proper moisture content into a long ribbon; sticky feel.

### 2.16 Setbacks

#### Regulation 15 (8)

Setback standards are as follows:

The approved treatment unit and land application system shall be at least:

- 2m from any land boundary
- 3m from any building
- 15m from any surface water and groundwater well

Installers shall endeavor to ensure that all sewage systems comply with the setback requirements provided above except in cases where land is limited, in which case treatment shall be improved.

### 2.17 Design Specification of Land Application System

Trenches, beds, mounds and subsurface irrigation system are to be designed in accordance with the standards set in AS/NZS 1547:2000.

### 2.18 Drain laying Standards

#### Regulation 15 (7)

All drain laying shall be in accordance with the AS/NZS 3500 National plumbing and drainage code standards and the New Zealand Building Code E1 Surface Water and G13 Foul Water standards.

### 2.19 Treatment Unit Categories and Effluent Quality Standards

#### Regulation 15 (4)

As a guide, raw sewage has a biochemical oxygen demand (BOD<sub>5</sub>) and Total Suspended Solids of TSS of 300 – 400 mg/litre and a faecal coliform count of 10<sup>10</sup>-10<sup>7</sup> cfu/100ml

**Table 9: Treatment Unit Categories and Effluent Quality Standards**

Treatment level	Effluent standards
<b>Primary treatment</b>	BOD <sub>5</sub> – 90% of samples taken over three test periods shall not exceed 180mg/litre and no sample shall exceed 200mg/litre TSS – 90% of samples taken over three test periods shall not exceed 80mg/litre and no sample shall exceed 100mg/litre FC – the median value shall be no more than 10 <sup>7</sup> cfu/100ml and no sample shall exceed 10 <sup>8</sup> cfu/100ml.
<b>Secondary treatment</b>	BOD <sub>5</sub> - 90% of samples taken over three test periods shall not exceed 20mg/litre and no sample shall exceed 30mg/litre TSS - 90% of samples taken over three test periods shall not exceed 30mg/litre and no sample shall exceed 45mg/litre. FC – Where disinfection is provided, the samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of 10 organisms per 100ml with 80% of the samples containing less than 20 organisms per 100ml and no sample exceeding 100 organisms per 100ml. Where disinfection is not provided, the samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of 10 <sup>4</sup> organisms per 100ml with 80% of the samples containing less than 10 <sup>5</sup> organisms per 100ml and no sample exceeding 10 <sup>6</sup> organisms per 100ml. TN - 90% of samples taken over three test periods shall not exceed 40 mg/litre and no sample shall exceed 60 mg/litre



	Where chlorination is the disinfection process, the total chlorine concentration shall be greater than or equal to 0.5mg/litre in four out of five samples taken.
<b>Advanced treatment</b>	<p>BOD<sub>5</sub> –90% of samples taken over three test periods shall not exceed 10mg/litre and no sample shall exceed 20mg/litre</p> <p>TSS – 90% of samples taken over three test periods shall not exceed 10mg/litre and no sample shall exceed 20mg/litre</p> <p>FC – The samples taken on each occasion shall have a thermotolerant coliform count not exceeding a median value of 10 organisms per 100ml with 80% of the samples containing less than 20 organisms per 100ml and no sample exceeding 100 organisms per 100ml.</p> <p>TN - 90% of samples taken over three test periods shall not exceed 15 mg/litre and no sample shall exceed 20 mg/litre</p> <p>TP –90% of samples taken over three test periods shall not exceed 5 mg/litre and no sample shall exceed 10mg/litre</p> <p>Where chlorination is the disinfection process, the total chlorine concentration shall be greater than or equal to 0.5mg/litre in four out of five samples taken.</p>

#### 2.20 Effluent outlet filters

Effluent outlet filters must reduce Total Suspended Solids to no more than 50mg/l. This performance data must be provided by an accredited independent testing agency.

Effluent outlet filters must have a filter aperture of no more than 3mm and a minimum surface area of 28,800mm<sup>2</sup>.

Servicing intervals of effluent outlet filters shall be specified by the manufacturer. The preferred period for servicing is once every three years.

#### 2.21 Noise

The maximum permissible noise level with all equipment (except the alarm) operating shall be 40 dB(A) measured on fast response at a distance of 1m from the nearest item of noise emitting equipment.

#### 2.22 Septic Tank Construction Standards

##### Regulation 8

Septic tank manufacturers shall construct septic tanks to meet AS/NZS 1546.1:2008 On-site domestic wastewater treatment units Part 1: Septic tanks.

### 2.23 Sewage Discharge Standards

#### Regulation 14

Sewage shall not under any circumstances be discharged to surface water. Sewage shall not be discharged directly to groundwater but shall be treated and applied to land as outlined in this code.

### 3.0 Time Periods

#### 3.1 Request for Sewage System Inspection - Regulation 21 (3) and 21 (5)

After receiving a request for sewage system inspection on the prescribed form, the Sanitary Inspector shall inspect the system on a day and time agreed between the inspector, owner and registered installer.

### 4.0 Registers

#### 4.1 Register of Sanitary Professionals and Technicians – Regulation 7

##### 4.1.1 Criteria for Installers and Servicing Agents

The registration of installers and servicing Agents shall not take effect until 1<sup>st</sup> October 2009. Until that time, the Sewage and Sanitation Board shall retain a list of Approved Installers and Servicing Agents who are qualified to install and service septic tanks and other sewage treatment systems.

The criteria for Approved Installers and Servicing Agents are:

- 1) A National Certificate in Drainlaying (Level 4) from an NZQA accredited institution\* in New Zealand or a similar institution in Australia
- AND
- 2) At least two years of practical experience supervised by a drainlayer registered in New Zealand or Australia
- AND
- 3) Has completed a short course, set and approved by the Board, on the Public Health (Sewage) Regulations 2008 and the Public Health Sewage Code 2008 (the CET Sewage and Sanitation Course held in Rarotonga, Cook Islands 2006-2007 qualifies for this requirement)

#### Discretionary Approval

Applicants who do not meet criteria 1) but who have a qualification in drainlaying from an institution outside of New Zealand or Australia may apply for discretionary approval. Applicants who do not meet criteria 2) and/or 3) may not be registered by the Sewage and Sanitation Board. Applications for discretionary approval are to include the following details:

- 1) Name
- 2) Contact details
- 3) Formal qualification with full contact details of the institution certifying the qualification
- 4) Details of professional registration (type of license, license number, name and full contact details of the authority issuing the license)
- 5) Membership of professional and/or trade bodies (if any) and their full contact details
- 6) Summary of experience in drain laying
- 7) Details of experience within the Cook Islands (if any)
- 8) Full contact details for three professional and/or industry referees
- 9) Full contact details for three clients for jobs completed within the last three years
- 10) Notarized copy of formal qualifications and birth certificate

The Sewage and Sanitation Board reserves the right to require the applicant to sit an assessment paper and/or to have their work assessed by a New Zealand/Australian Registered drainlayer.

A listing as an Approved Installer and/or Servicing Agent will become void upon 1<sup>st</sup> October 2009.

#### **Registration of Installers and Servicing Agents (Septic Tanks)**

After 1<sup>st</sup> October 2009, Public Health will only approve the installation of primary treatment systems (septic tanks) that are installed by Cook Islands Registered Installers of septic tanks. Furthermore, after 1<sup>st</sup> October 2009, only Cook Islands Registered Servicing Agents of primary treatment systems (septic tanks) will be permitted to service septic tanks. The criteria for Registered Installers and Servicing Agents of septic tanks are the same criteria used to determine Approved Installers and Servicing Agents (outlined in 1 – 3 above).

Registration for installers and servicing agents of septic tanks who receive registration on or after 1<sup>st</sup> October 2009 will be valid until 1<sup>st</sup> October 2010. Thereafter, annual renewal of registration will be required and will be due on the 1<sup>st</sup> October of each year.

#### **Registration of Installers and Servicing Agents (Secondary/Advanced Sewage Treatment Systems)**

After 1<sup>st</sup> October 2009, Public Health will only approve the installation of Secondary/Advanced treatment systems that are installed by Cook Islands Registered Installers of Secondary/Advanced treatment systems. Furthermore, after 1<sup>st</sup> October 2009, only Cook Islands Registered Servicing Agents of Secondary/Advanced treatment systems will be permitted to service Secondary/Advanced treatment systems. The criteria for Registered Installers of Secondary/Advanced treatment systems are the same criteria used to determine Approved Installers and Servicing Agents (outlined in 1 – 3 above) with the ADDITIONAL criterion which shall be:

- 4) Has been trained and certified by the manufacturers of the Secondary/Advanced treatment system as an installer and servicing agent for the respective model of that treatment system.

Registration for installers and Servicing Agents of Secondary/Advanced treatment systems who receive registration on or after 1<sup>st</sup> October 2009 will be valid until 1<sup>st</sup> October 2010. Thereafter, annual renewal of registration will be required and will be due on the 1<sup>st</sup> October of each year.

\*accredited institutions which provide this qualification in New Zealand are:

Christchurch Polytechnic Institute of Technology  
UniTec New Zealand  
Waikato Institute of Technology  
Wellington Institute of Technology  
Plumbing, Gasfitting and Drainlaying ITO Ltd.

#### **4.1.2 Criteria for the Registration of Inspectors**

Between 31<sup>st</sup> January 2008 and 1<sup>st</sup> October 2009, the criteria for the registration of inspectors are:

- 1) The applicant has obtained a pass in the exams for the CET Sewage and Sanitation Course Category 1
- AND
- 2) The applicant has submitted at least one CET Stage 3 project and received a pass for that project
- AND
- 3) The applicant is able to demonstrate experience with and knowledge of the drainlaying and plumbing trade

Registration for inspectors who are registered during this period will be valid for 12 months from the date of approval.

After 1<sup>st</sup> October 2009, the criteria for the registration of inspectors are:

- 1) The applicant has a pass in the CET Sewage and Sanitation Course Category 1
- AND
- 2) The applicant has a Certificate for Drainlaying Theory Assessment from an NZQA accredited institution in New Zealand or an equivalent institution in Australia or a qualification equivalent to the requirements set out by the Master Plumbers, Gasfitters and Drainlayers NZ Inc. Industry Training Organisation for a Certificate for Drainlaying Theory Assessment.”

Registration for inspectors who are registered during this period will be valid for 12 months from the date of approval.

#### 4.1.3 Criteria for the Registration of Designers

Between 31<sup>st</sup> January 2008 and 1<sup>st</sup> October 2009, the criteria for the registration of designers are:

- 1) The applicant has obtained a pass in the exams for the CET Sewage and Sanitation Course Category 2
- AND
- 2) The applicant has submitted at least one CET Stage 3 project and received a pass for that project
- AND
- 3) The applicant has an appropriate engineering or applied science degree or diploma

Registration for designers who are registered during this period will be valid for 12 months from the date of approval.

After 1<sup>st</sup> October 2009, the criteria for the registration of designers are:

- 1) The applicant has obtained a pass in the CET Sewage and Sanitation Course Category 2
- AND
- 2) The applicant has an appropriate engineering or applied science degree or diploma

Registration for designers who are registered during this period will be valid for 12 months from the date of approval.

#### Exemptions:

There will be some applicants who will consider that they have qualifications and experience in sanitation equivalent to, or of a higher standard than, the qualifications specified above. The Board will consider applications from such professionals and tradespeople. The applicant will be required submit details of the qualifications and experience. Applications should be made to:

Health Planner (Sanitation)  
Ministry of Health  
PO Box 109  
Rarotonga

The application is to include the following details:

- 1) Name
- 2) Contact details
- 3) CET or similar course(s) attended including year and venue of each course
- 4) Any other formal qualification with details of the institution certifying the qualification
- 5) Details of professional registration, if any
- 6) Details of any membership of professional and/or trade bodies
- 7) Summary of experience in sanitation engineering

- 8) Details of experience within the Cook Islands
- 9) Contact details for three professional and/or industry referees

The Board reserves the right to require the applicant to sit an assessment paper.

#### 4.2 Register of Sewage Treatment Unit Designs – Regulation 9

##### 4.2.1 Criteria for the Registration of Sewage Treatment Unit Designs

For the purpose of the Code, **sewage management systems** have been categorized as follows:

- a. Dry sewage management systems – any waste system designed to manage domestic waste undiluted with flush water e.g. composting toilets
- b. Wet sewage management systems – any waste system designed to manage domestic wastewater diluted with flush water, and there are many different types. This also includes greywater.

A sewage management system will normally consist of the following basic components:

- Source technologies (toilets, showers, washing machine, sinks etc)
- Treatment unit (septic tank, aeration unit, sand filter etc)
- Land application components (soak pit, trench, mound, subsurface irrigation field etc)

The regulations require

- The registration of *Septic Tank Manufacturers* (Reg 8)
- The registration of *Sewage Treatment Unit Designs* (Reg 9)

The criteria for registration of septic tanks are that the septic tanks be manufactured to the standards specified in AS/NZS 1546.1:2008 Septic Tanks and that the selection and application be in accordance with AS/NZS 1547:2000.

Primary, secondary and advanced treatment units are required to meet the effluent standards specified in Table 9.

##### 4.2.2 AERATION TREATMENT PLANTS

Aeration treatment plants designed for individual homes are to meet the requirements specified in AS/NZS 1546.3:2008

##### 4.2.3 Applications for the Registration of Sewage Treatment Unit Designs – Regulation 9 (2)

Applications for the Registration of Secondary or Advanced Treatment Systems shall consist of:

- (a) a description of the treatment process used by the sewage system;
- (b) mechanical and electrical specifications and other technical specifications if applicable;
- (c) performance of the treatment unit in terms of effluent BOD<sub>5</sub>, suspended solids, faecal coliforms, total nitrogen and total phosphorus from an accredited independent testing agency;
- (d) design criteria for maximum short-term peak hydraulic loading capacity of the treatment unit;
- (e) information on emergency storage capacity;
- (f) evidence of resilience to variable loading (in terms of influent quantity and quality);
- (g) a description of alarm system used;
- (h) an action plan and impact of power failure;
- (i) guarantee/warranty details;
- (j) information on recommended land application systems in accordance with the Public Health Sewage Code;

- (k) an indication of the system's power consumption;
- (l) an indication of the level of noise (in decibels) produced by the system;
- (m) names and addresses of companies that manufacture the tanks and land application system and any pumps, blowers or rotating disks if applicable;
- (n) a copy of the operation and maintenance manual provided to the property owner and servicing agent;
- (o) details of certification by an independent certifier. The certifier should be required to provide their CV and validate their competence in wastewater engineering.
- (p) a declaration of whether the sewage system is designed to meet the requirements of a Secondary Treatment System or Advanced Treatment System, as defined in the Public Health Sewage Code; and
- (q) any other information that may be required by the Board..

The registration process involves:

1. The submission of an application for registration to the Health Planner (Sanitation) at Public Health, PO Box 109, Rarotonga.
2. Review by the Health Planner (Sanitation) and two independent sanitary engineers
3. Consideration of advice and possible endorsement by the Sewage and Sanitation Board.

The criteria for registration are:

1. Certification of the treatment unit by an independent certifier
2. The use of a scientifically proven and peer-reviewed treatment process
3. Performance details in terms of BOD<sub>5</sub> in mg/l, suspended solids in mg/l, faecal coliform bacteria (coliform forming units per 100ml), total nitrogen (mg/l) and total phosphorus (mg/l). Performance data must be provided by an accredited independent testing agency.
4. Compliance with relevant AS/NZS engineering standards
5. Resilience to changes in influent loading (in terms of influent quantity and quality)
6. Ease of installation and servicing
7. Capacity for emergency storage in case of power failure
8. Low power consumption and operation and maintenance costs
9. Low noise, low risk of odour, low risk of insect and pest breeding
10. Detailed operation and maintenance manual
11. The presence of at least two servicing agents in-country who are certified to service the system.
12. Contact details of independent referees

#### **4.3 Register of Septic Tank Manufacturers – Regulation 8**

##### **4.3.1 Criteria for the Registration of Septic Tank Manufacturers**

To be registered as a Septic Tank Manufacturer the manufacturer must demonstrate that they can consistently manufacture septic tanks according to the AS/NZS 1546.1:2008 Septic Tank standards.

#### **5.0 Reports**

##### **5.1 Abandonment or Disconnection Plan – Regulation 31**

An Abandonment or disconnection plan shall outline the following:

1. How the developer of a new sewage treatment system will manage wastewater that is normally treated by the abandoned sewage system;
2. How the components of the system will be dismantled and waste material managed;
3. How the site will be rehabilitated and left in a safe, clean and environmentally satisfactory manner.

**5.2 Operation and Maintenance Manual – Regulation 29**

An Operation and Maintenance Manual for a Secondary or Advanced Treatment System shall contain:

- (i) operation and maintenance instructions for each pump station and treatment unit or process under normal and emergency conditions such as power outage and equipment malfunction;
- (ii) operation and maintenance instructions for the land application system including procedures for purging or chemical shock loading to prevent or eliminate biological growth in a subsurface disposal system;
- (iii) a list of required sampling frequencies and analyses to be conducted by the operator;
- (iv) a checklist of troubleshooting, corrective, and preventative measures to be taken to maintain process control and treatment performance;
- (v) a checklist of start-up procedures;
- (vi) applicable Cook Islands effluent requirements;
- (vii) instructions on the collection and disposal of sewage sludge;
- (viii) a summary of labour requirements needed to operate and maintain the sewage system;
- (ix) a list of critical parts of the sewage system;
- (x) as built drawings of the sewage system;
- (xi) a list of required daily activities, checks and observations;
- (xii) logs or report forms for all operation and maintenance activities performed;
- (xiii) results of all discharge sampling undertaken on the system;
- (xiv) all necessary flow schematic diagrams with details of piping and valving;
- (xv) a plot plan of the sewage system and site including all collection lines and equipment;
- (xvi) details on all safety equipment at the sewage system site, any applicable spare parts, maintenance and operation instructions;
- (xvii) details on all monitoring equipment including spare parts, maintenance and operating instructions;
- (xviii) names and addresses of suppliers of all spare parts; and
- (xix) contingency plans to ensure the continued operation of the system in the event of any natural or man-made disaster.