Queensland Government

CHIEF EXECUTIVE APPROVAL 02/2017

Plumbing and Drainage Act 2002, part 5.

Approval

1. The **OzziKleen RP10 A+** ("the system") described in the Specifications and Drawings in the attached Schedule and manufactured by **Suncoast Waste Water Management** ("the manufacturer") (ABN 62 063 770 534) has been assessed in accordance with the Queensland Plumbing and Wastewater Code (QPW Code) dated 15 January 2013.

2. Approval is granted for an advanced secondary with nutrient reduction wastewater treatment system, subject to compliance by the manufacturer with the requirements of the *Plumbing and Drainage Act 2002*, part 5 and the conditions of approval detailed below.

3. This approval, the conditions of approval and the Schedule comprise the entire Chief Executive Approval document.

4. Any modification by the manufacturer to the design, drawings or specifications scheduled to this approval must be approved by the Chief Executive.

Conditions of approval

5. The manufacture, installation, operation, service and maintenance of the systems must be in conformity with the conditions of this Chief Executive Approval.

6. The advanced secondary with nutrient reduction wastewater treatment system may only be used on premises that generate per day:

   (a) a maximum hydraulic loading of 2,000 litres/day; and

   (b) a maximum organic loading of 700 grams/day BOD_5

7. For the system to meet the requirements of an advanced secondary with nutrient reduction wastewater treatment system, the system must produce the following effluent quality —

   (a) 90% of the samples taken must have a BOD_5 less than or equal 10g/m³ with no sample greater than 20g/m³; and

   (b) 90% of the samples taken must have total suspended solids less than or equal 10g/m³ with no sample greater than 20g/m³; and

   (c) 90% of the samples taken must have thermotolerant coliform count not exceeding 10 organisms per 100 mL with no sample exceeding 200 organisms per 100mL.

   (d) Where chlorination is the disinfections process, the total chlorine concentration shall be greater than or equal to 0.5gm³ and less than 2.0g/m³ in four out of five samples taken.

   (e) Where the manufacturer has included nitrogen and/or phosphorus reduction in the treatment process, the effluent compliance criteria must be able to meet in addition to the above the following nutrient criteria:

      i. 90% of the samples, with 95% confidence limits taken over the test period shall have a total nitrogen concentration less than or equal to 10 mg/L.

      ii. 90% of the samples, with 95% confidence limits taken over the test period shall have a total phosphorus concentration less than or equal to 5mg/L

8. Each system must be serviced in accordance with the manufacturers details supplied in the owner's service and maintenance manuals.

9. Each system must be supplied with —

   (a) a copy of this Chief Executive Approval document;

   (b) details of the system and ancillary equipment;

   (c) instructions for authorised persons for its installation;

   (d) a copy of the owner's manual to be given to the owner at the time of installation; and

   (e) detailed instructions for authorised service personal for its operation and maintenance.

10. This approval does not extend, apply to, or include the land application system used in conjunction with an approved system installed on premises.

11. At each anniversary of the Chief Executive Approval date, the manufacturer must submit to the Chief Executive a list of all systems installed in Queensland that they have received an installation and commissioning certificate for during the previous 12 months.

12. Where the Chief Executive is notified of any system failures that they believe are a result of poor design or faulty manufacture, the Chief Executive may randomly select a number of installed systems for audit. The Chief Executive will notify the National Association of Testing Agencies (NATA) accredited laboratory nominated by the manufacturer, which systems are to be audited for Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS). The sampling and testing of the selected systems, if required, is to be done at the manufacturer's expense. The following results must be reported to the Chief Executive;

   (a) Address of premises.

   (b) Date inspected and sampled.

   (c) Sample identification number.

   (d) Biochemical Oxygen Demand (BOD_5).

   (e) Total Suspended Solids (TSS).

13. The Chief Executive may, by written notice, cancel this approval if the manufacturer fails — to comply with one or more of the conditions of approval; or within 30 days, to remedy a breach, for which a written notice been given by the Chief Executive.

14. This approval may only be assigned with the prior written consent of the Chief Executive.

15. This approval expires on 7 February 2022 unless cancelled earlier in accordance with paragraph 13 above.

Lindsay Walker
Director
Strategic Policy (Plumbing, Drainage, Committees and Special Projects)

Date approved: 8 February 2017

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CHIEF EXECUTIVE APPROVAL No. 02/2017
Plumbing and Drainage Act 2002, part 5, division 1, section 93

SCHEDULE

Attachment 1

Specifications for the

OzziKleen RP10 A+

Department of Housing and Public Works
Chief Executive Approval
Approval No: 02/2017
Date of Issue: 8/2/17
Delegate Signature:
Building Codes Queensland

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THE OZZI KLEEN TREATMENT PROCESS

The Ozzi Kleen sewage treatment units work with a cyclic aeration process built into a single tank designed to accept and treat the sewage. The waste products in the sewage are completely consumed by naturally occurring bacteria in the oxygen-rich environment in the aeration tank. The system treats the organic waste to produce treated water of a high standard. The unit consists of a round polyethylene tank with an internal effluent compartment and pumping system.

The sewage is treated in a "Bioreactor" which is a suspended growth activated sludge process using Cyclic Extended Aeration process with intermittent decanting. It is treated in a series of batch phases within the Bioreactor to achieve the desired effluent quality.

The treatment operation in the bioreactor is automatically controlled by the PLC system in a pre-determined cycle. The treatment can be operated at different cycle times to enable operational flexibility. For normal operation, the operation consists of the following cycles:

FEED & AERATION CYCLE

Incoming sewage flows into the bioreactor and is mixed with the biomass held in the aeration tanks. This is aerated and oxygenated by diffused air supplied from an air blower. Aeration is provided to meet the process oxygen demand for carbonaceous oxidation, nitrification and for mixing. As aeration takes place and continues, an ideal aerobic environment for micro-organisms and a humus type activated sludge is formed. With this balanced aeration and a good healthy activated sludge, digestion and oxidation of the organic waste occurs. A balance of aeration in relation to the organic/hydraulic load is maintained for a good steady reliable treatment process. BOD oxidation and nitrification also occurs during this phase of operation.

SETTLING CYCLE

Immediately after the aeration cycle, a settling condition is created to provide solids-liquid separation, which allows a quiet period where the biomass has time to settle. As the biomass is settling it acts as a filter blanket trapping all the waste that is in suspension in the mixed liquor of the aerobic biomass and settles it to the floor. This provides for further carbonaceous oxidation (anoxically), clarification, and denitrification. A zone of clear water is generated at the surface of the aeration tank, which is now acting as a clarifier.

DECANT CYCLE

After a predetermined settling period a decanting cycle takes place. The floating decanter draws off water from just under the surface to a predetermined level. During the decanting cycle the anoxic treatment process continues carbonaceous oxidation, clarification, and denitrification, and automatically decants highly treated clarified effluent which flows into the chlorinator for disinfection by gravity. The decanting cycle continues drawing off effluent until the electronic process control puts the system back into the aeration cycle.

At the end of the decanting cycle which is the start of the next aeration cycle the blower on timer starts the blower again causing air pressure to purge the liquid from the decanter and an air-lock is created in the decanter's bladder, thus stopping any flow of water and the decanting procedure. Variable duration for each cycle can be chosen for optimum treatment.

AUTOMATIC SLUDGE WASTING AND STORAGE:

Waste sludge is pumped from the bioreactor at the beginning of each aeration cycle by the PLC controlled sludge pumps into a 350 litre sludge holding tube. The sludge that is wasted from the aeration tanks moves on to digestion in the sludge tube. As sludge is settling and thickening a separation of water and sludge occurs. The concentrated solids (waste sludge) are eventually pumped out for disposal, and the supernatant from the sludge tube flows into the main aeration tank for further treatment.

The sludge wasting programme will not need to be activated until there is sufficient biomass which would be determined at the time of each service.

BASKET STRAINER:

The decanted effluent from the aeration tank will flow through a sock strainer to remove the scum from the decanted effluent.

CHLORINATION

The treated effluent from the RP10A+ will be disinfected through the chlorinator and an effluent chlorine contact tank. Although the effluent is treated, it contains many types of human enteric organisms that are associated with various waterborne diseases. Disinfection can selectively destruct the disease-causing organisms in the sewage effluent. The chlorinator and the chlorine contract tank are designed to meet the disinfection requirements.

A disinfection process of effluent is carried out using chlorination equipment to treat the final water before discharge. The chlorinator uses tablet chlorine (TICA Trichloroisocyanuric Acid) and is self-compensating for variations in flow. The bottom tablet is submerged at all times and during periods of low flow this ensures sufficient chlorine is released, and during periods of high flow the water level in the chlorinator increases and more tablets are exposed as these are dissolved, more chlorine is released in sufficient quantities to ensure disinfection. A dose rate residual chlorine is maintained in the effluent of between 0.5-to 2.0 mg/l free chlorine prior to being delivered to the effluent storage or disposal area.

EFFLUENT PUMP AND CONTROLS

The effluent storage compartment of the unit holds approximately 300 litres of water which gives sufficient storage. The effluent storage compartment has a submersible pump controlled by a float switch that is part of the submersible pump.

CHEMICAL PHOSPHORUS REMOVAL

A chemical (Alum) dosing system is provided in the motor box of the RP10A+. The dosing of Alum at a controlled rate is for phosphorus removal from the activated sludge. Phosphorus removal takes place within the mixed liquor of the aeration tank with the addition of the flocculating chemical, which precipitates and binds the element to the sludge and is removed from the treatment cycle through the exercise of sludge wasting.

EFFLUENT DISCHARGE

When the liquid has reached the predetermined level in the chlorine contact tank, the effluent pump will operate and pump out the effluent to the irrigation or disposal system.

The effluent pump is controlled by a float switch which is hardwired to the pump. This is held on the side of the pump handle in a special groove designed to hold the float's cable. If the float cable is removed from the groove and left to hang without any support, the float will not turn the pump off due to the float cable being longer than the length of the pump body causing the pump to constantly run dry causing premature failure of the pump. If it is noted that the float has become dislodged from its groove, the pump will need to be removed and the float cable returned to the groove. When installing the cable, ensure that the head of the float hangs vertically before it reaches the bottom of the pump housing to ensure that the pump will turn off before the effluent reaches the bottom of the pump.

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Plumbing and Drainage Act 2002, part 5, division 1, section 93

SCHEDULE

Attachment 2

Drawings for the

OzziKleen RP10 A+

Department of Housing and Public Works
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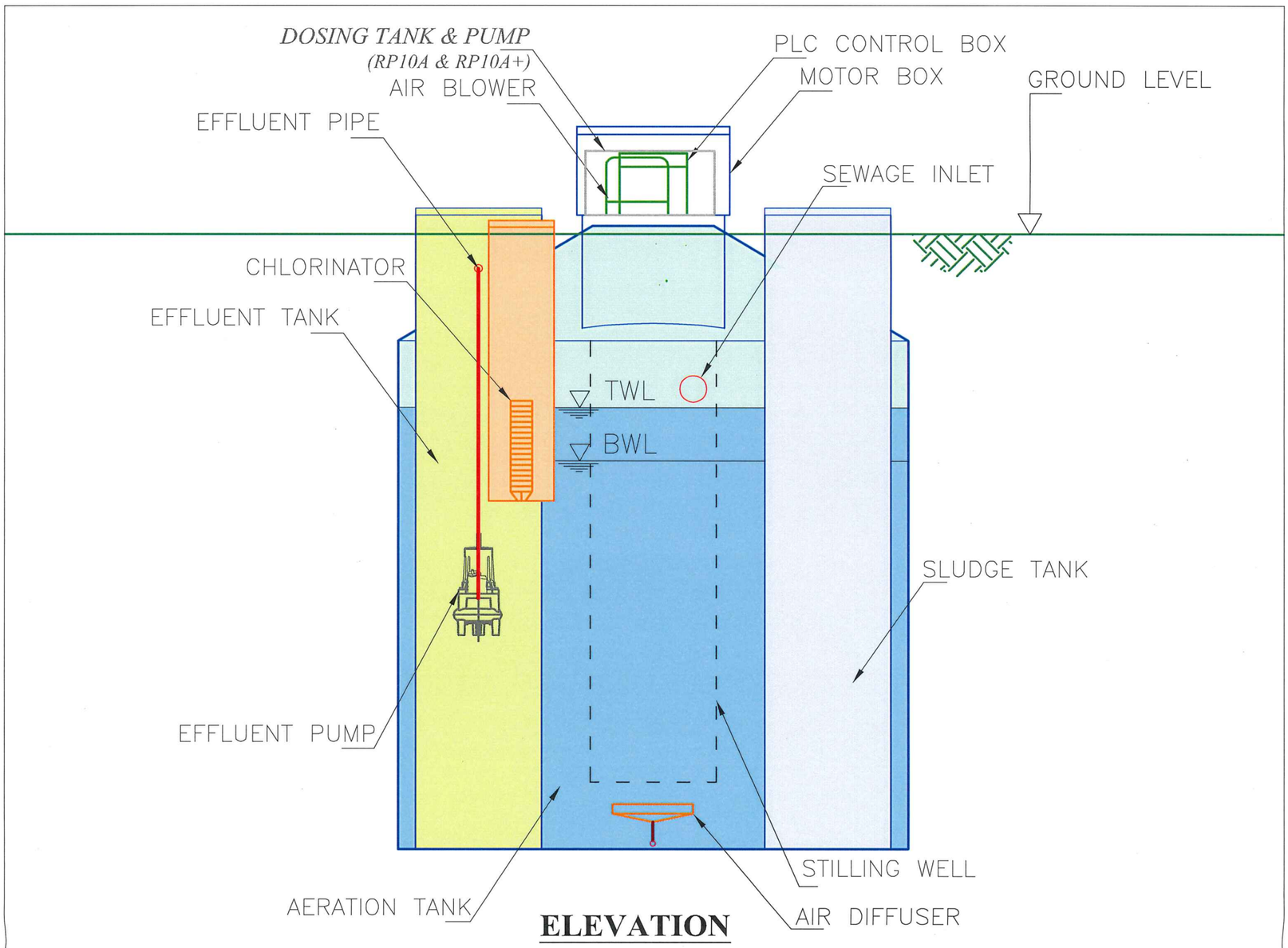
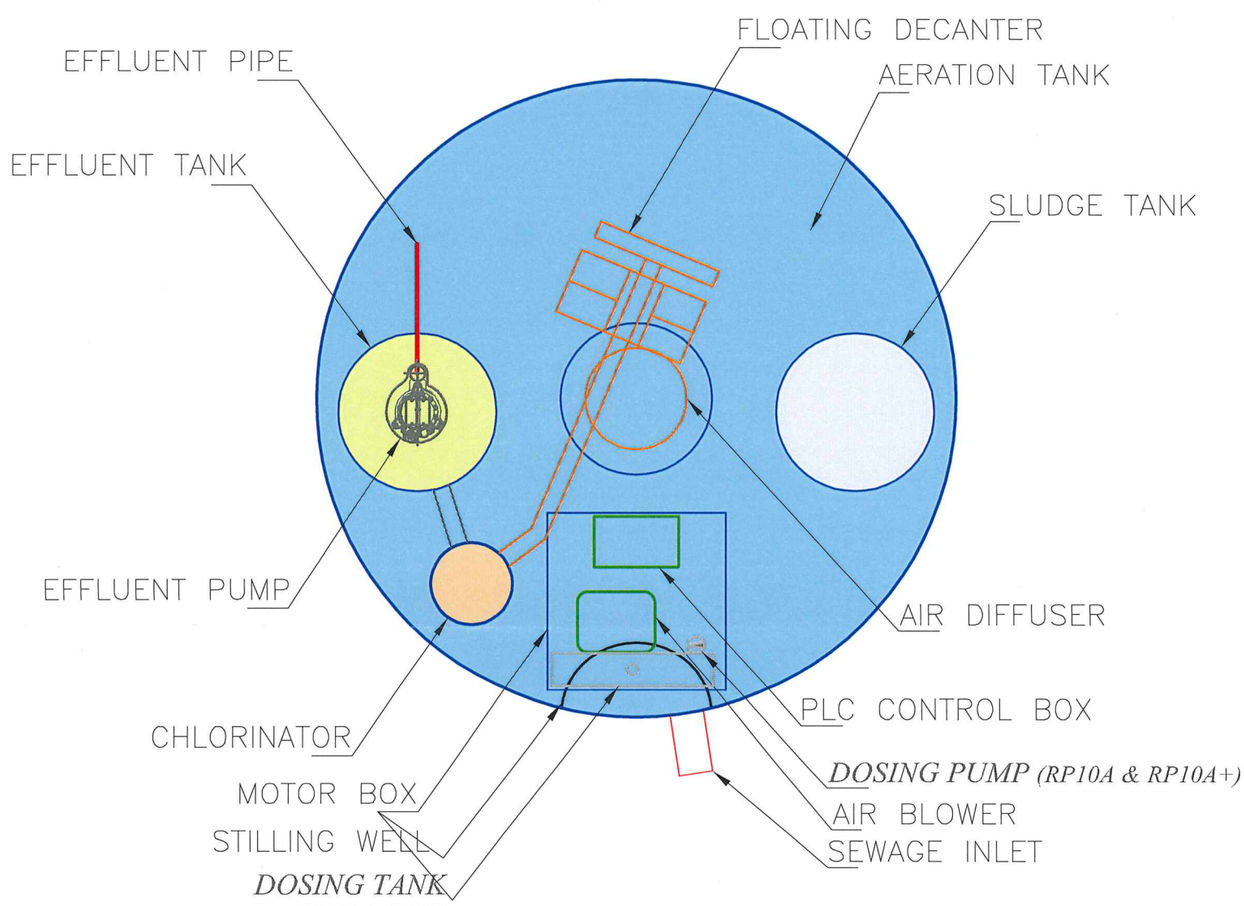
Delegate Signature:
Building Codes Queensland



ELEVATION



PLAN VIEW

Department of Housing and Public Works
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Building Codes Queensland

DATE	DESCRIPTION	REV.	BY
20/12/16	RP10A+ Notation	3	ARP
02/09/13	AIR DIFFUSER LOCATION UPDATED	2	SB
28/08/08	GENERAL REVISION	1	DC

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CLIENT	GENERAL	DESIGN	AP
PROJECT	Ozzi Kleen RP10 PACKAGE STP	DRAWN	SB
		CHKD	AP
TITLE	SYSTEM DIAGRAM	DATE	02/09/13
DWG NO.	GD–RP10–H10.B	SCALE	NTS