Approval

1. The Krystal Kleer ADV 5000 (13EP) ("the system") described in the Specifications and Drawings in the attached Schedule and manufactured by Quality Tanks (Qld) Pty Ltd (ABN 60 834 863 374) ("the manufacturer") has been assessed in accordance with the Queensland Plumbing and Wastewater Code (QPW Code) dated 15 January 2013.

2. Approval is granted for the advanced secondary quality 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 quality wastewater treatment system, which is an example of the approved systems, may only be used on premises that generate per day:

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

   (b) a maximum organic loading of 700 grams BOD.s

7. The system must continue to meet the requirements of advanced secondary quality wastewater treatment system, producing the following effluent quality:

   (a) 90% of the samples taken must have a BOD.s less than or equal to 10 g/m³ with no sample greater than 20 g/m³.

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

   (c) 90% of the samples taken must have a thermotolerant coliform count not exceeding 10 organisms per 100 mL with no sample exceeding 200 organisms per 100 mL.
8. Each system must be serviced in accordance with the 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;
   
   (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 during the previous 12 months.

12. Where the Chief Executive is notified of any system failures the Chief Executive may randomly select a number of installed systems for audit. The Chief Executive will notify the manufacturer's nominated NATA accredited laboratory which systems are to be audited for BOD₅ and 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) BOD₅ for influent and effluent; and
   
   (e) TSS for influent and effluent.

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 6 May 2020 unless cancelled earlier in accordance with paragraph 13 above.

Lindsay Walker

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

Date approved: 7 May 2015
SCHEDULE

Attachment 1

Specifications for the
Krystal Kleer ADV 5000
**PROCESS FLOW**

Air Supply

\[\rightarrow \text{Incoming Wastewater} \rightarrow \text{Separation Chamber} \rightarrow \text{Contact Aeration Chambers} \rightarrow \text{Discharge} \leftarrow \text{Chlorine Disinfection Chamber} \leftarrow \text{Sedimentation Chamber}

\[\text{↑ Sludge return}\]

**GENERAL DESCRIPTION AND FUNCTION OF THE PLANT**

**PRIMARY TREATMENT**
The first stage of treatment is to separate the solids from the liquids. The solids mainly consist of toilet wastes. The digestion process takes place in a compartment where anaerobic micro-organisms which multiply rapidly under ideal conditions turn the offensive faecal solids into an inert waste. Hence, the microbial action in the first tank should not be hindered by the discharge of chemicals through household drainage fittings, e.g., chemical toilet cleaners and other anti-bacterial cleaning products.

**SECONDARY TREATMENT**
The subsequent treatment stages are mainly concerned with the aeration of the liquid wastes. Once more micro-organisms are present in these liquids, they assist in the aeration process. The micro-organisms are called aerobes and will thrive and multiply in the presence of oxygen. It is therefore important that a constant air supply is being maintained at all times. The air is supplied from a small blower located near the system.

**SETTLING**
Following aeration the liquid wastes are allowed to settle under quiescent conditions. Any solid particles which are suspended in the aerated effluent will settle out and are returned automatically to the first or second treatment stage. The clarified water, although it looks reasonably clean, may still contain some bacteria which will have to be removed.

**TERTIARY TREATMENT**
The bacteria are removed by a Chlorine process. While the clarified effluent flows through the chlorine chamber it comes into contact with a disinfecting agent. Chlorine disinfection will ensure the final effluent meets the criteria set by regulating bodies, prior to irrigation onto your garden.
Typical Krystel Kleer ADV 5000 Indoor Alarm Panel.
TREATMENT PLANT COMPONENTS:

1. Effluent Pump Type: Davey D42a or similar
2. Aerator Type: Thomas LPA BOHN Single Phase or similar
3. Chlorine tablet dispenser
4. Electrical Control Box: 240 Volt with alarm system
5. Internal Baffles: Concrete one piece system.
6. Internal Plumbing: PVC pipe and fittings.
7. Control Valves: PVC
8. Media: Plastic
9. Tank: Concrete

Department of Housing and Public Works
Chief Executive Approval

Approval No: 18/2015
Date of issue: 7/5/15
Delegate Signature: [Signature]

Building Codes Queensland
ELECTRICAL CIRCUIT SPECIFICATIONS FOR KRYSTEL KLEER

Important: Please note there is no Home Owner requirement to touch any of the electrical components. Please consult a licensed electrical contractor.

Caution: this specification changes from time to time – always check.

The conduit must be run to the junction box mounted in the side of the control box on the treatment tank. Ensure you seal all joints in your conduit run to prevent water from entering your conduit and the Krystel Kleer control box and causing damage. Water ingress is not covered under warranty.

- A dedicated single phase plus earth circuit, protected by a 16 amp MINIMUM circuit breaker of 8ka type suitable for motor start, such as Weber/Martec AS166 type, Quicklag, Terasaki Safe "T" or Clipal "U" type. Minimum cable size 2.5mm, Connected to and run from an EXTERNAL building switchboard (to allow for maintenance when the house is unattended), to the Krystel Kleer terminal box. Alarm wiring run can be two-core switch wire.

Circuits should be labelled "Krystel Kleer System"
The above circuits must be connected to the terminals as labelled in the Krystel Kleer terminal box.

Note: Electrical work must be carried out in accordance with A.S/N.Z. 3000 and Supply Authority Rules. A "Notification of electrical work" certificate must be lodged with the Supply Authority for your wiring.

Continuous running current is 0.6 amp with maximum intermittent current up to 3.1 amps (dependant on submersible pump size).

Upon initial energizing of the circuit to the system, the alarm may sound. This may be caused by high water level, and is no cause for concern. If the power is left on, the level will return to normal within 30 minutes and the alarm will automatically reset. Be sure to return the alarm to "NORMAL" after the alarm has reset.

Alarm Panel: If the alarm panel is more than 30 meters away from the Krystel Kleer control box, use shielded cable for SW to alarm panel to avoid any induced voltage from active cable.

Fault Conditions
- Yellow light and buzzer low air pressure. Red light and buzzer high water, both lights U.V. light problem.

---

SWITCHBOARD

16amp
Minimum
CB nlink earth

ALARM PANEL

BLUE
WHITE

WIRING DIAGRAM
SCHEDULE

Attachment 2

Drawings for the

Krystel Kleer ADV 5000