

MR. P.D. BEAVERS
224 2443

91/18690
9 October 1991

The Manager
Biocycle (Qld) Pty Ltd
PO Box 13
TOOWONG QLD 4066

Dear Sir,

AUTHORISATION OF BIOCYCLE COMMERCIAL WASTEWATER TREATMENT SYSTEM

The specifications and performance data for the above system have been examined. Authorisation is granted for a Biocycle Commercial Wastewater Treatment system having an installed capacity which does not exceed 20 000 litres per day (100 equivalent persons) and capable of treating wastewater that is predominantly domestic in origin from commercial premises.

This authorisation is granted under Part X of the Standard Sewerage By-Laws.

You are requested to provide the Water Resources Commission, Queensland, with a list of servicing agents who can provide regular routine service, at intervals not exceeding ninety days, to all plants installed and who can further provide a twenty-four hour emergency breakdown service to ensure continuous and satisfactory operation of the unit.

The Local Authority should be advised by the manufacturer when an owner fails to renew his/her service contract. A copy of the three-monthly or any emergency service report should be forwarded to the Local Authority. A further copy of the report should be forwarded to the owner of the plant.

The conditions of authorisation are attached.

Yours faithfully,



for COMMISSIONER OF WATER RESOURCES

PREFABRICATED SEWAGE TREATMENT PLANT

BIOCYCLE COMMERCIAL WASTEWATER

TREATMENT SYSTEMS

CONDITIONS OF AUTHORISATION

- Sept
1. Before installation of the authorised plant, approval shall be obtained from the relevant Local Authority and any requirements of that Local Authority in regard to the installation shall be complied with.
 2. No modification to the specified process, equipment, materials and fittings shall be undertaken without prior authorisation from Water Resources Commission, Queensland.
 3. The wastewater to the primary treatment tank(s) (septic tank) shall be predominantly domestic in origin from commercial premises.
 4. The plants are installed for providing secondary treatment to the effluent from a primary treatment tank(s).
 5. The effective capacity of the primary treatment tank(s) shall be obtained by calculating:

$$\text{design daily flow} + (S \times P_1 \times Y)$$

where S = rate of sludge/scum accumulation per person per year
P₁ = average number of persons using the system
Y = desludging frequency in years

6. The aeration compartment shall have a volume equal to the minimum design daily flow.
7. The low-pressure compressor delivering air through the diffusers shall have a capacity of 15 litres per minute at 1.8 metres total pressure head per equivalent person served.
8. The corrugated PVC media used in the aeration compartment shall have a specific surface area of 1.0 square metre per 20 grams of BOD₅ removed. The spacing of the corrugated PVC media shall be 50 millimetres.
9. The upward flowrate in the secondary clarifier shall not exceed 1.0 m³/m²/hour based on peak hourly flow rate of 3 times average day flow.

10. The chlorine contact time to be provided in the plant shall be 30 minutes at maximum design flow. The chlorine dosage equipment must be capable of providing a free residual chlorine level of 0.3 - 0.5 mg/L after 30 minutes of peak flow without excessive residual levels for low flows.

11. The chlorinator shall be capable of operating without any attention or chemical replenishment for a period in excess of 3 months when the plant is operating at its design capacity.

12. The concrete structures forming part of the plant shall comply with the requirements of AS 1546 - Small Septic Tanks in relation to strength, durability and quality of finish.

13. The pump and electric motors and electrical control equipment in the plant shall have a minimum service life of three years.

14. All metallic components associated with the plant shall be suitably protected against corrosion.

15. Unless a licence has been issued under the Clean Waters Act for off-site discharge, all effluent from the plant shall be disposed on the premises in a manner to minimise the risk of direct human contact with effluent and to comply with the appropriate guidelines on effluent disposal/irrigation.

16. The plant, when installed, shall continue to perform satisfactorily, producing an effluent to comply with the following standard when tested in accordance with procedures recommended by the Commission:

(a) The 5 day Biochemical Oxygen Demand shall not exceed 20 mg/L in any sample.

(b) The Suspended Solids shall not exceed 30 mg/L in any sample.

(c) The E.coli requirements shall be as follows:

- The geometric mean for a daily set of 5 separate samples taken at 30 minute intervals shall not exceed 200 E.coli per 100 mL.

- No individual count shall exceed 1000 E.coli per 100 mL.

(d) The Free Residual Chlorine value shall be between 0.3 mg/L and 0.5 mg/L after 30 minutes average detention time at the peak flow of at least 650 L over 2 hours.

(e) Total oil and grease content not greater than 2 mg/L.

*related to
ALP
not necessary*

17.

The manufacturer shall ensure that the plant is serviced by trained personnel at three-monthly intervals and a service history kept on every plant.

18.

Should the plant prove to be unsatisfactory in any respect during service, and therefore require modification to achieve the prescribed standards, all installed Biocycle Commercial Wastewater Treatment Systems shall be modified accordingly. It will also be necessary to subject any modified model to full performance evaluation in compliance with the Commission's Authorisation procedures current at the time of re-testing.

19.

Each plant shall be permanently marked with the manufacturer's name, registered trademark (if applicable), and product identification in a position readily visible after installation. The plant shall also have a marking to enable its capacity to be identified.

20.

Each unit shall be supplied with a complete and detailed owner's instruction manual for installation, initiation of service, operation and maintenance instructions for the information of the owner. The servicing officer must enter a report in the booklet on the occasion of each service for the record and information of the owner.

**Department of Natural Resources and Mines
Queensland**

**MODEL APPROVAL (Biocycle 10-20 Person AWTS)
AMENDMENT No. 1
Section 77—Standard Sewerage Law**

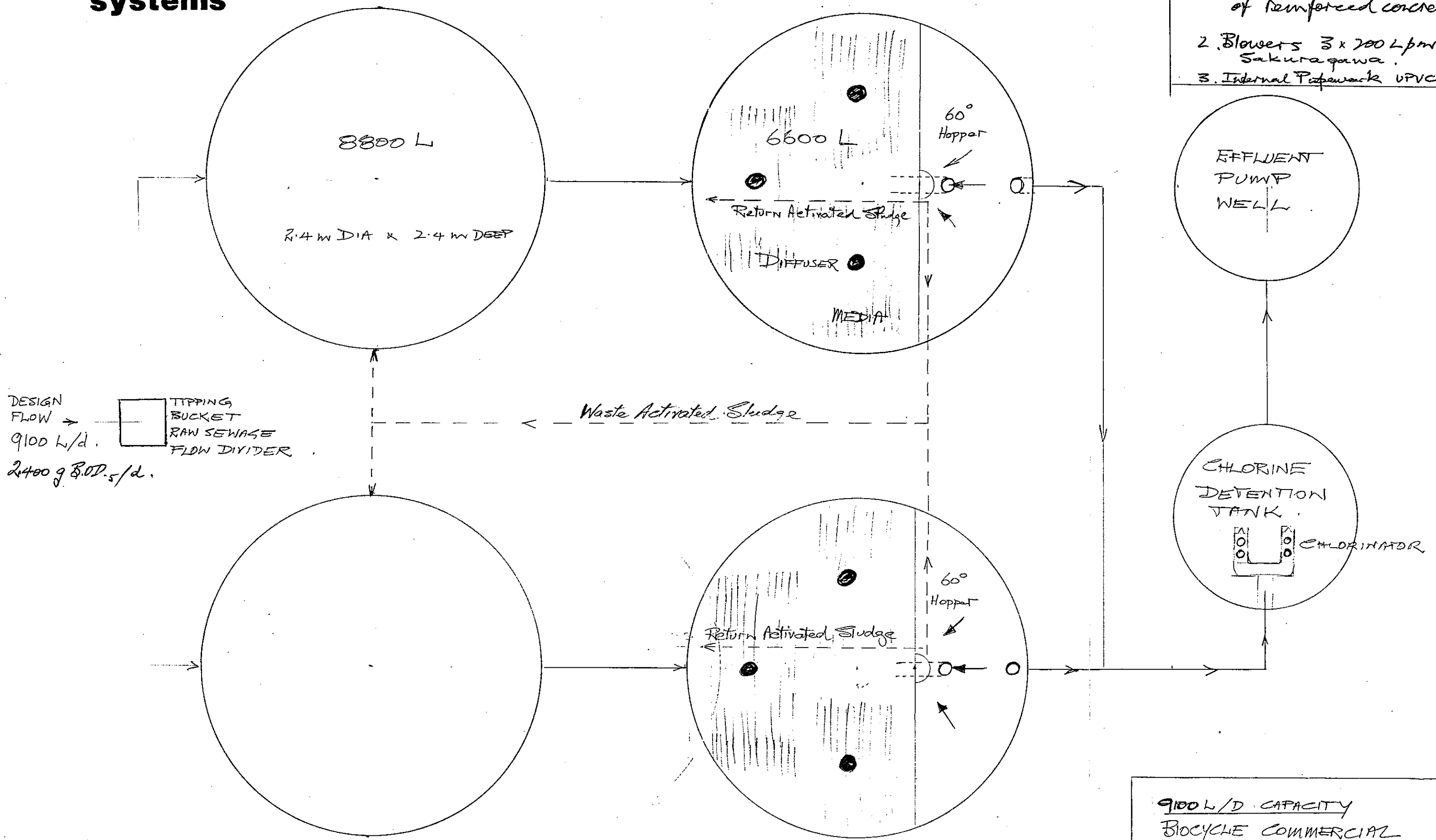
1. The Biocycle Commercial (10-20 Person) Aerated Wastewater Treatment System was approved for use in Queensland by letter of authorisation dated 9 October 1991.
2. Department of Natural Resources and Mines has been advised that the approval for the Biocycle 10-20 Person was acquired by Jowa Group Pty Ltd on 4 October 2000 and the approval should be amended.
3. Approval is granted for the modification described in clause 2 above and the conditions applying to the authorisation dated 9 October 1991, apply to the amended approval.

Robert Reilly

**R Reilly
General Manager
Water Industry Compliance**

Date approved: 9 July 2013.

- Notes
1. Tanks constructed of reinforced concrete
 2. Blowers 3 x 200 Lpm Sakuragawa.
 3. Internal Pipework UPVC.



DESIGN FLOW →
 9100 L/d.
 2400 g B.O.D.5/d.

TIPPING BUCKET
 RAW SEWAGE
 FLOW DIVIDER

PRIMARY SEDIMENTATION
 - ANAEROBIC DIGESTION
 TANK

BIOCYCLE SECONDARY
 TREATMENT UNIT

9100 L/D CAPACITY
 BIOCYCLE COMMERCIAL
 WASTEWATER TREATMENT
 PLANT - LAYOUT AND
 FEATURES

Scale 1:25 ECP 24/7/91