Wastewater treatment plant, Augusta

Water Authority of Western Australia

Report and recommendations of the
Environmental Protection Authority

Environmental Protection Authority
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1. Background

The Environmental Protection Authority has assessed a proposal by the Water Authority of Western Australia to construct a facility to treat wastewater from Augusta to secondary standards and dispose of the effluent by ground infiltration on an area adjacent to the ponds.

The site selected is Unalienated Crown Land located approximately 3km SW of the Central Business District of the town of Augusta.

2. The proposal

The wastewater from Augusta will be treated using oxidation ponds. Initially there will be 3 oxidation ponds operated in series to cater for a population of 1000. Future upgrading to progressively cater for a population of up to 4000 will be the subject of future applications to the Environmental Protection Authority.

Treated effluent will be disposed of by irrigating the natural bushland to the southeast of the treatment ponds using a flood irrigation method. The size of the infiltration area is 6.04 ha.

The existing flora will be removed from the immediate area of the ponds.

The site satisfies the current Water Authority requirements for a pond based treatment plant. The site provides

1. A 500m buffer zone between the ponds and the closest proposed residential development.
2. Two on -site effluent disposal areas.
3. Suitable soil materials to construct the ponds' bed and banks.

3. Existing environment

The proponent indicates that following investigations by the Department of Conservation and Land Management ninety-eight species of flora were recorded within the wastewater treatment site. No species in any of the categories of rare flora were found.

The possible presence of Jarrah dieback, *Phytopthora cinnamomi*, on the site has been indicated.

The soils beneath the infiltration area have been tested. A summary of results follows;

1. Depth of soil - 0.5 to 1.3m.
2. Nature of soil - predominantly Sandy, overlying gravel.
3. Average permeability of soil - 1.0×10^{-5} m/sec
4. Long term infiltration rate - 500L/hr/m^2
5. Phosphorus retention index - from 58 to 480 mL/g

4. Environmental impacts and management

The main environmental issues were related to the protection of water quality to Redman Brook and Flinders Bay. The Water Authority undertook testing of physical site characteristics to determine the suitability of the site for the proposed facility. The Environmental Protection Authority considers that the Water Authority's investigations should have provided it with the capacity to make firm predictions on the sites ability to assimilate nutrients, the likely behaviour of those nutrients and the breakthrough period for nutrients entering Redman Brook.
In this regard, the Authority considers that further work should be completed by the Water Authority to predict the nutrient holding capacity of the irrigation area and indicate after what period of time the breakthrough of nutrients into Redman Brook would occur. In addition, further details of the expected increases in soil interflow or groundwater flow from the proposed irrigation system should be outlined.

The Authority considers that the Water Authority should prepare a Nutrient Irrigation Management Plan as an aid in the on-going management of the site. The Authority would provide technical advice to assist in the preparation of the NIMP and other monitoring requirements.

Additional on-going monitoring commitments are considered highly important and have been included in the proponents report. To ensure the adequacy of the monitoring programme, the Authority has made a recommendation that it be to the Authority's satisfaction (see below).

Should nutrient levels in the infiltration area be allowed to increase to toxic levels then clearly existing vegetation would not survive. The monitoring proposed by the Water Authority is therefore an essential on-going management commitment for the life of the facility. The expected salt loading to the site resulting from the wastewater treatment plant has the potential to affect the site vegetation and Redman Brook. The salt export programme indicated in commitment 4 of the Consultative Environmental Review will require Environmental Protection Authority approval prior to implementation.

The Authority considers the disposal of sludge should also be referred to the Authority for environmental assessment of the disposal method and site.

The Authority considers the values for the phosphorus retention index are unusually high for sandy soils

Other issues including appropriate odour buffer zones, clearing of vegetation, expansion considerations and integrity of Augusta water supply have been addressed in the CER.

The proposed facility will be required to be licence under Part v of the Environmental Protection Act, and the Authority considers that the outstanding environmental issues indicated above can be satisfactorily addressed by appropriate Works Approval and Licence conditions.

Recommendation 1

The Environmental Protection Authority concludes that the project, as described in the Consultative Environmental Review for a Wastewater Treatment Plant For Sewage Scheme, Augusta is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this assessment report and the commitments made by the Water Authority of Western Australia with regard to environmental management and monitoring of the project.

The Authority's experience is that it is common for details of a proposal to alter through the detailed design and construction phase. In many cases alterations are not environmentally significant or have a positive effect on the environmental performance of the project. The Authority believes that such non-substantial changes, and especially those which improve environmental performance and protection, should be provided for.

Monitoring is required during construction and over the operational and post operational phases of the work to cover all those areas likely to be affected by the proposal. The monitoring will assist in the overall management of this proposal.

Recommendation 2

The Environmental Protection Authority recommends that, the Water Authority of Western Australia should submit prior to commissioning, and subsequently implement, a monitoring and management programme for the wastewater treatment site, also including Redman Brook and Flinders Bay, to the satisfaction of the Environmental Protection Authority.

The Authority believes that any approval for the proposal based on this assessment should be limited to five years. Accordingly, if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Authority.