



MINISTER FOR THE ENVIRONMENT AND HERITAGE

BEENYUP OCEAN OUTLET -PROPOSAL UNDER S46 OF THE EP ACT TO INCREASE PHOSPHORUS DISCHARGE LIMIT

I refer to your predecessor's letter of 28 July 1998 requesting the EPA to inquire into and report to you regarding the Water Corporation's proposed changes to the environmental conditions for the Beenyup Treated Wastewater Ocean Outlet in Marmion Marine Park.

The following is my report to you pursuant to Section 46(3) of the Environmental Protection Act 1986.

Introduction

The current operating conditions for the outlet were approved on 13 March 1995 in Ministerial Statement 382 (Attachment 1). Condition 2-1 set target loads of 913kg per day for total phosphorus and 3600kg per day for total nitrogen. Condition 2-2 requires the proponent to refer to the EPA any proposal to increase the levels of nutrients beyond those in 2-1. The Water Corporation is seeking a 64% increase in the phosphorus discharge limit to 1500kg a day. The need for this and the expected environmental effects are detailed in the recently completed Water Corporation report titled *Proposal to increase the phosphorus discharge limit for Ocean Reef Outlet under S46 of the Environmental Protection Act*.

Water Corporation studies

Ministerial Condition 3 detailed the requirements for studies to determine the impacts of nutrients from the outlets. Extensive studies have been done, commencing in 1990 as part of the original Beenyup outlet approval conditions published in July 1990.

The Perth Coastal Waters Study (PCWS) ran from July 1992 to March 1995. Its stated aim was "to determine the loads of nutrients (especially nitrogen) in treated wastewater that can be discharged to Perth's coastal waters and maintain environmental values". Mapping of the habitats on the seafloor was followed by oceanographic measurements and numerical modelling to depict water flow in the area as well as dilution of the effluent when discharged from the outlet. Regular

measurements of conditions in the water column, sediments and on the reefs were taken to establish the responses of plankton, algae and seagrasses to the input of nutrients.

The conclusions from the PCWS were that:

- the bathing beaches of Marmion Marine Park met national and international criteria for microbiology;
- fish and shellfish taken from the marine park show no signs of contamination by heavy metals or persistent organic chemicals;
- the studies found no signs of eutrophication in the vicinity of the Beenyup outlet, although they did identify a potential for an increase in biomass at Ocean Reef some time in the future due to the planned increases in discharges of nitrogen from the outlets; and
- it was not possible to determine a long term acceptable nitrogen loading.

To address this the Water Corporation proposed a further programme of work to investigate and monitor the impact of treated wastewater discharge on the environment. The Perth Long Term Ocean Outlet Monitoring (PLOOM) programme began in 1995 and continues investigations of the effects of Perth's ocean outlets on the receiving waters. The programme is designed to address the effects of increasing wastewater flows on primary production, particularly phytoplankton and other marine plants. It also monitors bacteria in bathing waters and contaminants in sediments and seafood. The PLOOM programme is due to be completed and reported on in June this year. The main findings from the programme are:

- Perth coastal waters are shallow, clear, low in nutrients and low in ambient levels of primary production;
- flushing rates for the Whitford Lagoon area are generally high and predominantly wind-driven;
- treated wastewater discharges to this area do not compromise water quality further than 2km from the outlet and within the 2km area the change is an increased nutrient level resulting in higher phytoplankton numbers. Between 1km and 2km from the outlet there is no observed change in biodiversity or abundances of marine organisms;
- there is no evidence of contamination by heavy metals and persistent organic compounds;
- the main issue of environmental concern associated with treated wastewater discharge is nitrogen; and
- nitrogen is always the limiting nutrient for primary production in Perth's coastal waters.

Workshop

A full day workshop was organised by the Water Corporation and held on 31 January 2001. Representatives from government agencies and authorities (DEP, EPA, CALM, MPRA) research institutions (Murdoch University, UWA, CSIRO) consultants and community organisations (represented by the Conservation Council

of WA) were present and invited to contribute to the sessions. I was requested to chair the workshop.

In respect of phosphorus, it was agreed that its role as a nutrient in this context is passive compared to that of nitrogen. The productivity of the lagoon in terms of the growth (and overgrowth) of organisms is totally dependent on the availability of nitrogen. The Water Corporation is not seeking to increase the permitted level of nitrogen discharge, only that of phosphorus. The current Ministerial Condition permits 3600kg of nitrogen a day to be discharged from the outlet. This is considerably in excess of what is currently discharged, which is in the order of 2750kg a day. The nitrogen load is expected to rise slowly to 3000kg a day with increasing volumes of processed wastewater over the next 40 years.

The Water Corporation is entering the second phase of its PLOOM programme. It is working closely with the DEP, CALM and the MPRA to set meaningful environmental quality objectives and criteria which will be applied to the outlets in the Marmion Marine Park. It is anticipated that the Water Corporation's monitoring programme, PLOOM Phase 2, will be revised, as appropriate, to directly address the agreed environmental quality objectives and criteria. These will form the basis of any further reviews of the Ministerial Conditions, should they become necessary.

In participating in the workshop and commenting on the proposed increase in permitted phosphorus load, the Conservation Council has strongly urged continued monitoring to ensure any potential problems are detected at a very early stage, so that more severe problems can be averted, and the understanding of the system improved. I believe this can occur through the second phase PLOOM programme, and the Water Corporation has agreed to continue to liaise with the Council in developing the programme.

The Conservation Council also raised the issue of the need to continue to review options for reuse of treated wastewater to minimise discharge to the ocean. This was considered in detail by the Water Corporation in its Wastewater 2040 Strategy which was released in 1995. The Water Corporation should give consideration to periodically reviewing this Strategy and advising the community on approaches being pursued to increase reuse of treated wastewater.

Recommendation

That Condition 2-1 be changed to reflect the increased phosphorus levels sought, from 913 kg to 1500kg per day.

Bernard Bowen

Bernard Bowen
CHAIRMAN

27 April 2001



Ass # 912

Bull # 762

State # 382

WESTERN AUSTRALIA

MINISTER FOR THE ENVIRONMENT

**STATEMENT TO AMEND CONDITIONS APPLYING TO A PROPOSAL
(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE
ENVIRONMENTAL PROTECTION ACT 1986)**

PROPOSAL: BEENYUP WASTEWATER OCEAN OUTLET
DUPLICATION INTO MARMION MARINE PARK
(079 / 912)

CURRENT PROPONENT: WATER AUTHORITY OF WESTERN AUSTRALIA

CONDITIONS SET ON: 13 JULY 1990

The implementation of this proposal is now subject to the following conditions which replace all previous conditions:

1 Implementation

The proponent must adhere in substance to the proposal as assessed. However, changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment.

- 1-1 Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

2 Target Loads for Nitrogen and Phosphorus

- 2-1 The proponent shall not permit the combined mean monthly nutrient loadings within both the original and second pipelines from the Beenyup Wastewater Treatment Plant to exceed the maximum loads set for total phosphorus (plus 10 per cent) and total nitrogen for the original single outfall.

The maximum load set for total phosphorus is 913 kg per day and for total nitrogen 3.6 tonnes per day.

- 2-2 The proponent shall refer to the Environmental Protection Authority any proposal to increase the levels of nutrients discharged beyond the levels referred to in condition 2-1 .
- 2-3 Prior to 31 August each year, the proponent shall submit monitoring reports to the Department of Environmental Protection, giving details of the plant performance, in relation to the mean monthly nutrient concentrations and loads in the wastewater.

Published on

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3 Nutrient Impact Studies

The proponent should undertake studies to determine the impacts of nutrients from the Beenyup outfalls.

- 3-1 Prior to 31 July 1990, the proponent shall commence a study to examine water circulation in the region of the outlets of both pipelines in order to determine the flushing characteristics of the receiving waterbody, in consultation with and to the requirements of the Department of Environmental Protection on advice of the Department of Conservation and Land Management. A complete range of conditions shall be sampled to enable calibration of an appropriate numerical model.
- 3-2 Prior to 31 July 1990, the proponent shall commence a study to examine the effects of nutrient loadings on the local marine communities, in consultation with and to the requirements of the Department of Environmental Protection on advice of the Department of Conservation and Land Management. This study shall involve at least three years of intensive effort (Phase 1) and two years of reduced effort (Phase 2).
- 3-3 Prior to commencement of the studies required by conditions 3-1 and 3-2, the proponent shall establish a Technical Advisory Group, which includes representatives from the Water Authority of Western Australia, the Department of Environmental Protection, the Fisheries Department and the Department of Conservation and Land Management, to co-ordinate the studies.
- 3-4 In the event that, due to excessive nutrient loading, the effluent causes an unacceptable environmental impact in the opinion of the Minister for the Environment on advice of the Department of Environmental Protection, the proponent shall undertake additional treatment of the effluent to further remove nutrients to a level acceptable to the Minister for the Environment.

4 Monitoring Programme

- 4-1 The proponent shall continue with the existing monitoring programme as described in the Public Environmental Report, to the requirements of the Department of Environmental Protection in consultation with the Department of Conservation and Land Management and the Fisheries Department.
- 4-2 The proponent shall submit reports on the monitoring programme referred to in condition 4-1 to the Department of Environmental Protection as outlined in the Public Environmental Report.

5 Water Quality

Condition deleted. (Matter addressed by Procedures 3 and 4).

6 Bacterial Concentrations

- 6-1 In the event that water quality criteria for bacteria in the prescribed beneficial use zones are exceeded, the proponent shall further treat the effluent to reduce bacterial concentrations.

7 Effects on Marine Biota

- 7-1 In the event that concentrations of bacteria or other contaminants introduced into the receiving water by the proponent are unacceptable, in the opinion of the Minister for the Environment, because of demonstrable effects on marine biota (especially mammals), the proponent shall take action to ensure that concentrations of contaminants are reduced to levels which are acceptable to the Minister for the Environment on advice of the Departments of Environmental Protection and Conservation and Land Management.

8 Surveys of Biota Contamination

- 8-1 The proponent shall undertake surveys, to the requirements of the Department of Environmental Protection in consultation with the Department of Conservation and Land Management and the Fisheries Department, to investigate contamination of biota (particularly the harvestable fish species of the area) by heavy metals, pesticides and by-products of the chlorination process.

These surveys shall:

- 1 incorporate an initial survey, commencing as soon as possible and to be completed before the second pipeline becomes operational, to establish current levels of contamination in a range of species; and
- 2 include follow-up surveys, to take place every three years, with a major review after 12 years.

The proponent shall forward results to the Department of Environmental Protection within six months of completion of sampling.

- 8-2 In the event that levels of contamination of biota are found to be unacceptable in the opinion of the Minister for the Environment, the proponent shall reduce concentrations of contaminants to levels which are acceptable to the Minister for the Environment on advice of the Department of Environmental Protection.

9 Approval of Pipeline Alignment

Condition deleted. (Alignment now approved and pipeline constructed).

10 Alternative to Underwater Blasting for Rock Removal

Condition deleted. (Alternative approved and rock removed).

11 Rehabilitation of On-shore Site

- 11-1 Following the completion of construction and launching of the pipeline, the proponent shall rehabilitate the onshore site to the requirements of the Department of Environmental Protection on advice of the Ministry for Planning.

12 Studies to Predict Loads and Impacts by 2040

- 12-1 Prior to 31 March 1995, the proponent shall undertake and complete studies to the requirements of the Environmental Protection Authority which:

- 1 predict the wastewater discharges and characteristics likely to occur by the year 2040 from Metropolitan Perth (including discharges from the area between Mandurah and Yanchep, inclusive); and
- 2 determine whether the waters off Metropolitan Perth have the assimilative capacity for the combined wastewater discharges predicted to occur by 2040.

13 Studies of Alternatives to Ocean Disposal

- 13-1 Prior to 31 March 1995, the proponent shall undertake and complete a study to the requirements of the Environmental Protection Authority which investigates alternatives to ocean disposal of wastewater.

14 Decommissioning

- 14-1 The proponent shall achieve satisfactory decommissioning, and if necessary, removal of the pipeline and rehabilitation of the site and its environs.
- 14-2 At least six months prior to decommissioning, the proponent shall prepare a decommissioning and rehabilitation plan.
- 14-3 The proponent shall implement the plan required by condition 14-2.

Procedure

- 1 The Department of Environmental Protection is responsible for verifying compliance with the conditions contained in this statement, with the exception of conditions stating that the proponent shall meet the requirements of either the Minister for the Environment or any other public authority.
- 2 If the Department of Environmental Protection, other public authority or proponent is in dispute concerning compliance with the conditions contained in this statement, that dispute will be determined by the Minister for the Environment.
- 3 Prior to commencing operations, the Department of Environmental Protection, on advice of the Water Authority of Western Australia, the Departments of Conservation and Land Management and Health and the Fisheries Department will identify beneficial uses and beneficial use zones for the waters in the locality of the outlets and determine a mixing zone, to the requirements of the Minister for the Environment. The water quality criteria for the beneficial use zones will be those published in Environmental Protection Authority Bulletin No 103, Water Quality Criteria for Marine and Estuarine Waters of Western Australia, April 1981, or as revised from time to time.
- 4 The allocation of beneficial uses and beneficial use zones and the mixing zone will be periodically reviewed in the light of monitoring data, to the requirements of the Minister for the Environment on advice of the Department of Environmental Protection.



Peter Foss, MLC
MINISTER FOR THE ENVIRONMENT

13 MAR 1995



MINISTER FOR THE ENVIRONMENT;
EMPLOYMENT AND TRAINING

CHAIRMAN
ENVIRONMENTAL PROTECTION AUTHORITY

**BEENYUP WASTEWATER OCEAN OUTLET DUPLICATION INTO
MARMION MARINE PARK (STATEMENT 382)**

Pursuant to Section 46(1) of the Environmental Protection Act, I request that the Environmental Protection Authority inquire into the proponent's proposed changes to the environmental conditions set on the above project and report to me.

A handwritten signature in black ink, appearing to read 'C. Edwardes', written over the typed name.

CHERYL EDWARDES (Mrs) MLA
MINISTER FOR THE ENVIRONMENT

28 JUL 1998