Wastewater Treatment and Disposal, Albany, Change to Environmental Conditions

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Water Corporation

Section 46 Report and Recommendations of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 1126
February 2004

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
17/11/03	**Level of Assessment set (following any appeals upheld)**	**20**
23/01/04	**Final Proponent response to the issues raised**	**9**
23/02/04	**EPA report to the Minister for the Environment**	**4**

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Summary and recommendations

The Minister for the Environment has requested the Environmental Protection Authority (EPA) to consider and provide advice under Section 46(1) of the Environmental Protection Act 1986 on the Water Corporation's proposal to remove the limit on the application of nitrogen to the area of irrigated trees on the tree farm at Albany. This proposal was subsequently amended by the Water Corporation to raise the nitrogen application rate limit to 150 kilograms per hectare per year.

The original proposal, assessed in 1992, calculated nitrogen loadings in the wastewater applied to the grass bays and the irrigated trees at the wastewater disposal site taking into account an upgrade of the wastewater treatment plant to reduce nitrogen concentrations in the wastewater occurring in 2000 when volume flows were projected to increase. The upgrade of the wastewater treatment plant has not occurred, resulting in higher concentrations of nitrogen in the wastewater than originally allowed for and larger tonnages per year of nitrogen going to the wastewater disposal site.

The current change to the proposal will increase the amount of nitrogen sent to the disposal site from the assessed proposal maximum of 63 tonnes Total Nitrogen per year (TN/y) to a potential maximum of 102 tonnes TN/y (calculated on current TN concentrations of the wastewater and 6 megalitres (ML)/day of wastewater being received at the disposal site). The increased concentration of total nitrogen in the wastewater will affect the nitrogen load applied to the grass bays and the nitrogen content of the wastewater stored in the dam as well as the nitrogen load applied to the trees. Due to seepage from the grass bays and dam area there is groundwater mounding occurring beneath this area and the groundwater monitoring is showing an increase in TN concentration. Studies have indicated that there is a hydrological connection between groundwater and Seven Mile Creek via the existing drainage. (CyMod, 2002).

Currently phosphorus (P) is applied to the tree farm in excess of the needs of the trees. The proposal relies on the phosphorus retention capacity of the soil to prevent the off-site export of P in groundwater and via surface water. Phosphorus loads are unaffected by the change to conditions.

Section 46(3) of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on whether or not the proposed changes to conditions and procedures should be allowed. In addition, the EPA may make recommendations as it sees fit. This report provides the EPA's advice and recommendations to the Minister for the Environment on the environmental factors, conditions and procedures relevant to the proposal

Relevant environmental factor

It is the EPA's opinion that the following environmental factor is relevant to the proposal, which requires detailed evaluation in the report:

(a) Ground and surface water quality.

Conclusion

After consideration of the information provided by the proponent and proponent's commitments, the EPA has recommended that the nitrogen limit be increased to 150 kg/ha/y, in accordance with the amended request from the proponent but that this limit should apply for three years. As the Water Corporation is planing to either upgrade the wastewater

treatment plant, acquire more land for wastewater re-use or implement other environmentally acceptable wastewater disposal options, the higher TN application rate may not be required beyond the three year time limit. The Water Corporation has also indicated that changes in the site operation, such as decommissioning of the grassed bays, may be made by 2005/6. The three year time limit will provide the opportunity to prove the sustainability of the higher application rate at the tree farm where irrigation takes place all year round. At the expiry of the three year time limit a request may be made to the Minister for Environment to retain the higher TN application rate and will be evaluated considering any further information. Should no request be made to continue the 150 kg/ha/year TN application rate, the limit will revert back to the original 106 kg/ha/year TN application rate. The never to be exceeded limit of three tonnes nitrogen or one tonne phosphorus exported from the site remains as a safeguard for the environmental performance of the site.

In addition to the above, the EPA considers that conditions attaching to the existing environmental approval should be updated. It has therefore also reported on the updating of conditions.

Recommendations

The EPA submits the following recommendations to the Minister for the Environment:

1. The Minister notes that this report is pursuant to Section 46(3) of *the Environmental Protection Act 1986* and thus is limited to consideration of proposed changes to the original conditions.
2. The Minister notes that the proposed change is to raise the application limit for total nitrogen from 106 to 150 kilograms per hectare per year to the area of irrigated trees on the tree farm.
3. The EPA recommends that the Minister considers the report on the relevant environmental factors as set out in Section 3.
4. The Minister notes that the EPA has concluded that the application limit for nitrogen to the area of irrigated trees on the tree farm can be increased from 106 to 150 kilograms per hectare per year for three years and that this increase can be managed to meet the EPA's objectives, provided there is satisfactory implementation by the proponent of the amended conditions, including the proponent's commitments, as set out in Section 4. A request can be made to the Minister for Environment for extension of this time limit or revision of the application rate limit, if required.
5. The Minister imposes the amended conditions, commitments and procedures recommended in Appendix 3 of this report.

Conditions and commitments

The Water Corporation has made a number of additional commitments in relation to the change in the proposal. The proponent's additional and updated commitments as set out in the text of this report should be made enforceable conditions.

Recommended conditions

Having considered the proponent's commitments and the information provided in this report, the EPA recommends that the following conditions, as set out in Appendix 3, be imposed if the proposal by the Water Corporation is approved for implementation:

7-1 For three years following the date of this statement the proponent shall operate the overland flow area or utilize other means to remove the nitrogen content of the

incoming wastewater to a level which results in not more that 150 kilograms per hectare per year of total nitrogen being applied to the area of trees being irrigated.

7-2 Beyond the three year period referred to in condition 7-1, the proponent shall irrigate the area of trees with wastewater such that the total nitrogen application rate does not exceed 106 kilograms per hectare per year, unless the Minister for Environment on advice of the Environmental Protection Authority permits a higher total nitrogen application rate.

7-3 Any request for an increase in the total nitrogen application rate shall be supported with further information and/or trials.

8-3 Within 6 months following the date of this statement, the proponent shall prepare contingency plans in the event that monitoring indicates that total nutrient losses from the site to groundwater and surface water threaten to exceed three tonnes of nitrogen or one tonne of phosphorus per year, to the requirements of the Minister for Environment on advice of the Environmental Protection Authority ; and

9-1(2) monitoring reports to include a nitrogen balance for the land disposal site.

The existing Ministerial Conditions applied to the project Ministerial Statement Number 287 published on 7 October 1992, be subject to modifications necessary to:

(a) update the conditions to the current format. This applies to Conditions 1, 2, 3, 4, 9, and 10 of Statement 287.

The amended conditions and amended Consolidated Commitments statement are presented in Appendix 3.

Contents

1. Introduction and background

The Minister for the Environment has requested the Environmental Protection Authority (EPA) to consider and provide advice under Section 46(1) of the Environmental Protection Act 1986 on the Water Corporation's proposal to remove the limit on the application of nitrogen to the area of irrigated trees on the tree farm at Albany. This proposal was subsequently amended by the Water Corporation to raise the nitrogen application rate limit to 150 kilograms per hectare per year.

The proponent, the Water Corporation, operates the Albany wastewater treatment plant, situated in Timewell Road. Wastewater from the treatment plant is pumped to a tree farm situated in Gunn Road. At the tree farm wastewater is stored in two holding ponds from where it is pumped to overland flow grass bays for nutrient reduction. Surface run-off from the bays is collected in the main irrigation dam, from where it is used to irrigate the tree farm (Figure 1).

While copies of this proposal are publicly available it was not formally released for public review and comment as the current Ministerial conditions allow for the possibility of export of up to three tonnes of nitrogen or one tonne of phosphorus per year and therefore the potential environmental impact has not increased. However there is a change to the way the proposal is operated and therefore it has been assessed under the provisions of s46 of the *Environmental Protection Act 1986* to allow additional conditions and commitments to be inserted and the Ministerial Condition Statement to be updated to a current format.

Further details of the proposal are presented in Section 2 of this Report. Section 3 discusses the environmental factor relevant to the proposal. The Conditions and procedures to which the proposal should be subject, if the Minister determines that it may be implemented, are set out in Section 4. Section 5 presents the EPA's conclusions and Section 6, the EPA's Recommendations.

References are listed in Appendix 1. Environmental Condition Statement No 287, published on 7 October 1992, is presented in Appendix 2. The recommended amended conditions and procedures and proponent's commitments are provided in Appendix 3.

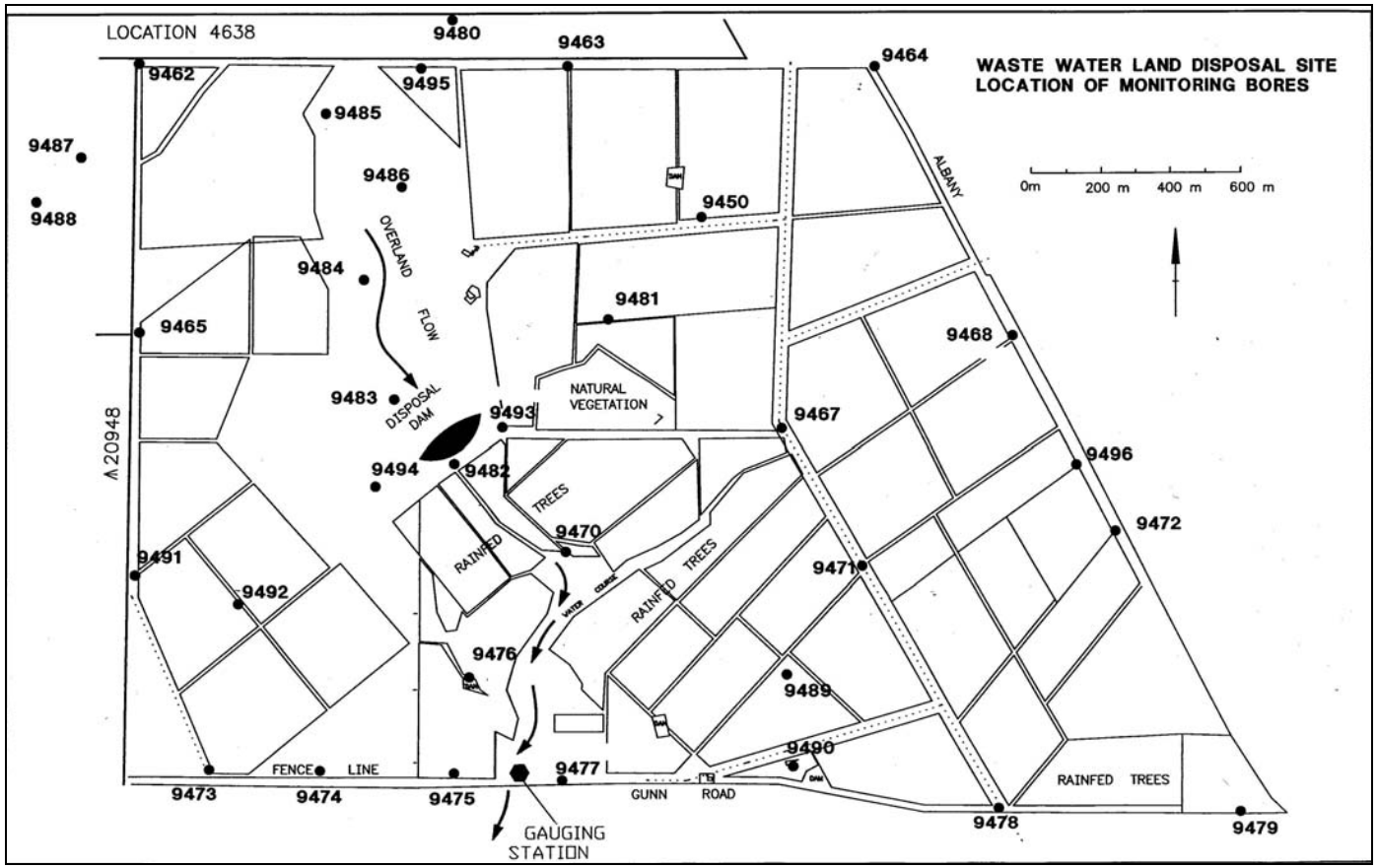

Figure 1: Albany Tree Farm - Site layout (supplied by Water Corporation)

2. The proposal

The proposal by the Water Corporation is to raise the application rate for total nitrogen from 106 to 150 kg/ha/y to the area of irrigated trees on the tree farm.

The original proposal, assessed in 1992, calculated nitrogen loadings in the wastewater applied to the grass bays and the irrigated trees at the wastewater disposal site taking into account an upgrade of the wastewater treatment plant to reduce nitrogen concentrations in the wastewater occurring in 2000 when volume flows were projected to increase. The upgrade of the wastewater treatment plant has not occurred, resulting in higher concentrations of nitrogen in the wastewater than originally allowed for and larger tonnages per year of nitrogen going to the wastewater disposal site.

The current change to the proposal will increase the amount of nitrogen sent to the disposal site from the assessed proposal maximum of 63 tonnes TN/y to a potential maximum of 102 tonnes TN/y (calculated on current TN concentrations of the wastewater and 6 megalitres (ML)/day of wastewater being received at the disposal site). The increased concentration of total nitrogen in the wastewater will affect the nitrogen load applied to the grass bays and the nitrogen content of the wastewater stored in the dam as well as the nitrogen load applied to the trees. Due to seepage from the grass bays and dam area there is groundwater mounding occurring beneath this area and the groundwater monitoring is showing an increase in TN concentration. Studies have indicated that there is a hydrological connection between groundwater and Seven Mile Creek via the existing drainage. (CyMod, 2002).

Currently phosphorus (P) is applied to the tree farm in excess of the needs of the trees. The proposal relies on the phosphorus retention capacity of the soil to prevent the off-site export of P in groundwater and via surface water. Phosphorus loads are unaffected by the change to conditions.

3. Relevant environmental factors

Section 46(3) of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on whether or not the proposed changes to conditions or procedures should be allowed. In addition, the EPA may make recommendations as it sees fit. It is the EPA's opinion that its inquiry into the proposed change in conditions should address the following relevant factors:

(a) ground and surface water quality.

The above relevant factor was identified from the EPA's consideration of all environmental factors generated from the proposed change in conditions in conjunction with the proposal characteristics (including significance of the potential impacts), the adequacy of the commitments, and the effectiveness of current management.

The environmental significance of the above issue of the proposal and its assessment is discussed in Sections 3.1 of this report. The description of the issue shows how it relates to the project. The assessment of the issue, combined with the consideration of the environmental factors relevant to it, is where the EPA considers if the proposal can be managed to meet its environmental objectives.

3.1 Ground and surface water quality

Description

The increased concentration of total nitrogen in the wastewater exported to the wastewater disposal site from the wastewater treatment plant has the potential to affect the groundwater quality due to the increased loads of nitrogen applied to the grass bays and the area of irrigated trees. Drainage of groundwater to Seven Mile Creek has the potential to affect downstream surface water quality.

The operation of the grass bays is causing the nitrogen content of the groundwater beneath the bays to increase and seepage, estimated at approximately 160-210 ML/y (Water Corporation 2003) is causing mounding of groundwater. Since 1997 the TN applied to the bays has increased approximately 2.4 times from 2576 to 6143 kg/ha/yr. The bays are achieving 33.3 mg/L TN at the dam inflow. Recent monitoring at the grass bay site shows the average concentration in deep drainage (below 150 cm) to be 4.4 mg/L compared to approximately 2 mg/L in 1998. Bores beneath the grass bays have shown an increase in TN concentration since the start of operation of the disposal site. A nitrogen balance study for the disposal site cannot account for 16 tonnes of nitrogen lost between the inflow to the site and the storage dam. The Water Corporation has suggested that volatilisation and denitrification losses are higher than assumed and are undertaking further investigations.

Loss of nitrogen from the dam via volatilisation is reducing the nitrogen concentration of the wastewater to 23 mg/L at the time of irrigation of the trees. This has allowed the total nitrogen application rate to be met until now (with the exception of 2000). Seepage estimated to be approximately 50ML/year occurs from the storage dam (CyMod, 2002). Irrigation water is applied to the tree farm throughout the year, though at a reduced rate during the winter months.

Currently there are no monitoring data to indicate that operations on the site are affecting soil condition. However, application of wastewater to soil can impact on the soil condition. Excess nutrients can cause algal or bacterial growths which reduce infiltration rates and could cause surface run-off. The soil may increase in salinity and soil sodicity which is “an accumulation of exchangeable sodium resulting in a deterioration in soil porosity and permeability” (CSIRO,1999).

Assessment

The area considered for assessment of this factor is ground and surface water moving off the wastewater disposal site, particularly to Seven Mile Creek which discharges to Lake Powell.

The EPA’s environmental objective for this factor is to maintain or improve the quality of ground and surface water to ensure that existing and potential uses, including ecosystem maintenance are protected.

The groundwater mounding and increase in nitrogen occurring beneath the grass bays has the potential to increase the movement of nutrients off-site. It is know that water in the aquifer is slow moving but the fate of nitrogen in groundwater is not known. There is an area of non-irrigated plantation downstream of the grass bays and dam that was designed to take up nutrients from the groundwater.

A study entitled “Flow and Solute Transport Modelling of the Albany Wastewater Tree Farm” has been undertaken by CyMod Systems Pty Ltd and Rockwater Pty Ltd (CyMod,

2002). Accuracy of the water modelling is, however, limited by the amount of hydrogeological data available. It is recommended that a more detailed hydrogeological assessment of the site is undertaken to improve this modelling. The predicted nitrogen discharges to waterways should also be expressed as likely ranges rather than a single number because of the uncertainties in the conceptual model. Modelling indicates that there is a hydrological connection between groundwater and Seven Mile Creek via the existing drainage. The flow of ground and surface water from the site via Seven Mile Creek is monitored at Gunn Road. Between 2002 and 2003 the reported average nitrogen concentration for approximately the same estimated flow volume has doubled from 0.74 to 1.53 mg/L. This may be indicative of an upward trend and needs to be monitored closely. Seven Mile Creek flows to Lake Powell, a conservation category lake where eutrophication has occurred previously, and then to Torbay Inlet. A study has estimated that the Albany tree farm currently contributes only 0.5% of the total nitrogen to the Torbay Catchment and is therefore a small contributor compared to other sources (Department of Agriculture and Ecotones & Associates, 2002).

A study "Management and Monitoring of Nitrogen and Phosphorus at the Albany Effluent Irrigation Tree Farm" was undertaken for the Water Corporation by Professor Mark Adams of the University of Western Australia (Adams, 2002). This study showed that the irrigated tree stems account for 25% of nitrogen applied to the trees in the irrigated wastewater. Litter and the soil are major sinks for the remaining nitrogen and there are losses of nitrogen through denitrification. The nitrogen content of the litter layer and surface soils is likely to become greater with effluent irrigation and increased productivity will ultimately result in increased mobilisation of nitrogen in soil organic matter. The EPA considers that soil investigations should be undertaken to determine the extent that nutrients are immobilised within the soil profile and the extent to which denitrification is taking place. The fate of nitrogen is not known and it is recommended that this is investigated.

Therefore the EPA recommends the need for caution in applying more nitrogen to the site until a greater understanding of the fate of the nitrogen has been obtained. The Water Corporation has undertaken to limit TN to the tree farm to 150 kg/ha/y and to further review the studies on the site and/or undertake trials to establish the sustainability of applying more nitrogen.

Summary

Having particular regard to the:

(a) mounding of the water table and increased nitrogen content in the groundwater below the grass bays;

(b) limited hydrogeological information to precisely determine the fate of the groundwater and drainage to Seven Mile Creek;

(c) lack of knowledge of the fate of all the nitrogen received at the site;

(d) year round irrigation; and

(e) uncertainty of the fate of the nitrogen applied to the irrigated tree area which is not taken up by the trees,

it is the EPA's opinion that the application rate limit for total nitrogen may be raised to 150kg/ha/y but that this rate should apply for three years, provided the never to be exceeded limits of three tonnes of TN or one tonne of P exported from the site are met.

It should be noted that the three tonne TN limit was set to allow for export of nitrogen already present on the site due to previous land use and unavoidable losses required for the leaching of salt from the tree root zone, but that there was a "high probability that discharge of nutrients would be far less than this figure" (Kinhill 1992). The three tonne limit was not based on potential environmental impact and the EPA considered in the original assessment that off-site losses of nutrients due to wastewater disposal would be "so small as to be undetectable for the duration of the anticipated operational life of the site" (EPA 1992). The three tonne limit should not therefore be taken as permission to allow increased discharge of nutrients to this level by overloading of the site. The Water Corporation should ensure that nitrogen management on the site meets the aim of the previous assessment and waste minimisation principles. The current estimate of nutrient export from the site is estimated at 850 kg of TN and 23 kg of TP per year and is well below the limit. The proponent has also committed to the preparation of contingency plans should monitoring indicate that the limit of three tonnes of TN or one tonne of P may be exceeded. Any request to extend the application rate limit of 150 kg/ha/y of TN or to further increase the application rate further will require support by further information and/or trials before it is approved.

The Water Corporation is proposing to upgrade the Timewell Road treatment plant to biologically reduce nitrogen concentrations to less than 20mg/L, which may result in the 14ha of overland flow bays being removed and replaced with trees. The expected timeframe for the upgrade is 2005/6. The Water Corporation is investigating additional irrigation areas around Timewell Road, Gunn Road and along the pipeline route to reduce the nitrogen loading rate. These proposals, if implemented, are expected to reduce the amount of nitrogen being received at the tree farm and may remove the necessity for an extension of the 150 kg/ha/y TN application rate limit.

In addition, soil condition should continue to be monitored. In applying more nitrogen to the trees, more wastewater, containing other constituents, is likely to be applied. Deterioration of soil condition can result in surface run-off or affect the long term use of the site.

4. Conditions and commitments

Section 46(3) of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on whether or not the proposed changes to conditions or procedures should be allowed. In addition, the EPA may make recommendations as it sees fit.

The Water Corporation has made a number of additional commitments in relation to the change in commitments.

4.1 Recommended commitments

The proponent's commitments as shown below should be made enforceable conditions:

1 a proposal for the future management of the land disposal site to be referred to the EPA at least one year before the hydraulic capacity of the site is attained; and
2 nitrogen and/or phosphorus removal at the Timewell Road treatment plant to be improved if the land treatment system fails to perform to design.

The following commitments have been updated (number according to the audit table);

8 Sludge from the plant to be disposed of in accordance with the document *Western Australian Guidelines for Direct Land Application of Biosolids and Biosolids*

Products, Department of Environmental Protection, Water and Rivers Commission and Department of Health (February, 2002) or other method approved by the Department of Environmental Protection.

14 The land treatment system to be managed and operated in accordance with the Agricultural and Resource Management Council of Australia and New Zealand, Australian and New Zealand Environment and Conservation Council, National Health and Medical Research Council Guidelines For Sewerage Systems, Use of Reclaimed Water, (November 2002), or as otherwise approved by the Department of Health.

18 The performance of the wastewater disposal site to be monitored in accordance with a monitoring programme agreed with the Department of Environmental Protection and amended from time to time.

21.3 • provide a fire control vehicle to the site (by donating monies to the local Bush Fire Brigade to fund a vehicle).

The following commitments have been removed as they are requirements under other legislation:

7.1 • noise levels from the plant to comply with the noise limits likely to be set by the Environmental Protection Authority;

21.1 • maintain firebreaks on the site to the satisfaction of the Bush Fires Board;

21.6 • ensure that staff complied with the provisions of the *Bush Fires Act 1954*.

The following commitment has been removed and replaced by recommended condition 7 (Appendix 3):

15.1 The overland flow area would be operated to remove the nitrogen content in the incoming wastewater to a level that resulted in not more than 106 kg/ha of total nitrogen per annum being applied to the area of trees irrigated.

4.2 Recommended conditions

Having considered the proponent's commitments and the information provided in this report, the EPA recommends that the following conditions, as set out in Appendix 3, be imposed if the proposal by the Water Corporation is approved for implementation:

7-1 For three years following the date of this statement the proponent shall operate the overland flow area or utilize other means to remove the nitrogen content of the incoming wastewater to a level which results in not more that 150 kilograms per hectare per year of total nitrogen being applied to the area of trees being irrigated.

7-2 Beyond the three year period referred to in condition 7-1, the proponent shall irrigate the area of trees with wastewater such that the total nitrogen application rate does not exceed 106 kilograms per hectare per year, unless the Minister for Environment on advice of the Environmental Protection Authority permits a higher total nitrogen application rate.

7-3 Any request for an increase in the total nitrogen application rate shall be supported with further information and/or trials.

8-3 Within 6 months following the date of this statement, the proponent shall prepare contingency plans in the event that monitoring indicates that total nutrient losses from

the site to groundwater and surface water threaten to exceed three tonnes of nitrogen or one tonne of phosphorus per year, to the requirements of the Minister for Environment on advice of the Environmental Protection Authority ; and

9-1(2) monitoring reports to include a nitrogen balance for the land disposal site.

The existing Ministerial Conditions applied to the project Ministerial Statement Number 287 published on 7 October 1992, be subject to modifications necessary to:

(a) update the conditions to the current format. This applies to Conditions 1, 2, 3, 4, 9, and 10 of Statement 287.

The amended conditions and amended Consolidated Commitments statement are presented in Appendix 3.

5. Conclusions

After consideration of the information provided by the proponent and proponent's commitments, the EPA has recommended that the nitrogen limit be increased to 150 kg/ha/y, in accordance with the amended request from the proponent but that this limit should apply for three years. As the Water Corporation is planing to either upgrade the wastewater treatment plant, acquire more land for wastewater re-use or implement other environmentally acceptable wastewater disposal options, the higher TN application rate should not be required beyond the three year time limit. The Water Corporation has also indicated that changes in the site operation, such as decommissioning of the grassed bays, may be made by 2005. The three year time limit will provide the opportunity to prove the sustainability of the higher application rate at the tree farm where irrigation takes place all year round. At the expiry of the three year time limit a request may be made to the Minister for Environment to retain the higher TN application rate and will be evaluated considering any further information. Should no request be made to continue the 150 kg/ha/year TN application rate, the limit will revert back to the original 106 kg/ha/year TN application rate. The never to be exceeded limit of three tonnes nitrogen or one tonne phosphorus exported from the site remains as a safeguard for the environmental performance of the site.

In addition to the above, the EPA considers that conditions attached to the existing environmental approval should be updated. It has therefore also reported on the updating of conditions.

6. Recommendations

The EPA submits the following recommendations to the Minister for the Environment:

1. The Minister notes that this report is pursuant to Section 46(3) of *the Environmental Protection Act 1986* and thus is limited to consideration of proposed changes to the original conditions.
2. The Minister notes that the proposed change is to raise the application limit for total nitrogen from 106 to 150 kilograms per hectare per year to the area of irrigated trees on the tree farm.

3. The EPA recommends that the Minister considers the report on the relevant environmental factors as set out in Section 3.
4. The Minister notes that the EPA has concluded that the application limit for nitrogen to the area of irrigated trees on the tree farm can be increased from 106 to 150 kilograms per hectare per year for three years and that this increase can be managed to meet the EPA's objectives, provided there is satisfactory implementation by the proponent of the amended conditions, including the proponent's commitments, as set out in Section 4. A request can be made to the Minister for Environment for extension of this time limit or revision of the application rate limit, if required.
5. The Minister imposes the amended conditions, commitments and procedures recommended in Appendix 3 of this report.

Appendix 1

References

Agricultural and Resource Management Council of Australia and New Zealand, Australian and New Zealand Environment and Conservation Council, National Health and Medical Research *Council Guidelines For Sewerage Systems, Use of Reclaimed Water*, November 2002

Adams 2002 *Management and Monitoring of nitrogen and phosphorus at the Albany Effluent Irrigation Tree Farm* Professor Mark Adams, The University of Western Australia, November 2002

CSIRO 1999 *Sustainable Effluent Irrigated Plantations: An Australian Guide*, CSIRO Forestry and Forest Products, 1999

CyMod 2002 *Flow and Solute Modelling of the Albany Wastewater Tree Farm* CyMod Systems Pty Ltd and Rockwater Pty Ltd November 2002

Department of Agriculture and Ecotones & Associates *Best Management Practices for Nutrient Reduction in Wilson Inlet and Torbay Catchment*, August 2002

EPA 1992 *Albany Sewage – treatment and disposal of wastewater*, Bulletin 638, July 1992, Environmental Protection Authority

erg 2002 *Desk-top study of water use of irrigated plantations at the Albany effluent irrigated tree-farm*, C Macfarlane, P Grierson and M Adams, Ecosystems Research Group, Faculty of Natural and Agricultural Sciences, The University of Western Australia, November 2002

Kinhill 1992 *Planning Study into Land Treatment of Albany Wastewater*, Kinhill Engineers Pty Ltd, February 1992

Water Corporation 2003 *Correspondence dated 17 December 2003*

Appendix 2

Statement of Environmental Conditions of Approval (1992)

Ass # 654

Bull # 638

State # 287

WESTERN AUSTRALIA

MINISTER FOR THE ENVIRONMENT

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

WASTEWATER TREATMENT & DISPOSAL, ALBANY (654)

WATER AUTHORITY OF WESTERN AUSTRALIA

This proposal may be implemented subject to the following conditions:

1 Proponent Commitments

The proponent has made a number of environmental management commitments to protect the environment.

1-1 In implementing the proposal, the proponent shall fulfil the commitments (which are not inconsistent with the conditions or procedures contained in this statement) made in the Public Environmental Review and included as Appendix 1 in Environmental Protection Authority Bulletin 638 (A copy of the commitments is attached).

2 Implementation

Changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment.

2-1 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.

3 Land-based Wastewater Disposal

The final stage of wastewater treatment will be by slow-rate infiltration of secondary treated wastewater onto woodlots. Stringent standards have been placed on this treatment process and the formulation of contingency plans is required (see condition 5).

3-1 Within two years of commissioning the land disposal site, the proponent shall commence trial plantings on the land disposal site to ascertain the merits and disadvantages of alternative tree species and provenances.

3-2 The proponent shall maintain an unharvested 50 metre visual buffer along the southern periphery (Gunn Road border) of the land disposal site. This buffer shall consist of a combination of plantation and ornamental native species.

3-3 The proponent shall not irrigate remnant native vegetation on the land disposal site with wastewater.

3-4 The proponent shall design and manage the rising main leading into the holding pond such that the outlet is submerged at all times.

Published On

- 7 OCT 1992

3-5 Commencing at the time of commissioning the land disposal site, the proponent shall measure soil infiltration rates on a triennial basis and shall ensure that appropriate soil water storage capacities are maintained.

3-6 If the values measured according to the requirements of condition 3-5 are sufficiently low as to threaten the retention of contaminants on the site, the proponent shall implement approved contingency measures (see conditions 5 and 6-4).

4 Timewell Road (No. 2) Treatment Plant

The Timewell Road plant is the main wastewater treatment plant for Albany and is currently licensed. The site has been established for some time with future expansion in mind. Ultimately this plant will receive the domestic wastewater streams from the No. 1, No. 3 and No. 4 treatment plants. The Timewell Road treatment plant is the source of effluent that will be irrigated at the land-based wastewater disposal site.

4-1 The proponent shall retain remnant native vegetation at the Timewell Road (No. 2) treatment plant site where practicable.

5 Contingency Measures

Contingency measures should be prepared by the proponent in the unlikely event that the land-based wastewater disposal site does not perform to the required level.

5-1 The proponent shall not irrigate Reserve 20948 (vested in the National Parks and Nature Conservation Authority) with wastewater.

5-2 Within 12 months of the date of this statement, the proponent shall prepare an alternative plan for the temporary irrigation of treated wastewater in the event that insect attack, fire or a decline in soil infiltration threaten to cause either:

- nutrient losses from the site to exceed 3 tonne of nitrogen and 1 tonne of phosphorus per year; or
- surface runoff from the site to occur more frequently than 1 year in 10 (based on long term rainfall probabilities).

5-3 The proponent shall implement the plan referred to in condition 5-2 when required by the Environmental Protection Authority.

6 Monitoring and Reporting

Monitoring is to be conducted by the proponent in order to assess the environmental impacts of the project and to provide feedback for future management. On-going monitoring and reporting requirements will be reviewed by the Environmental Protection Authority after submission of the third triennial report.

6-1 The proponent shall submit to the Environmental Protection Authority brief annual and more detailed triennial reports addressing, but not limited to the following:

1. a water balance for the land disposal site, including a comparison between measured and estimated (modelled) evapotranspiration for both rainfed and irrigated woodlots;
2. results of environmental monitoring;
3. results of infiltration rate measurements, trends and implications for the onsite retention of water and contaminants (see condition 3-6);
4. results of trial plantings of alternative species (see condition 3-1);
5. compliance with the commitments; and
6. any proposed changes to management or monitoring of aspects of the system.

6-2 Within three years of commissioning the land disposal site, the proponent shall commence submitting the reports required by condition 6-1 to the Environmental Protection Authority and shall make them publicly available.

6-3 The proponent shall report any breach or anticipated breach of the environmental commitments to the Environmental Protection Authority immediately.

6-4 If impacts are detected which are deemed to be unacceptable by the Environmental Protection Authority, the proponent shall modify and remedy the operations of the treatment plants and/or the land disposal site.

7 Decommissioning

The proponent is responsible for decommissioning and removal of treatment and disposal installations and rehabilitating the site and its environs (including de-stumping).

7-1 At least six months prior to decommissioning the land disposal site or any of the treatment plants (Numbers 1, 2, 3 or 4), the proponent shall prepare a decommissioning and rehabilitation plan.

7-2 The proponent shall implement the decommissioning and rehabilitation plan required by condition 7-1.

8 Proponent

These conditions legally apply to the nominated proponent.

8-1 No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister for the Environment has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

9 Time Limit on Approval

The environmental approval for the proposal is limited.

9-1 If the proponent has not substantially commenced the project within five years of the date of this statement, then the approval to implement the proposal as granted in this statement shall lapse and be void. The Minister for the Environment shall determine any question as to whether the project has been substantially commenced. Any application to extend the period of five years referred to in this condition shall be made before the expiration of that period, to the Minister for the Environment by way of a request for a change in the condition under Section 46 of the Environmental Protection Act. (On expiration of the five year period, further consideration of the proposal can only occur following a new referral to the Environmental Protection Authority).

10 Compliance Auditing

In order to ensure that environmental conditions and commitments are met, an audit system is required.

10-1 The proponent shall prepare periodic "Progress and Compliance Reports", to help verify the environmental performance of this project, in consultation with the Environmental Protection Authority.

Procedure

The Environmental Protection Authority 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 government agency.

If the Environmental Protection Authority, other government agency 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.

Note: The proponent will be required to apply for a Works Approval and Licence for the land disposal site under the provisions of Part V of the Environmental Protection Act.

Bob Pearce, MLA
MINISTER FOR THE ENVIRONMENT

6 OCT 1992

PROPONENT'S COMMITMENTS

WASTEWATER TREATMENT & DISPOSAL

ALBANY (654)

WATER AUTHORITY OF WESTERN AUSTRALIA

The proponent has made the following environmental commitments:

Chapter Nine

SUMMARY OF COMMITMENTS

9.1 WASTEWATER DISCHARGES

9.1.1 NO. 1 (KING POINT) TREATMENT PLANT

Discharge from the No. 1 treatment plant would cease in December 1994.

9.1.2 NO. 2 (TIMEWELL ROAD) TREATMENT PLANT

Discharge from the No. 2 treatment plant into Five Mile Creek would cease in December 1996.

9.1.3 LAND TREATMENT SITE

The nutrient discharge from the land treatment site in groundwater or surface water would not exceed 1 t of phosphorus and 3 t of total nitrogen per annum.

9.2 NO. 2 TREATMENT PLANT

The existing No. 2 aerated pond treatment plant would be upgraded to a capacity of 3,500 kL/d by December 1994.

The treatment facilities would be further upgraded, enlarged or replaced as necessary to meet further demand, depending on their performance and that of the land treatment system.

From December 1994, the volume of wastewater pumped daily to the land treatment site would not be less than the volume of water diverted from the No. 1 treatment plant. The volume pumped would be gradually increased as the trees grew on the land treatment site, until discharge into Five Mile Creek ceased in December 1996.

The aerated pond plant and any subsequent upgraded or new plant would be managed and operated in such a manner that:

- noise levels from the plant complied with the noise limits likely to be set by the EPA;

- offensive odours would only be detectable at the nearest odour-sensitive premises on rare occasions;

- the wastewater from the plant did not create odour problems on the land treatment site.

Appropriate remedial action would be taken if noise or odour reached unacceptable levels.

Sludge from the plant would be disposed of in accordance with the proposed Australian Water Resources Council *Draft guidelines for sewerage systems—Sludge management* or by a method approved by the Health Department of Western Australia.

Earthworks for the new aerated pond and storage pond would be carried out in a manner that minimized increased sediment flow into Five Mile Creek.

9.3 LAND TREATMENT SYSTEM

9.3.1 CONSTRUCTION

Establishment of woodlot

Establishment of the woodlot would be carried out in an environmentally responsible manner.

In particular, shatter ploughing and mounding would avoid developed watercourses and would be managed to minimize increased sediment flow into Seven Mile Creek. Fifteen metre wide buffer zones would be maintained on each side of the creek.

The spraying of herbicide for pre-emergent and post-emergent weed control would be closely managed to avoid pollution of Seven Mile Creek or overspray on to adjoining properties.

Earthworks

Earthworks for the construction of the storage dam and tracks and roads on the property would take place during the summer. The drainage discharge from disturbed areas would be diverted on to areas of established pasture to minimize increased sediment flow into Seven Mile Creek to the satisfaction of the EPA.

The generation of dust would be suppressed by the use of water tankers.

9.3.2 OPERATION

The land treatment system would be managed and operated in accordance with the National Health and Medical Research Council and Australian Water Resources Council guidelines (1987) for land treatment of wastewater, or as otherwise approved by the Health Department of Western Australia.

Overland flow area

The overland flow area would be operated to remove the nitrogen content in the incoming wastewater to a level that resulted in not more than 106 kg/ha of total nitrogen per annum being applied to the area of trees irrigated.

Storage dam

The storage of wastewater in the dam would be managed so that no overflow of the dam occurred in 90% of years.

Irrigation system

The operation of the irrigation system would be managed in a manner that:

- achieved no runoff in 90% of years;
- achieved moisture levels in the effective root zone of the trees sufficient to limit downward percolation to the amount required to ensure root zone salinity was maintained at a sustainable level;
- optimized evapotranspiration by the trees.

Monitoring

The performance of the system would be monitored in accordance with the programme set out in Appendix D.

Insect attack

The Water Authority would join with CALM and other landholders with tree plantations in the Albany area to monitor insect activity in order to provide early warning of insect build-up.

If serious insect attack appeared likely, the Water Authority, in conjunction with CALM, would develop and implement a plan to control the attack.

Fire

The Water Authority would:

- maintain firebreaks on the site to the satisfaction of the Bush Fires Board;
- keep all fire dams on the site full of water during summer;
- provide and maintain fire control vehicles on the site to the satisfaction of the Bush Fires Board;

- ensure that Water Authority employees were trained to handle fire incidents;
- ensure that staff complied with the provisions of the *Bush Fires Act 1954*;
- prohibit smoking in the areas planted with trees.

9.3.3 CONTINGENCY PLANNING

If the land treatment system failed to perform to design, the Water Authority would, as necessary:

- expand the overland flow and irrigated tree areas
- construct an additional storage dam.

Appendix 3

Recommended Environmental Conditions and Proponent's Consolidated Commitments

Statement No.

RECOMMENDED CONDITIONS AND PROCEDURES

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

WASTEWATER TREATMENT & DISPOSAL, ALBANY

Proposal: The operation of a wastewater treatment plant at Timewell Road, Albany and disposal of the treated wastewater (at a maximum rate of 6 megalitres per annum) at a 550 hectare land disposal site on Gunn Road, Albany. The wastewater undergoes nutrient reduction by flowing over grassed bays. The wastewater is then collected in a dam and used for irrigation of a tree plantation.

Proponent: Water Corporation

Proponent Address: P O Box 100, LEEDERVILLE WA 6902

Assessment Number: 1508

Report of the Environmental Protection Authority: Bulletin 1126

Previous Assessment Number: 654

Previous Statement Number: 287

Previous Report of the Environmental Protection Authority: Bulletin 638

The implementation of the proposal to which the above reports of the Environmental Protection Authority relate is subject to the following conditions and procedures, which replace all previous conditions and procedures:

1 Implementation and Changes

1-1 The proponent shall implement the proposal as documented in the Public Environmental Review "Albany sewage – treatment and disposal of wastewater" and Bulletin 638 subject to the conditions of this statement.

1-2 Where the proponent seeks to change any aspect of the proposal as documented in the Public Environmental Review "Albany sewage – treatment and disposal of wastewater" and Bulletin 638 in any way that the Minister for the Environment determines, on advice of the Environmental Protection Authority, is substantial, the proponent shall refer the matter to the Environmental Protection Authority.

1-3 Where the proponent seeks to change any aspect of the proposal as documented in the Public Environmental Review "Albany sewage – treatment and disposal of wastewater" and Bulletin 638 in any way that the Minister for the Environment determines, on advice of the Environmental Protection Authority, is not substantial, the proponent may implement those changes upon receipt of the approval of the Minister for the Environment.

2 Proponent Commitments

2-1 The proponent shall implement the environmental management commitments documented in schedule 1 of this statement.

3 Proponent Nomination and Contact Details

3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.

3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.

3-3 The nominated proponent shall notify the Department of Environmental Protection of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

4-1 The proponent shall substantially commence the modified proposal within five years of the date of this statement or the approval granted in the statement published on 7 October 1992 shall lapse and be void.

Note: The Minister for the Environment will determine any dispute as to whether the modified proposal has been substantially commenced.

4-2 The proponent shall make application for any extension of approval for the substantial commencement of the modified proposal beyond five years from the date of this statement to the Minister for the Environment, prior to the expiration of the five-year period referred to in condition 4-1

The application shall demonstrate that:

1. the environmental factors of the modified proposal have not changed significantly;
2. new, significant, environmental issues have not arisen; and
3. all relevant government authorities have been consulted.

Note: The Minister for the Environment may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the modified proposal.

5 Land-based Wastewater Disposal

5-1 Within two years following commissioning of the land disposal site, the proponent shall commence trial plantings on the land disposal site to ascertain the merits and disadvantages of alternative tree species and provenances, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

5-2 The proponent shall maintain an unharvested 50-metre visual buffer along the southern periphery (Gunn Road border) of the land disposal site, consisting of a combination of plantation and ornamental native species, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

5-3 The proponent shall not irrigate remnant native vegetation on the land disposal site with wastewater.

5-4 The proponent shall design and manage the rising main leading into the holding pond such that the outlet is submerged at all times.

5-5 Commencing at the time of commissioning the land disposal site, the proponent shall measure soil infiltration rates on a triennial basis and shall ensure that appropriate soil water storage capacities are maintained, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

5-6 If the values measured in accordance with the requirements of condition 5-5 are sufficiently low as to threaten the retention of contaminants on the site, the proponent shall implement contingency measures (see conditions 8 and 9-4) , to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

6 Timewell Road (No. 2) Treatment Plant

6-1 The proponent shall retain remnant native vegetation at the Timewell Road (No. 2) treatment plant site, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

7 Operation of wastewater disposal site

7-1 For three years following the date of this statement, the proponent shall operate the overland flow area or utilize other means to remove the nitrogen content of the incoming wastewater to a level which results in not more that 150 kilograms per hectare per year of total nitrogen being applied to the area of trees being irrigated.

7-2 Beyond the three year period referred to in condition 7-1, the proponent shall irrigate the area of trees with wastewater such that the total nitrogen application rate does not exceed 106 kilograms per hectare per year, unless the Minister for the Environment on advice of the Environmental Protection Authority permits a higher total nitrogen application rate.

7-3 Any request for an increase in the total nitrogen application rate shall be supported with further adequate information and/or trials.

8 Contingency Measures

8-1 The proponent shall not irrigate Reserve 20948, which is vested in the National Parks and Nature Conservation Authority, with wastewater.

8-2 Within 6 months following the date of this statement, the proponent shall prepare an alternative plan for the temporary irrigation of treated wastewater in the event that insect attack, fire or a decline in soil infiltration threaten to cause either:

1. nutrient losses from the site to exceed 3 tonnes of nitrogen or 1 tonne of phosphorus per year; or
2. surface runoff from the site to occur more frequently than 1 year in 10 (based on long term rainfall probabilities),

to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8-3 Within 6 months following the date of this statement, the proponent shall prepare contingency plans in the event that monitoring indicates that total nutrient losses from the site to groundwater and surface water threaten to exceed 3 tonnes of nitrogen or 1 tonne of phosphorus per year, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8-4 The proponent shall implement the plans referred to in conditions 8-2 and 8-3, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

9 Monitoring

9-1 The proponent shall submit to the Department of Environmental Protection brief annual and more detailed triennial reports addressing the following:

1 a water balance for the land disposal site, including a comparison between measured and estimated (modelled) evapotranspiration for both rainfed and irrigated woodlots;
2 a nitrogen balance for the land disposal site;
3 results of environmental monitoring;
4 results of infiltration rate measurements, trends and implications for the onsite retention of water and contaminants (see condition 5-6);
5 results of trial plantings of alternative species (see condition 5-1), and
6 any proposed changes to management or monitoring of aspects of the system.

9-2 Within three years following commissioning of the land disposal site, the proponent shall commence submitting the reports required by condition 9-1 to the Department of Environmental Protection and shall make them publicly available.

9-3 The proponent shall report any breach or anticipated breach of the environmental conditions and commitments to the Department of Environmental Protection within five working days.

9-4 If impacts are detected which are deemed to be unacceptable by the Department of Environmental Protection, the proponent shall modify and remedy the operations of the treatment plants and/or the land disposal site, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

10 Compliance Audit and Performance Review

10-1 The proponent shall prepare an audit program and submit compliance reports to the Department of Environmental Protection which address:

1. evidence of compliance with the conditions and commitments; and

2. the performance of the environmental management plans and programs.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environmental Protection is empowered to audit the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.

10-2 The proponent shall submit a performance review report every six years after the start of operations, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, which addresses:

1. the major environmental issues associated with the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets;

2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;

3. significant improvements gained in environmental management, including the use of external peer reviews;

4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and

5. the proposed environmental targets over the next five years, including improvements in technology and management processes.

11 Decommissioning Plans

11-1 Within 6 months following the date of this statement, the proponent shall prepare a Preliminary Decommissioning Plan, which provides the framework to ensure that the wastewater treatment and disposal sites are left in an environmentally acceptable condition to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The Preliminary Decommissioning Plan shall address:

1 the conceptual plans for the removal or, if appropriate, retention of plant and infrastructure;

2 long-term management of ground and surface water systems or soil affected by the storage and disposal of wastewater (where applicable);

3 a conceptual rehabilitation plan for all disturbed areas and a description of a process to agree on the end land use(s) with all stakeholders;

4 a conceptual plan for a care and maintenance phase; and

5 management of noxious materials to avoid the creation of contaminated areas.

11-2 At least 12 months prior to the anticipated date of decommissioning, or at a time agreed with the Environmental Protection Authority, the proponent shall prepare a Final Decommissioning Plan designed to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The Final Decommissioning Plan shall address:

1 removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders;

2 long-term management of ground and surface water systems or soil affected by the storage and disposal of wastewater (where applicable);

3 rehabilitation of all disturbed areas to a standard suitable for the agreed new land use(s); and

4 identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.

11-3 The proponent shall implement the Final Decommissioning Plan required by condition 11-2 until such time as the Minister for the Environment determines, on advice of the Environmental Protection Authority, that the proponent's decommissioning responsibilities have been fulfilled.

11-4 The proponent shall make the Final Decommissioning Plan required by condition 11-2 publicly available, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

Procedures

1 Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environmental Protection for the preparation of written notice to the proponent.

2 The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice to the Department of Environmental Protection.

3 Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Department of Environmental Protection.

Notes

1 The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environmental Protection over the fulfilment of the requirements of the conditions.

2 The proponent is required to hold a Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986.*

3 Within this statement, to "have in place" means to "prepare, implement and maintain for the duration of the proposal".

Schedule 1

Proponent's Environmental Management Commitments

As revised on 23 January 2004

WASTEWATER TREATMENT AND DISPOSAL, ALBANY

(Assessment No.1508)

Water Corporation

The proponent has made the following environmental management commitments (numbered in accordance with the existing audit table):

(A) WASTEWATER DISCHARGES

NO 1 (KING POINT) TREATMENT PLANT

1 Discharge from the No 1 treatment plant to cease in December 1994.

NO 2 (TIMEWELL ROAD) TREATMENT PLANT

2 Discharge from the No 2 treatment plant into Five Mile Creek to cease in December 1996.

LAND TREATMENT SITE

3 The nutrient discharge from the land treatment site in groundwater and surface water not to exceed 1 tonne of phosphorus or 3 tonnes of nitrogen per annum.

(B) NO 2 TREATMENT PLANT

4 The existing No 2 aerated pond treatment plant to be upgraded to a capacity of 3 500 kilolitres/day by December 1994.

5 The treatment facilities to be further upgraded, enlarged or replaced as necessary to meet further demand, depending on their performance and that of the land treatment system.

6.1 From December 1994, the volume of wastewater pumped daily to the land treatment site to be not less than the volume of water diverted from the No 1 treatment plant.

6.2 The volume pumped to be gradually increased as the trees grow on the land treatment site, until discharge into Five Mile Creek ceases in December 1996.

The aerated pond plant and any subsequent upgraded or new plant to be managed and operated in such a manner that:

7.2 • offensive odours to be only detectable at the nearest odour-sensitive premises on rare occasions;

7.3 • the wastewater from the plant not to create odour problems on the land treatment site.

7.4 Appropriate remedial action to be taken if noise or odour reaches unacceptable levels.

8 Sludge from the plant to be disposed of in accordance with the document *Western Australian Guidelines for Direct Land Application of Biosolids and Biosolids Products*, Department of Environmental Protection, Water and Rivers Commission and Department of Health (February, 2002) or other method approved by the Department of Environmental Protection.

9 Earthworks for the new aerated pond and storage pond to be carried out in a manner that minimized increased sediment flow into Five Mile Creek.

(C) LAND TEATMENT SYSTEM

CONSTRUCTION

Establishment of woodlot

10 Establishment of the woodlot to be carried out in an environmentally responsible manner.

11.1 In particular, shatter ploughing and mounding to avoid developed watercourses and to be managed to minimize increased sediment flow into Seven Mile Creek.
11.2 Fifteen metre wide buffer zones to be maintained on each side of the creek.

12 The spraying of herbicide for pre-emergent and post-emergent weed control to be closely managed to avoid pollution of Seven Mile Creek or overspray onto adjoining properties.

Earthworks

13.1 Earthworks for the construction of the storage dam and tracks and roads on the property to take place during summer.
13.2 Drainage discharge from disturbed areas to be diverted onto areas of established pasture to minimize increased sediment flow into Seven Mile Creek.
13.3 The generation of dust to be suppressed by the use of water tankers.

OPERATION

14 The land treatment system to be managed and operated in accordance with the Agricultural and Resource Management Council of Australia and New Zealand, Australian and New Zealand Environment and Conservation Council, National Health and Medical Research Council Guidelines For Sewerage Systems, Use of Reclaimed Water, (November 2002), or as otherwise approved by the Department of Health.

1.1.1.2 Overland flow area

16 The storage of wastewater in the dam to be managed so that overflow of the dam occurs not in more than 1 year in 10 (based on long term rainfall probabilities).

Irrigation system

The operation of the irrigation system to be managed in a manner that:

17.1 • run-off occurs in not more than 1 year in 10 (based on long term rainfall probabilities);
17.2 • achieves moisture levels in the effective root zone of the trees sufficient to limit the downward percolation to the amount required to ensure root zone salinity is maintained at a sustainable level;
17.3 • optimised evapotranspiration by the trees;

17.4 • a proposal for the future management of the land disposal site to be referred to the EPA at least one year before the hydraulic capacity of the site is attained.

Monitoring

18 The performance of the wastewater disposal site to be monitored in accordance with a monitoring programme agreed with the Department of Environmental Protection and amended from time to time.

Insect attack

19 The proponent would join with an approved Forestry Manager and other landholders with tree plantations in the Albany area to monitor insect activity in order to provide early warning of insect build-up.

20 If serious insect attack appears likely, the proponent, in conjunction with the Department of Conservation and Land Management, to develop and implement a plan to control attack.

Fire

21.2 • keep all fire dams on the site full of water during the summer;
21.3 • provide a fire control vehicle to the site (by donating monies to the local Bush Fire Brigade to fund a vehicle)
21.4 • prohibit smoking in the areas planted with trees.

CONTINGENCY PLANNING

If the land treatment system fails to perform to design, the proponent will as necessary:

22.1 • expand the overland flow and/or irrigated tree areas;
22.2 • construct an additional storage dam.
22.3 • improve Nitrogen and/or Phosphorus removal at the Timewell Road treatment plant