LANA WOOL INDUSTRIES PTY LTD - BAKERS HILL

Report and Recommendations
of the
Environmental Protection Authority

Bulletin No 316
Perth Western Australia

ISBN 0 7309 1702 9
ISSN 1030 0120

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i. SUMMARY AND RECOMMENDATIONS

Lana Wool Industries Pty Ltd proposes to establish a wool scouring plant at Bakers Hill (Figure 1).

A Notice of Intent (NOI) was submitted by the proponent in August 1987 and outstanding questions answered in December 1987.

The Authority has assessed the environmental impacts of the proposal from the NOI and additional information supplied by the proponent and other government agencies. It specifically notes the all encompassing commitment that the Company has made:

The Company gives a commitment that should the effluent treatment and disposal programme detect any undesirable trends, or should any justified complaints be received about the effluent treatment operation, appropriate action will be taken to rectify these problems.

The Authority has concluded that the project is environmentally acceptable and recommends that it could proceed subject to the commitments given in the NOI and to the Authority's conclusions and recommendations.

1. **The Environmental Protection Authority recommends that odour be controlled at all times to the satisfaction of the EPA and in consultation with the local shire and affected landowners.**

2. **The Environmental Protection Authority recommends that any leakage from treatment ponds to the groundwater be rectified immediately.**

3. **The Environmental Protection Authority recommends that the disposal of treated effluent via irrigation is environmentally acceptable provided that no adverse environmental impacts develop from unanticipated nutrient export from the site by surface or groundwater flows. Disposal of treated effluent requires licensing under the Environmental Protection Act 1986 and this is open to review at any time.**

4. **The Environmental Protection Authority recommends that if the proponent is unable to meet its environmental conditions, or the operations of the plant develop detrimental impacts on the surrounding area, the Authority will require, as a condition of licence, that the proponent modify its operations so that environmental impacts are reduced to a level acceptable to the Environmental Protection Authority.**

5. **The Environmental Protection Authority commends the proponent's commitment to a monitoring programme in the Notice of Intent. The EPA recommends that the Proponent forward details of the programme to the Environmental Protection Authority for approval and that the project not commence until approval is given. The EPA recommends that the monitoring programme, which will be carried out by the Proponent, include:**

   - **initial sampling period to determine whether impacts are presently or likely to occur;**
   - **parameters to be measured;**
   - **sampling sites and times;**
   - **reporting times to EPA, and**

- commitment to modify environment management programme in line with results.

6. The Environmental Protection Authority recommends a revegetation programme that prevents salt scour and that trees be grown, where possible, over the areas presently affected by salinity.

7. The Environmental Protection Authority recommends that disposal of solid waste must meet the EPA's approval prior to commissioning the plant.

8. The Environmental Protection Authority concludes that the proposal is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this report and the commitments made by the proponent.

1. BACKGROUND

Lana Wool Industries has referred to the Environmental Protection Authority (EPA) a proposal for a wool scouring plant at Bakers Hill, approximately 60 km east of Perth. The Authority requested that the proponent prepare a Notice of Intent (NOI) for referral to EPA for environmental assessment. EPA examined the NOI and sought additional information on various aspects of the project from the proponent. On receipt of this additional information EPA assessed the environmental impacts of the project and gives its advice in this assessment report.

2. PROPOSAL

The proposal involves production of 5 700 tonnes of scoured wool per year, initially, followed later by top making, spinning and knitting facilities. The proposed site (Figure 1) is 65 hectares, in area, has no dwellings and is deemed suitable by appropriate local authorities. It is partly bounded by a golf course on the north side and the remainder is bounded by agricultural land. The closest residence is approximately 1 km away.

In considering the NOI, EPA gave particular consideration to the following environmental issues:

- odour from settling pits and anaerobic ponds;
- underpond leakage;
- seepage to groundwater;
- water logging of receiving soil;
- nitrogen (N), phosphorus (P), and potassium (K) build up in soil;
- salinity down stream of irrigated area, and
- solid waste disposal.

3. ENVIRONMENTAL IMPACTS AND MANAGEMENT

Potential environmental impacts are identified and discussed below:

3.1 ODOUR, B.O.D., SUSPENDED SOLIDS AND GREASE

The Company will employ CSIRO recommended 'State of the Art' ponding effluent treatment which will produce effluent with (Biological Oxygen Demand) as low as 100 mg/L, and negligible suspended solids and grease.

Odour should not be a problem as the settling pit will be cleaned every 2.5 hr or at a greater frequency if necessary. The anaerobic pond system, which is similar to that used by abattoirs in built up areas, will have a hard surface crust which will retain odours.

RECOMMENDATION

The Environmental Protection Authority recommends that odours be controlled at all times to the satisfaction of the EPA and in consultation with the local shire and affected landowners.

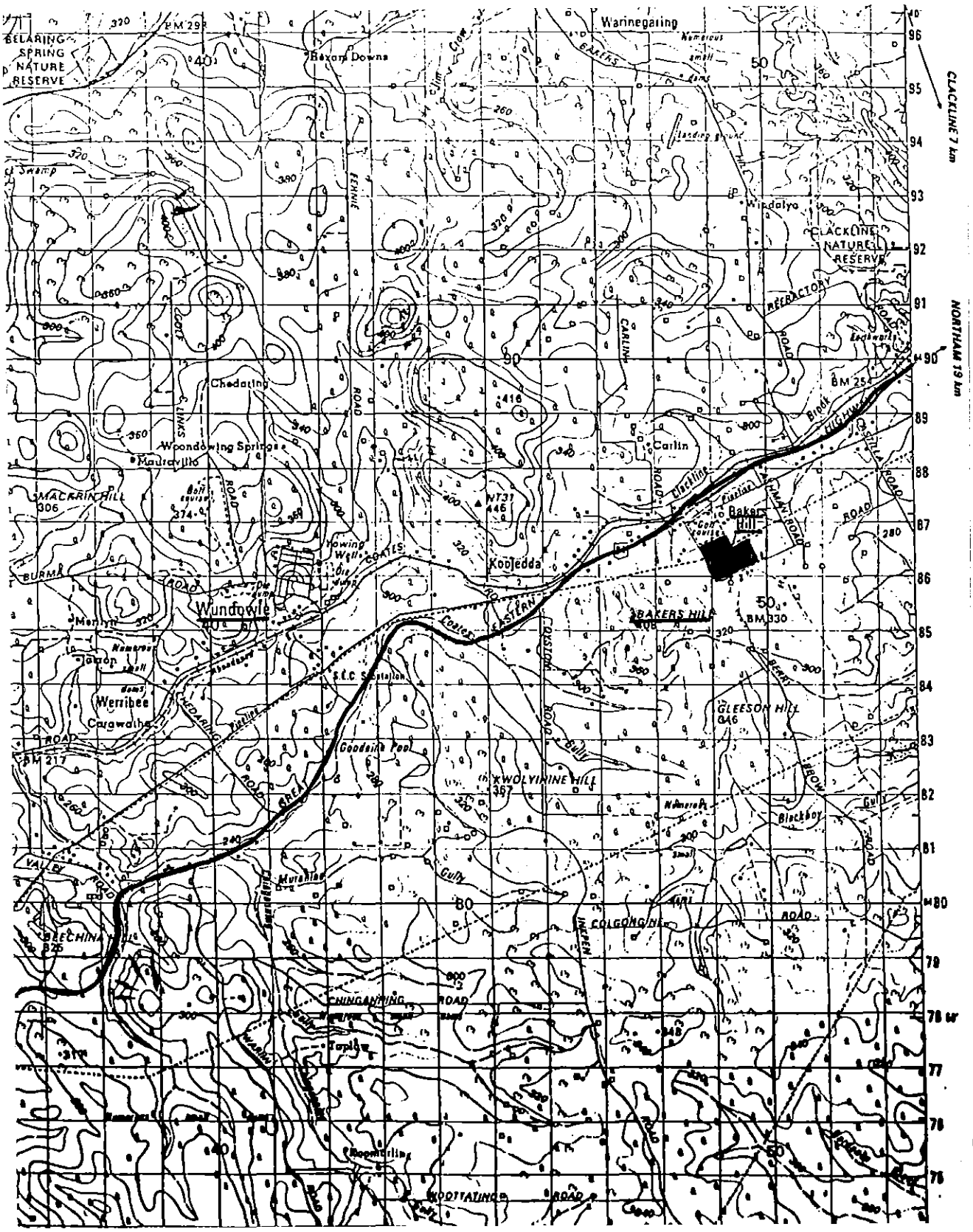

Figure 1a Proposed site marked in black.

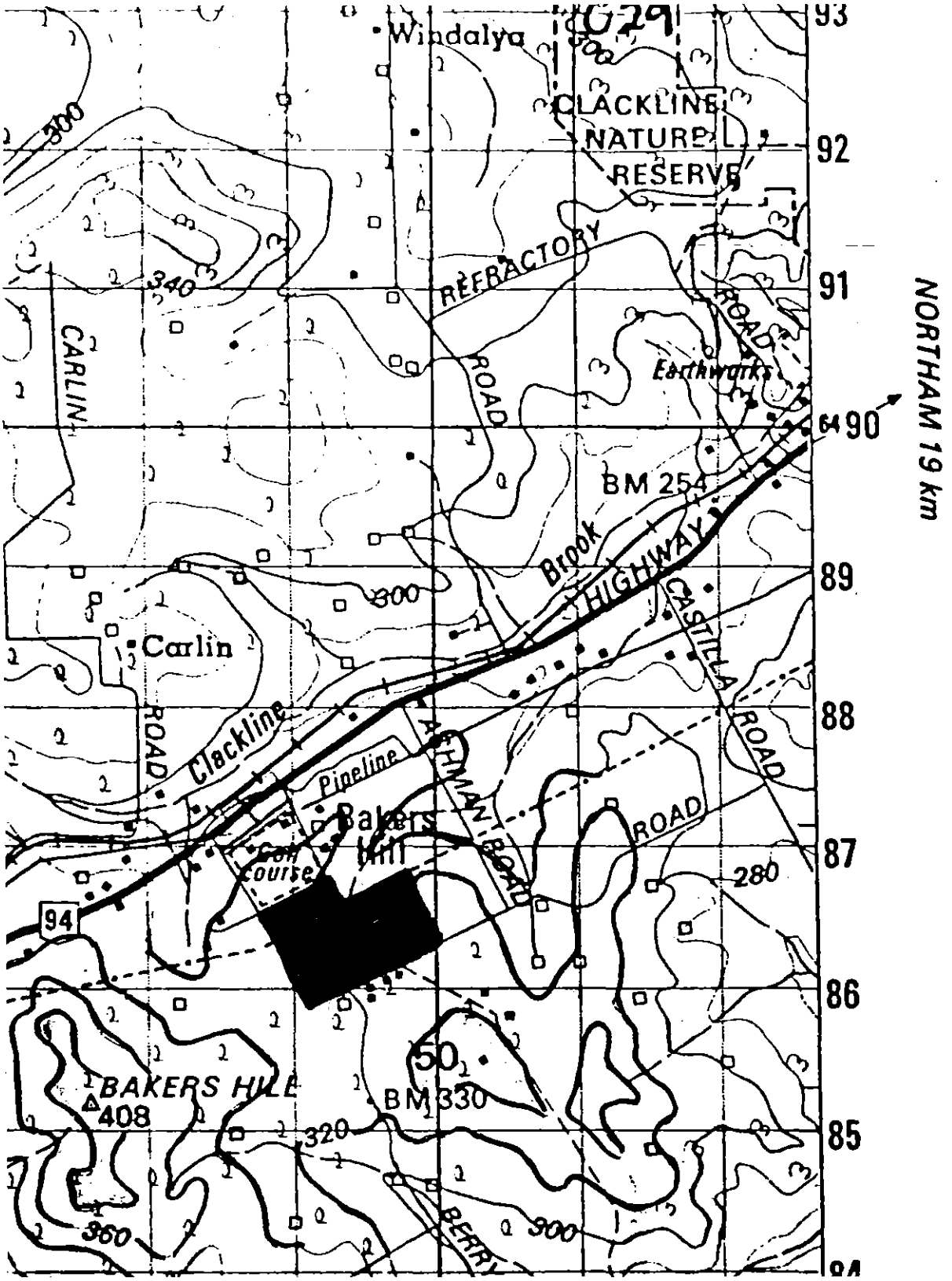

Figure 1b. An enlarged view of the proposed site (see Figure 1a for regional location).

3.2 UNDER-POND LEAKAGE

Analyses by the WA Department of Agriculture (given in NOI) indicates that whilst soils from the proposed under pond area have sufficient clay to be suitable there is a possibility that leakage may occur. This can be corrected by compaction and possibly by addition of chemicals to seal leakage. The Department also noted that soils proposed for irrigation would be capable of absorbing far more water than is proposed by irrigation and it is concluded that there should be no problem in this respect (see commitments). However if unanticipated leaks occur, they will be rectified immediately.

RECOMMENDATION

The Environmental Protection Authority recommends that any leakage from treatment ponds to groundwater be rectified immediately.

3.3 WATER LOGGING

Correspondence from Southern Cross Corporation (Water Resources Products Division) (given in NOI) indicates that the proposed volume of irrigated water would not account for 50% of water loss through evaporation over the proposed area (20 ha) during winter. This excludes periods of rainfall. The proponent will be able to hold four weeks production of treated effluent in a specially built pond, which will enable it to operate in non-irrigation mode during periods of high rainfall. In addition, a further 20 ha are available for irrigation if necessary. It is also pointed out that effluent production decreases by approximately 40% during the high rainfall period of May to August owing to off peak production. Because adequate area is available for irrigation, portions of the irrigated land will be rested. The proponent intends also to recycle treated effluent if at all possible and the Shire of Northam has expressed interest in using treated effluent for irrigation of the local oval.

3.4 PHOSPHORUS, NITROGEN AND SALINITY

Formal discussions with the Department of Agriculture noted that the proposed loading of 100 kg/ha/annum is high but acceptable and that nitrogen loading of 630 kg/ha/annum is too high, especially if irrigation is over a small area (6 ha) in summer. In addition, the removal of phosphorus and nitrogen via grazing is inefficient in as much as the nutrients are recycled to the ground. These nutrients could be managed however, by using a greater area for irrigation and planting a harvestable crop. Otherwise tertiary treatment would be required for nitrogen and phosphorus removal.

There is a salinity problem in the low lying part of the site. The level of potassium in treated effluent will be one quarter the concentration of natural occurring salt in the local brook and hence would have a diluting effect on salinity. Given the small volume of water to be irrigated relative to the area available for irrigation, natural rainfall, water absorption and cation exchange capacity of the soil, it is unlikely that the salinity problem in the region will increase as a result of irrigation. In addition, if the holding pond facility is used correctly, there is no reason why water should be applied in such a manner so as to cause underground hydraulic pressure resulting in down stream salinity problems.

The Shire of Northam is prepared to supply trees (free of charge) to any individual or body attempting to improve salinity problems in the Shire.

This offer should be seriously considered by the proponent for management of the lowlying area of the site. The Department of Agriculture recommends the use of the Tasmanian Blue Gum for this purpose.

RECOMMENDATION

The Environmental Protection Authority recommends that the disposal of treated effluent via irrigation is environmentally acceptable provided that no adverse environmental impacts develop from unanticipated nutrient export from the site by surface or groundwater flows. Disposal of treated effluent requires licensing under the Environmental Protection Act 1986 and this is open to review at any time.

RECOMMENDATION

The Environmental Protection Authority recommends that if the proponent is unable to meet its environmental conditions, or the operations of the plant develop detrimental impacts on the surrounding area, the Authority will require, as a condition of licence, that the proponent modify its operations so that environmental impacts are reduced to a level acceptable to the Environmental Protection Authority.

RECOMMENDATION

The Environmental Protection Authority commends the proponent's commitment to a monitoring programme in the Notice of Intent. The EPA recommends that the proponent forward details of the programme to the Environmental Protection Authority for approval and that the project not commence until approval is given. The EPA recommends that the monitoring programme, which be carried out by the Proponent, include:

- initial sampling period to determine whether impacts are presently or likely to occur;
- parameters to be measured;
- sampling sites and times;
- reporting times to EPA, and
- commitment to modify environment management programme in line with results.

RECOMMENDATION

The Environmental Protection Authority recommends a revegetation programme that prevents salt scour and that trees be grown, where possible, over the area presently affected by salinity.

3.5 SOLID WASTE DISPOSAL

The Shire of Northam has noted that the amount of sludge to be produced is minimal and suggests it could be handled quite satisfactorily by burial on site. Alternatively, the Council would be prepared to give consideration to the possibility of disposing the sludge on one of the Council's rubbish sites.

RECOMMENDATION

The Environmental Protection Authority recommends that disposal of solid waste must meet with the EPA's approval prior to commissioning the plant.

4. TREATED EFFLUENT QUALITY

The following waste water quality objectives should apply before water is irrigated to land proposed by the proponents:

Biological Oxygen Demand : 100 mg/L

Suspended Solids : 50 mg/L

Grease Content : 50 mg/L

Potassium Content : 1 200 mg/L

Nitrogen Content : 30 mg/L

Phosphorus Content : 3 mg/L

5. COMMITMENTS MADE BY PROPONENT

The Company gives an all encompassing commitment that should the effluent management project detect any undesirable trends, or should any justified complaints be received about effluent treatment and disposal, then appropriate action will be taken.

In addition, the following commitments are made:

1) A storage pond will be constructed which can hold four weeks effluent without irrigation;

2) 20 hectares will be put aside for irrigation purposes to cope with the unlikely event that the land becomes overloaded with water;

3) Samples will be taken annually to monitor the condition of the land and action will be taken to correct <u>any</u> detrimental trend in the soil condition. Specifically, a soil monitoring programme determining pH, phosphorus, nitrogen, and potassium will be carried out annually at 6 locations;

4) Experiments will be carried out with a water filtering/recovery system in attempts to re-cycle effluent to the factory;

5) Should the grease recovery system breakdown, the scouring plant would be stopped immediately;

6) Appropriate action will be taken to correct any problems which arise concerning odour from the anaerobic pond;

7) Sufficient space is allocated for a second anaerobic pond which can be used during clean out of the first pond (every 6-7 years);

8) The irrigated area will be cropped to remove as much phosphorus, nitrogen and potassium from the soil as possible;

9) Irrigation will not extend to within 50 m of sand and shallow groundwater areas;

10) Salt levels will be monitored around irrigated areas to ensure neighbouring properties are not affected;

11) Water downstream from the property will be monitored monthly at Ashman Road to check any influence from irrigated effluent, and

12) Trees and shrubs will be planted around the ponds to provide a wind break and to reduce visual impact.

6. CONCLUSIONS

Based on the information supplied in the NOI and the additional information supplied by the proponent, the Environmental Protection Authority has concluded that the project is environmentally acceptable and recommends that it could proceed subject to the commitments given in the NOI and the recommendations.

The project will be using 'State of the Art' CSIRO recommended effluent treatment ponding technology and if managed properly should produce a high quality effluent. Whilst most aspects of treatment and disposal of treated effluent can be managed without concern, nutrient loading to irrigated pasture may present a problem of nutrient overload and salinity. It can be managed using a combination of techniques such as harvesting of crops, growing trees, using a greater land area for irrigation, dilution of effluent, use of artificial wetlands, recycling of water and if necessary some tertiary treatment.

RECOMMENDATION

The Environmental Protection Authority concludes that the proposal is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this report and the commitments made by the proponent.