# Proposed Abattoir Aurisch Road Gingin

## D'Orsogna Bros Pty Ltd

**Report and Recommendation**
**of the**
**Environmental Protection Authority**

Environmental Protection Authority
Perth Western Australia
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## Environmental Protection Authority

# Contents



**Appendices**

# Summary and Recommendation

D'Orsogna Bros Pty Ltd proposes to build an abattoir on a 650ha rural site at Aurisch Road, Gingin (Figure 1). The site is located at the base of the Darling Scarp approximately 9km north of Gingin, 2km east of the Brand Highway and about 4km from Lakes Beermullah and White, the former being in a System 6 reserve. The proposed abattoir would process 1000 sheep and 2000 pigs per five day week. The site has a dwelling and a small piggery and is considered suitable by the Shire of Gingin for this proposal. The area is sparsely populated with the nearest neighbouring dwelling 2km from the site.

A Notice of Intent (NOI) was referred to the Environmental Protection Authority (EPA) in September 1988. The Authority released the NOI for comment to the Decision Making Authorities. A public meeting was held at Gingin at which the proposal was explained to interested parties by the proponent.

The Authority has assessed the potential environmental impacts of the proposal described in the NOI, and utilizing additional information supplied by the proponent, the public and Government agencies.

In consultation with the Authority's officers the proponent has developed a comprehensive list of commitments covering all issues raised during the assessment (Appendix 1).

The major potential environmental problem with this proposal is the potential for the wastewater treatment pond system to leak. The underlying soil (mainly sand with some clay) offers only moderate protection against leakage, which has the potential to affect a System 6 reserve downstream (Fig.1). This reserve is already nutrient enriched. Hence, very strict criteria need to be applied to the construction of the wastewater treatment and disposal ponding system so that no unacceptable environmental impacts occur.

The Company will employ a wastewater treatment system comprising screening, chemical treatment if necessary using acids, flocculation agents and polyelectrolytes, fat removal using air flotation, dissolved aeration biological treatment, clarification, biological treatment using facultative and aeration ponds with final disposal via evaporation ponds. The ponds will be sealed using clay liners. A belt press will be used to dewater all waste solids prior to removal offsite. The proposed wastewater treatment system is comprehensive and if carefully implemented would be sufficient to ensure against detrimental environmental impacts.

The Authority considers the project to be environmentally acceptable subject to the proponent being required to fulfil commitments given both in the NOI and in responses to subsequent questions.

## Recommendation

**The Environmental Protection Authority concludes that the proposal, as described in the Notice of Intent and in the proponent's responses to questions raised resulting from public review, is environmentally acceptable and recommends that the proposal could proceed subject the commitments given by the proponent in Appendix 1 of this Report and which include:**

- **construction and management of a fully integrated wastewater disposal system;**
- **solid waste disposal;**
- **noise and odour control;**
- **construction of the abattoir;**
- **water requirements for the abattoir;**
- **monitoring;**
- **remedial action if waste management procedures fail;**
- **stormwater control; and**
- **mechanical backup for pollution control system.**

# 1. Introduction

D'Orsogna Bros Pty Ltd, the proponent, is a Western Australian company. The proponent proposes to build an abattoir at Swan Location 5539 and 5918 Aurisch Road Gingin (Fig.1). The proposed abattoir is located on a 650ha site in a rural area at the base of the Darling Scarp approximately 9km north of Gingin and about 2km from the Brand Highway, and about 4km upstream from Lakes Beermullah and White, the former being in a System 6 Reserve.

The proponent referred a Notice of Intent (NOI) to the Environmental Protection Authority (EPA) for environmental assessment. The Authority examined the NOI and sought additional information on various aspects of the project from the proponent. On receipt of this additional information the Environmental Protection Authority assessed the environmental impacts of the project and gives its advice to Government in this assessment report.

# 2. Description of proposal

## 2.1 Outline of the operation

The proposal involves constructing an abattoir with a capacity to process 1000 sheep and 2000 pigs per five day week. The actual numbers processed may be lower depending on the season and supply. Only a small proportion of the 650 ha site will be used for the abattoir. The pigs will come largely from the local Westpork piggery which is also owned by the proponent, hence the pigs can be processed shortly after arrival. Sheep will be also processed upon arrival thus minimising the potential of dust problems associated with stockholding yards.

The proposed site (Fig. 1) has one dwelling and a small piggery and is deemed suitable by the Local Authority for the proposal. The area is sparsely populated with the nearest neighbouring dwelling 2km from the site.

The company will employ modern abattoir techniques to meet all abattoir standards and to minimise potential environmental problems. The plant will use surface aquifer water for its supply. Water will be used in the process for animal watering, boilers, dressing and offal cleaning and will enter the wastewater stream with liquid wastes from the abattoir operations.

The proponent will employ a high technology wastewater treatment system to ensure odours are not produced and that the final effluent does not consume much oxygen. As solids in the wastewater are the prime source of odour problems and oxygen consumption, treatment addresses the issue of solid removal in detail. Treatment will comprise mechanical screening of solid waste from the wastewater. Chemical treatment will also be used, if necessary, to help very fine solid particulate matter to settle out and to be disposed of as solid waste. Fine bubbles of air will be passed through the wastewater to float fat to the surface so it can be recovered and sold. The air will also help other solids to break down and settle out and subsequently be disposed of as solid waste. These procedures will help to clarify the effluent. The remaining wastewater which will still have an ability to consume oxygen will be discharged to a biological treatment system using facultative and aeration ponds. The water in the facultative pond is depleted of air near the bottom and is naturally aerated at the surface. This allows for the growth of a wide range of microbes which consume the solids from the water and hence clarify it further. The aeration pond acts in a similar manner but is restricted to microbes which need air for their survival. The resulting relatively clean water is disposed of via evaporation ponds to the air. This will minimise the potential for environmental impacts. The ponds will be sealed using clay liners. A belt press will be used to dewater all waste solids prior to removal offsite as garden or agricultural fertilizer.

One of the problems with some abattoirs in the past was that they managed the disposal of solid and liquid waste badly and hence created odour problems. The high technology waste disposal system to be employed in this abattoir should ensure that odour generation is kept to a minimum. Given the buffer between the proposed abattoir and local dwellings, the population density of the area and the technology to be employed, potential impacts such as odour and noise should not be a problem.

The wastewater treatment pond system has the potential to leak and cause an environmental impact if not constructed or managed properly. The proponent has given an extensive list of commitments (Appendix 1) covering all aspects of the proposal, including the pond construction and wastewater treatment pond system, to ensure that the possibility of leakage is minimised and that if an impact occurs it will be rectified without delay and to the satisfaction of the Environmental Protection Authority.

## 2.2 Site selection

The proponent operates the Westpork piggery in the Shire of Gingin. For economic reasons, the proponent wishes to process its produce close by. Presently the pigs are transported to the metropolitan area for processing. The site was chosen as it is remote from populated areas (the nearest dwelling is approximately 2km distant), and is near the Westpork piggery. A small piggery already exists on site, and

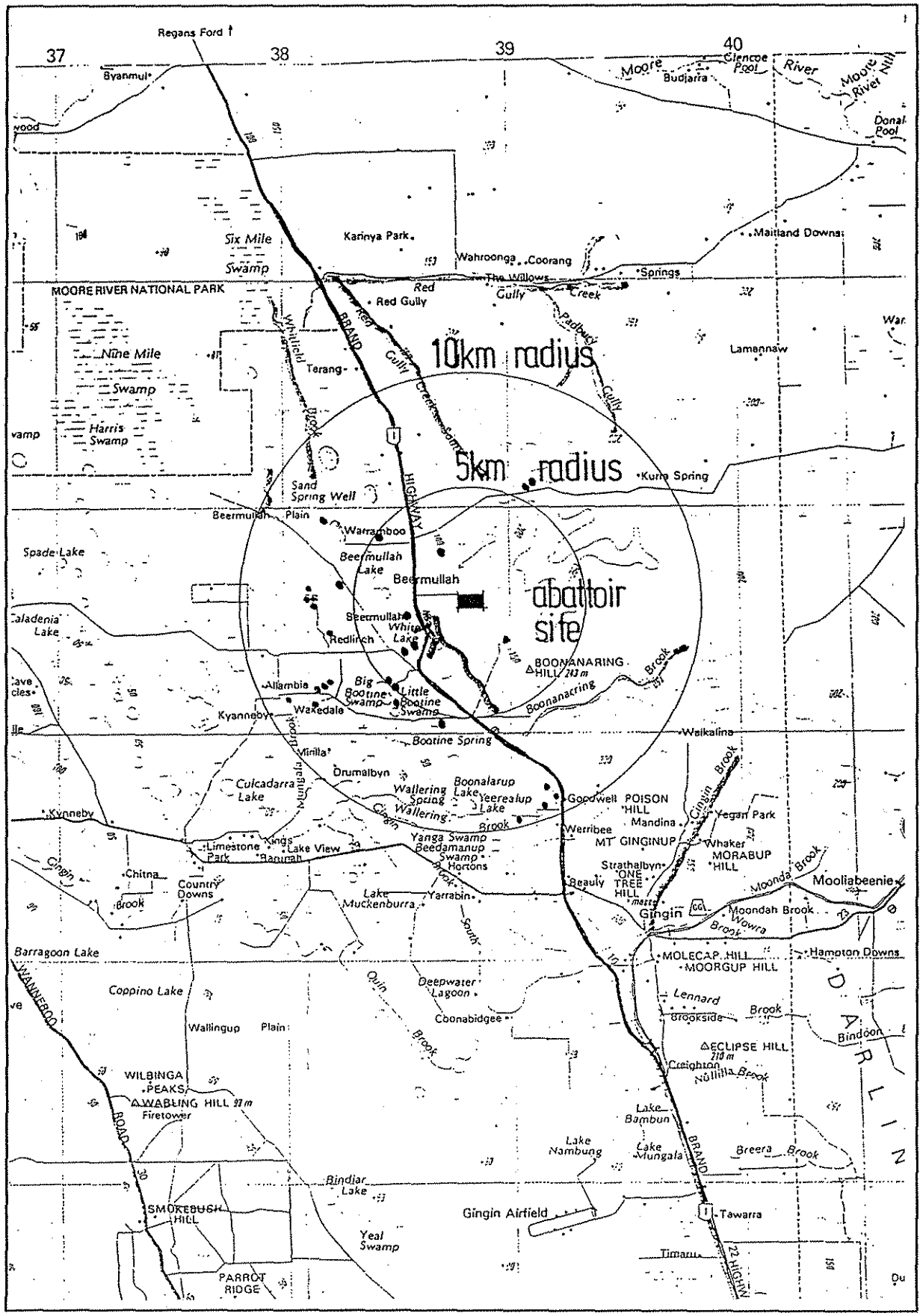


Figure 1a: Regional location

Source: Notice of Intent

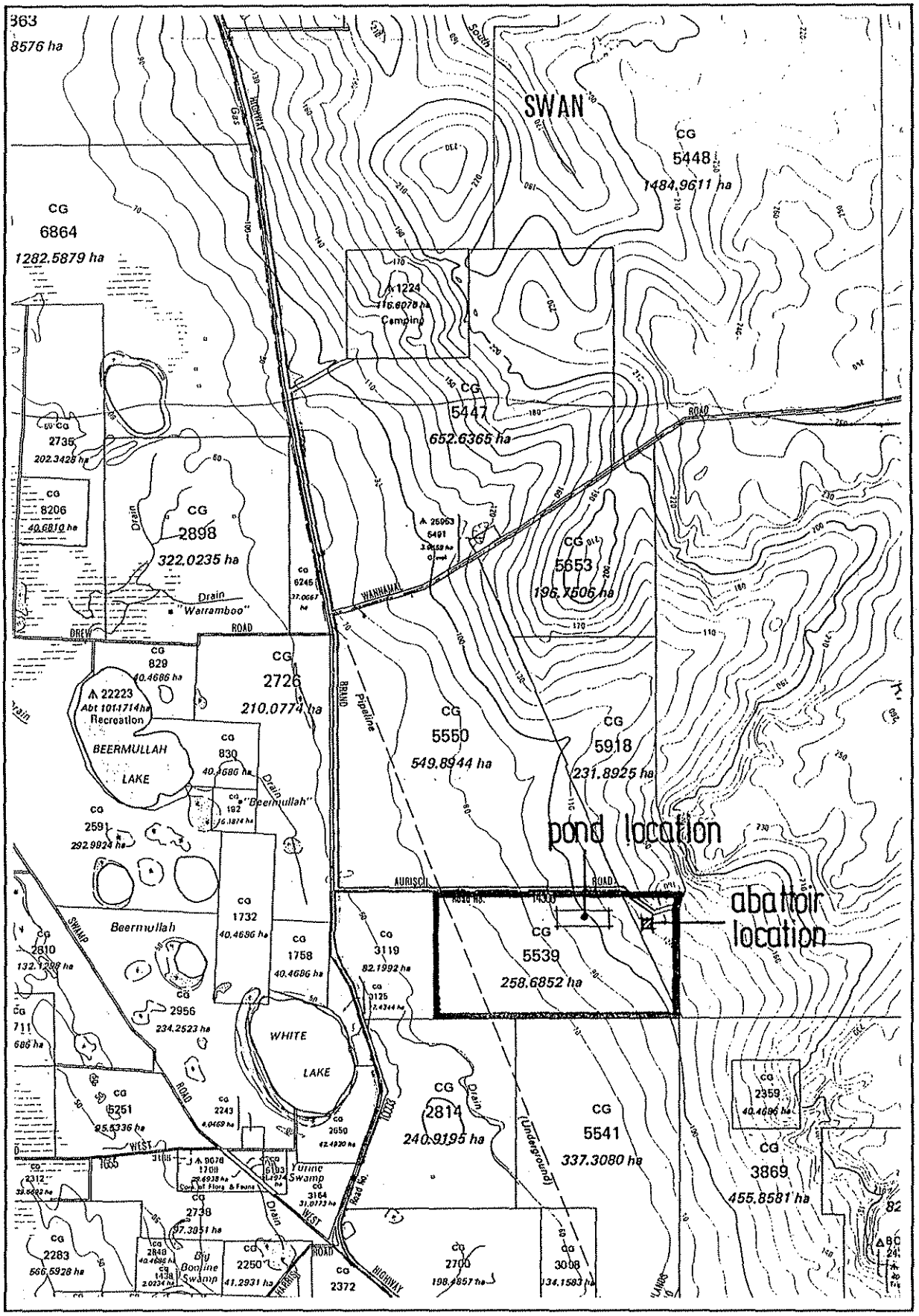


Figure 1b: Site plan

Source: Notice of Intent

power is available for the process. The proponent intends to use groundwater as the water supply. The soil contains some clay and can be amended for the construction of well engineered wastewater treatment ponds, and the climate is suitable for wastewater disposal via evaporation. In addition, odour, noise, and dust can be controlled easily due to the buffer zone between the proposed abattoir and the few surrounding dwellings. The Local Shire is supportive of the proposal.

# 3. Potential environmental impacts and management as given in Notice of Intent

The proponent believes that all potential environmental impacts are covered by suitable commitments (Appendix 1).

The NOI identified the following potential environmental impacts for the project:

## 3.1 Dust, noise, and odour

Dust will be controlled during construction by damping. There should be no dust problem during operation as there will be no stock holding paddocks. There will a concrete lairage area, however but this will not cause a problem as it will be managed daily. Dust along the access road will be monitored, and the road will be sealed if a dust problem is detected.

The nearest house is approximately 2km from the site so there should be no public disturbance due to noise during construction or operation. During operation most noise generated will be within buildings. Buildings will be constructed to attenuate noise as much as possible. The company will comply with the Environmental Protection Authority' s regulations on noise.

Odour from the liquid waste would only be a problem if wastewater is not managed so as to properly control the Biological Oxygen Demand (BOD). The proposed level of wastewater treatment exceeds that required to keep the BOD under control, and hence there should be no odour problem. Solids wastes will be disposed of offsite regularly, which should also ensure no odour problems.

## 3.2 Wastewater treatment and evaporation pond leakage

Wastewater will be treated first by a high performance mechanical treatment system. This will be followed by biological treatment in ponds. If effluent leakage occurs from ponds it could cause phosphate and nitrate pollution of groundwater.

However, prior to commissioning the plant, a monitoring programme will be designed to detect any leakage, and the proponent is committed to rectifying leakage by emptying the leaking pond to a standby pond. Any pond leaks detected will then be mended with plastic liners. All ponds will be constructed to the Water Authority's requirements so the possibility of leakage is minimised. All treated water will be disposed of by evaporation.

## 3.3 Solid waste disposal

Solid waste will be dried using a belt press and will be disposed of offsite as directed by the Shire of Gingin, Health Department and to the satisfaction of the Environmental Protection Authority.

# 4. Summary of public and government agencies' submissions

## 4.1 Introduction

A total of 4 public and Government submissions on this proposal were received by the Environmental Protection Authority in addition to a petition by 17 people. Names of contributors are given in Appendix 3. Several issues raised were not of an environmental nature. The Authority specifically notes the high quality of the Government and Public submissions, including that of Mr and Mrs Barrett-Lennard. Submissions indicated that the potential environmental problems of greatest concern were, waste management, leakage from the biological wastewater treatment ponding system and associated monitoring whilst the petition related to the suitability of the site for an abattoir.

## 4.2 Specific issues raised in submissions by the public and government agencies and proponents response

Comments from submissions can be broadly classified as follows:

- pond location, construction, leakage, size, overflow, lining repairs and underlying soil types
- nutrient problems in System 6 reserve downstream
- monitoring and chemical analysis
- insect and weed control around lagoons
- use of treated wastewater in abattoir and disease

- stormwater, roof water and washdown water control and collection
- groundwater extraction
- alternative use land, soil survey, tree planting and.weather conditions
- solid waste disposal including dead animals
- dust and noise
- social implications due to odour and benefit to local residents
- and values
- Shire planning
- reliability of proponent and commitments

The proponent has addressed all the issues relating to potential environmental impacts with commitments, which are listed in Appendix 1.

# 5. Environmental impacts and management identified by the Environmental Protection Authority

## 5.1 General introduction

In considering the Notice of Intent, the Environmental Protection Authority gave particular consideration to all of the issues raised during the public review which are outlined in section 4.2. Specific emphasis was placed on the integrity of the biological wastewater treatment and evaporation pond system. Leakage of partially or wholly treated wastewater from the lagooning and evaporation pond systems could be a problem as the ponds will be lined with clay. The proponent has made commitments to construct the ponds to sound engineering principles and to the satisfaction of the Environmental Protection Authority, hence problems are not anticipated.

Should the Minister for Environment wish to approve this proposal, that approval should be conditional on the proponent adhering to these commitments. The commitments would thereby become legally binding on the proponent.

### Recommendation 1

**The Environmental Protection Authority concludes that the proposal, as described in the Notice of Intent and in the proponent's responses to questions raised resulting from public review, is environmentally acceptable and recommends that the proposal could proceed subject the commitments given by the proponent in Appendix 1 of this Report and which include:**

- **construction and management of a fully integrated wastewater disposal system;**
- **solid waste disposal;**
- **noise and odour control;**
- **construction of the abattoir;**
- **water requirements for the abattoir;**
- **monitoring;**
- **remedial action if waste management procedures fail;**
- **stormwater control and mechanical backup for pollution control system.**

## 5.2 Dust, noise, odour and soil erosion

Odour will occur in the immediate surroundings of the abattoir. However, because of the buffer zone between the proposed abattoir and the closest dwelling, odour is unlikely to a problem. The wastewater treatment system has the potential to cause odour. Given the level of wastewater treatment committed by the proponent, however, BOD (biological oxygen demand) levels should not cause odours during treatment or sludge cleanout and drying.

Most machinery with a potential to cause noise will be contained within buildings. Given the distance of dwellings from the proposed abattoir and its times of operation, it is highly unlikely that noise would be a problem.

The proponent recognises that dust should be controlled at all times and has made a commitment to do this to the satisfaction of the Environmental Protection Authority. However, dust is unlikely to be a problem as no substantial stock holding yards will be used. In addition, if traffic creates dust problems on the approach road, the proponent is committed to sealing the road. Dust due to soil erosion is unlikely as most of the site will remain rural in use.

## 5.3 Solid waste disposal

Solid waste from noxious industries has the potential to generate odour and disease. All solid waste with such a potential must be managed on a daily basis. The proponent has made a commitment to dispose of all solid waste to the satisfaction of the Environmental Protection Authority and the Health Department.

## 5.4 Use of treated wastewater in abattoir and weed and pest control around ponds

The proponent does not intend to use treated wastewater within its abattoir operations. The Health Department of Western Australia has informed the proponent that the use of treated wastewater in the abattoir, and weed and pest control around wastewater treatment ponds require Health Department approval and can be handled under the Health Act. The proponent is also committed to managing the whole wastewater treatment system to the satisfaction of the Environmental Protection Authority and the Health Department.

## 5.5 Water usage by abattoir

The proponent intends to use 100 cubic metres of borewater per day for the water supply for the abattoir. This is a relatively small amount of water. The water will be taken from a surface aquifer (perched water body) on site which is on the lower section of the Darling Scarp. It is highly unlikely that this water body has any direct connection with the wetlands downstream which are largely charged by groundwater from the coastal plain. The proponent has committed itself to carrying out a water supply study six months prior to commissioning the plant to the satisfaction of the Environmental Protection Authority and the Water Authority of Western Australia to ensure adequate water supply. In addition, the proponent will require a groundwater extraction licence from the Water Authority of Western Australia prior to extraction. This will ensure that groundwater extraction by the proponent will not adversely affect other groundwater users.

# 6. Conclusions

Based on the information supplied in the NOI and additional information supplied by the proponent during the assessment, the Environmental Protection Authority has concluded that the project could proceed subject to the commitments given by the proponent in the NOI and in response to questions raised during the assessment, and to the Authority's recommendation in this report.

The proposed wastewater treatment system is technically sound and, given the proponents commitments to management, monitoring and correction of any detected faults, should ensure no environmental impact from groundwater contamination or odour.

All solid waste will be dewatered using a belt press. That should ensure that such waste can be disposed of offsite within a short period of generation. The proponent is committed to disposing of solid waste offsite in a manner satisfactory to the Environmental Protection Authority, the Shire of Gingin and the Health Department. Hence, the proper management of solid waste should not cause any environmental problem.

# Appendix 1

# List of Commitments

The proponent has provided the following commitments in the NOI and in response to questions raised:

## General commitments

1. The proponent will adhere to the proposal as assessed by the Environmental Protection Authority and will fulfil the commitments made below.

2. The abattoir will be constructed and operated according to relevant Government statutes and agencies' requirements, including those of the following:

- Environmental Protection Authority
- Water Authority of WA
- Health Department of WA
- Shire of Gingin
- WA Meat Industry Authority
- WA Fire Brigades Board and
- Department of Occupational Safety and Welfare
- Shops and Factories Act

## Wastewater management commitments

3. The proponent will build a fully integrated wastewater, solid waste, noise and odour treatment and disposal system which will be designed and installed by a recognised water/wastewater treatment contractor to the satisfaction of the Environmental Protection Authority. The system will be operated by the proponent and monitored by the consultant to the satisfaction of the Environmental Protection Authority and all relevant Authorities.

4. Prior to construction of the wastewater treatment ponds, the proponent will supply to the Environmental Protection Authority and the Water Authority of Western Australia details of their exact location and design and have those details approved by the Environmental Protection Authority and the Water Authority of Western Australia.

5. Prior to construction of the wastewater treatment ponds, the proponent will supply to the Environmental Protection Authority and the Water Authority of Western Australia details of where it is intended to obtaining suitable impermeable clay to line the ponds and to have these clays approved by the Environmental Protection Authority and the Water Authority of Western Australia.

6. Prior to commissioning the plant, evaporative lagoons will be constructed to dispose of treated wastewater and will be operated subsequently to the satisfaction of the Environmental Protection Authority.

7. In the case of pond leakage, the proponent, upon direction from either the Environmental Protection Authority or the Water Authority of Western Australia, will immediately line the leaking pond with a plastic liner to the satisfaction of the Environmental Protection Authority and the Water Authority of Western Australia.

8. All wastewater treatment ponds (lagoons) will be constructed to have at least 0.9m freeboard so as to be able to cope with a "once in thirty year storm event".

9. The proponent will ensure that the water level in the wastewater treatment ponds will be maintained to the satisfaction of the Environmental Protection Authority and the Water Authority of Western Australia.

10. The proponent will take immediate remedial action should failure of the wastewater treatment system occur and will carry out such action to the satisfaction of the Environmental Protection Authority and all relevant Authorities.

11. To cope with equipment failure, the proponent will keep sufficient spares for immediate repair to the aerators, the electrical system and other key elements of the system. In such an event the proponent will advise the Environmental Protection Authority and will take steps in the event of major failure to construct holding lagoons to the satisfaction of the Environmental Protection Authority and relevant authorities as quickly as possible.

12. The proponent will ensure that stormwater runoff from areas adjacent to the ponds will not enter the wastewater treatment pond system.

### Monitoring

13. Prior to construction, the proponent will submit and subsequently implement a monitoring programme to the satisfaction of the Environmental Protection Authority and the Water Authority of Western Australia.

The monitoring programme will include:

- initial baseline sampling period to determine whether impacts are presently occurring;
- parameters to be measured;
- sampling sites and times;
- reporting times to the Environmental Protection Authority, and.a commitment to modify the environmental management programme , if necessary, to reduce the impact of pollution, to the satisfaction of the Environmental Protection Authority.

14. All samples taken in the monitoring programme will be analysed in a laboratory acceptable to the Environmental Protection Authority.

## Solid waste

15. The proponent will dispose of all solid wastes off-site, and will obtain the approval of the Shire of Gingin, the Health Department of Western Australia and the Environmental Protection Authority for the method and location of solid waste disposal prior to commissioning the plant.

16. The proponent will, six months prior to commissioning, submit a solid waste disposal to the Environmental Protection Authority, and be to the satisfaction of the Environmental Protection Authority. This plan will nominate a Gazetted landfill site which will accept abattoir waste and be to the satisfaction of the Environmental Protection Authority. '

17. The proponent will, have a permanent member of staff on site at all times. If dead animals are delivered to the abattoir they will be removed from the site within 24 hours and disposed of to the satisfaction of the Environmental Protection Authority.

## Water supply

18. Prior to construction, the proponent will show where it is intended to the water supply to operate the abattoir and will not proceed until the requirements of the Water Authority of Western Australia and the Environmental Protection Authority are satisfied.

19. The proponent will, six months prior to commissioning, carry out a trial pumping of the proposed water supply bore to generate data to satisfy the Environmental Protection Authority and the Water Authority that the is sufficient water to supply the abattoir.

## Dust and noise

20. The proponent will ensure that odour, dust and noise will be controlled at all times to the satisfaction of the Environmental Protection Authority and the Shire of Gingin and any other relevant authorities.

21. The proponent will seal any area used by traffic including the access road to the abattoir if it is deemed by the Environmental Protection Authority or the Shire of Gingin that traffic is causing a dust problem.

22. The proponent will monitor noise at night and weekends and will take appropriate action to minimise noise to the satisfaction of the Environmental Protection Authority.

## Irrigation of waste water: nutrients and disease

23. The proponent will not irrigate wastewater onto its property at any time. Before the proponent would change this commitment, it would seek and obtain the approval of the Environmental Protection Authority and the Water Authority of Western Australia.

## Other commitments

24. The proponent will not use treated water for any purpose relating to the dressing of meat. If it were to use such water for washing down stock yards etc, approval would be sought from the Health Department and the Environmental Protection Authority. All such wash down water would be recycled back into the wastewater treatment system.

25. The proponent will control insects and weeds around the wastewater treatment system, including the ponds, any sludge drying facilities or temporary stock holding areas, to the satisfaction of the Environmental Protection Authority, the Health Department of Western Australia and the Shire of Gingin.

26. The proponent will, three months before commissioning the plant, submit a landscaping plan (tree planting) to the Environmental Protection Authority, and have it approved by the Environmental Protection Authority, with the purpose of retaining the amenity of the area.

27. The proponent will modify its pollution control operations, if it cannot meet its licence conditions , so that environmental impacts are reduced to a level acceptable to the Environmental Protection Authority.

28. The proponent will be responsible for decommissioning the plant and rehabilitating the site and its environs, to the satisfaction of the Environmental Protection Authority.

29. The proponent will, at least six months prior to decommissioning, prepare a decommissioning and rehabilitation plan to the satisfaction of the Environmental Protection Authority.

30. The proponent will not transfer ownership, control or management of the project, without prior consultation and arrangements being made which are to the satisfaction of the Environmental Protection Authority and The Hon. Minister for Environment.

# Appendix 2

## Proponent's response to issues raised during the assessment.

# Appendix 2

## Proponent's response to issues raised during the assessment.

## APPENDIX 2

### QUESTIONS RAISED AND ANSWERS GIVEN BY PROPONENT:

1. Q) Suitability of site location - EPA raised the question with regard to proposed site?

   A) Proponent answered that location was a good area for pig husbandry with good communications (Gt. Northern and Brand Highways) and relatively remote from residential areas - at least 3 Km.

2. Q) What protection was envisaged for System 6 areas at Lake Beermullah and Yurine Swamp downstream of proposed evaporation ponds?

   A) Proponent answered that ponds would be lined either with clay to compaction giving 10-8 M/Sec permeability or if this proved to be unsuitable then with artificial impervious lining. Downstream of proposed ponds a series of interceptor banks would collect wastewater in the event of lagoon failure and prevent run-off to System 6 areas. Finally, monitoring bores would indicate any slow seepage of wastewater in time for remedial action to be taken.

3. Q) What level of public debate was adopted?

   A) Proponent arranged through Auspices of Shire of Gingin for a public meeting to be arranged (27.9.89) to give full debate to issues involved. Copies of N.O.I. were distributed to interested parties and all affected landowners were consulted.

4. Q) Proposed nutrient management of site - how was this addressed?

   A) Proponent answered that the wastewater treatment system is an aerobic system capable of producing a high quality discharge to evaporation lagoons. Provision for phosphorous removal had also been made in the plant. The concept was one of total evaporation, no liquid discharge. However, if land disposal was possible subsequent reductions in artificial fertilisers would be made to compensate after discussions with relevant government authorities. All solid wastes were to be disposed of off-site.

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5. Q) Proposed location of evaporation ponds - why was area chosen?

A) Proponent indicated that area chosen was one where some clay co-existed with sand and groundwater streams were diverted by a clay/sand reef area. This would enable an easy means of monitoring problems and assist in controlling unlikely lagoon failure.

6. Q) Proposed system of solid waste disposal?

A) Proponent indicated that solids would be handled on a daily basis and that roofed concrete storage would be provided for up to 2 months storage. Waste sludge from the aerobic wastewater system would be handled via belt press arrangement to yield almost dry stabilised solid. This would be disposed of to local fertiliser industry. Offal solids would be collected and sold and lairage (manure) materials collected and disposed of to fertiliser manufacturer. If land disposal for manure solids was sought in emergencies then this would be as part of a nutrient programme and would be done to satisfaction of EPA and relevant authorities.

7. Q) What groundwater monitoring programme is proposed?

A) Proponent will as soon as works approval is given install three monitoring bores to satisfaction of the Water Authority to provide baseline data for future monitoring of the site. Regular samples will be analysed to yield an on-going picture of the state of groundwater.

8. Q) What management programme for leachate is envisaged?

A) The downstream interceptor banks from evaporation lagoons will contain leachate spill-over. This would then be pumped back to evaporation lagoons.

9. Q) What happens if over-topping of lagoons takes place?

A) Proponent will build more lagoons.

10. Q) Does 100 cum/day wastewater production include wash downwater?

A) Proponent replied that yes this was the case, however, wastewater would be monitored from start-up and system fine-tuned to suit production requirements.

11. Q) What water will be used for lairage washdown?

A) At present, proponent intends to use fresh water. However, later on wastewater from evaporation ponds may be used after Health Department safeguards have been observed.

12. Q) Do evaporation ponds allow for one in one hundred year storm?

A) Design of ponds allows for extra free board and area to cover a worst case rainfall season.

13. Q) What will happen to evaporation lagoon solids?

A) These will be pumped out on a six monthly or yearly basis and taken for dewatering at the belt press. Disposal will then be to fertiliser manufacturer. Solids build up in the lagoons will be low as water is treated and clarified prior to lagoon disposal. The bottom of lagoons will be protected by a barrier of sand/car tyres to prevent lagoon lining damage.

14. Q) Will there be recovery bores downstream of lagoons?

A) Not at this stage as provision has been made for interceptor banks.

15. Q) Will dust from Aurisch Road cause a problem?

A) Aurisch Road should not cause a problem with dust outside the area of the property. However, the position will be monitored and the road will be stabilised in the event of dust problems.

16. Q) What control is envisaged for dust and noise during construction?

A) Proponent indicated that all relevant codes would be worked to in this regard.

17. Q) What pond lining procedures will be adopted?

A) Proponent indicated that clay would be the preferred pond lining system, suitably compacted to achieve impermeability. All checks will be carried out during construction to confirm this and proponent will not allow clay to dry out and crack, resulting in seepage.

18. Q) Will there be truck washing facilities providing a load on the wastewater system?

A) Supply of animals will tend to be local so no significant truck washing will be carried out.

19. Q) Is lairage area to be roofed?

A) Proponent answered that area would be roofed and have hard standing.

20. Q) What is daily production capability of the abattoir?

A) Proponent will allow for killing of 2,000 pigs and 1,000 sheep per week.

21. Q) What problems are envisaged in the proposed pond location which is adjacent to Aurisch Road Reserve?

A) Adequate transport protection is provided between lagoons and road with 3 metre wide gully and a protective vegetation area of 20 metres depth comprising trees/scrubs.

22. Q) How will interceptor banks be sealed?

A) An artificial lining will extend underneath the bank to sufficient depth to seal. Lining will then extend upstream toward lagoon to seal.

23. Q) Will there be an emergency pond to cope with lagoon failure?

A) Proponent indicated that an emergency pond would be constructed but not lined. In the event of lagoon failure, an artificial lining would be made available to bring this pond into service quickly.

24. Q) How will water heights in the lagoons be adjusted?

A) Invert pipes will be set to give correct water depth.

25. Q) Will effluent be used for irrigation?

A) Initially, the answer is no, however, we the proponent believe that the treated water would be of sufficient standard for re-use on land and government advice may be sought in this regard in future.

26. Q) How would repairs to leaking ponds be done?

A) If clay lining leaks and leak could be easily detected then pond would be drained to emergency pond and repair affected. If leak could not be detected then pond would be filled in and a new pond constructed.

27. Q) Where does rainwater/stormwater from facility run-off areas go?

A) All roof and similar stormwater will go to a separate stormwater pond.

28. Q) What monitoring bore analytical programme will be undertaken?

A) Monthly samples will be analysed for pH, TDS, Nitrate and total phosphorous. Monitoring bores will be installed 28 days after works approval.

29. Q) What evaluation has been done on water supply bores to feed abattoir?

A) Initial indications show a plentiful supply of water from the existing water supply. Local knowledge indicates a considerable surplus of groundwater in that area which should provide for the abattoir without adversely affecting wetlands downstream. A detailed study will be conducted in collaboration with the Water Authority prior to start-up to confirm this to EPA satisfaction.

30. Q) What work has been done on determining underground watercourses?

A) A site survey was carried out using local knowledge and the course of underground water followed in the region of pond location. These findings will be confirmed when monitoring bores are positioned.

31. Q) What parameters will be used to control any solid waste disposal on site?

A) Generally, total nitrogen will not be allowed to exceed 45 KG/HEC/PA and total phosphorous will not be allowed to exceed 9 KG/HEC/PA in any disposal area. Use of artificial fertiliser will be reduced accordingly. Any such activity would be with approval of relevant authorities.

32. Q) Will there be anaerobic activity in the evaporation ponding system?

A) Proponent indicates that there will be little or no anaerobic activity in the impounded water. The system is designed on an aerobic concept and will not rely on anaerobic digestion.

33. Q) How will insects/weed growth around lagoons be controlled?

A) Proponent indicates that an insect control programme will be conducted on a regular basis in all relevant areas of the facility monitored by the local authority. Weeds will be similarly addressed.

34. Q) What social concerns have been taken into account in the planning of the proposal?

A) Considerable expertise has been invoked in providing a wastewater and solid waste system which will eliminate smell by by-passing traditional methods of anaerobic treatment. It is not expected that smells will spill beyond the borders of the property. With regard to residential property there are no properties within the immediate area (nearest 3-4 kilometres) and therefore residents are unlikely to be adversely affected by abattoir operations.
With regard to groundwater nutrient matters, these have been addressed in the design of the waste handling systems.

35. Q) Will there be a reduction in land prices?

A) This depends on how the future surrounding property is developed. There are at present no plans for hobby farmers to populate the surrounding area and therefore attention is focused on broadacre farming prices. These may well rise due to availability of a modern export standard abattoir in this location.

36. Q) What will be the impact of such an industry close to recreational areas?

A) The facility is not close to any recreational facility with the exception of being up-stream of the coastal wetlands. Safeguards outlined in the proposal should make any impact minimal on wetland activity.

37. Q) What will be the effect of groundwater abstraction downstream?

A) At this stage it is likely that groundwater abstraction will have the beneficial effect of reducing excess stormwater in the area. Before abstraction is undertaken a thorough investigation will be carried out in conjunction with the Water Authority to the satisfaction of EPA

38. Q) How reliable is the proponent?

A) Proponent is bound to a detailed list of commitments (attached) and these are legally binding on the proponent.

39. Q) What alternatives are there for proposed site development?

A) Alternatives such as VITI-CULTURE are climatically unsuitable and would require large amounts of groundwater which would not be available. Horticulture would invoke intensive use of fertilisers which would have adverse effect on the downstream wetlands in time.

40. Q) Rational regarding placing an offensive industry close to a leisure area?

A) There is no conflict as only leisure area is 4 Km away at Beermullah Lake. This is used on a limited basis in Summer for water ski activities and is shared with other environmental pursuits.
The factory would be a rural industry on broadacre farmland too far away to have an effect.

41. Q) What skin drying facilities will be available?

A) It is not intended that skins be dried on site. Skins will be salted and disposed of through the trade. This practice would not result in offensive odours outside boundaries of the property.

42. Q) What is direction and influence of prevailing winds?

A) Bureau of Meteorology indicates that the winds will not cause offensive odours to carry over to residential property. In any event odours on-site have been reduced to a practical minimum and the 600 hectare property will provide a suitable buffer zone.

43. Q) Will trees be planted on the property?

A) A treed zone will be set up around the evaporative lagoon area and further tree planting will take place around the factory. For the future a commercial tree growing programme may be adopted to utilise the land further.

44. Q) Will ponds leak?

A) Ponds will be sealed with clay to practical impermeability 10-8 cum/sec. The proponent is further committed to artificial lining if found necessary.

45. Q) What benefit to the local community is the project?

A) There is no down-side given the environmental commitments outlined above. The main benefits would be employment for the Shire of Gingin and increase economic activity, together with the very considerable benefit of a major export standard meatworks to the farming community North of Perth. The very location would have considerable environmental benefits in that stock trucks from the North could reach the abattoir without travelling through the metropolitan area. Local land prices may also rise due to the close proximity of the installation.

# Appendix 3

## Government agencies and public who made submissions

The following authorities and members of the public made submissions

Health Department of Western Australia

Water Authority of Western Australia

The Shire of Gingin

Mr and Mrs Barrett-Lennard

Others who signed a petition regarding the suitability of the abattoir at the proposed site.

R.K. Reiniers

R.L. Harris

R.J. Harris

C and J McVee

G.C. Jackson

R. Alt

J.M Harris

F.R. Narson

M. Harris

C. Scott

M. Shields

F. Scott

A.J. Fandon

R. Elan

B.R. Messam and

S.P. Shields