REDEVELOPMENT OF WESTRAIL LAND, NORTH FREMANT TO INCORPORATE SWAN WOOL SCOURING, FREMANTLE STEAM LAUNDR AND CONTAINER STORAGE OPERATIONS

GOVERNMENT EMPLOYEES SUPERANNUATION BOARD

Report and Recommendations
of the
Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 300 September 1987

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SUMMARY AND RECOMMENDATIONS

The Environmental Protection Authority has considered the proposal by the Superannuation Board of WA (now Government Employees Superannuation Board) and Saland Pty Ltd to relocate several industries in Tydeman Road, North Fremantle.

The establishment of Swan Wool Scouring (WA) Pty Ltd, Fremantle Steam Laundry, Conaust Pty Ltd and Keywest Pty Ltd was subject to review through a Public Environmental Report. A total of 251 submissions were received by the Authority during the 8 week public review period, which closed on 3 April 1987.

The view of the Authority, that the discharge of effluent to the Swan River was a major environmental issue associated with the relocation of the industries, was reiterated in submissions. No submission supported disposal to Swan River.

Following careful consideration of the information available to it through submissions and specific request as well as that provided by the proponents when responding to the submission issues, the Authority has reached the following conclusions in relation to the Swan Wool Scouring relocation:

- the company's existing discharge to the Swan River is causing some contamination of the biota and is considered to be environmentally undesirable;

- to increase the discharge or the contaminants in the effluent would lead to environmentally unacceptable consequences; and

- that river discharge from the proposed site is therefore unacceptable.

With regard to Fremantle Steam Laundry, the question of the suitability of the proposed site needs to be determined through the planning process but discharge to the river from the new site should not occur. Further, alternative methods of effluent disposal from the existing operation should be reviewed, with a view to removing the discharge.

Both container relocation proposals are considered to raise issues of noise and traffic that can be managed.

RECOMMENDATION 1.

The EPA has concluded that the continued discharge of effluent to the Swan River from the existing Swan Wool Scouring Plant is environmentally undesirable. The EPA recommends that there be no increase in the volume and/or quantity of contaminants in the effluent discharged to the Swan River from Swan Wool Scouring.

RECOMMENDATION 2.

The EPA recommends that proposed effluent discharge to the Swan River from the proposed Swan Wool Scouring site would be environmentally unacceptable and should not be approved.

RECOMMENDATION 3.

The EPA recommends that, should the discharge from Swan Wool Scouring continue, the Health Department and the Fisheries Department review the need to restrict or prohibit the taking of molluscs and fish from that portion of the Swan River downstream of the Stirling Bridge.

RECOMMENDATION 4.

The EPA recommends that, whether it relocates or not, the Fremantle Steam Laundry should investigate alternate means of effluent disposal with appropriate Government departments, with a view to discontinuing effluent discharge to the Swan River.

RECOMMENDATION 5.

The EPA recommends that, should the proposal proceed, the relocation of the Fremantle Steam Laundry to Tydeman Road should be subject to the commitments given by the company in the PER and in the response to submission issues (These are presented in Appendix B of this report)

RECOMMENDATION 6.

The EPA recommends that, should the proposal proceed, the relocation of Conaust Pty Ltd and Keywest Pty Ltd should be subject to the commitments given by the companies in the PER and in the response to submission issues (These are presented in Appendix B of this Report)

1. INTRODUCTION

The existing sites used by Swan Wool Scouring and Fremantle Steam Laundry, are proposed to be redeveloped by the Superannuation Board of WA (now Government Employees Superannuation Board) and Saland Pty Ltd, necessitating the relocation of these and other industries.

The proposed development of sites for the wool Scourers and laundry as well as two container storage operations on Westrail land in North Fremantle was submitted to the Environmental Protection Authority as a Notice of Intent in July 1986. The Authority determined that the redevelopment of the industries' existing sites between Queen Victoria Avenue and Stirling Highway, and the relocation of the industries from that site, raised a number of environmental concerns and should be subject to formal public scrutiny. As a consequence, a Public Environmental Report (PER) outlining proposals for Swan Wool Scouring, Fremantle Steam Laundry, Conaust Pty Ltd and Keywest Pty Ltd was released for public review for 8 weeks, closing on 3 April 1987.

2. DESCRIPTION OF PROPOSALS

Following a review of potential alternative locations for these four operations, the Superannuation Board of WA and Saland Pty Ltd (the proponent) determined that there were benefits in remaining within the Fremantle area, and North Fremantle specifically. The proponent subsequently entered into an agreement with Westrail and the Fremantle Port Authority for the establishment of these four operations on Reserves 35189 and 23594, located between the Perth-Fremantle Railway Line, Tydeman Road and Bracks Street (Figure 1).

The proposal would see purpose-built facilities being established for Swan Wool Scouring and Fremantle Steam Laundry fronting onto Tydeman Road, and the container storage operations of Conaust Pty Ltd and Keywest Pty Ltd being located further to the north, with road access along Barker Street and Irene Street respectively.

Included in the proposal is the combination of effluents produced by Swan Wool Scouring and Fremantle Steam Laundry, both of which would have substantially expanded operating capacity, and the discharge of this effluent into the Swan River beneath the Fremantle Traffic Bridge. Currently, both industries separately discharge their effluent to the River under the provisions of licences issued by the Swan River Management Authority.

The production capacity of the new Swan Wool Scouring plant would be approximately 8 700 000 kg of wool per annum which would generate 630 kilolitres of effluent per day, while the Fremantle Steam Laundry's throughput would increase by 75%, to about 17 500 kg per day, with a corresponding increase in effluent to 2 000 kilolitres per week. The combined effluent would be 830 kilolitres per day. It is proposed in the PER that a new licence be issued by the SRMA, using conditions that apply to the existing wool scourer's discharge licence.

3. PUBLIC REVIEW

The Authority received a total of 251 submissions on the PER, comprising one petition (247 signatures), 218 copies of a standard letter, 24 other public

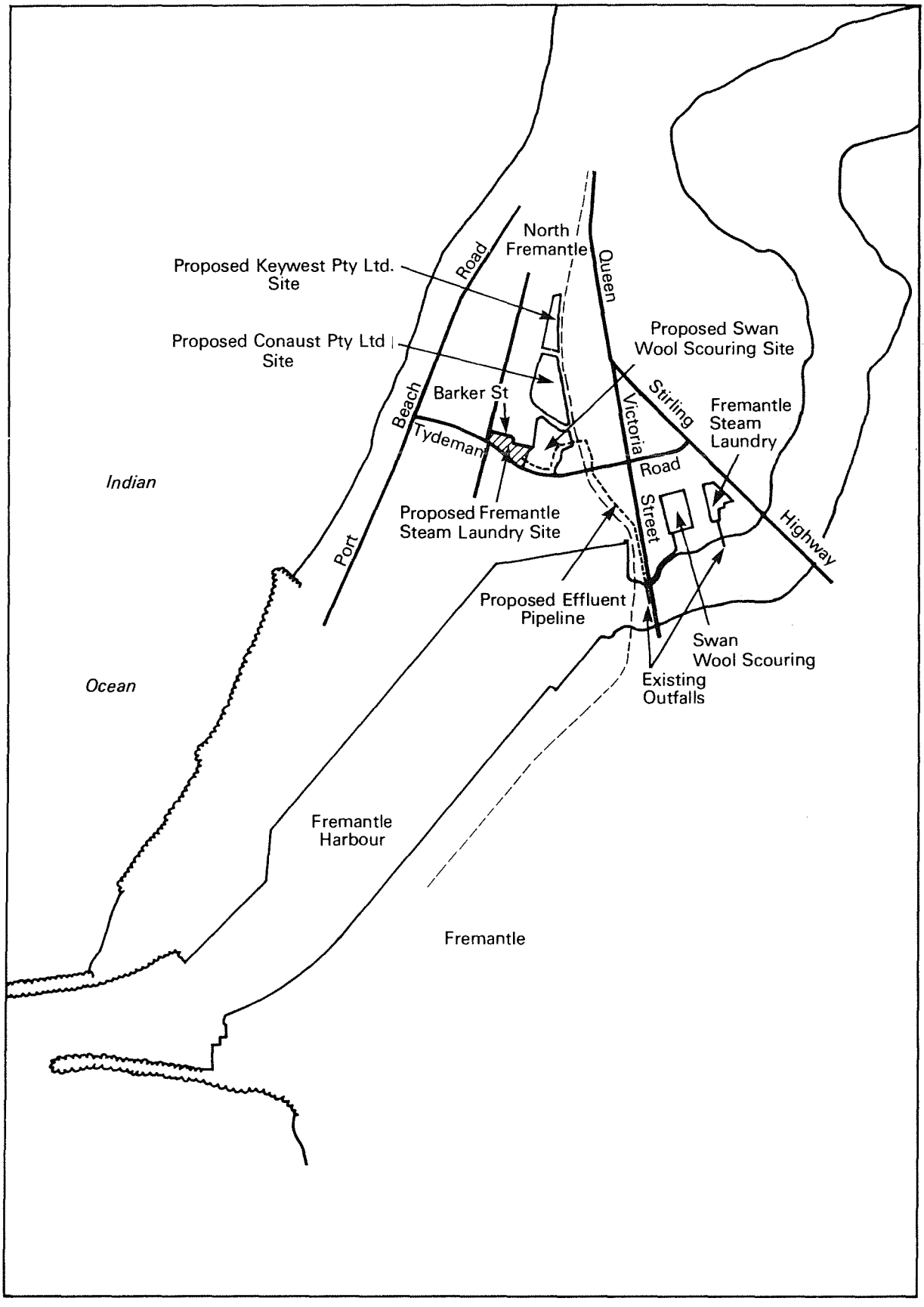

Figure 1. Existing and Proposed Sites.

submissions and 8 submissions from Government agencies and local authorities.

The following issues and comments were made to the Authority in public submissions.

(a) Site Suitability Issues Raised in Submissions

. the present location of the two industries is well away from residential areas; the proposed location is not.

. if the businesses are to be relocated, they should be relocated in an industrial area, where pollution consequential upon their activities will not affect those who live in a quiet residential area.

. the area north of Tydeman Road on the western side of Queen Victoria Street is quite heavily populated and there have been a number of houses renovated into quite attractive residential sites in the particular area. To introduce a wool scouring and laundry complex into the area is going to detract substantially from the enjoyment of residential life in the area.

. the proponent has not provided evidence of investigations to relocate to other areas apart from the FPA land.

. the railway embankment does not constitute an adequate buffer between industrial and residential areas.

. the wool scourers will provide an inappropriate backdrop for Port Beach.

. real estate values of properties will plummet considerably.

(b) Planning Issues

. no studies have been undertaken on the social impact of industries in North Fremantle.

. relocation and capital expenditure in the order of $11 000 000 would ensure the continued presence of hazardous and noxious industries in the locality well into the 21st century.

. relocation would eliminate the opportunity to reappraise the whole of the North Fremantle region with the view to addressing land use in the light of current changing uses. If North Fremantle is to overcome the implications of past ad hoc expedient planning decisions it must be the subject of a comprehensive forward thinking planning study.

. the land onto which the industries are to be relocated is owned by Westrail and held for rail use, and it seems wrong in principle that industries such as wool scourers and laundries should be able to now occupy that land, particularly as it sits so close to a residential area.

. the land adjacent to Pearce Street is zoned for residential purposes, and that should be the uppermost and primary consideration in looking at the relocation of industry within the general area.

. relocation will constitute a breach of the planning objectives of TPS 2 by allowing the operation of Hazardous and Noxious Industries within the City of Fremantle.

. the proposed new buildings will not blend aesthetically with the surrounding small residences of stone and brick.

. neither the wool scourers or the laundry are port related activities. They would be more appropriately located in an established industrial area.

. the increased scale of operations makes it false to compare the existing operations to those planned.

(c) Odour Issues Raised in Submissions

. the smell will create a significant environmental hazard for those who live close by.

(d) Noise Issues Raised in Submissions

. recommended noise tolerance levels are between 50 to 60 dB(A). Levels of 65 dB(A) have been recorded at the wool scourers. However, the report claims that at distance of 100 m, levels are reduced to acceptable levels. No mention is made of wind direction at the time of testing. The scientific merit of the report's observation is dubious. Noise could be more of a problem in the higher position of the new location. The noise associated with crashing of containers when loading and unloading would be a problem. Also the noise of forklifts and trucks when reversing, especially the "beep beep" reversing warning signal.

. present loud noises which are heard from the west industrial area are not lessened by the railway embankment.

(e) Chemical Spill Issues Raised in Submissions

. concern is expressed about the possibility of chemical spills - will these be discharged into the river?

(f) Effluent Treatment and Disposal Issues Raised in Submissions

. what safeguards will ensure that the companies concerned cease operating in the event of failure of the effluent treatment system?

. some of the detergents used in the wool scouring activities may not be biodegradable.

. there is inadequate discussion of the options for waste disposal.

. dilution of wastes with laundry effluent does not constitute a decrease in the amount of waste entering the river.

. the new wool scouring plant should not be considered as an upgrading of an old premises but as an entirely new operation. Therefore, transference of the existing licence for effluent discharge should not be assumed.

. in line with long term objectives of the SRMA and the EPA to clean up and maintain biological cleanliness of the Swan River, licences for the

discharging of industrial effluents should be void on such industries ceasing to operate or relocating, so their impact on the environment can be re-assessed and updated.

- the conditions under which Swan Wool Scouring effluent disposal is presently licenced are not being met.

(g) Comments on the Effects of Effluent Disposal Raised in Submissions

- with the high profile the relevant section of the river will gain with the Anchorage project, activities such as mussel collection will increase. We should not accept that there will be some contamination of the river.

- there is discolouration in the river.

- there is injury to marine life.

- there is excessive depletion of the oxygen content of the water in the plume.

- effluent discharge would continue to render an area of the harbour unfit for contact water sports and dangerous for the collection of mulluscs.

(h) Comments on Other Consequences Raised in Submissions

- doubling the rate of extraction of groundwater may threaten the quality of groundwater on the loose narrow isthmus which forms North Fremantle, a danger which has not been addressed.

A list of people and organisations which made a submission is provided in Appendix A.

The Authority provided the proponent with this summary of issues and comments and sought a response on them. As part of their response a list of commitments was provided . This list is at Attachment B.

4. ENVIRONMENTAL IMPACTS AND MANAGEMENT

In reviewing the impacts of the proposals, the Authority has closely examined the PER and response by the proponent, as well as taken into account the public and Government agency submissions.

The issues that arise from the relocation of Swan Wool Scouring and Fremantle Steam Laundry are of major environmental significance. Those that relate to the proposed container operations are fewer in number and generally less significant, although clearly of concern to the local community. Therefore, the Authority has tended to concentrate on the two industrial proposals.

4.1 SWAN WOOL SCOURING (WA) PTY LTD

There are two critical environmental issues that need to be considered in relation to the establishment of Swan Wool Scouring at Tydeman Road. These are:

- site suitability; and

. effluent disposal.

Other issues relate to odour, noise and traffic.

4.1.1 SITE SUITABILITY

The existing Swan Wool Scouring site is located within an industrial area and this industry has operated on this site since 1916. Effluent generated from the wool scouring operation on this site has been discharged to the Swan River since that time. The discharge has been the subject of frequent debate over time. In 1955, a report to the Swan River Reference Committee noted that the effluent from the wool scourers was being centrifuged, settlement of the solids instituted and midstream discharge at ebb tide was undertaken. However, in spite of these substantial improvements, the general position was described as "still not satisfactory" (Swan River Reference Committee, 1955).

Following its establishment in 1959, the Swan River Conservation Board (SRCB) was involved in frequent discussions with the wool scourers regarding the quality of the effluent discharged to the river, as well as the desirability of the relocation of the industry away from the river. These discussions have continued with the Swan River Management Authority, which replaced the SRCB in 1976.

The existing Swan Wool Scouring site is currently zoned Industrial and Public Purposes in the Metropolitan Region Scheme, and Light Industry and Public Purpose in the City of Fremantle Town Planning Scheme No 2. Redevelopment of this site would require its rezoning, and this has already commenced.

The PER (p 16) indicates the following preferred site requirements for the relocation of Swan Wool Scouring:

. a relatively large area of land;

. a site with road access for heavy vehicles;

. potential access to rail would be an advantage;

. access to power and water supplies;

. proximity to a workforce;

. the ability to discharge large volumes of effluent;

. within an economic distance of the Swan River; and

. if possible, close to the existing discharge site.

These criteria led the proponent to only look at sites within the North Fremantle area. Two sites within North Fremantle were investigated, with the Westrail reserve being selected because of its availability.

As there is a need to dispose of highly polluted effluent from the wool scouring industry, the EPA recognises that there are particular locational requirements.

It is this issue that has created the greatest difficulty over time for successive Governments, which have attempted to find a site that could cater for animal product based industries. A number of reviews and investigations have been carried out in the past decade to locate suitable sites, without any having been selected. It is for this reason that the PER pointed out (p 15) that no sites have been nominated by Government agencies that would be acceptable to those agencies or local government.

The Authority is aware that there is strong commercial interest in the establishment of animal product processing industries within Western Australia. Therefore, the lack of acceptable sites would be a significant and continual deterrent to their establishment. In view of this interest and recognising that their environmental implications are important considerations, the State Planning Commission, Department of Agriculture, Technology and Industry Development Authority and the Environmental Protection Authority have initiated a study with the objective of defining suitable sites. This study and related investigations is expected to be completed by the end of October 1987.

With regard to the suitability of the proposed Swan Wool Scouring site, the Authority considers that the planning agencies must consider whether the Tydeman Road site is appropriate for this type of industry. However, the Authority questions whether the establishment of a noxious industry is the most beneficial and appropriate use for land that has such a close relationship to the port. Certainly, the rationale put forward for this site in the PER, aside from the effluent disposal issue, can only be described as superficial. It appears to the Authority that the overriding reason for Swan Wool Scouring maintaining an operation in North Fremantle is the ability to discharge effluent to the Swan River.

4.1.2 EFFLUENT MANAGEMENT

The PER proposes that the effluent generated through the wool scouring process would be treated on site to reduce solids, screen fibres and other particles and remove woolgrease. The treated effluent would then be stored on-site and discharged to the Swan River at a point beneath the Fremantle Traffic Bridge, in accordance with the conditions of its existing licence issued by the Swan River Management Authority.

The conditions that apply to the current Swan Wool Scouring effluent disposal licence are:

- A retention period sufficient to achieve adequate sedimentation prior to discharge into the river to the extent that the suspended solids as determined by a method approved by the Director of the Government Chemical Laboratories do not exceed 6 g/litre;

- The final holding tanks are to be desludged at a time to achieve optimum removal of solids, prior to each discharge;

- The discharge shall be controlled by an automatic tide switch so that the discharge can be made only when there is an outgoing tide of 0.5 knots or greater;

- The rate of discharge for a maximum of 630 kilolitres per day of effluent shall not be more than 3.0 kilolitres per minute and the total time shall not exceed 3.5 hours;

- No solids or semi-solid floating substance shall be discharged;

- Discharge of effluent shall be metered by means of a recording meter o the effluent discharge line to be recorded on a daily basis;

- Desludging operations shall be monitored and records of daily quantitie maintained;

- A log of operations shall be kept in a form approved by the Authority;

- All records relevant to these conditions shall be open to inspection b the Authority and copies shall be supplied on request;

- Security must be provided to prevent manual operation of discharge of th effluent, without the prior approval of the Authority; and

- Should the discharge of effluent cause any of the following detrimenta effects to be observed in the waters, then the conditions of the licenc will be reviewed:

  (a) Formation of sludge or other deposit;

  (b) Formation of scum, fat, oil, grease or floating material;

  (c) Formation of objectionable odours or discolouration;

  (d) Injury to marine, animal or human life; or

  (e) Excessive depletion of the oxygen content of the waters.

It is clear from the data presented in the PER that the current discharg does not meet the conditions of its SRMA licence in at least one respect The suspended solids ranges from 3700 - 7100 mg/L while the licenc condition sets a maximum level of 6000 mg/L. The average discharge level i indicated to be 5385 mg/L (PER, p30).

The EPA understands that the conditions of the licence held by Swan Woo Scouring are currently being reviewed prior to renewal.

The Swan River Management Authority issues annual licences for twent industrial discharges to the Swan River. The discharge from Swan Woo Scouring is by far the most contaminated, with all others having receive treatment prior to discharge to the river.

Effluent disposal to the river from Swan Wool Scouring was the principa issue raised in submissions by the public and Government agencies. N submission supported the continued discharge to the River by the company.

In its submission, the Swan River Management Authority indicated tha bacteriological levels are unacceptable and are inconsistent with beneficia uses for the area, the aesthetic criteria in the Waterways Conservation Ac (Section 47, 5d) are not met by the discharge, and that the presen discharge of about 650 tonnes of suspended solids per annum to the river i considered to be unacceptable. Advice from the Fisheries Department was tha the concentration of effluent pollutants in the receiving waters should b below levels which are considered to cause harmful effects to people wh consume either fish or mussels taken from these waters. The Healt Department indicated to the Authority that the high levels of faeca

coliform and salmonella bacteria in the effluent presented a threat to public health and that a significant reduction in their numbers would be required before disposal to the river could continue. The Fremantle Port Authority expressed concern at any possible deterioration of water quality within the Inner Harbour, in view of the proposed increase in effluent.

Recognising the likely opposition to this discharge option, the proponent briefly investigated disposal alternatives. These included discharge to sewer, into the groundwater, to the ocean, within the Inner Harbour and through an improved diffuser at the existing outfall. While the alternative forms of disposal were dismissed in the PER, in favour of continuing the discharge to the river, the proponent has subsequently indicated to the Authority that it is proposed to install a new diffuser at the commencement of the operation of the new plant.

The PER presents a review of the environmental impacts of the existing discharge, including a survey of the discharge and Inner Harbour, and extrapolates these results to the proposed increased discharge. The results from an effluent discharge model are outlined in Section 8.2.1.1 of the PER while those from the field and literature survey are in Section 8.2.1.2.

As reported in the PER, these investigations have suggested the following in relation to the existing Swan Wool Scouring discharge:

- no adverse impact on water quality that can be associated with the discharge of the industrial effluents has been detected in samples taken from the Fremantle Traffic Bridge;
- no appreciable build up of oil or grease in the sediments;
- the levels of faecal coliform bacteria present in the effluent decline rapidly after discharge;
- low levels of arsenic are present in mussels and sediments in the vicinity of the discharge point;
- the suspended solid load is reduced from an average of 5.4 g/L in the effluent to 10 mg/L within 30-40 m of discharge; and
- bacterial contamination of molluscs occurs in the vicinity of the discharge point (PER,p 41).

The Authority has noted the comment in PER Appendix B (p 34) that caution is required in assessing the impact of the effluent on the basis of short term and once-off studies. Further, it is pointed out on page 53 of Appendix B that the absence of any pre-discharge studies of the sessile or migratory organisms in the vicinity of the discharge outfall precludes any comment as to changes which may have arisen as a result of the industrial discharges.

Modelling of the proposed increased combined discharge from the same point, presented in Appendix C of the PER, suggests that:

- under average tidal flow conditions, some effluent remains in the Inner Harbour after the ebb tide;

- under worst case conditions, of average tidal flow and low summer river flow, the Inner Harbour and river contain in excess of three times the maximum daily discharge;

- effluent might proceed upstream of the discharge point as far as Freshwater Bay;

- under conditions of extreme tidal amplitude and winter river flow, the river and harbour are completely free of effluent; and

- maximum concentrations of effluent (as indicated by faecal coliform levels) in the Inner Harbour are found immediately downstream of the discharge point and in its north east corner (PER,p 39).

Although the PER (p 42) suggests that these survey and modelling results indicate that at present there is no detectable permanent impact on the environment, the document also acknowledges the high levels of bacteria and presence of arsenic in the biota and points to the potential for effluent to be carried upstream of the discharge outfall. In addition, PER Appendix B indicates that there is a measurable increase in suspended solids and a decrease in dissolved oxygen in the immediate area (10m) downstream from the outfall during discharge. These aspects point to threats to the environment resulting from the effluent discharge to the Swan River and must be considered when evaluating the proposed increased discharge.

Arsenic is a contaminant in the effluent from Swan Wool Scouring. Table 1 in Appendix B of the PER indicates that the arsenic level ranges between 0.22 and 0.32 mg/L. LeProvost, Semeniuk & Chalmer carried out a series of samples as part of their investigations into the effluent discharge. These are presented in Appendix B of the PER. In relation to arsenic contamination, their samples taken from the Fremantle Traffic Bridge, the discharge pipe and the railway bridge showed concentrations of between 1.7 and 2.2 mg/kg in mussel flesh, while a sample from the Stirling Bridge indicated 2.1 mg/kg in mussels. Samples of mussels taken at similar sites by the Swan River Management Authority in December 1986 showed levels of arsenic between 2.1 and 2.4 mg/kg. Levels obtained from mussels taken 200m and 400m downstream of the railway bridge returned arsenic concentrations of 2.1 mg/kg and 0.63 mg/kg respectively. The arsenic concentrations reported from the Swan River Management Authority samples show an increase compared to mussels collected from the same vicinity in October 1985. (Government Chemical Laboratories, pers comm).

Sampling of total coliform bacteria prior to, during and following effluent discharge was also undertaken by LeProvost, Semeniuk & Chalmer. Figure 8D in Appendix B of the PER shows their results. Levels recorded before the discharge approximately 350 m downstream of the railway bridge ranged from 2 - 24 coliform bacteria/100mL. These increased to 14 - 40 000 coliform bacteria/100mL during discharge and then declined to 88 - 464 coliform bacteria/100mL following discharge. The survey indicates that, based on the bacteria levels, the effluent tends to disperse across the width of the Inner Harbour following discharge but concentrates in its north eastern portion.

Appendix B of the PER (p 49) also points out that several salmonella bacteria serotypes are present in the effluent and that salmonella bacteria were detected in mussels during the consultant's survey.

The acceptability of these bacteria levels can be determined by comparing them to the levels outlined by the Working Group to the Environmental Protection Authority on Water Quality Criteria for Marine and Estuarine Waters of Western Australia (DCE 1981). One of the beneficial uses defined in that report relates to the harvesting of molluscs for food (Beneficial Use No 3). As mentioned previously, mussels are taken for human consumption in the Inner harbour and from the bridges near the discharge point. The beneficial use criteria for faecal coliforms states that:

> "A health investigation level for water in areas designated for mollusc harvesting may be established on the basis of a minimum of five samples taken over not more than a 30-day period under circumstances in which the faecal contamination is most probable, and is reached either when the median reading of such samples exceeds 15 organisms/100mL, or when more than 20% of such samples exceed 50/100mL." (DCE, p 19)

As indicated above, sampling indicated that these levels are exceeded throughout the upstream portion of the Inner Harbour during and following effluent discharge. Further, sampling at the Stirling Bridge also shows faecal coliform levels in excess of these criteria. (PER Appendix B, Figure 5). This result appears to confirm the prediction of the model described in Appendix C of the PER, that effluent is carried upstream on flood tides.

The current effluent discharge from Swan Wool Scouring is 359 kilolitres per day. As proposed, the discharge from the new wool scourers would increase in volume, to 630 kilolitres, while its quality could be marginally reduced through a more efficient effluent treatment plant. The proponent also proposes that the effluent from the Fremantle Steam Laundry, which would be approximately 200 kilolitres per day, would be combined with that of the wool scourers. Therefore, the total effluent discharged from the single discharge point would be 830 kilolitres per day.

The total load of suspended solids discharged to the river each day would increase from the present 1.93 tonnes per day, up to 3.78 tonnes per day.

The Authority considers that the evidence presented in the PER and information provided in submissions indicates that there have been some environmental impacts resulting from the existing discharge, particularly in relation to contamination of molluscs and potential contamination of other aquatic fauna. While the suspended solids and arsenic discharges do not appear to have directly affected the biota, they are of environmental concern to the Authority.

To show the relative quality of the existing discharge from Swan Wool Scouring, the following table compares its current effluent quality with that received by and exported from the Woodman Point Wastewater Treatment Plant.

Table 1 indicates that Swan Wool Scouring effluent substantially exceeds several of the significant environmental quality parameters in the effluent from the Woodman Point Wastewater Treatment Plant. For instance, the 5-Day Biological Oxygen Demand is almost 30 times higher, suspended solids are on average 40 times higher, oil and grease levels are over 100 times higher while arsenic levels are more than 20 times higher. Only the levels of faecal coliforms in the two effluents are roughly equivalent.

Table 1. Comparison of Swan Wool Scouring (SWS) effluent and that to and from the Woodman Point Wastewater Treatment Plant (WPWTP).

	SWS	WPWTP	
		UNTREATED SEWAGE	TREATED SEWAGE
pH	6.8-7.2	6.2-9.1	6.5-8.0
BOD (mg/L)	7600	350	260.0
Suspended Solids (mg/L)	3700-7100	290	130.0
Oil & Grease (mg/L)	4200-5300	115	10.0-50.0
Faecal coliforms (/100mL)	10 Million	100 Million	10 - 100 Million
Arsenic (mg/L)	0.22-0.32	0.014	0.014

Source: (PER & MWSSDB,1982)

Continued discharge of effluent to the river by Swan Wool Scouring is considered by the EPA to be environmentally undesirable.

It is pointed out in the PER that the combined discharge would allow reduced levels of contaminants in the effluent, this would be achieved by the dilution of the substantially increased effluent from Swan Wool Scouring with the relatively less polluted effluent from Fremantle Steam Laundry. However, the total load of contaminants in the discharge would increase, as would the area of the river required for mixing and dilution of the effluent. Any increase in the discharge to the river from the wool scouring operation could result in higher levels of contamination of the biota and the water, with the result that the local environment would be affected. The capacity of the immediate environment to assimilate the increased effluent discharge would be significantly reduced.

In assessing the impacts of increased discharge to the river, the Authority has also considered the potential effect on proposals to change the land uses in the vicinity of the discharge site. Such changes, if they were to come to fruition, would be likely to see a change in the uses that are made of the environment, especially the Swan River. For example, the proposed redevelopment of the site between the two traffic bridges includes the increased use of the foreshore for public access, a marina harbour within the development and residential development, all of which would substantially increase the requirement for improved water and aesthetic quality in this portion of the Swan River. Such a development could see a change in the emphasis on specific beneficial uses that should apply to the waters in the area. The continued discharge of the effluent would represent a threat to those potential future uses.

The Authority considers that the environmental effects and consequences on the river of any increase in the effluent discharge or its constituents would be environmentally unacceptable.

RECOMMENDATION 1.

The EPA has concluded that the continued discharge of effluent to the Swan River from the existing Swan Wool Scouring Plant is environmentally undesirable. The EPA recommends that there be no increase in the volume and/or quantity of contaminants in the effluent discharged to the Swan River from Swan Wool Scouring.

The proponent examined alternative disposal options in the PER and the response to issues raised in submissions and concluded that discharge to the River is the only realistic option. Discharge to the sewer was seen by a number of submissions as being the only acceptable alternative. However, advice from the Water Authority and the proponent indicates that discharge to the sewer would not be possible. The Water Authority has maximum standards for effluent disposal to the sewer (Table 2), and these are substantially below the levels that can be achieved by the wool scourers. The standards presented in Table 2 should be compared with the current effluent quality indicated in Table 1. It is unlikely that without sophisticated pre-treatment, and possibly despite it, the effluent quality could be improved to meet even these maximum standards.

Table 2. Water Authority Sewer Maximum Acceptance Standards.

Temperature	< 38'C
Maximum 5 day BOD	3 000 mg/L
Maximum Suspended Solids	1 500 mg/L
Maximum Oil & Grease	100 mg/L
pH Range	6.2 - 9.0

(Source: Water Authority of WA)

In view of the apparent lack of suitable effluent disposal alternatives, with the result that discharge from the proposed site would need to be to the Swan River, and the fact that the proposal envisages that the effluent volume from the wool scourers would increase from 359 kilolitres to 630 kilolitres per day, the Authority considers that the proposed relocation of the Swan Wool Scouring to the Tydeman Road site would lead to environmentally unacceptable impacts.

RECOMMENDATION 2.

The EPA recommends that proposed effluent discharge to the Swan River from the proposed Swan Wool Scouring site would be environmentally unacceptable and should not be approved.

As the effluent contains a high level of faecal coliform and includes salmonella bacteria, the Health Department has indicated that the effluent represents a threat to public health. In addition, advice received from the Fisheries Department has indicated that licenced professional fishing currently takes place within the Inner Harbour, from the No.12 container terminal. One of the main species netted are white bait which are sold for human consumption and for bait. According to the model and sampling results

presented in the PER, the water in this portion of the harbour has very high faecal coliform levels from the existing discharge, and these could increase with the proposed discharge. Amateur fishing, including the taking of mussels, is extensively practised from the two moles, the Inner Harbour and Fremantle Traffic Bridge.

RECOMMENDATION 3.

The EPA recommends that, should the discharge from Swan Wool Scouring continue, the Health Department and the Fisheries Department review the need to restrict or prohibit the taking of molluscs and fish from that portion of the Swan River downstream of the Stirling Bridge.

4.1.3 ODOUR AND NOISE

The operations of animal-based industries frequently give rise to odours. This is generally a consequence of the nature of the effluent and the biological and chemical activity that occurs in it. In the case of wool scourers, the odour problem arises from the holding and treatment of the effluent. The operation of scouring gives rise to some limited odours detectable off-site, which mainly result from the washing of the wool and can smell like wet woollen blankets.

As indicated in the PER, no complaints have been received by authorities since the modernisation of the effluent treatment plant.

Submissions from residents living close to the Tydeman Road site indicated concern about odour emissions. While it is unlikely that objectionable odours would arise from the proposal, it also needs to be pointed out that the residential area between Queen Victoria Street and the railway line would be closer to the proposed site than residences from the existing site and they would be more exposed to emitted odours carried by the predominant south-westerly and westerly winds.

Were additional treatment of the effluent to take place on the existing or proposed sites, it is likely that the nature and the level of odours would increase. As a consequence, effluent treatment would either need to be very carefully designed and strictly controlled to minimise odours or be carried out elsewhere.

Potential noise generating sources would be restricted in the proposed plant. The most likely causes would relate to the vehicular transport of the wool to, from and around the site. It is expected that noise generated from the proposed wool scouring operation would not exceed existing ambient levels.

4.1.4 TRAFFIC

The Main Roads Department has evaluated the traffic management proposals for the site and has indicated that the proposed developments at Tydeman Road are unlikely to unduly impinge on the existing road system and associated traffic lights. However, a number of improvements to the road system have been suggested. The proponent has already commenced negotiations with the Main Roads Department regarding the construction of these improvements.

4.2 FREMANTLE STEAM LAUNDRY

The relocation of the laundry also raises issues related to effluent discharge and site suitability. In addition, traffic and water supply issues need to be considered.

4.2.1 SITE SUITABILITY

The relocation of the Fremantle Steam Laundry did not raise the same concerns in submissions as did Swan Wool Scouring. It is likely that the nature of the industry, its limited effluent volume and relative quality, and relative scale, were all contributing factors in this.

The Authority considers that the suitability of the site for relocation of the Fremantle Steam Laundry should be determined through the planning process. However, a principal reason for locating the laundry on this site was the proposal to combine the effluent from the laundry with that of the wool scourers. In view of the Authority's recommendations in relation to disposal of effluent from Swan Wool Scouring, the need for adjacent siting also should be reconsidered.

4.2.2 EFFLUENT MANAGEMENT

The laundry currently discharges effluent to the Swan River adjacent to its existing site. The proposal in the PER is for this effluent, which is relatively cleaner than that of the wool scourers, to be combined with the wool scourer effluent prior to discharge through the single outfall beneath the Traffic Bridge.

The laundry discharges under the provisions of a licence from the Swan River Management Authority. The main provisions are described in the PER, and include:

- Discharge of treated and filtered washing liquors and rinse water at a rate not exceeding 50 kilolitres per hour and a maximum of 2 000 kilolitres per week;
- The discharge is to be first treated by settling and filtration of lints; and
- pH should remain within the range 5 to 9.

Table 3 indicates the current quality and volume of the effluent discharged to the Swan River from the laundry.

Table 3. Existing effluent quality from Fremantle Steam Laundry.

Volume	200 kL/day
pH	8.1 - 9.3
Suspended Solids	51 - 73 mg/L
BOD	38 mg/L
Oil & Grease	14 mg/L
Surfactants	0.9 mg/L

(Source: PER)

As can be seen from Table 3, the effluent from Fremantle Steam Laundry is relatively uncontaminated. The main difficulty experienced in relation to the discharge is that the pH has fluctuated substantially, on occasions exceeding the maximum pH permitted.

Elsewhere in the Metropolitan area, laundries commonly discharge to the sewer. The Water Authority has advised that the discharge to the sewer would be acceptable, although some enlargement of the local sewerage reticulation system would be required, at the developer's cost.

While the effluent is of relatively better quality when compared to that of Swan Wool Scouring, the Authority considers the discharge of industrial effluent to the Swan River to be environmentally undesirable when there are suitable and acceptable alternative disposal methods available.

Should the Fremantle Steam Laundry relocate to the Tydeman Road site, its process effluent should be disposed of in a more acceptable manner.

RECOMMENDATION 4.

The EPA recommends that, whether it relocates or not, the Fremantle Steam Laundry should investigate alternate means of effluent disposal with appropriate Government departments, with a view to discontinuing effluent discharge to the Swan River.

4.2.3 TRAFFIC

The laundry is a generator of a significant volume of vehicle movements, and the proposed expansion would lead to a further increase. In terms of its proposed location adjacent to the port, an area which already creates a high traffic load, this increase is not incompatible. It needs to be recognised that the laundry is presently located nearby and therefore the increase would be less than if it were not.

The comments provided by the Main Roads Department and mentioned in Section 4.1.4 above also refer to this proposal.

4.2.4 WATER SUPPLY

The laundry proposes to abstract groundwater to provide its water requirements. The proposal would require the drawing of approximately 820 kilolitres per day. (PER Appendix E)

Concern has been expressed in public submissions about the impact of this abstraction on the local groundwater regime, which is shallow and limited. The Perth Urban Water Balance Study report indicates that the unconfined aquifer beneath the North Fremantle area contains a saltwater intrusion. (Water Authority, 1987)

The advice of the Water Authority of WA should be sought prior to the development of any bores as part of these proposals.

4.2.5 COMMITMENTS

The PER contains a number of commitments that would apply with the relocation of the Fremantle Steam Laundry. Additional commitments have arisen in response to the issues raised in submissions. A list of the commitments is presented in Appendix B of this Report.

RECOMMENDATION 5.

The EPA recommends that, should the proposal proceed, the relocation of the Fremantle Steam Laundry to Tydeman Road should be subject to the commitments given by the company in the PER and in the response to submission issues. (These are presented in Appendix B of this Report)

4.3 CONTAINER STORAGE OPERATIONS

Two companies are proposed to be relocated to the Westrail reserve. They are Conaust Pty Ltd, which currently operates from a site fronting onto Tydeman Road, and Keywest Pty Ltd.

The main issues raised by their relocation relate to traffic and noise. The Main Roads Department's comments on the wool scourers were also relevant to the container operators, and the negotiations would also address traffic problems specific to these proposals.

The noise issue was of particular concern to nearby residents. In response to these concerns, a noise survey was carried out by the proponent. This survey found that the vehicle movements would normally occur between 7.30 am and 3.30 pm during weekdays. Keywest is a transport operation whereas Conaust store empty shipping containers. Noise is generated in the latter operation by the loading and stacking of the containers. The noise survey measured the background level in Pearse Street to be approximately 60 dB(A) and the container operation noises to be barely discernable above this level.

As a consequence of this survey, the consultant recommended that the following actions could be taken to reduce noise emitted from the container operations:

. using tyne type forklifts; or

. fitting rubber impact absorbers to the lifting frame on the forklift; or

. revising operating operating procedures for the forklift operation.

Commitments have been made by Keywest and Conaust in the PER and in the response to issues raised in submissions, in the event of relocation. These commitments are listed in Appendix B of this Report.

RECOMMENDATION 6.

The EPA recommends that, should the proposal proceed, the relocation of Conaust Pty Ltd and Keywest Pty Ltd should be subject to the commitments given by the companies in the PER and in the response to submission issues. (These are presented in Appendix B of this Report)

5. CONCLUSION

The EPA has carefully considered the proposals contained in the Public Environmental Report for the relocation of Swan Wool Scouring, Fremantle Steam Laundry, Conaust Pty Ltd and Keywest Pty Ltd to a North Fremantle site vested in Westrail and the Fremantle Port Authority. Issues raised in the public, Government agency and local authority submissions have been responded to by the proponent, the Government Employees Superannuation

Board, and both of these have been incorporated in the Authority's assessment of the proposals.

The main proposal, and the one that was subject to the greatest comment, related to the establishment of Swan Wool Scouring at the Tydeman Road site, with continued effluent disposal to the Swan River. The Authority has reviewed the impact of the discharge from the existing operation at Swan Street and considered the proposed increased effluent discharge in light of that.

The Authority has found that the existing discharge has given indications of unsatisfactory environmental consequences, especially to the biota in the Swan River, which have led the EPA to conclude that the continued discharge of effluent is environmentally undesirable. In view of these consequences and likely changes to the uses of that portion of the river and adjacent land, any increase in the volume and/or quantity of contaminants in the effluent is considered by the Authority to be environmentally unacceptable. Therefore, the Authority has recommended against the proposed disposal of effluent from the relocated Swan Wool Scouring.

In relation to the relocation of Fremantle Steam Laundry, the Authority considers that suitable disposal options exist for its effluent and has recommended that effluent from the laundry should be disposed in a manner more acceptable than discharge to the Swan River. In the event of relocation proceeding, it should be conditional on the commitments given by the company.

The development of operations by Keywest Pty Ltd and Conaust Pty Ltd on the Westrail reserve could be environmentally acceptable, subject to commitments regarding hours of operation and other noise control measures.

6. REFERENCES

Department of Conservation & Environment (1981), Water Quality Criteria for Marine and Estuarine Waters of Western Australia.

Metropolitan Water Supply, Sewerage & Drainage Board (1982), Cape Peron Ocean Outfall - Environmental Review and Management Programme.

Swan River Reference Committee (1955), Report by Sub-Committee on Pollution of Swan River.

Superannuation Board of WA (1987), Public Environmental Report - Redevelopment of Westrail land, North Fremantle, to Incorporate Swan Wool Scouring (WA), Fremantle Steam Laundry and Container Storage Operations.

Water Authority of WA (1987), Perth Urban Water Balance Study.

APPENDIX A

LIST OF PEOPLE AND ORGANISATIONS WHICH MADE A SUBMISSION

D M Dickman
NORTH FREMANTLE WA 6159

Mr R F Brindley
DOUBLEVIEW WA 6018

Dr A P Gallagher
NORTH FREMANTLE WA 6159

Mr B Davies
President
The Fremantle Society Inc
FREMANTLE WA 6160

Mr Geoffrey Miller
PERTH WA 6000

Ms Sandra Miller
NORTH FREMANTLE WA 6159

Mr J W Vincent
NORTH FREMANTLE WA 6159

Mr J Kerr
NORTH FREMANTLE WA 6159

Mr M Hipkins
Max Hipkins and Assoc
EAST PERTH WA 6000

Ms S de la Hunty
President
Foreshores & Waterways
Protection Council
APPLECROSS WA 6153

Ms M Haanappel
NORTH FREMANTLE WA 6160

T & Z Holt
NORTH FREMANTLE WA 6159

Mr J S Hempsall
NORTH FREMANTLE WA 6159

Mr M Patroni & Ms E Jansen
NORTH FREMANTLE WA 6159

Secretary
North Fremantle Community Assoc
NORTH FREMANTLE WA 6159

Ms S Tchan
NORTH FREMANTLE WA 6159

Mr L Ivory
NORTH FREMANTLE WA 6159

Mrs A Thacker
NORTH FREMANTLE WA 6159

Ms Roberta Mead
NORTH FREMANTLE WA 6159

J Jefferys
NORTH FREMANTLE WA 6159

Mr P Hoare
NORTH FREMANTLE WA 6159

Mr A R Peterson
NORTH FREMANTLE WA 6159

Ms J Culcutt
NORTH FREMANTLE WA 6159

Mr M Tunnecliffe
NORTH FREMANTLE WA 6159

Executive Director
Health Department

LIST OF PEOPLE AND ORGANISATIONS WHICH MADE A SUBMISSION (contd)

Executive Secretary
State Planning Commission

General Manager
Department of Marine & Harbours

Director of Water Resources
Water Authority of WA

Director
Department of Industrial Development

Superintending Engineer Planning
Main Roads Department

Chairman
Waterways Commission

Corporate Services Manager
Fremantle Port Authority

APPENDIX B

COMMITMENTS MADE IN THE RESPONSE BY THE PROPONENT TO ISSUES RAISED IN SUBMISSIONS

FREMANTLE STEAM LAUNDRY

The Company makes the following undertakings.

1. EFFLUENT TREATMENT PROCESS

   It will install at its new location effluent treatment plant to ensure its discharged effluent complies with its current license requirements.

2. AMOUNT OF EFFLUENT

   It will install such new and existing plant to ensure that its discharged effluent will not exceed 200 Kl per day.

3. DISPOSAL OF EFFLUENT

   It will make available to Swan Wool Scouring up to 200 Kl/working day of effluent for disposal, in such a manner and time as agreed between the two companies.

   Pursuant to this it will negotiate agreements with the Woolscour covering the capital cost of shared facilities, operational cost sharing, maintenance of common plant, guarantee of pretreatment of effluent to comply with the requirements of the SRMA, the planning and management of water supplies and effluent disposal in the event of plant shutdowns, and mismatched production times.

   It will negotiate with and support an application to the Swan River Management Authority from the Woolscour for a combined effluent discharge licence as is mutually agreed with the Woolscour.

   It will make such arrangements as are deemed necessary to store and discharge its own effluent in the event of emergency, or plant breakdown preventing the normal pumped discharge of effluent to the Swan River by the proposed combined effluent discharge pipeline operated by the Woolscour.

4. CHEMICAL SPILL

   It will undertake to contain any non-biodegradeable soap, detergent or other drycleaning chemical used in its process in an area not accessible to the normal drainage or effluent disposal line to the river, and to collect such spillage and transport to a suitable disposal site.

5. NOISE

   It undertakes to comply with the Noise Abatement Act in its operations both in terms of its process generated noise, and its effect on the surrounding environment.

COMMITMENTS MADE IN THE RESPONSE BY THE PROPONENT TO ISSUES RAISED IN SUBMISSIONS (contd)

It undertakes to operate between the hours of 7 am and 5 pm Monday through Friday and 7 am to 1 pm Saturday except in emergency and to confine any boiler blowdown or other noise generating activity to these hours.

6. ODOURS

It will fit whatever covers and filters are deemed necessary by the Pollution Control Division of the Environmental Protection Authority and the Fremantle City Council.

7. MANAGEMENT

It will commit itself to the Management statements in Section 9.2 of the PER and state its management procedures to ensure plant shutdown and subsequent disposal in the event of emergency and effluent plant failure.

8. MONITORING

It will commit itself to the monitoring statements in Section 9.3 of the PER and develop further monitoring of stored effluent in the event of plant failure.

CONAUST (AUSTRALIA) PTY LTD

The Company makes the following undertakings.

1. NOISE

It undertakes to comply with the Noise Abatement Act in its operations area and its effect on the surrounding environment.

It undertakes to operate within the hours of 7 am and 5 pm Monday through Friday except in emergency.

It undertakes to monitor its operations and to modify and/or upgrade its forklift operations to ensure unnecessary noise generation be eliminated within the bounds of practicality.

QUAYSIDE TRANSPORT CO

The Company makes the following undertakings.

1. NOISE

It undertakes to comply with the Noise Abatement Act in its operations, both in terms of its operational area and its effect on the surrounding environment.

COMMITMENTS MADE IN THE RESPONSE BY THE PROPONENT TO ISSUES RAISED IN SUBMISSIONS (contd)

It undertakes to operate within the hours of 7 am and 5 pm Monday through Friday except in emergency.

It undertakes to monitor its operations and to modify and/or upgrade its yard operations to ensure noise generation is maintained at its lowest practical level.