

**Proposed Non-Hazardous Industrial Liquid Wastes**

**Treatment Plant at Forrestdale**

**Health Department of Western Australia**

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

Environmental Protection Authority  
Perth Western Australia  
Bulletin 417 November 1989

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ISBN 0 7309 34276

ISSN 1030 - 0120

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## Summary and recommendation

The Health Department acting under instructions from the Cabinet Committee on Metropolitan Waste, has proposed a non-hazardous industrial liquid waste treatment plant at Forrestdale (Fig.1) on the existing Metropolitan Septage Treatment Plant site. The facility will treat this liquid waste and discharge the treated effluent to sewer. This will obviate the current method of disposal which is to discharge it to the City of Gosnells landfill site on Kelvin Road in Orange Grove. The City of Gosnells gave notice to the proponent in June 1988 that the tip site would be closed to industrial liquid waste receipt at the end of November 1989.

The Health Department (the proponent), will contract Cleanaway to set up and operate the plant. Cleanaway currently operates the new Metropolitan Septage Treatment Plant at Forrestdale on the same site. The site previously housed the Water Authority Westfield treatment plant.

A Public Environmental Report (PER) describing the current proposal was submitted by the proponent in September to the Environmental Protection Authority and released for an eight week public review commencing 4 September and concluding 27 October 1989. The Authority received 7 submissions.

The proposal is to build a plant which includes receipt buildings, in-ground screening facilities and a transfer pumping station. All areas subject to spillage will be bunded. Incoming wastes will be cleared by the plant before acceptance. Waste will be treated by screening, liming, pH correction, oil removal, and clarification and then discharged to sewer. Solids will be dewatered and removed offsite to an Environmental Protection Authority-approved landfill site.

The PER contained an extensive list of environmental commitments. In response to the issues raised by the Environmental Protection Authority in its assessment and by submissions, the Health Department made further commitments.

In addition to the proper construction and operation of the plant the Authority has two wider concerns, the auditing of non-hazardous industrial liquid waste generation and disposal and the potential for illegal dumping in the metropolitan area.

The Authority notes that the proponent presently has in place a comprehensive manifest system which keeps track of wastes from generation to disposal. Generators who produce more than 1 kL/year require licences. Information recorded includes details of wastes generated, the waste generators and waste transporters and a docket system which includes docket presentation on arrival at the proposed plant. For generators who produce less than 1 kL/year, disposal is not licensed but is monitored by the Health Department to ensure illegal dumping does not take place.

The Authority notes the commitments given by the proponent to prepare and supply the Environmental Protection Authority with a complete list of all non-hazardous industrial liquid waste generators in the metropolitan area and to prepare a plan, and continue to update it, to ensure the practice of illegal dumping is eliminated before the commissioning of the plant.

The commitments state:

- The proponent will supply, to the Environmental Protection Authority's satisfaction, a complete record of all the generators of non-hazardous industrial liquid waste in the Metropolitan area, prior to the commissioning of the plant.
- The proponent will supply, to the Environmental Protection Authority's satisfaction, a plan on how it intends to control the prevention of illegal dumping of non-hazardous industrial liquid waste in the Metropolitan area, prior to the commissioning of the plant and will continue to update it during the operation of the plant. The proponent will also implement the plan to the satisfaction of the Environmental Protection Authority.

The Authority is concerned that the auditing of this pretreatment be effective. Hazardous wastes are required to be pretreated to render them non-hazardous prior to transport to the plant.

The proponent recently sent circulars to generators of industrial liquid waste indicating that from 1 December 1989 the production of liquid waste for off-site disposal will be subject to new conditions regarding transport and pretreatment (Appendix 3). In addition the producers of waste solvents have been advised that they will have to recover their solvents either by themselves or via a solvent recycling company (Appendix 4).

The proponent points out that if off-specification industrial liquid waste is brought to the proposed plant it can be held in one of two 25kL volume off-specification holding tanks. If it is determined that the waste can be adequately treated without compromising effluent quality, it will be treated. Otherwise it will be returned to the generator for treatment. To ensure that generators of off-specification waste do not transport such waste to the facility, the proponent will be prepared to prosecute the generator or transporter as appropriate. The Health Act provides for fines up to \$5,000 for such offences and can cancel the licence to operate. The proponent has addressed this issue with the following commitment:

The proponent will supply to the Environmental Protection Authority a plan on how it intends to ensure that pretreatment of hazardous waste in the Metropolitan area will be undertaken at source so as to render it non-hazardous prior to transport to the treatment plant. In this plan the proponent will indicate how it will monitor the adequate cleansing of

vehicles prior to collection of waste to ensure against mixing wastes which could produce hazardous substances. This plan will be developed to the Environmental Protection Authority's satisfaction prior to commissioning the plant. The proponent will also implement the plan to the satisfaction of the Environmental Protection Authority.

Given the location of the proposed site, its present use, the technology to be used in treatment, and method of disposal of treated waste, the Authority considers the project to be environmentally acceptable and that it could proceed subject to the commitments given by the proponent (Appendix 1), its responses to questions raised during the assessment (Appendix 2).

## **Recommendation**

**The Environmental Protection Authority concludes that the proposal, as described in the Public Environmental Report and subsequent information supplied, is environmentally acceptable, and recommends that the proposal could proceed subject to the Authority's recommendations in this Report and the management commitments made by the proponent in the PER (Appendix 1 of this Report), and in response to questions raised during the assessment (Appendix 2 of this Report) which include:**

- **community liaison;**
- **construction of the plant;**
- **auditing wastes, waste generators and transporters;**
- **eliminating illegal dumping;**
- **nature of waste to be treated at the plant;**
- **monitoring nature of waste at receipt point;**
- **pretreatment of hazardous waste at source;**
- **wastewater quality and disposal;**
- **location of solid waste disposal;**
- **spillages on site and off site;**
- **monitoring on site and off site;**
- **suitable transport routes/protection of the Jandakot Mound;**
- **rehabilitation;**
- **plant equipment maintenance and security;**
- **noise, odour, dust, traffic, landscaping**
- **insect and weed control;**
- **decommissioning;**
- **transfer of ownership; and**
- **reporting to the Environmental Protection Authority.**

# 1. Introduction

1.1 The Health Department acting under instructions from the Cabinet Committee on Metropolitan Waste, has proposed a non-hazardous industrial liquid waste treatment plant at Forrestdale (Fig.1) on the existing Metropolitan Septage Treatment Plant site. The facility will treat the liquid waste and subsequently discharge it to sewer. This will obviate the current method of disposal which is to discharge it to the City of Gosnells landfill site on Kelvin Road in Orange Grove. The City of Gosnells gave notice to the proponent in June 1988 that the tip site would be closed to industrial liquid waste receipt at the end of November 1989.

The Health Department, the proponent, will contract Cleanaway Pty Ltd to set up and operate the plant. Cleanaway currently operates the Metropolitan Septage Treatment Plant at Forrestdale on the same site. The site previously housed the the old Water Authority Westfield treatment plant.

A Public Environmental Report (PER) describing the current proposal was submitted by the proponent in September to the Environmental Protection Authority and released for an eight week public review commencing 4 September and concluding 27 October 1989. The Authority received 7 submissions.

## 2. Description of proposal

The proposal is to build a plant which includes receipt buildings, in-ground screening facilities and a transfer pumping station. All areas subject to spillage will be bunded so that no spillage can enter the environment but will be recycled back into the plant.

Incoming wastes will be tested at the plant before acceptance. Waste will be treated by screening, liming, pH correction, oil removal, and clarification. The objective of this is to treat all non-hazardous industrial liquid waste to a sufficiently high standard that it can be discharged to sewer.

Only non-hazardous wastes will be received at the plant. Any hazardous wastes are required to be treated at source to render them non-hazardous to ensure that they can be transported safely.

Solids will be dewatered and removed offsite to an Environmental Protection Authority approved landfill site.

The treated effluent will be monitored before discharge to sewer to ensure that it complies with Water Authority of Western Australia requirements.

### 2.1 Description of the site and surrounding land use

The site is located on lot 78, Janda District, Forrestdale, Armadale and is approximately 2 km east of Forrestdale Lake (Fig.1) The System Six report notes that the lake is valuable as a water-fowl

habitat, and long-necked tortoises are common. The lake and its surrounds are attractive for passive recreation including some aquatic activities.

The Westfield Wastewater Treatment Septage Plant which was commissioned in 1988, is located on the site. The site is accessed from Waterworks Road. The area required for the proposed plant is only 300m x150m and is presently vacant.

The site is bounded to the south-east and south-west by large semi-rural blocks with the nearest dwelling at least 500 m distant. This land is low-lying, subject to surface flooding, interspersed with grass cover, scrub and low trees and is used for grazing. To the north-west there is a residential estate approximately 300m from the closest structure on the site whilst land to the immediate north of Armadale Road in the vicinity of the site is semi-rural. Some of this land is owned by the Water Authority and was previously used for disposal of effluent.

## 2.2 Advantages of site for proposal

The site and plant have a number of advantages such as:

- centralised treatment for both septage and industrial liquids wastes;
- common receipt point, treatment and administration, (economy of scale);
- good road access;
- common monitoring and auditing of wastes;
- common emergency procedures in the event of a power failure; and
- lower charges for industrial waste treatment compared to
- alternative locations.

## 3. Nature of waste

More than 50% of the industrial liquid waste consists of unstable oil and water emulsions derived mainly from service stations, waste oil recyclers, and car wash companies. The remainder is generated by more than 200 industries around Perth, including laboratories, paint distributors, machining shops, galvanisers, and platers. In total approximately 26,000 kL/year of waste is produced. Total capacity of the plant is 50,000 kL/ year.

The nature of the industrial liquid wastes to be treated are as follows:

- paints and resins
- oils and emulsions
- solvents
- other organic chemicals

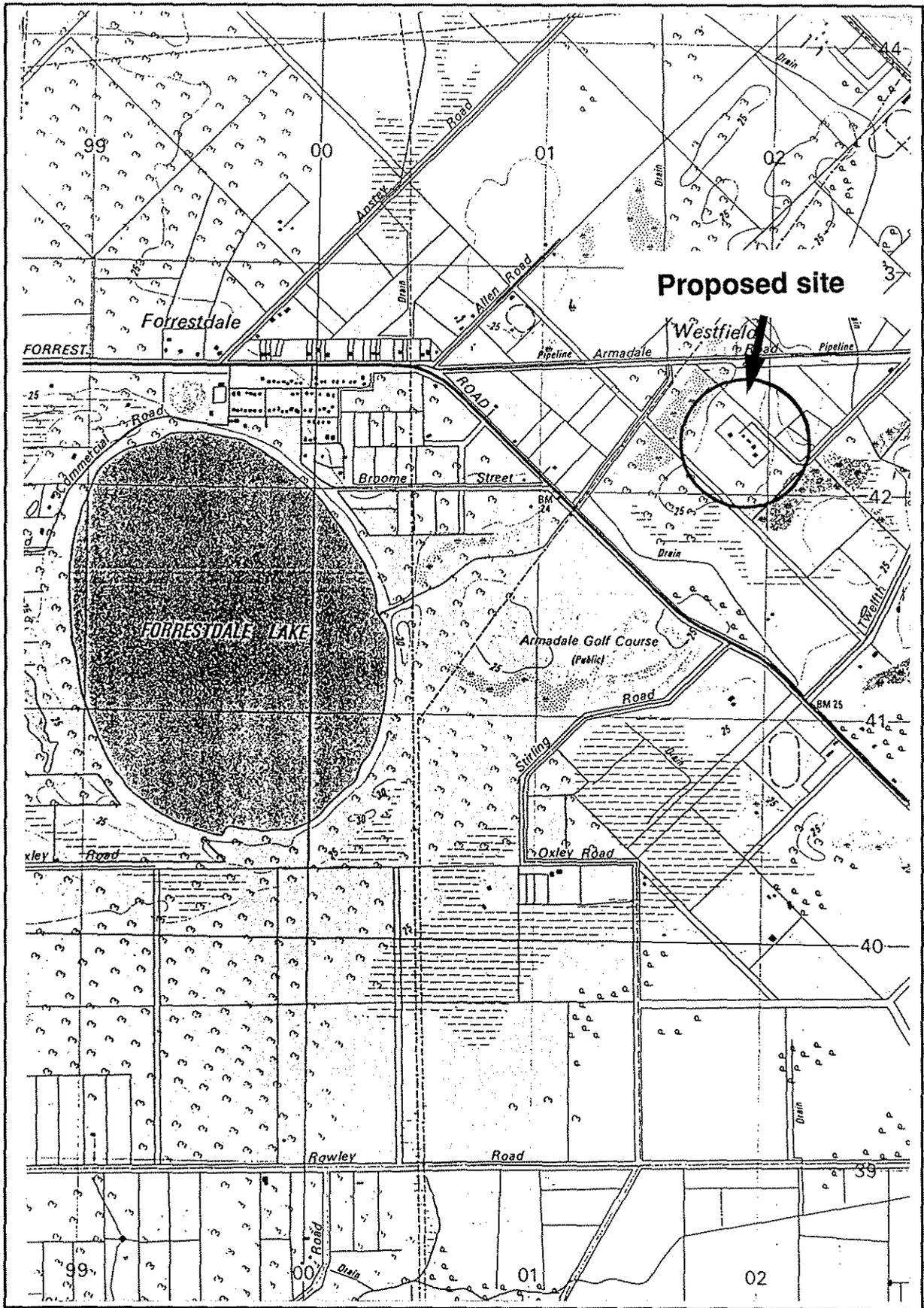


Figure 1: Location of proposed site

Source : PER

- acids
- alkalis
- neutral salts
- treated cyanide
- other inorganic chemicals.

PCBs, DDT and other intractable wastes as well as radioactive waste will not be accepted into the plant.

## 4. Potential Environmental Impacts identified in PER

### 4.1 Introduction

The significant potential environmental impacts identified in the PER relate to transport, spillage on and off site, odour, noise, fire risk and amenity around the plant. All these issues have been addressed in the form of commitments made by the proponent (Appendix 1 of this report).

### 4.2 Pretreatment of waste prior to transport

Some of the wastes are, in their present form, potentially hazardous for transport. These include cyanide wastes and hexavalent chromium from electroplating industries, highly volatile solvent mixtures from paint manufacturers, degreasing tank bottoms, and other toxic organics. In addition to their toxicity, some of these are present in high enough concentration for the mixtures to be combustible or flammable. Such substances can be classified under the Australian Dangerous Goods Code and special precautions in the construction of transport vehicles and in handling are required. The proponent will not receive such waste into the proposed plant for treatment and disposal, unless the consignor has rendered them non-hazardous before transport. The proponent will enforce such conditions through the Health (Licensing of Liquid Waste) Regulations 1987 and to the satisfaction of the Environmental Protection Authority.

### 4.3 Integrity of the tanker transport system

Some wastes are regarded as dangerous goods under the Australian Dangerous Goods Code (ADG Code). This requires the consignor and the transporter to comply with the requirements of the Mines Department of WA. In addition, the Health (Licensing of Liquid Waste) Regulations of 1987 stipulate that the vehicle be of sound construction and kept in good repair as well as being constructed and used in a manner to prevent spillage. Guidelines defining minimum acceptable standards of tanker

vehicle construction for safe operation are being developed also by the proponent for liquid waste transport in consultation with the Mines Department and the Road Transport Association. Draft guidelines will be available for discussion in the middle of 1990.

### 4.4 Transport routes

For tankers servicing industrial areas to the east of Albany Highway (such as Midland, Welshpool, Belmont) the distance for the tankers to travel is further than for the Kelvin Road site. Tanker loads from these areas are estimated to amount to over 50% of the total number of tanker vehicle movements. However, an estimated 30% to 40% of the loads come from areas closer to the proposed site such as Kwinana, South Fremantle, Canning Vale and Jandakot. The balance of the loads which will arrive from northern areas such as Osborne Park, Balcatta, and Wanneroo, will be less sensitive to the distance variation than eastern or western areas.

Whilst there will be some increased traffic on the approach roads to the plant, this is offset by the benefit of removing almost all tanker traffic from the areas surrounding the Kelvin Road site. With respect to the protection of Forrestdale Lake and Nature Reserve immediately to the south of Forrest Road, only a marginal increase in traffic is expected as it is already used by tankers (5-10 per day) carrying waste from the western areas such as Henderson, Coogee, and Jandakot, to Kelvin Road.

### 4.5 Risk of tanker spillage

The proposal will not alter the general situation with respect to environmental risks of tanker transport. Most routes from major industrial centres which generate the bulk of liquid waste are already used by tankers conveying septage to the Forrestdale site. The site is well served by good standard access roads to the west, east and north, that have adequate capacity to carry the tanker traffic generated by both the Metropolitan Septage Plant and the proposed plant.

Drainage from both sides of Forrest Road including the Forrestdale housing development is, however, diverted to the north side of the road into the Bailey's Branch Drain, which joins the Main Forrestdale Drain and eventually discharges to the Southern River. There is consequently minimal risk of any spillage entering the lake from Forrest Road but it could eventually enter the Southern River some four kilometres away. The proponent considers that the existing emergency response scheme will cope with such spillages. (see Section 4.6)

Within the proposed plant, any spillages will be contained as the area will be sealed, bunded, and spilt materials will be returned to the treatment system.

## 4.6 Transport emergency response procedures

In the event of tanker accidents involving hazardous waste spills, a rapid response scheme is in place to deal with hazard containment and environmental clean-up. This scheme has been developed by the forerunner of the WA Hazardous Materials Emergency Management Co-ordinating Committee, which includes the Police Department, the WA Fire Brigade, the Health Department, Mines Department, and other organisations including the Water Authority, Environmental Protection Authority, and the Department of Occupational Health, Safety and Welfare. In addition to the Fire Brigade's extensive emergency equipment, the proponent has at its disposal a tactical response trailer unit, located at the WA Fire Brigade Training Centre in Belmont. This unit can be taken to the scene of an accident and enable commencement of containment and clean-up procedures. This unit will carry safety gear such as protective suits, breathing apparatus, chemicals such as lime and other reagents for safe neutralisation or fixation of spilled chemical substances, fire fighting foams, liquid absorbing chemicals, bunding and spill containment devices.

## 4.7 Odour, noise and visual impacts

Occurrence of offensive odours is unlikely to be a problem as containment measures are incorporated in the design to prevent detectability beyond the site boundaries. Where it is clear that odours are not being adequately contained, the proponent will rectify the situation without delay by repairing or changing the odour control unit and if necessary by removing the waste creating the odour. Odours generated from leaking valves and hose pipes on tankers will be policed by the proponent who will require tanker drivers to maintain their vehicles free of such defects under the Health (Licensing of Liquid Wastes) Regulations. This is presently the case for tankers delivering such waste to the Kelvin road site. This policing has ensured that little if any pollution has been caused by faulty tankers.

Noise impact of the proposal is expected to be minimal in view of the various acoustic shielding measures to be installed on the site. Furthermore, the distance to nearest dwellings is greater than 300m. The major sources of noise on the plant will be from:

- tankers manoeuvring into the receival bays;
- induced draft fans for control of odours;
- centrifuges;
- roll-on/roll-off bin articulated vehicles; and
- process control system alarms.

Noises from vehicle manoeuvring and odour control fans will be no more intrusive than those from the adjacent Septage Plant, which have little impact on

the neighbourhood. The centrifuges can generate noise under certain conditions, however, they will be enclosed in sound-proofing canopies and housed in the dewatering building. The building is a solid brick and concrete structure with acoustic confining properties.

The only noise at the existing plant which has caused complaints was from the audible alarms from three process controller units. In order to prevent further occurrence of this problem, Cleanaway have kept alarms to the minimum audible level necessary under prevailing operating conditions to ensure detection. Alarms also sound for short periods only and have visible flashing beacons as backup. This system has cleared up the nuisance from the Septage Plant alarms.

Visually, the plant will have a very small impact, as the site is already developed as a treatment plant site with low prominence on the landscape and skyline. Planting of trees effectively screens the site from the north and east. The plant will be developed within the confines of the old Wastewater Treatment Plant, which is surrounded by a buffer of vacant land. The land surrounding this buffer strip is either Water Authority land or large semi-rural blocks with no residences within 300m of the fenced treatment plant site.

## 4.8 Fire

The probability of a major fire getting out of control on the plant site is unlikely due to the layout of the various facilities and the fact that the liquid waste will be non-flammable in the form in which it is delivered. One area of potential fire risk, however, is the stored oil removed from the oily wastes in the concentration tank. The oil storage tank will be fully enclosed and kept separate from any buildings or other equipment. The oil is unlikely to be highly volatile, consisting mainly of old engine and lubricating oils from service stations, etc. In other respects the plant will be provided with fire protection equipment including foam and dry carbon dioxide extinguishers for electrical fires and hydrants and hose reels for general protection and will meet the requirements of the WA Fire Brigade.

There is some risk of a fire originating on the site spreading to the surrounding vegetation along north and north-eastern boundaries, where there is denser scrub and tree cover. The plant itself will not, however, represent a major fire hazard to the surrounding area since there is no high-storey canopy of flammable vegetation within reach of the perimeter fence to spread a fire. The surrounding land adjacent the perimeter fence in the vicinity of the plant is free of trees or bush to support a fire and will be maintained to the satisfaction of the WA Fire Brigade.

## 4.9 Power failure

There are several possible failure modes which will prevent normal operation of the plant and require the adoption of contingency measures. These include:

- SEC power failure or black-out;
- control system malfunction;
- major process component malfunction;
- final effluent discharge inhibit; and
- lime system malfunction.

The plant can be run fully on standby power using the Septage Plant diesel fired generator set. This generator is already connected to the electrical supply and has sufficient power output to enable both the Septage Plant and the proposed plant to continue to operate when SEC power is unavailable.

In the event of a shut-down of the Water Authority diversion pump station, the final effluent from the plant can be stored together with the Septage Plant effluent in the old disused aeration tanks, which have a combined capacity of 1300 kL (approximately 100 days capacity). Should there be problems with pumping the plant effluent to the Septage Plant final clarifiers, it can be diverted to the two disused clarifiers for storage.

Malfunctions with the Septage Plant lime system can be overcome by ordering tanker loads of lime slurry or lime putty from one of the lime suppliers in Perth and pumping this into the plant slurry storage tank. There will be ample time (in excess of 24 hours) to make such arrangements because of the large buffer capacity of the plant (equivalent to more than 1 tonne of lime).

## 4.10 Monitoring

The Proponent will undertake regular sampling and monitoring of all aspects of the operation which have the potential to cause an environmental impact and this will be carried out to the satisfaction of the Environmental Protection Authority. The Proponent will report regularly to the Environmental Protection Authority and the local residents' community association and address any enquiries or concerns related to the proposal.

The Proponent will undertake regular drain inspections both within the site and in the perimeter drains to determine whether contamination is occurring from surface runoff. If the plant is causing offsite pollution the proponent will take the necessary steps to clean the contaminated water and/or soil and prevent pollution from recurring.

## 5. Summary of public and Government agencies' submissions

A total of 7 public and Government submissions on this proposal were received by the Environmental Protection Authority. Names of contributors are given in Appendix 3. With the exception of one submission the remainder considered the proposal as an appropriate step in the right direction in the rationalisation of non-hazardous industrial liquid waste treatment and disposal. A summary of the issues raised are summarized in the following section. The major issues of concern raised included contamination of the environment around the plant, spillage of waste on the site and during transit, groundwater pollution, odour and fire. No submission gave a rationale indicating that the project was unmanageable.

### 5.2 Specific issues raised in submissions by the public and Government Agencies

Comments from submissions are broadly classified into the following issues:

- accountability of parties generating, transporting and treating wastes;
- monitoring of transport of borderline and questionable wastes;
- treatment of wastes;
- monitoring treated effluent prior to discharge to sewer for hazardous substances;
- reliability of method of determining intractable or hazardous wastes in the waste stream;
- reliability of analytical testing procedures;
- fines for mishandling or tampering with samples or results;
- management and monitoring disposal of solid waste;
- construction of disposal facilities for receipt of solid waste;
- monitoring protocol;
- monitoring site, surrounding environment and downstream watercourses for contamination;
- code of practices for the industry;
- spillage and monitoring;
- supervising the monitoring committee;
- groundwater and wetlands protection;
- protection of the Jandakot Groundwater Mound from contamination and transport spillage;

- minimising transport of waste through the Jandakot Underground Water Pollution Control Area;
- contamination of land surrounding land during periods of high rainfall;
- buffer zone around the plant;
- location of plant and contamination of potable water supply;
- odour control in and around the plant including ammonia emissions;
- traffic;
- illegal dumping;
- population changes in Armadale and land prices;
- fire control;
- decommissioning the plant and site rehabilitation.

### **5.3 Proponent's response to issues raised**

The proponent's responses to questions raised are given in Appendix 2. In summary, the proponent has addressed all the issues and has covered each issue with a commitment (Appendix 1) whenever the nature of the issue raised allowed for this. If the recommendation of this report, which makes reference to the commitments, is accepted by the Minister for Environment and turned into Ministerial conditions, then these commitments become legally binding. Consequently, the proponent has offered a high degree of commitment to ensure that the proposal will be managed to the satisfaction of the Environmental Protection Authority and other relevant agencies.

## **6. Potential environmental impacts identified by Environmental Protection Authority**

### **6.1 General introduction**

Given the location of the proposed site and its present use in conjunction with the technology to be used in treatment, the Authority considers the project to be environmentally acceptable and that it could proceed subject to the commitments given by the proponent in the PER and in response to subsequent questions (Appendices 1 and 2).

## **Recommendation**

The Environmental Protection Authority concludes that the proposal, as described in the Public Environmental Report and subsequent information supplied, is environmentally acceptable, and recommends that the proposal could proceed subject to the Authority's recommendations in this Report and the management commitments made by the proponent in the PER (Appendix 1 of this Report), and in response to questions raised during the assessment (Appendix 2 of this Report) which include:

- community liaison;
- construction of the plant;
- auditing wastes, waste generators and transporters;
- eliminating illegal dumping;
- nature of waste to be treated at the plant;
- monitoring nature of waste at receipt point;
- pretreatment of hazardous waste at source;
- wastewater quality and disposal;
- location of solid waste disposal;
- spillages on site and off site;
- monitoring on site and off site;
- suitable transport routes/protection of the Jandakot Mound;
- rehabilitation;
- plant equipment maintenance and security;
- noise, odour, dust, traffic, landscaping;
- insect and weed control;
- decommissioning;
- transfer of ownership; and
- reporting to the Environmental Protection Authority.

### **6.2 Industrial waste generation and disposal**

#### **6.2.1 General introduction**

The disposal of non-hazardous industrial liquid waste generated in the metropolitan area is controlled by the Health Department and the Water Authority of Western Australia depending on the method of disposal. Given the degree of uncertainty regarding

the auditing and reporting responsibilities of every producer to deliver all loads to an approved site for disposal, it is timely to address the issue of illegal dumping.

Whilst the Authority is concerned about this issue, it commends the proponent on its commitments to prepare a complete list of all non-hazardous industrial liquid waste generators in the metropolitan area and to prepare a plan to ensure the practice of illegal dumping is eliminated before the commissioning of the plant. The Authority considers that this audit should be updated on an annual basis to ensure on-going control. The proponent is also committed to implementing plans to ensure hazardous industrial liquid wastes are pretreated, prior to transport to the plant, thus rendering them non-hazardous.

### **6.2.2 Auditing waste generating and disposal**

The Authority notes that the proponent presently has in place a comprehensive manifest system which keeps track of wastes from generation to disposal. Generators who produce more than 1 kL/year require licences. Information recorded includes, name, address, phone number and licence number of generator, time waste is generated and transported, nature and volume of waste and pretreatment before transport if appropriate, transport licence number of hauler, and a docket system which includes docket presentation on arrival at the proposed plant. For generators who produce less than 1 kL/year, disposal is not licensed but is monitored by the proponent to ensure illegal dumping does not take place. The Authority notes the commitments given by the proponent to prepare and supply the Environmental Protection Authority with a complete list of all non-hazardous industrial liquid waste generators in the metropolitan area and to prepare a plan to ensure the practice of illegal dumping is eliminated before the commissioning of the plant and that situation remains.

To this end the proponent has given two commitments:

The proponent will supply, to the Environmental Protection Authority's satisfaction, a complete record of all the generators of non-hazardous industrial liquid waste in the Metropolitan area, prior to the commissioning of the plant.

The proponent will supply, to the Environmental Protection Authority's satisfaction, a plan on how it intends to control the prevention of illegal dumping of non-hazardous industrial liquid waste in the Metropolitan area, prior to the commissioning of the plant. The proponent will subsequently implement the plan to the satisfaction of the Environmental Protection Authority.

### **6.2.3 Auditing pretreatment of hazardous waste prior to transport Including updating of audits**

The proponent recently sent circulars to generators of industrial liquid waste indicating that from 1 December 1989 the production of liquid waste for off-site disposal will be subject to new conditions regarding transport and pretreatment (Appendix 3). In addition the producers of waste solvents have been advised that they will have to recover their solvents either themselves or via a solvent recycling company (Appendix 4). The proponent points out that if off-specification industrial liquid waste is brought to the proposed plant it can be held in one of two 25kL volume off-specification holding tanks. If it is determined that the waste can be adequately treated without compromising effluent quality, it will be treated. Otherwise it will be returned to the generator. The proponent would subsequently prosecute the generator or transporter as appropriate. The Health Act provides for fines up to \$5,000 for such practices in addition to the loss of licence to operate. To ensure that the generators and transport of such waste are informed, the proponent intends to circulate copies of this assessment report to all concerned parties after public release.

The proponent has addressed this issue with the following commitment:

The proponent will supply to the Environmental Protection Authority a plan on how it intends to ensure that pretreatment of hazardous waste in the Metropolitan area will be undertaken at source so as to render it non-hazardous prior to transport to the treatment plant. In this plan the proponent will indicate how it will monitor the adequate cleansing of vehicles prior to collection of waste to ensure against mixing wastes which could produce hazardous substances. This plan will be developed to the Environmental Protection Authority's satisfaction prior to commissioning the plant. The proponent will also implement the plan to the satisfaction of the Environmental Protection Authority.

## **7. Conclusions**

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

The project will use high performance technology to treat the liquid waste and if managed properly should create no environmental impacts. In addition, the plant will be discharging treated effluent to sewer. The Authority believes that the establishment of such a facility presents an appropriate time to carry out a complete audit of all non-hazardous industrial liquid waste generated in the metropolitan area so that illegal dumping can be eliminated.



## **Appendix 1**

### **List of commitments made by proponent**

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

The Proponent makes the following commitments to the Environmental Protection Authority relating to its proposal to establish a new Industrial Liquid Wastes Treatment Facility.

### **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 non-hazardous industrial liquid waste treatment plant 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;
- City of Armadale;
- WA Fire Brigades Board;
- State Energy Commission;
- Department of Occupational Safety and Welfare; and
- Mines Department.

### **Industrial liquid waste generation**

3. The proponent will supply, to the Environmental Protection Authority's satisfaction, a complete record of all the generators of non-hazardous industrial liquid waste in the Metropolitan area, prior to the commissioning of the plant.

### **Nature of waste to be accepted at the plant and procedures to monitor this**

4. The plant will receive only non-hazardous liquid industrial wastes (as defined in PER) for treatment.

5. All incoming wastes will be recorded and sampled at the site gatehouse before referral to the plant. The name, address, licence number of the generator will be recorded in addition to its composition, volume, the transporter and the waste treatment operator. The complete procedure will be covered by a docket system to the satisfaction of the Environmental Protection Authority.

6. If hazardous waste is brought to the plant it will be either treated to render it non-hazardous or returned to the generator. A prosecution for such an offence is likely to follow. The Environmental Protection Authority will be notified of such incidences within a five days period. Facilities will be provided for temporary storage of off-specification wastes in two enclosed tanks totalling 50kL, if necessary, prior to treatment or being returned to the generator.

### **Illegal dumping of industrial liquid waste**

7. The proponent will supply, to the Environmental Protection Authority's satisfaction, a plan on how it intends to control the prevention of illegal dumping of non-hazardous industrial liquid waste in the Metropolitan area, prior to the commissioning of the plant and will continue to update it during the operation of the plant. The proponent will also implement the plan to the satisfaction of the Environmental Protection Authority.

8. The proponent will circulate to all non-hazardous industrial liquid waste generators and transporters copies of this assessment report to ensure that they understand the concern of the Environmental Protection Authority has regarding illegal dumping.

### **Pretreatment of industrial liquid waste at source**

9. The proponent will supply to the Environmental Protection Authority a plan on how it intends to ensure that pretreatment of hazardous waste in the Metropolitan area will be undertaken at source so as to render it non-hazardous prior to transport to the treatment plant. In this plan the proponent will also indicate how it will monitor the adequate cleansing of vehicles prior to collection of waste to ensure against mixing wastes which could produce hazardous substances. This plan will be developed to the Environmental Protection Authority's satisfaction prior to commissioning the plant. The proponent will also implement the plan to the satisfaction of the Environmental Protection Authority.

10. The proponent will circulate to all non-hazardous industrial liquid waste generators and transporters copies of this assessment report to ensure that they understand the concern the Environmental Protection Authority has regarding adequate pretreatment of hazardous waste prior to transport.

### **Wastewater management commitments**

11. The proponent will build a wastewater treatment facility with adequate noise and odour control. It 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 and monitored by Cleanaway to the satisfaction of the Environmental Protection Authority and all relevant government agencies.

12. Effluent being discharged from the plant to the Water Authority Sewer will be maintained within standards that enable the Water Authority's effluent discharge quality criteria for the Septage Treatment Plant to be satisfied.

13. The Plant effluent quality and flow will be monitored prior to discharge to the sewer. If the quality is unacceptable to the Water Authority the effluent will be retreated.

## **On site spillage**

14. The facility will be designed and operated to contain any liquid spillages, contaminated runoff within the site boundaries to the satisfaction of the Environmental Protection Authority.

15. In the case of leakage to the surrounding environment, the proponent will immediately clean up such leakage to the satisfaction of the Environmental Protection Authority, the Water Authority of Western Australia and City of Armadale.

16. The proponent will bund all areas in the plant where there is potential for stormwater to wash spillage to the surrounding environment, and will do this to the satisfaction of the Environmental Protection Authority during construction of the plant.

17. All above-ground tanks and liquid waste treatment areas will be bunded or otherwise provided with means of preventing escape of liquids either to the ground or as surface runoff to the satisfaction of the Environmental Protection Authority and the Water Authority. All contained spillages, wash water and contaminated runoff within the sealed and bunded areas will be returned to the treatment process.

## **Monitoring**

18. 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.

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

20. The quality of water in the site perimeter drains, as well as groundwater from the production bore adjacent the dewatering building will be monitored to the satisfaction of the Environmental Protection Authority, prior to commissioning and during operation on a regular basis to ensure that no contamination is occurring due to the operation of the plant. Should any contamination be detected appropriate action will be taken to the satisfaction of the Environmental Protection Authority.

## **Solid Waste**

21. The proponent will dispose of all solid wastes off-site, and will obtain the approval of the Local Government Authority and the Environmental Protection Authority for the method and location of solid waste disposal prior to commissioning the plant.

## **Plant equipment and security**

22. Standby electrical power will be provided by a diesel fired generator set, already installed and connected to the Septage Plant.

23. The plant equipment, process and storage area will be made and kept safe from explosion by flammable constituents to the satisfaction of the Mines Department.

24. The plant equipment, process, storage area and surrounding area will be made and kept safe from Fire to the satisfaction of the Mines Department.

25. Fire fighting facilities will be installed to the approval of the WA Fire Brigade.

26. Electrical wiring, equipment and instrumentation will be designed and installed in compliance with AS3000 and all other applicable Australian Standards. This equipment will be made and kept safe to the satisfaction of the State Energy Commission.

27. The Plant will be designed and constructed in accordance with the Occupational Health, Safety and Welfare Regulations, 1988.

28. The proponent will fence the proposed plant to the same standard as that for the Septage Treatment Plant and maintain it to that standard at all times. All storage facilities will be maintained to the satisfaction of the Mines Department.

## **Noise**

29. The proponent commits itself to operating the plant within the hours of 6 AM and 9 PM except in the case of an emergency. If such an emergency arises the proponent will inform the Environmental Protection Authority of that event within two days of the occurrence.

30. The proponent will design and operate the plant so as to minimise noise generation and noise levels at the boundary of its site at all times to the satisfaction of the Environmental Protection Authority.

## **Odour**

31. All treatment processes and waste handling operations that could generate odours detectable at the site boundary will be enclosed with provision for odour control and be to the satisfaction of the Environmental Protection Authority.

### **Traffic routes**

32. The proponent will liaise with the Local Government Authority and relevant Government Agencies including the Pollution Control Division of the Environmental Protection Authority to identify appropriate traffic routes to the plant, prior to commissioning the plant.

### **Other commitments**

33. The proponent will prepare a landscaping plan, to the satisfaction of the Environmental Protection Authority, to improve the amenity of the area, prior to commissioning the plant and be to the satisfaction of the Environmental Protection Authority.

34. The proponent will ensure that dust will be controlled at all times to the satisfaction of the Environmental Protection Authority and the City of Armadale and any other relevant authorities.

35. The proponent will take immediate remedial action should failure of the treatment system occur which has the potential to, or actually causes an environmental impact, and will carry out remedial action to the satisfaction of the Environmental Protection Authority and all relevant Authorities.

36. The proponent will control insects and weeds around the treatment plant including any sludge drying or holding facilities to the satisfaction of the Environmental Protection Authority and the City of Armadale.

37. 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.

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

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

40. 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.

### **General reporting**

41. Reports will be provided to the Environmental Protection Authority quarterly on progress of the development of the plant and annually on the operation of the facility after the plant is commissioned. Reporting will include advice to the Environmental Protection Authority on the fulfilment of any Ministerial Conditions and Commitments given by the proponent at relevant project stages.

42. Representatives of the proponent will meet regularly with the Community Liaison Committee consisting of representatives of the Forrestdale Community Association and the Armadale City Council and any other relevant party, such as the Pollution Action Network and the Conservation Council of Western Australia, to discuss development and operation of the plant.

## **Appendix 2**

### **Proponent's responses to questions raised during the assessment**

Auditing liquid waste generation, transport and disposal at site

Q.1 Will the hazardous waste manifest include?

- name, address, telephone number, licence number of each generator of treatable waste;
- nature and volume of waste;
- mode of transport;
- condition of waste whether it has or has not been pretreated;
- details of hauler including licence number
- hauler knowing details of generator and waste being hauled; and
- name of gateman at receipt point at the plant.

A.1 The manifest will include name, address and licence number of each generator, nature and volume of waste, details of handling including licence number, name of disposal site and gateman. Other information such as phone number of generator, pretreatment conditions and total volume produced by each generator will be kept by the Health Department.

See also Commitment No 5.

Q.2 Who will be notified, prior to transport, if a load of waste is borderline regarding its acceptance at the plant?

A.2 Only liquid waste treatable at the plant will knowingly be accepted for transport.

See also Commitment No 6.

Q.3 Will haulers or generators of borderline liquid waste or non-specification waste be prosecuted if they attempt to have such waste treated at the plant?

A.3 Yes, both generators and haulers will be liable to prosecution if non-specification waste is knowingly taken to the plant.

See also Commitment No 6.

Q.4 What will happen if a hauler presents non-specification waste to the plant for treatment?

A.4 The waste will either be discharged into the off-specification tanks for special treatment or later returned to the generator, or the waste will be rejected and sent back to the generator immediately. In any case both the generator and the transporter will be advised and warned, and if necessary charged with breach of the Health (Licencing of Liquid Waste) Regulations.

See also Commitment No 6.

Q.5 How will the operators at the plant determine whether liquid waste is hazardous or otherwise given their laboratory facilities?

A.5 The plant has an extensive laboratory with two on-site chemists. Each tanker load will be sampled and tested for a number of parameters, the minimum being pH, odour and appearance. Any suspicious or

unknown waste will be tested in further detail to ensure compliance with the conditions specified.

Q.6 How will the proponent ensure that liquid waste will not be dumped illegally if trucks are turned away?

A.6 The manifest system will be used to track the waste. See also Commitment Nos 7 and 8.

### **Treatment effluent and solid waste disposal**

Q.7 Will chemical analysis be carried out on treated effluent and solid waste for hazardous substances prior to disposal. Will the results be made public?

A.7 No treated effluent will be discharged into the Water Authority sewer unless testing has confirmed that it complies with Water Authority criteria. The results will be reported to the Liaison Committee at regular intervals.

See also Commitment No 10.

Q.8 Given that hazardous substances will be present in the solid waste, where will the solid waste be disposed and how secure is that site against pollution of groundwater or wetlands?

A.8 Solid waste will be disposed of at one of the sites listed below:

- Red Hill landfill site, Red Hill;
  - Henderson landfill site, Cockburn;
  - Kelvin Road Landfill site, Orange Grove; or
  - Dawson Avenue landfill site, Forrestfield.
- see also commitment No 19.

### **Chemical analysis of wastes (treated and untreated)**

Q.9 Will fines be imposed on any body interfering with sample monitoring and analysis?

A.9 Yes, under the Health Act and /or the Sewerage and Drainage Act and/or the Environmental Protection Act.

Q.10 What is the protocol for sampling and analysis of waste prior to treatment. Will it be sufficiently independent and reliable to ensure the results are meaningful?

A.10 Two chemists on site will analyse all incoming waste to ensure compliance with the licencing conditions. The laboratory is expected to be NATA registered in the near future. This will ensure independence and reliability.

See also Commitment Nos 5, 6 and 8.

### **Monitoring and community liaison**

Q.11 How often will the bunded and holding tank areas, sewers, drains associated with the plant be monitored/sampled to ensure against pollution of surrounding wetlands or groundwater?

A.11. Every three months and immediately after spills or suspected spills have been reported

See also Commitment No 16.

Q.12 Will the local community and interested parties be allowed to have an input into the monitoring program given the significance of the local wetlands to conservation?

A.12 Yes, through the Liaison Committee, the local community will be regularly informed of monitoring results. See also Commitment No 16, 17 and 18.

Q.13 How often will groundwater around and under the plant be monitored and what protocol will be established to carry out such monitoring?

A.13 Every three months and immediately after spills or suspected spills have been reported. The protocol will be established in accordance with Commitments Nos 16, 17 and 18.

Q.14 Will the proponent develop a code of practice for the plant which would involve the local community and other interested parties?

A.14 The proponent is willing to discuss operational practices with the Community Liaison Committee and if necessary develop a code of practice.

### **Spillage on site**

Q.15 Will the proponent install a weir on the Forrestdale drain to cope with an emergency?

A.15 No. It is the opinion of the proponent that a weir in the Forrestdale drain could lead to local flooding, including backflow into susceptible areas.

Q.16 Will the proponent supply more details to help regarding the drain systems within the plant and around the plant so as to ensure contamination of the environment does not take place?

A.16 The proponent will supply any information available which will assist in protecting the environment of the area.

### **Decommissioning**

Q.17 Will the proponent clean up the site prior to decommissioning, if so, to whose satisfaction. Who will be responsible for site cleanup after decommissioning if some unforeseen pollution event occurs. Who would fund further clean up?

A.17 Yes. In accordance with Commitment No 36 decommissioning will take place to the satisfaction of the Environmental Protection Authority. The proponent will be responsible for site clean up after decommissioning

### **Traffic, transport route, wetland and groundwater protection**

Q.18 Who will the proponent liaise with to ensure transport routes do not cause problems for the

Jandakot Mound (Jandakot Underground Water Pollution Control Area) due to spillage. Will the Main Roads Department be consulted during the assessment of transport routes How will the proponent ensure that the potential for pollution of the wetland and groundwater be minimised?

A.18 In accordance with Commitment No 30, the proponent will liaise with the Local Government Authority and relevant Government Agencies to identify appropriate traffic routes to the plant. The Main Roads Department will be included in this consultation. Consultation with the Environmental Protection Authority and the Water Authority will ensure minimum wetland and groundwater pollution.

Q.19 How will the proponent ensure that traffic problems near the plant will not increase with the increased volume of trucks?

A.19 Extensions to Armadale Road has already been carried out to cope with traffic to the existing Septage Plant. It is expected that these extensions will adequately cope with the traffic to the new plant.

Q.20 Will the proponent supply more details to help evolve a scheme to minimise the risk of polluting the Jandakot Mound area in addition to those given in the WA Hazardous Materials Emergency Management Co-ordination Scheme?

A.20 Yes, the proponent will supply information available to develop a scheme for minimising the risk of polluting the Jandakot Mound.

### **Buffer zone around plant**

Q.21 What are the rationale and dimensions for the buffer area around the treatment plant reserve and its implications on surrounding land use?

A.21 The Water Authority has adopted a one kilometre buffer zone as applicable to a sewage treatment works. The proponent considers this buffer zone more than adequate for the proposed plant.

### **Odour, noise and pollution of potable water**

Q.22 Will odour, noise or groundwater pollution be a problem at a distance of 1 to 1.5km away from the plant. Do residents have a guarantee that borewater which is used for potable purposes will not be polluted by the plant operations and if it is, will potable water be supplied to affected residents?

A.22 Odours and noise are not expected to be a problem outside the boundary of the plant. Action will be taken immediately if this is proven to be the case. Groundwater pollution will be monitored at the plant. If any pollution is detected remedial action will be taken. Due to the slow groundwater movement in the area and the extensive monitoring program, there will be no pollution of adjoining properties or anywhere else in the area.

Q.23 Since activated carbon does not control ammonia odours and considering their cost, does

the proponent intend using other filters/ processes to control odour; if not how will ammonia odours be controlled?

A.23 Since all waste will be neutralised at the place of production, most ammonia will be released before entry to the plant. In any event it is not expected that the wastes will contain large amounts of ammonia. Organic wastes with high levels of ammonia will not be treated at the plant. They go to the Septage Plant. Furthermore, the proponent gives an undertaking that if ammonia odours prove to be a problem, then a wet scrubber or other suitable odour control unit will be installed. See also Commitment No 29.

Q.24 Will the proponent supply more details regarding the drain systems within the plant and around the plant so as to ensure contamination of the environment and local groundwater does not take place?

A.24 The plant will be designed to minimise contamination of the environment. The proponent is willing to make detailed design drawings of the drainage system available. See also Commitment Nos 12, 13, 14 and 15.

### Site selection

Q.25 How can the proponent justify the selection of the proposed site given that the population density of the Armadale is likely to increase?

A.25 The final choice of the site was between the Canning Vale, Woodman Point and Forrestdale Sewage Treatment Works. The Canning Vale site is too small for the purpose, the area is densely populated and the road system is inferior to the Forrestdale location. Woodman Point would also have required substantial upgrading of the road system and construction and operations would have been far more expensive.

### Liquid waste treatment process

Q.26 Could the proponent clarify as to whether a neutralisation process conducted in two or three stages and pH controlled would be more efficient in preventing any dissolution of hydroxides from taking place, as well as preventing ammonia complexing?

A.26 Extensive analysis of all industrial waste producers have taken place. Even at pH 11.5-12 the worst metal finishing waste can meet Water Authority discharge limits. The expected low level of ammonia will reduce complexing of metals. The fact that most heavy metals will enter the plant through the non-oily waste stream and go to the acid/alkali reactor will ensure maximum heavy metals precipitation, as this reactor will be operated at pH 9 to 10.

### Fire control

Q.27 Why does the PER not contain fire control plans to prevent bushfires and grass fires which

could threaten the plant, adjacent areas, and the Forrestdale Nature Reserve?

A.27 The plant will be surrounded by roads (5 metres wide) and a well maintained lawn (9 metres wide). In addition, the plant is surrounded by a fire break (2 metres wide). There is a further fire break at the boundary of the Water Authority property. The plant is therefore well protected from bush and grass fires. See also Commitments Nos 22 and 23.

Q.28 Given that the plant will treat and store organic wastes, and the plant is 1500m from the Forrestdale Nature Reserve, why has the proponent not prepared a full fire control plan in the PER?

A.28 All treatment of waste at the plant is within enclosed vessels and/or buildings. Together with the conditions set out in A.27, it is most unlikely that a fire at the plant will spread to adjacent areas. See also Commitment Nos 21 and 24.

## **Appendix 3**

### **List of Government agencies and public who made submissions**

Water Authority of Western Australia

City of Armadale

Mr P Jennings and Ms J Dickie, Conservation  
Council of WA, Perth.

Messers B Kristiansen and J.O. Borlaug, Viking  
Enterprises, Cannington.

Ms A Foote, Co-Ordinator, Pollution Action Network,  
Beaconsfield.

Mrs Joy O'Grady, Armadale.

Mr P Raiter, Coolbina, WA.