Proposal to Change Plant Processes and Waste Acceptance Criteria at the Brookdale Liquid Waste Treatment Facility

Waste Management (WA)

Report and recommendations
of the Environmental Protection Authority

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Summary and recommendations

Context

The Brookdale Liquid Waste Treatment Facility (LWTF) has been operating under environmental approvals since 1988 as a septage treatment plant.

Since 1990 the environmental approvals have included the acceptance and treatment of non-hazardous industrial liquid waste.

The facility was also licenced by the Department of Environmental Protection (DEP) to receive some specific types of hazardous liquid waste for treatment to render them non-hazardous or utilised on-site as reagents for treating other liquid wastes. Amendments to Part VIIB of the *Environmental Protection Act* in 1998 provided for the EPA to accept responsibility from the DEP for monitoring or causing to be monitored this facility in accordance with both licence conditions and environmental approvals.

Towards the end of 1995 Waste Management Western Australia (WMWA) submitted a proposal to the EPA to change plant processes and waste acceptance criteria to enable the LWTF to accept a wider range of hazardous liquid waste for specialised treatment to:

- render them suitable for disposal to an approved landfill;
- render them non-hazardous for treatment within the LWTF;
- recycle them offsite; or
- repackage them for transport to other appropriate facilities.

A formal level of assessment at Consultative Environmental Review (CER) was set in early 1996, and the proponent's CER document was released on 6 August 2001. It should be noted that the proposal does not include solid wastes except for those included in the definition of liquid wastes, nor does the proposal include radioactive or explosive wastes.

On 27 July 1999, the Environmental Protection Authority (EPA) advised the then Minister for the Environment pursuant to s110(0) of the *Environmental Protection Act* that the LWTF was operating outside of its environmental approvals with respect to the acceptance, handling and treatment of some hazardous waste.

The then Minister for the Environment requested the Authority on 23 August 1999 to inquire into and report on possible changes to the conditions and procedures relating to the acceptance and treatment of waste outside current specifications at the facility. The request was pursuant to s46(1) of the *Environmental Protection Act* and it was decided that the review could be undertaken as part of the CER assessment. The Minister's request did not direct that during the environmental review process those activities which were outside the existing environmental approvals were to cease. This action was taken pursuant to s48(4) of the *Environmental Protection Act*.

This report provides the EPA's advice to the Minister for the Environment and Heritage in respect to the CER and s46.

The EPA recognises the community's overwhelming desire for the plant to be closed or relocated.

The EPA also recognises that some members of the public were of the understanding from a consideration of information given by officers of the former Office of Waste Management (whose role is now undertaken by Waste Management WA) at a public meeting in 1994 and subsequent information by the then Acting Director of Waste Management in writing (unsigned) on 13 September 1994 (Appendix 1) that:

- the current contracts for the plant extend to 2002;
- at that stage the plant would revert solely to Government control and a decision would be made as to its future;
- owing to the expected decline in septage delivered to the plant, it was likely that the septage plant would be closed or require substantial modification;
- there was a possibility that the government may opt to close the plant at the end of the current contract because of the increasing pressure on the buffer zone around the site; and
- it was unlikely that the government would be enthusiastic about making substantial capital investment on the site.

This information does not constitute Government Policy, of the day, but it does provide a focus for community interest.

It is within the context of the historical account of the plant as set out above that the EPA has prepared this report, also taking into consideration:

- the information provided in the CER document;
- issues raised by the public submissions and the subsequent public meeting;
- specialist advice from government agencies;
- the proponent's response to issues raised by the public; and
- the EPA's examination of the issues.

Section 44 of the *Environmental Protection Act (1986)* requires the EPA to report to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal and on the Environmental Conditions and Procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

Relevant environmental factors

In the EPA's opinion, the following are the environmental factors relevant to this proposal, which require detailed evaluation in this report:

a) community health – impact on people;

b) air quality - impact on people;

c) public risk and safety – impact on people;

d) alternatives;

e) surface water quality – off site impacts; and

f) ground water quality – both within the site boundary and off site impacts.

Conclusion

The EPA has been very conscious that some of the current activities at the LWTF fall outside the approved Environmental Conditions but that those activities have been endorsed to the extent that, pursuant to section 48(4) of the *Environmental Protection Act,* the Minister did not direct that they should cease. As part of its enquiry, the EPA sought information from the proponent in relation to other facilities available to treat hazardous liquid waste substances not covered by the Environmental Conditions. This information indicates that for some of the hazardous material there are no other facilities currently available.

The EPA has undertaken its assessment of the proposal in difficult circumstances noting that:

- the activities for which approval is being sought are mostly already being undertaken;
- there appears to be no other facilities available in the State to receive or treat some of the wastes involved;
- the public has a strong view that rather than the facility being allowed to expand its activities on an on-going basis, it should be relocated; and
- if the proposal is not approved, the facility still has approvals to operate as a non-hazardous liquid waste treatment facility.

The EPA has assessed the proposal and has concluded that overall it can be managed to meet the EPA's objectives and does not impose unacceptable risks to community health and public safety. However, taking into account the historical context and social surrounds, the EPA is of the view that the proposal should be subject to modifications set out in its recommendations and recommended Environmental Conditions presented in Appendix 4 of this report, including a time limit of approval.

The modifications recommended by the EPA include:

- no acceptance after 28 February 2002 of polychlorinated biphenyls (PCB) and perchloroethylene (PERC) as these can be treated by another approved licensed facility;
- no solvent extraction plant, noting that this plant would have primarily treated perchlorethylene (PERC), as well as other solvents; and
- no acceptance after 30 June 2002 of acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes), as these can be treated by another approved licensed facility.

A proposed biodiesel plant is mentioned in the CER document and the response to submissions but the proponent has stated to the EPA that it is not part of the proposal.

Although the EPA has concluded that overall the proposal can be managed to meet its objectives, there is a broader issue:

- the LWTF was originally designed to deal with septage waste; and
- the Office of Waste Management (whose role is now undertaken by Waste Management WA) provided information in 1994 that indicated that the government may be of a mind to close the plant at the end of the current contract.

The EPA is of the view that the future of the LWTF should be examined by Government in relation to the possibility of the whole facility being decommissioned in a timely manner. It would not be appropriate for an approval of the current proposal to facilitate the long term operation of an expanded function at the LWTF.

Noting that the information provided by the proponent identifies particular wastes for which no other alternative is currently available, the EPA recommends that the LWTF be given a limited approval to 31 December 2003, in relation to hazardous liquid waste, so as to provide an opportunity for Government and the waste industry to work together to make alternative arrangements.

The EPA further concludes that the Minister for the Environment and Heritage should request that Waste Management WA inform her every three months of those hazardous liquid wastes which can be accepted by other facilities in Western Australia as part of a progressive decommissioning of the hazardous liquid wastes components accepted at the LWTF.

Government and the waste industry should actively work towards finding solutions to the waste streams for which no other facility is currently available to accept them.

Recommendations

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

1. That the Minister notes:

(a) that the proposal being assessed is to change some plant processes and waste acceptance criteria at the Brookdale Liquid Waste Treatment Facility;

(b) that the proposal does not include solid wastes except for those included in the definition of liquid wastes, nor does the proposal include radioactive or explosive wastes and

(c) that the current treatment of non-hazardous materials, carried out under existing approvals, are not the subject of this proposal.

2. That the Minister notes that she issued a Direction pursuant to s110N(1) of the *Environmental Protection Act* that no waste is to be received at the LWTF outside existing approvals (including any approvals given as a result of this report) as from 28 February 2002.

3. That the Minister considers the report and relevant environmental factors as set out in Section 4 of this report.

4. That the Minister notes that the EPA has concluded that overall this proposal can be managed to meet the EPA's objectives and does not impose unacceptable risks to community health and public safety, but that it should be subject to modifications set out in Recommendation 6.

5. That the Minister notes that, notwithstanding Recommendation 4, the EPA has concluded that it would not be appropriate for implementation of the proposal to allow for the long term operation of an expanded function (hazardous liquid wastes) at the LWTF.

6. That the Minister excludes environmental approval from this proposal:

(a) PERC as soon as practicable but no later than 28 February 2002;

(b) PCBs as soon as practicable but no later than 28 February 2002;

(c) chlorinated pesticides as soon as practicable but no later than 30 June 2002;

(d) acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) as soon as practicable but no later than 30 June 2002; and

(e) the remainder of the hazardous liquid waste pursuant to this proposal as soon as practicable but no later than 31 December 2003.

7. That the Minister notes that if the modifications set out in Recommendation 6 are adopted, the quantity of bulk hazardous liquid waste proposed to be received by the LWTF would be substantially reduced, as from 28 February 2002, from a rate of approximately 4 600 – 6 000 tonnes per year as documented in the proponent's CER to a rate of approximately 600 tonnes per year as notified by the proponent in writing on 21 December 2001. This quantity of hazardous liquid wastes would be progressively reduced to zero no later than 31 December 2003.

8. That the Minister excludes environmental approval from this proposal of the solvent extraction plant, noting that this plant would have primarily treated perchlorethylene (PERC), as well as other solvents.

9. That the Minister requests the proponent to report to her every three months on progress towards giving effect to Recommendation 6.

10. That the Minister gives consideration to the future of the LWTF in the context of waste management planning.

11. That the Minister imposes the Environmental Conditions and Procedures recommended in Appendix 4 of this report.

Conditions

Having considered the information contained in this report, the EPA has developed a set of Environmental Conditions that the EPA recommends be imposed if the proposal by WMWA is approved for implementation.

These Environmental Conditions are presented in Appendix 4, and include the modifications proposed by the EPA as set out in the recommendations. The proposed Environmental Conditions also include a set of proponent commitments. Some of these commitments relate to the operation of the LWTF as a whole, including treatment of septage and non-hazardous industrial liquid waste.

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1. Introduction

Background

The Brookdale Liquid Waste Treatment Facility (LWTF) treats septage and a specified range of hazardous liquid wastes. It is located on Waterworks Road, Brookdale (Figure 1) and operates under environmental approvals.

The facility is owned by the State of Western Australia. It is managed by Waste Management WA (WMWA), a body corporate of the Department of Environmental Protection, and operated by Cleanaway Technical Services (CTS) under contract to WMWA.

The LWTF has been operating under environmental approvals since 1988 as a septage treatment plant.

Since 1990 the environmental approvals have included the acceptance and treatment of non-hazardous industrial liquid waste.

The facility was also licenced by the Department of Environmental Protection (DEP) to receive some specific types of hazardous liquid waste for treatment to render them non-hazardous or utilised on-site as reagents for treating other liquid wastes. Amendments to Part VIIB of the *Environmental Protection Act* in 1998 provided for the EPA to accept responsibility from the DEP for monitoring or causing to be monitored this facility in accordance with both licence conditions and environmental approvals.

Towards the end of 1995 WMWA submitted a proposal to the EPA to change plant processes and waste acceptance criteria to enable the LWTF to accept a wider range of hazardous liquid waste for specialised treatment to:

- render them suitable for disposal to an approved landfill;
- render them non-hazardous for treatment within the LWTF;
- recycle them offsite; or
- repackage them for transport to other appropriate facilities (Figure 2).

A formal level of assessment at Consultative Environmental Review (CER) was set in early 1996, and the proponent's CER document was released on 6 August 2001.

On 27 July 1999, the Environmental Protection Authority (EPA) advised the then Minister for the Environment Pursuant to s110(0) of the *Environmental Protection Act* that the LWTF was operating outside of its existing environmental approvals with respect to the acceptance, handling and treatment of some hazardous waste.

The then Minister for the Environment requested the Authority on 23 August 1999 to inquire into and report on possible changes to the conditions and procedures relating to the acceptance and treatment of waste outside current specifications at the facility. The request was pursuant to s46(1) of the *Environmental Protection Act* and it was decided that the review could be undertaken as part of the CER assessment. The Minister's request did not direct that during the environmental review process those activities which were outside the existing environmental approvals were to cease. This action was taken pursuant to s48(4) of the *Environmental Protection Act*.

On 5 June 2001 the Minister for the Environment and Heritage issued a Direction under s110N(1) of the *Environmental Protection Act* that no waste is to be received at this facility outside existing environmental approvals as from 28 February 2002 unless further approvals by the Minister are given. A timeline to complete the current environmental impact assessment within the deadline set by the Minister was agreed between WMWA and EPA, and this was communicated to the Minister.

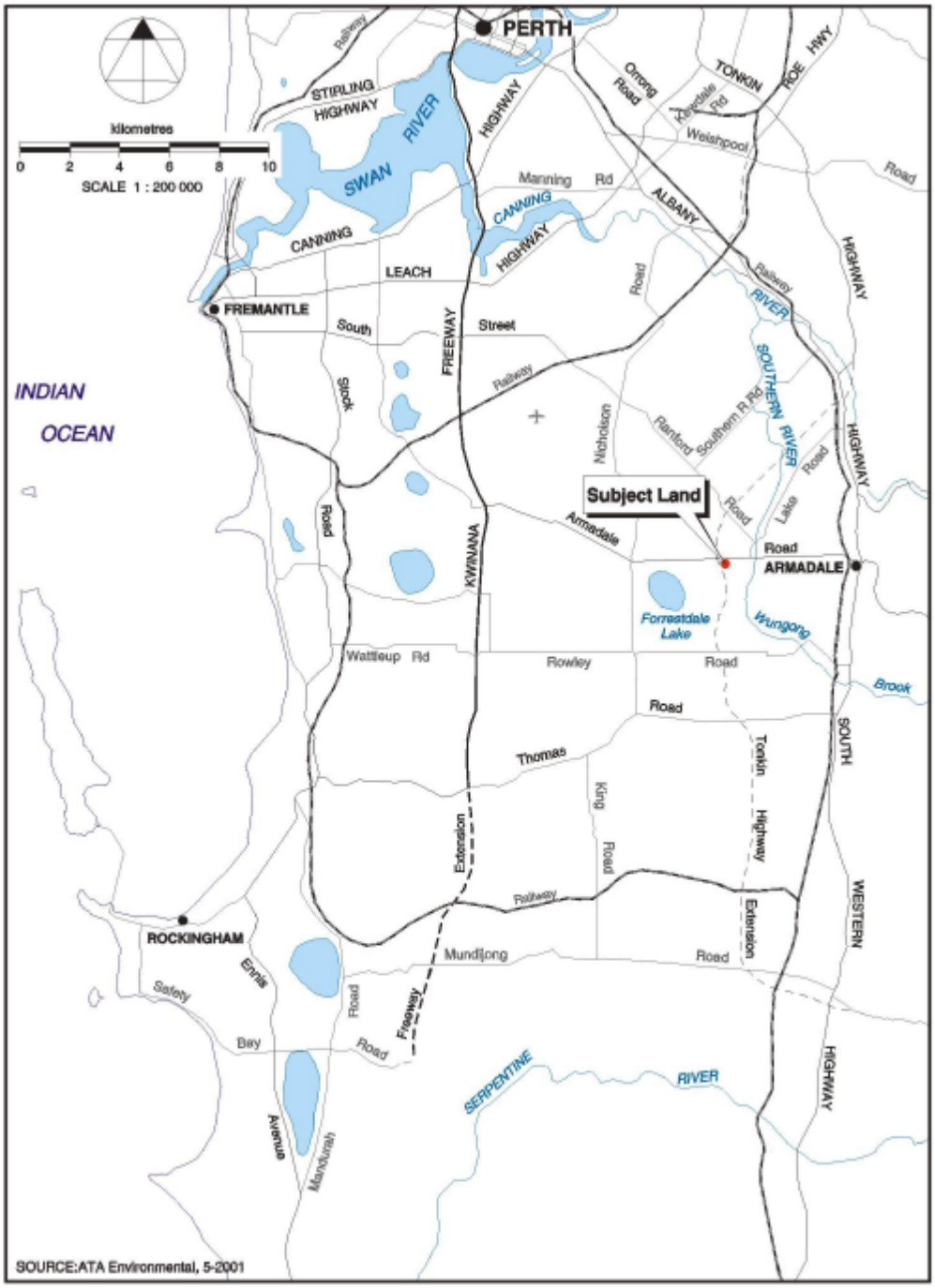

Figure 1. Site Location

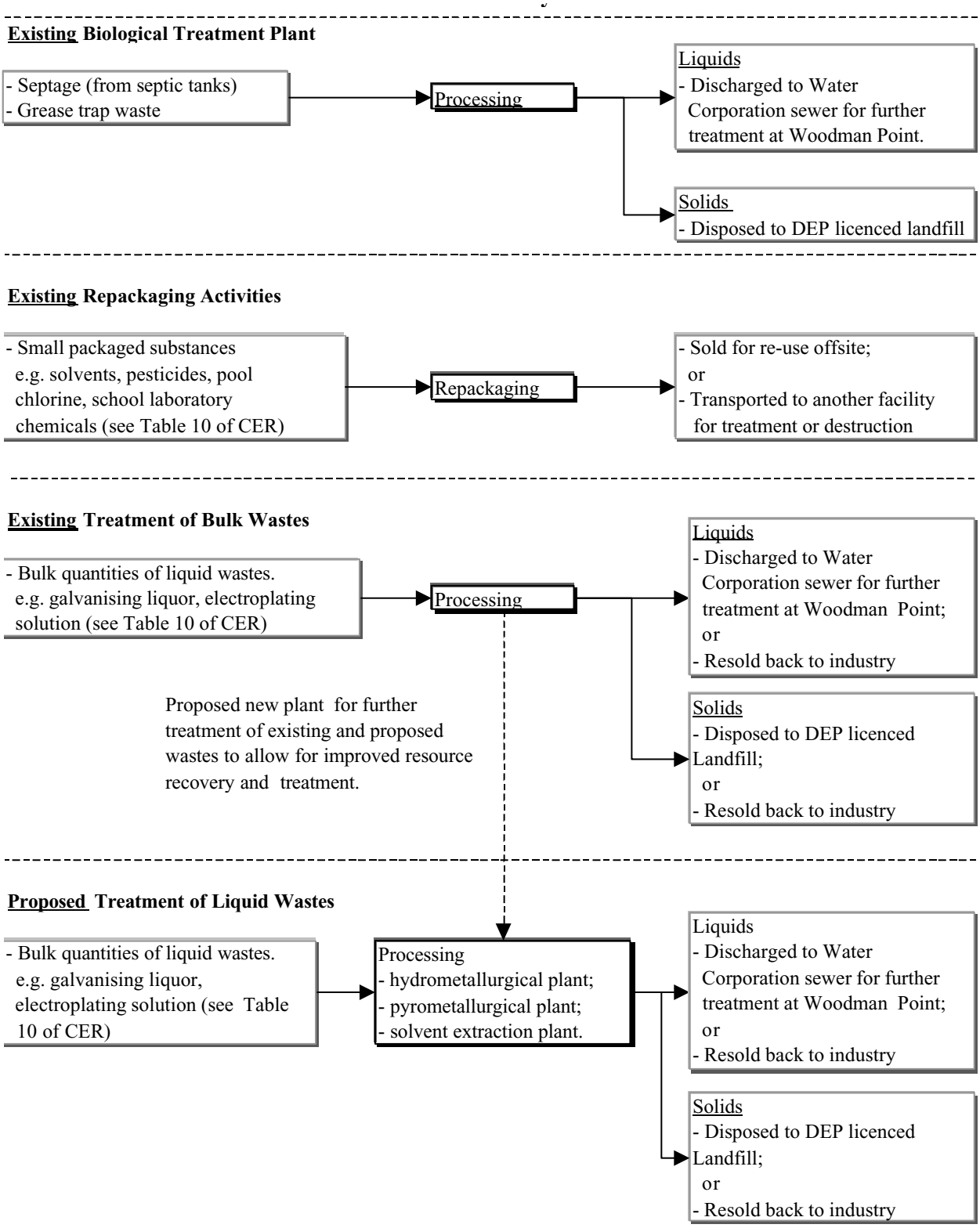

Figure 2. Brookdale LWTF Summary of Activities

The CER Process

The proponent's environmental review document entitled "Proposal to Change Plant Processes and Waste Acceptance Criteria at the Brookdale Liquid Waste Treatment Facility", was released for public review on 6 August 2001 (Waste Management WA, 2001). Owing to the public interest in this proposal, the usual four week public review period for a CER was extended to eight weeks, closing on 9 October 2001.

A total of 137 submissions were received during the public review period by the EPA which included 79 individual public submissions, 13 government agency submissions, 14 business/community organisation submissions and 31 proforma submissions. The EPA has also taken into account additional correspondence, form letters and petitions received after the close of the public review period. The major issues raised were:

- community health;
- air quality;
- odour;
- public safety and risk to people;
- alternatives for the material;
- unfair financial burden (the *Environmental Protection Act* does not provide for this factor to be considered);
- surface water quality;
- groundwater quality;
- soil quality;
- traffic;
- bush fire prone area;
- landuse/ planning; and
- Aboriginal heritage sites.

The EPA conducted a public meeting on the 7 November 2001 to give feedback from the EPA to the community on the issues arising from the public review process and for the EPA to take account of any additional issues of significance arising from this public meeting.

The EPA recognises the community's overwhelming desire for the plant to be closed or relocated.

The EPA also recognises that some members of the public were of the understanding from a consideration of information given by officers of the former Office of Waste Management (whose role is now undertaken by Waste Management WA) at a public meeting in 1994 and subsequent information by then Acting Director of Waste Management in writing (unsigned) on 13 September 1994 (Appendix 1) that:

- the current contracts for the plant extend to 2002;

- at that stage the plant would revert solely to Government control and a decision would be made as to its future;
- owing to the expected decline in septage delivered to the plant, it was likely that the septage plant would be closed or require substantial modification;
- there was a possibility that the government may opt to close the plant at the end of the current contract because of the increasing pressure on the buffer zone around the site; and
- it was unlikely that the government would be enthusiastic about making substantial capital investment on the site.

This report

It is within the context of the historical account of the plant as set out above that the EPA has prepared this report, also taking into consideration:

- the information provided in the CER document;
- issues raised by the public submissions and the subsequent public meeting;
- specialist advice from government agencies;
- the proponent's response to issues raised by the public; and
- the EPA's examination of the issues.

Section 2 presents further information about the history of the LWTF and Section 3 provides a description of the proposal. Section 4 discusses environmental factors relevant to the proposal. Section 5 sets out the Environmental Conditions and Procedures, which should be applied if the proposal is implemented, and other EPA advice is outlined in Section 6. Sections 7 and 8 present the EPA's conclusions and recommendations respectively.

Appendix 2 provides a list of people and organisations that made submissions. A list of references is contained in Appendix 3, the draft Environmental Conditions and the proponent's consolidated commitments are provided in Appendix 4 and identification of relevant environmental factors are provided in Appendix 5.

The summary of submissions and the proponent's response to those submissions is provided in a separate document contained on a computer disc attached to this report and is available on the EPA's website (www.environ.gov.au). The document is provided as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from the submission process and which the EPA has taken into account appear in this bulletin.

2. The Proponent

The proponent for this proposal is Waste Management WA (WMWA), a body corporate of the Department of Environmental Protection (DEP). The Chief Executive Officer of the DEP is also the Chief Executive Officer of WMWA.

2.1 Facility History

The principal events in the historical development of the site are:

- opened in 1988 to receive and treat septage. Known as the Metropolitan (or Westfield) Septage Treatment Plant and more recently known as the Brookdale liquid waste treatment facility (LWTF);
- commencement of acceptance and treatment of non-hazardous industrial waste from 1990;
- permitted to accept and treat specific types of hazardous liquid waste under the DEP licence conditions known as Group F hazardous wastes; and
- in 1999 the then Minister for the Environment requested a review of hazardous wastes accepted by this facility pursuant to s48(4) of the *Environmental Protection Act.*

Prior to management of the facility by WMWA, the facility was managed by:

- Health Department of Western Australia (HDWA) (1988 to 1996); and
- Department of Environmental Protection (DEP) (1996 to 30 June 1998).

Cleanaway Technical Services (CTS) has operated the facility under contract since 1988.

2.2 Environmental Approvals

The LWTF comprises a Biological Waste Treatment Plant and an Industrial Waste Treatment Plant. These plants perform the following principal services:

- the treatment of biodegradable liquid waste (such as effluent from septic tanks, food, grease traps and biological waste) for final disposal of liquid to sewer and solid residue to approved landfills; and
- the treatment of non-hazardous industrial liquid wastes such as spent acids and alkalis, oily wastes, sludge and liquors containing metals and other non-biodegradable chemical wastes. These wastes are either recycled or treated to allow for safe disposal to sewer or approved landfills or repackaged for transport to appropriate facilities within Australia for treatment or disposal.

The above operations are carried out under existing environmental approvals and are not the subject of this proposal.

3. The Proposal

WMWA has applied for a change to plant processes and waste acceptance criteria for this facility to enable it to accept a wider range of hazardous liquid wastes for specialised treatment to:

- render them suitable for disposal to an approved landfill;
- render them non-hazardous for treatment within the LWTF;
- recycle them offsite; or
- repackage them for transport to other appropriate facilities.

A formal level of assessment at Consultative Environmental Review (CER) was set in early 1996, and the proponent's CER document was released on 6 August 2001. It should be noted that the proposal does not include solid wastes except for those included in the definition of liquid wastes, nor does the proposal include radioactive or explosive wastes.

A summary of the key proposal characteristics proposed in the CER is provided in Table 1.

Table 1 key characteristics – Summary of Proposed Changes Outlined in the CER

Element	**Description**
Life of project	Indefinite
Area of disturbance	Lease area (see Figure 9 – site layout contained in the Proponent's CER document)
Standard Plant Operation Times	Between 7am and 5pm on weekdays and between 7am and 4pm on Saturdays
Emergency Plant Operating Times	Only available in emergencies where liquid waste poses an immediate risk to the community or environment
Waste Acceptance Times	Between 7am and 5pm on weekdays and between 7am and 4pm on Saturdays
List of Major of Components	Rotary Kiln Cyclones (3) Bag house Conveyor Solvent still Distillation column Condenser
Treatment Capacity	Approximately 1500 – 3000 drums (each of 200L) of mixed waste/year Approximately 4600 – 6000 tonnes of bulk hazardous waste per year.
Waste acceptance	Proposed to accept acids, alkalis, salts and organics classed as Dangerous Goods and/or Hazardous substances in bulk or for repackaging in accordance with the Modified Waste Acceptance Criteria, where the use of this facility provides the best environmental outcome.

Note: A proposed biodiesel plant is mentioned in the CER document and the response to submissions but the proponent has stated to the EPA that it is not part of the proposal.

The proposed change to the status of the waste acceptance criteria at the LWTF has the following objectives:

- to allow the acceptance of a wider range of hazardous liquid wastes:
  - acids and alkalis with pH values outside the pH range of 2 to 12;
  - oxidising and reducing agents that formerly required pre-treatment off-site;
  - chlorinated organic chemicals;
  - ancillary organic chemicals;
  - flammable liquids; and

- to reduce the risks associated with the off-site pre-treatment of wastes, in unsuitable facilities and by potentially untrained personnel by eliminating the need for such off-site pre-treatment.

For the purposes of the proposal, "Liquid Waste" is defined as:

> 'Liquids, oily rags, sludges (including spadeable sludges) and minor quantities of small packaged chemicals in solid form.'

Examples of small packaged chemicals in solid form are swimming pool chemicals, bleach and fertilisers. These are delivered to the LWTF as part of local authority household hazardous waste collections and from hazardous waste bins at landfill sites.

For the purposes of the proposal,' Hazardous Liquid Waste' is defined as:

'Any liquid waste (as defined above):

(a) with one or more of the following intrinsic properties:

   i. flammability;
   ii. a capacity to oxidise;
   iii. corrosiveness;
   iv. toxicity including chronic toxicity (effects on human health); and/or
   v. ecotoxicity, with or without bioaccumulation (effects on the environment); or

(b) which on contact with air or water (other than air or water where the temperature or pressure has been artificially increased or decreased) generates a substance with any one or more of the properties specified in paragraph a) of this definition.'

Examples of hazardous liquid wastes are substances such as: solvents, acids, contents of batteries and some heavy metals such as arsenic and mercury.

Wastes that will not be accepted at the LWTF, and do not form part of this proposal are:

- radioactive wastes;
- explosive waste; and
- solid wastes except those included in the definition of liquid waste.

The existing process for acceptance of waste at the LWTF will not change and involves the following two checking mechanisms (illustrated in Figure 3):

- assessment of waste documentation at the security gate; and
- chemical analysis of waste.

Waste is considered "accepted" at the facility only after it passes these two checks.

Disposal of any wastes from the processes at the LWTF is only to occur where it has been demonstrated that:

- the liquid wastes have been treated to standards that allow for disposal of the treated materials in accordance with Water Corporation licensed discharge levels to sewer (Water Corporation Acceptance Criteria Guidance Note IWPUB06); or
- disposal of solid wastes to approved landfills in accordance with the Department of Environmental Protection's "Landfill Waste Classification and Waste Definitions 1996 (as amended) January 2001" guidance document.

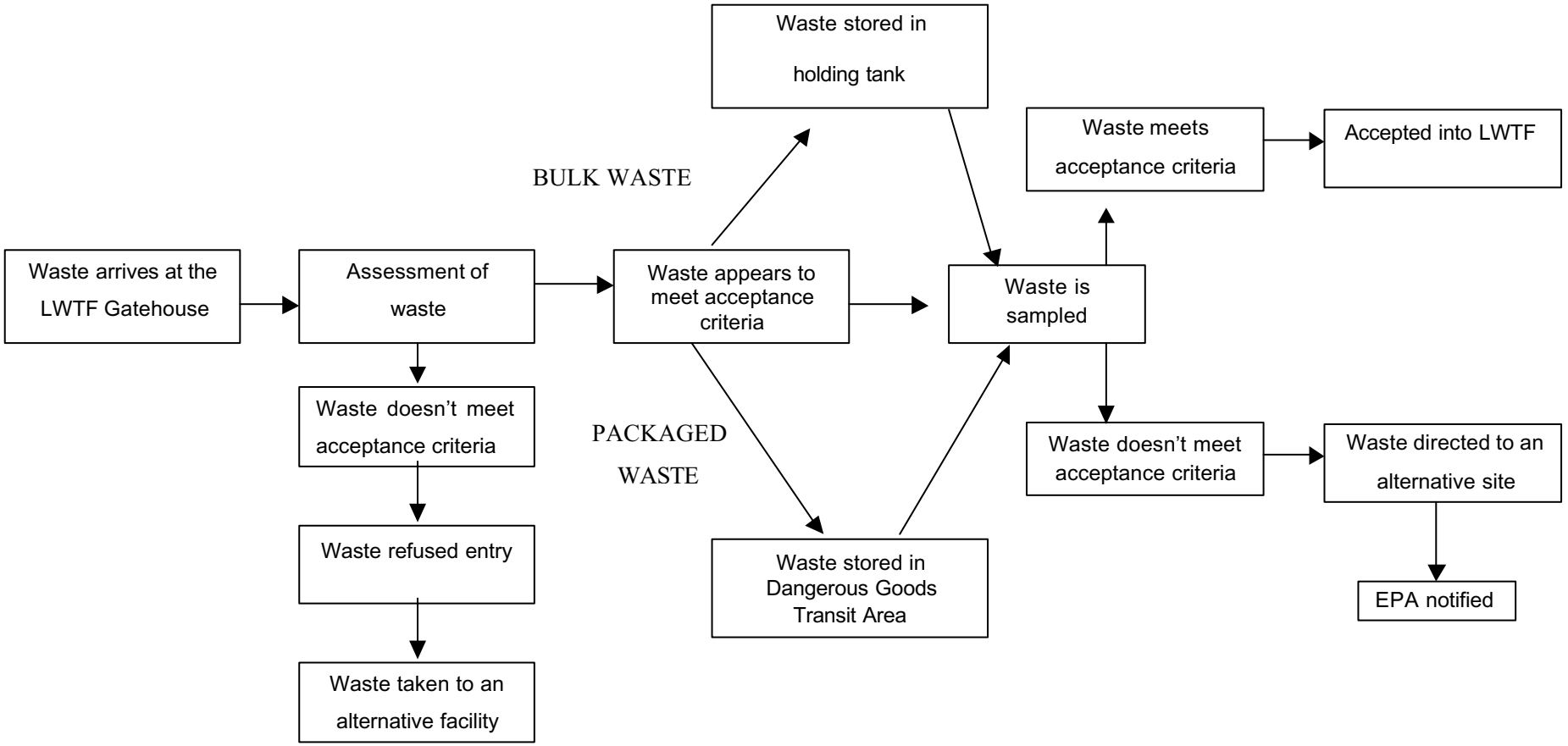

Figure 3. Hazardous Waste Acceptance Process at Brookdale LWTF

4. Relevant environmental factors

The summary of all of the environmental factors and their management is presented in Appendix 5.

Section 44 of the *Environmental Protection Act (1986)* requires the EPA to report to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal and on the Environmental Conditions and Procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

For this proposal the EPA identified the relevant environmental factors by referring to the preliminary list of factors identified in the EPA's guidelines, from the proponent's CER documentation, public submissions and from community input at the public meeting held by the EPA on 7 November 2001.

The EPA adopted the following environmental factors it considered as being relevant to the proposal by WMWA to change plant processes and waste acceptance criteria at the LWTF. Please refer to Appendix 5 for information which assisted the EPA in determining the relevant factors. Appendix 5 also provides for the EPA's advice on the remaining environmental factors raised through the assessment process.

Relevant Factors:

- community health;
- air quality;
- public risk and safety;
- alternatives;
- surface water quality; and
- groundwater quality.

4.1 Community health

Description

The LWTF currently operates a Biological Waste Treatment and an Industrial Waste Treatment Plant.

Proposed changes to the current waste acceptance criteria would allow the LWTF to accept a wider range of hazardous liquid wastes including chlorinated organic chemicals, other organic chemicals, flammable liquids, and acids and alkalis with pH's outside 2-12.

No radioactive or explosive wastes have been, or are intended to be, accepted at the facility.

Submissions

Main comments raised in submissions focused on:

- the possible side effects on the community's health from chemicals that are to be processed at the LWTF, for example carcinogens,
- recommendations that health statistics be investigated to provide a "baseline" for assessment of future possible impacts;
- concern of fly breeding controls, especially with relation to the approval of an

emergency storage facility of biosolids; and

- if the EPA cannot guarantee the LWTF will pose no risk to community's health then the government, and the proponent, should compensate nearby residents if the value of their property decreases due to the LWTF (Refer to "Unfair Financial Burden" under major issues in Section 1.0 - Introduction).

Assessment

The area considered for this environmental factor is the LWTF site and surrounding areas including the proximity of the nearest resident being approximately 450 metres from the site.

Issue	EPA Objective
Community Health	That the facility does not pose any unacceptable adverse risk to the health of the surrounding community.

Effects of Chemicals on Health

The community voiced considerable concerns about possible health problems as a result of exposure to hazardous chemicals. In response to the concerns the proponent identified that the possible exposure routes of substances at the LWTF are:

- via inhalation from the atmosphere;
- absorption through the skin; and
- ingestion.

Inhalation

The main way for substances to enter the atmosphere, are:

- through evaporation/volatilisation (rapid evaporation); and
- from combustion.

The EPA understands that there would be no process gaseous emissions.

Inhalation – Evaporation/Volatilisation

Evaporation/volatilisation (rapid evaporation) could occur when:

- dangerous goods are repacked;
- bulk substances are reacted/blended in the mixing bays;
- volatile substances are decanted;
- drums are washed and crushed; and
- wet cell batteries are crushed.

Emissions from evaporation/volatilisation (rapid evaporation) are minimised by:

- removal of contents from closed containers by vacuum pumping or drum to drum pressure/gravity techniques;
- handling of highly volatile substances in a building with a scrubber system;

- collecting off-gases from the drum shredder and passing them through a wet scrubber and an activated carbon filter to reduce emissions; and
- removal of acid vapours from gases arising from the battery crusher by passing the gases through a wet scrubber.

For workers on the site, the risk of inhalation of contaminants in the atmosphere from evaporation/volatilisation emissions is prevented through the correct use of appropriate safety procedures. The proponent is required to meet Work Safe criteria for the protection of people from exposure to substances within the boundary of the LWTF.

Through the use of management controls to minimise evaporation/volatilisation of substances and the quantities of substances involved, it is expected that such evaporation/volatilisation will not result in unacceptable concentrations of chemical compounds in the atmosphere and will not impact adversely on the community.

Inhalation - Combustion
There will be no combustion processes that will result in gaseous emissions.

A risk assessment (ASHE, 2001) identified that ignition of a pool of perchloroethylene (PERC) in the solvent distillation plant is a credible accident scenario. Such an accident would result in an accidental release to the atmosphere. However, as discussed in Section 4.3, Public Risk and Safety, the likelihood of such a fire occurring is extremely low. If such a fire did occur this would result in emissions of hydrochloric acid to the atmosphere. In terms of community health, risk of injury to the community is considered not to be significant (refer to Section 4.3).

The risk assessment also identified that a fire in the Dangerous Goods storage area is a credible scenario with the likelihood of such a fire occurring being seldom (one in 100 to 1000 years) (DNV, 2001). However, if such a fire did occur it would result in the emission of numerous by-products into the atmosphere. In terms of community health, this would not be expected to result in any fatality (DNV, 2001), and the risk of injury effects is also not expected to be significant (refer to Section 4.3).

Absorption and Ingestion
The potential means of absorption through the skin and ingestion to people outside the site are:
- direct contact with contaminated surface water;
- use of contaminated groundwater for watering of vegetable gardens; and
- drinking of rainwater that has collected airborne contaminants deposited on house roofs.

The plant has been designed and operated to ensure that the potential for ground and surface waters to come into contact with processes, chemicals or wastes associated with site operations is kept to a minimum. Also, since there will be no process emissions and fugitive emissions will be minimal, the contamination of roof run-off water used for drinking water could only be potentially be caused by a fire at the LWTF. However, as discussed in Section 4.3 the likelihood of a fire that would cause such contamination is minimal.

The EPA is of the view that the proposed process and management controls, if

properly implemented, would be adequate to maintain emissions well within acceptable limits.

Health Statistics

In terms of the Education Department's recommendation for providing "baseline" health statistics, the Department of Health has provided written advice that the commitments from the proponent and the proposed Environmental Conditions are considered to be adequate to prevent emissions that might impact on the health of the community.

Fly Breeding

The short-term storage of biosolids is not part of this proposal. The necessity for the biosolids emergency storage facility arose due to a short-term inability to dispose of biosolids off-site to landfill during heavy winter rains, which prevented access to landfills. Existing environmental approvals and management controls are considered to be adequate.

Summary

The proponent has sufficient existing procedures in place together with the Consolidated Environmental Management Commitments provided in Appendix 4 to ensure that the risk to community health from implementation of the proposal is minimal.

The EPA has assessed this proposal and has concluded that overall it can be managed to meet the EPA's objectives and does not impose unacceptable risks to community health and public safety. However, taking into account the historical context and social surrounds, the EPA is of the view that the proposal should be subject to modifications set out in its recommendations and recommended Environmental Conditions presented in Appendix 4 of this report, including a time limit of approval.

The modifications recommended by the EPA excludes from this proposal:

- PERC as soon as practicable but no later than 28 February 2002;
- Polychlorinated biphenyls (PCBs) as soon as practicable but no later than 28 February 2002;
- chlorinated pesticides as soon as practicable but no later than 30 June 2002;
- acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) as soon as practicable but no later than 30 June 2002; and
- the remainder of the hazardous liquid waste pursuant to this proposal as soon as practicable but no later than 31 December 2003.

It is the EPA's opinion that this environmental factor can be managed to meet the EPA's objectives, but taking into account the historical context and social surrounds, any approvals granted should have the effect of modifying the proposal.

4.2 Air quality

Description

There would be no process gaseous emissions from proposed activities at the hydrometallurgical, pyrometallurgical and solvent extraction plants. There would be some particulate emissions from the pyrometallurgical plant, which would be kept within relevant regulatory requirements. Some fugitive emissions will occur. However, these are expected to be minimal.

Submissions

Main comments raised in submissions focused on:

- the CER not addressing any air emissions other than odour. If there are other air emissions they need to be addressed in the "Air Quality Management Plan";
- the potential of rainwater contamination caused by gaseous emissions could have an adverse effect on residents livelihood and their health, especially as not all properties in the district have mains water to their homes, and use a combination of rainwater and bore water;
- dispersion of air pollution across the region by strong winds that commonly occur in the area; and
- the impact of gaseous emissions on asthmatics, especially children at the local school.

Assessment

The area considered for this environmental factor is the LWTF site and surrounding areas including the proximity of the nearest resident being approximately 450 metres from the site.

Issue	EPA Objectives
Air Quality	With due consideration of neighbouring sources and background concentrations, to ensure that gaseous emissions from the plant in isolation and in combination from neighbouring sources and background concentrations: • meet the air quality standards and limits stated in relevant air quality standards/guidelines, including the NEPM for Ambient Air Quality (with advice sought from the EPA on relevant standards and guidelines and specific pollutants as necessary); • do not cause an environmental or human health/amenity problem; and • meet the requirements of section 51 of the *Environmental Protection Act 1986*, to take all reasonable and practicable measures to minimise all discharges.

Air Emissions

The EPA understands that:

- there would be no process gaseous emissions;
- some fugitive emissions would occur; and

- emissions would occur in the unlikely event of a fire.

The proposed activities at the hydrometallurgical and pyrometallurgical plants would be managed to ensure that no adverse off-site impacts would occur. The management of these plants include the following;

- performance of the processes in the hydrometallurgical plant in enclosed vessels to reduce the potential for release of emissions to the environment. Commonly, this process has no gaseous or fugitive emissions; and
- location of the pyrometallurgical plant within a sealed building with particulate matter emissions controlled through a fume ducting system.

Risk assessments (DNV, 2001; ASHE, 2001) have identified the following credible accident scenarios that would potentially have off-site consequences:

- a PERC pool fire in the proposed solvent extraction plant; and
- a fire in the Dangerous Goods storage area.

A PERC fire would result in the emission of hydrochloric acid, phosgene and other numerous by-products in trace amounts. The off-site risk of phosgene and other by-products was not considered by the proponent to be significant. The EPA has recommended (refer Appendix 4) that environmental approval excludes the acceptance of PERC including the solvent extraction plant as this plant would have largely treated PERC which can be treated by another approved licenced facility.

A fire in the Dangerous Goods store would result in emissions of numerous by-products. However, a qualitative injury risk assessment concluded that the injury risks are not significant (refer to Section 4.3).

Rainwater Contamination

This issue is addressed in Section 4.1 Community Health.

Dispersion of Air Pollution

Since there are no process gaseous emissions, the off-site concentrations of fugitive emissions are expected to be negligible, and modelling of the dispersion of hydrochloric acid in the atmosphere from the Dangerous Goods store accident scenario indicates concentrations to be within acceptable limits, the EPA considers that strong easterly winds will not result in spread of pollution in the region.

Impact on Asthmatics

The Department of Health has provided advice that the commitments from the proponent and the proposed Environmental Conditions are considered adequate to prevent emissions that might impact on the health of the community.

Summary

The proponent has sufficient existing procedures in place together with the Consolidated Environmental Management Commitments provided in Appendix 4 to ensure that the risk to community health from implementation of the proposal is minimal.

The EPA has assessed this proposal and has concluded that overall it can be managed to meet the EPA's objectives and does not impose unacceptable risks to community health and public safety. However, taking into account the historical context and social surrounds, the EPA is of the view that the proposal should be subject to

modifications set out in its recommendations and recommended Environmental Conditions presented in Appendix 4 of this report, including a time limit of approval.

The modifications recommended by the EPA excludes from this proposal:

- PERC as soon as practicable but no later than 28 February 2002;
- PCBs as soon as practicable but no later than 28 February 2002;
- chlorinated pesticides as soon as practicable but no later than 30 June 2002;
- acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) as soon as practicable but no later than 30 June 2002; and
- the remainder of the hazardous liquid waste pursuant to this proposal as soon as practicable but no later than 31 December 2003.

It is the EPA's opinion that this environmental factor can be managed to meet the EPA's objectives, but taking into account the historical context and social surrounds, any approvals granted should have the effect of modifying the proposal.

4.3 Public Risk and Safety

Description

Applicable standards, guideline, procedures and licences are as follows:

- the storage of Dangerous Goods at the LWTF is regulated under licence by the Department of Minerals and Petroleum Resources (DMPR);
- Risks and Hazards of Industrial Developments on Residential Areas in Western Australia, Bulletin 278 (EPA, 1987);
- Criteria for the Assessment of Risk from Industry, Bulletin 611, (EPA 1992a), and expanded discussion Bulletin 627, (EPA 1992b);
- National Standard and National Code of Practice for the Control of Major Hazard Facilities (WorkSafe Australia, 1996); and
- Guidance for Risk Assessment and Management: Offsite Individual Risk from Hazardous Industrial Plant. Guidance for the Assessment of Environmental Factors, No 2, July 2000 (EPA 2000).

Submissions

Main comments raised in submissions focused on:

- the facility will be handling "hazardous" chemicals;
- consideration of other potential off-site impacts of hazardous events other than risk of fatality;
- potential fire and/or explosion accident scenarios have the potential to impact to a distance of 1500 metres;
- proponent to provide for effective emergency procedures such as a quick and safe evacuation of children from the school in case of an accident, and that the proponent pays for all emergency provisions:
- concern for the safety of the near-by school, if a fire occurred;
- an appropriate fire safety plan is considered necessary; and

- unidentified dangerous goods are located in the receival areas. They should be processed as soon as possible before business closing occurs, or plant should be staffed on a 24-hour basis.

Assessment

The area considered for this environmental factor is the LWTF site and surrounding areas including nearest residence being approximately 450 metres from the site.

Issue	EPA Objective
Public Risk and Safety	To ensure that risk is managed to meet the EPA's criteria for individual fatality risk off-site, to ensure that the risks associated with the plant are as low as reasonably practical and comply with acceptable standards, and that the DMPR's public safety requirements with respect to plant operations, are met.

"Hazardous" Chemicals

The EPA notes that in response to questions generated from submissions, the proponent has made it clear that there would be no radioactive or explosive wastes accepted at the LWTF.

The proposal excluding modifications recommended by the EPA would result in acceptance and management of hazardous liquid chemicals that were previously not permitted to be accepted at the site. These chemicals are chlorinated organic chemicals (classified as Group A chemicals in licence), ancillary organic chemicals (Group B) and flammable liquids (Group D).

Fatality Risk

Level 1 risk assessments (ASHE, 2001b) were undertaken for the plant to assess if hazards identified can have any significant consequences. There assessments included a hazard identification study. This considered those hazards with potential to impact on surrounding area and population. It concluded that a more detailed risk assessment should be undertaken and that the potential for off-site impacts from the solvent extraction plant processes were identified.

A level 2 risk assessment ("Consequence Analysis") (ERS, 2001a) was undertaken on the solvent extraction plant processes. It was concluded from this assessment that potential off-site impacts could be readily managed to reduce impacts to the nearest resident.

As part of the response to submissions, a Level 3 risk assessment ("Quantitative Risk Assessment") (ERS, 2001b) of the proposed solvent extraction plant processes was undertaken to assess the levels of risk associated with the plant. The assessment concluded that the predicted individual fatality risk associated with the release of gases from a pool fire in close proximity to the plant is one in a hundred million. Consequently, the following EPA fatality risk criteria are met for this scenario:

- one in a million per year in residential areas; and
- ten in a million per year in buffer areas between industrial facilities and industrial areas.

Although, fire or explosion in the Dangerous Goods storage area was identified as a credible scenario (DNV, 2001), fatality was not identified as a potential consequence. Regulations within the *Dangerous Goods (Transport) Act 1998*, managed by DMPR,

control the storage and handling of hazardous and flammable goods on site. Compliance with the requirements of the Dangerous Goods Regulations will limit any risk posed by this aspect of operation of the facility.

Injury Risk

Off-site injury could potentially result from:

- heat radiation from fire;
- overpressure from an explosion; and
- health effects from toxic releases.

A qualitative injury risk assessment (ERS, 2001c) identified only the following credible scenarios that may have the potential to cause off-site injury:

- fire, explosion and toxic releases, Dangerous Goods storage area; and
- fire and toxic release, PERC fire in the solvent extraction plant.

The injury risk assessment concluded that the level of off-site injury risk from these two credible scenarios are not considered significant provided that:

- storage and handling of Dangerous Goods is undertaken in accordance with DMPR licence conditions;
- the existing 450metre buffer zone is maintained; and
- the existing Emergency Response Plan (ERP) is further developed and implemented (refer Appendix 4 – Proponent's Consolidated Environmental Management Commitments).

Emergency Response Planning

Emergency response action would be taken to minimise the potential for fire-fighters, on-site personnel or off-site persons being exposed to heat radiation, smoke and toxic release.

The existing ERP for the LWTF forms an integral component of the Occupational health and Safety Management System, and has been in operation since the LWTF was commissioned. The existing plan allocates the roles, responsibilities and actions required responding to emergency situations.

The proponent has committed to reviewing and updating the existing ERP to include proposed new processes and plant equipment. These commitments were significantly revised following consultation with the Fire and Emergency Services Authority (FESA). The revised commitments were presented in the proponent's response to submissions.

The revised commitments include:

- protection of the welfare and amenity of the community; and
- appropriate consultation with FESA and the community during preparation of off-site emergency plans.

Summary

The proponent has sufficient existing procedures in place together with the Consolidated Environmental Management Commitments provided in Appendix 4 to

ensure that the risk to community health from implementation of the proposal is minimal.

The EPA has assessed this proposal and has concluded that overall it can be managed to meet the EPA's objectives and does not impose unacceptable risks to community health and public safety. However, taking into account the historical context and social surrounds, the EPA is of the view that the proposal should be subject to modifications set out in its recommendations and recommended Environmental Conditions presented in Appendix 4 of this report, including a time limit of approval.

The modifications recommended by the EPA excludes from this proposal:

- PERC as soon as practicable but no later than 28 February 2002;
- PCBs as soon as practicable but no later than 28 February 2002;
- chlorinated pesticides as soon as practicable but no later than 30 June 2002;
- acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) as soon as practicable but no later than 30 June 2002; and
- the remainder of the hazardous liquid waste pursuant to this proposal as soon as practicable but no later than 31 December 2003.

Having particular regard to:

- the outcomes of the risk assessments conducted; and
- there would be sufficient measures and controls in place to minimise risk of the LWTF to the community,

it is the EPA's opinion that this environmental factor can be managed to meet the EPA's objectives, but taking into account the historical context and social surrounds, any approvals granted should have the effect of modifying the proposal.

4.4 Alternatives

Description

The LWTF currently operates a Biological Waste Treatment and an Industrial Waste Treatment Plant.

Proposed changes to the current waste acceptance criteria would allow the LWTF to accept a wider range of hazardous liquid wastes including chlorinated organic chemicals, other organic chemicals, flammable liquids, and acids and alkalis with pH's outside 2-12.

As per the request of the EPA the a 'Gap Analysis, Options for the Management of Wastes Deemed Hazardous' was undertaken by WMWA to identify alternative sites for either:

- recycling or treatment of hazardous liquid wastes to allow for safe disposal to sewer or approved landfill; or
- repackaged for transport to appropriate facilities within Australia for treatment or disposal.

The results of the 'Gap Analysis, Options for the Management of Wastes Deemed Hazardous' are presented in Table 2.

Submissions

Main comments raised in submissions focused on:

- residents had previously been given assurances that the facility would be scaled down by 2002;
- feeling that the LWTF is in too close a proximity to their homes and sensitive areas. The residents feel there must be a more appropriate site for this particular type of LWTF;
- suggestions that the planned waste to energy and water plant at Kwinana (GOWA) would have more than sufficient space to accommodate a waste treatment plant within its grounds;
- it would be more viable to use the GOWA plant, as there is already a considerable roadway network (as well as a train line) to Kwinana Industrial area for heavy trucks;
- feelings that it would be more appropriate to process the toxic liquid waste at GOWA or other alternative in the Kwinana area as this is already a suitably zoned area, with all the necessary buffer zones etc;
- suggestions that Toxfree, ERS and Western Resources could be viable alternative sites;
- Green Enviro Technologies Pty Ltd feel they can provide a viable, safe and environmentally the soundest option available for waste treatment as their technology is at the cutting edge of waste solutions. They are the license holders in Australia for the Pyromex Waste to Energy Technologies which they believe answer all the problems emanating from the LWTF; and
- the CER should include a cost/benefit analysis of the proposal and of alternative sites in order to make a valid comparison of the changes and risks involved.

Assessment

The area considered for this environmental factor is the LWTF site and surrounding areas including nearest residence being approximately 450 metres from the site.

Issues	EPA Objective
Alternatives	Justification and objectives for the proposed development be given with due consideration of alternative options.

The 'Gap Analysis, Options for the Management of Wastes Deemed Hazardous' identifies the following wastes for which other alternatives are expected to be available. These wastes are:

- PCB's, chlorinated pesticides and PERC would be able to be treated by another appropriately licensed facility ; and
- acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes).

Summary

The EPA has assessed the proposal and has concluded that overall it can be managed to meet the EPA's objectives and does not impose unacceptable risks to community

health and public safety. However, taking into account the historical context and social surrounds, the EPA is of the view that the proposal should be subject to modifications set out in its recommendations and recommended Environmental Conditions presented in Appendix 4 of this report, including a time limit of approval.

The modifications recommended by the EPA excludes from this proposal:

- PERC as soon as practicable but no later than 28 February 2002;
- PCBs as soon as practicable but no later than 28 February 2002;
- chlorinated pesticides as soon as practicable but no later than 30 June 2002;
- acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) as soon as practicable but no later than 30 June 2002; and
- the remainder of the hazardous liquid waste pursuant to this proposal as soon as practicable but no later than 31 December 2003.

The EPA further concludes that the Minister for the Environment and Heritage should request that Waste Management WA inform her every three months of those hazardous liquid wastes which can be accepted by other facilities in Western Australia as part of a progressive decommissioning of the hazardous liquid wastes components accepted at the LWTF.

Government and the waste industry should actively work towards finding solutions to the waste streams for which no other facility is currently available to accept them.

4.5 Surface water quality

Description

The area considered for assessment of this relevant environmental factor is the Wungong Brook (and accordingly the Southern River), and soaks and damplands within one kilometre of the LWTF. This is the area where surface water quality could be affected by the operations of the LWTF.

It is proposed that the existing surface water management practices continue. The main practices are:

- collection of facility run-off, including run-off from roadways, in the stormwater catchment system;
- discharge of water in the stormwater collection system into the stilling/detention basin;
- evaporation of stormwater from the stilling/detention basin or pumping it back to the perimeter ditch drain;
- pumping of liquids of unacceptable quality collected in the basin, back into the treatment plant;
- sealing and bunding of areas containing storage vessels and process areas as required by the EPA;
- collection of four samples from on-site surface water sites (drains and stilling basins) quarterly, analysis for contaminants and reporting of results annually to the EPA. If the results indicate contaminants above Guideline Values in the samples collected, these are to be reported immediately to the EPA; and

- collection of surface water run-off from the area surrounding the outside of the Facility in the perimeter ditch drains and piping the collected surplus water to the Forrestdale Main Drain.

Submissions

Comments made in submissions focused on:

- collection of the surface water run-off from the area surrounding the plant in the perimeter ditch drains being unsatisfactory because it could allow contaminated overflow water from the site into the Southern River via the Forrestdale Main Drain;
- overflow of the detention/stilling ponds causing contamination of surface or groundwater;
- overspill of bunds in the hardstand areas, as a result of heavy rainfall causing contamination of surface or groundwater;
- contamination of the Swan and Canning Rivers from an accidental spillage via the stormwater system. The quality criteria for phosphorus and nitrogen in surface water leaving the site should be revised to meet the tasks sought by the Swan-Canning Cleanup Program; and
- the potential for contamination of surface water to have a negative effect on the Declared Rare Flora and Priority Flora populations that are located on adjacent land to the west and northwest of the LWTF.

Assessment

The area considered for assessment is any area that could be reasonably affected by surface water flow from the site.

Issue	EPA Objective
Surface Water Quality	Quality of surface water is maintained in accordance with the requirements of the draft Western Australian Water Quality Guidelines for Fresh and Marine Waters (EPA Bulletin 711).

The EPA's objective in regard to this environmental factor is to ensure that WMWA continues to implement and upgrade sound design and management practices to avoid contamination of surface water from the plant's operations.

The site's Emergency Management System (EMS) contains details of strategies to prevent or respond to incidents that may impact on surface waters originating on the site or became contaminated by transport related spillages. The EMS contains a component relating to the regular inspections of the integrity of the drainage system in operational procedures. Other sections of the EMS relate to the reporting of incidents and prescribe clean-up procedures and protocols.

Fire and Emergency Services (FESA) has advised that the proponent should obtain independent confirmation that firewater containment mechanisms are adequate to limit the impact of firewater on the environment. Procedures to address containment of firewater will be detailed in the Emergency Response Plan in accordance with the revised Commitment 5.4 presented in Appendix 4.

Discharge of liquid waste from the site is to the sewer. The potential for contamination of surface waters is therefore, restricted to accidental spillage during transport of liquid waste or from an unlikely 'overflow' event from the

detention/stilling pond. The proponent advises that there has never been an overflow event observed or recorded from this facility, as accumulated stormwater is pumped back to the facility.

The Water and Rivers Commission inspected the stormwater management system at the LWTF on 18 October 2001. It was confident that the existing stormwater management system and the proposed modifications would ensure that the risk of contaminants being washed from the site is very low.

Public submissions expressed concerns over the potential for surface water contamination due to transport accidents. However, the CER identified that both the frequency of incidents and the likelihood of environmental consequences, such as surface water contamination, was minimal because there would not be a significant increase in truck traffic. The modifications recommended by the EPA would result in a reduction in truck movements.

In the case of an accidental spill of waste during transport, the EMS would be enacted to minimise the risk of contamination.

Drains are located on both sides of Forrest Road. If a major spill occurred on Forrest Road, surface runoff would drain via Bailey's Branch Drain and the Main Forrestdale Drain into Southern River, some 8km to the north. In case of a spill an emergency response component of the EMS would be initiated to prevent the spill from entering the waters to the Southern Rivers via Wungong Brook.

There has also been concern that surface water contamination could have grave implications for the Forrestdale Lake. However, as the lake is an expression of the groundwater table, and is not fed by surface drainage, the potential for contamination of lake-waters is negligible.

There have been recent improvements and upgrades to the bunds surrounding some of the off-specification tanks and Environmental Services areas. These improvements have also reduced the potential for contamination of surface water. The storage vessels are placed far enough from the edge of the bund to ensure that any vessel overflow will not discharge outside of the bunded area; and bunded and storage areas all drain into sealed drainage sumps. These sumps contain automatically operated pumps, which direct contaminated liquids back into an appropriate part of the waste treatment facility.

The LWTF has been designed to contain on-site spills with existing storage process areas utilising a number of mechanisms including bunding and sealing and automatically operated sump pumps. This will protect the environment even if a leak were to occur and continue unnoticed for a period of time (eg. over the weekend). Additionally, all surface water on the Brookdale LWTF is collected in the stilling basin. This minimises the risk of contaminated surface water leaving the site. Consistent with the continual improvement management strategy adopted for the facility, implementation of this proposal will result in a further upgrade of the drainage management system.

There has been concern from the Brookwood Community Association relating to the quality criteria for phosphorus and nitrogen in surface water leaving the site. Current licence conditions criteria require the quality of surface waters leaving the site are those specified within the *Australian Water Quality Guidelines for Marine and Fresh Water* (Australian and New Zealand Environment and Conservation Council, 1992).

Summary

Having particular regard to:

- reviews of monitoring data and accident notifications indicate there has been minimal impact on surface water;
- the continual implementation of the LWTF's EMS to limit off-site impacts to surface waters through procedures and protocols relating to maintenance, event notification, spillage reporting and response; and
- facility equipment, operations and procedures are updated as a component of continual improvement within the proponents commitments,

it is the EPA's opinion that this environmental factor can be managed to meet the EPA's environmental objective.

4.6 Groundwater quality

Description

The area considered for assessment of this relevant environmental factor is groundwater beneath the site and down hydraulic gradient, both within and outside the LWTF site boundaries.

Generally groundwater occurs within 1.5m of the surface at the facility. The superficial aquifer is not used for potable supply, nor does it fall on the Jandakot Mound recharge area, although some local abstraction for domestic irrigation is known to occur.

It is proposed in the CER that:

- all storage vessels and process areas within the plant are sealed and bunded as required by the EPA;
- existing procedures would continue to be used to maintain spill prevention and control facilities in order to minimise the risk of spillages;
- as with the existing operations, there would be no irrigation of effluent or disposal of sludge on the site and treated liquid effluent, including process liquors, would be discharged to the Water Corporation sewer in accordance with Water Corporation discharge limits;
- as with the existing operations, dewatered sludge would be transported in trucks to a DEP licensed landfill;
- the existing groundwater monitoring programme would be expanded to include a total of 20 groundwater-monitoring bores;
- sampling of the bores be undertaken every six months and the samples analysed for a range of chemical compounds and water quality parameters; and
- the results of the groundwater monitoring be reported to the EPA annually, however, if the results indicate contaminants above Guideline Values in the samples collected the results are to be reported immediately to the EPA.

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Submissions

Comments made in submissions focused on:

- concern about the ramifications of groundwater contamination on surrounding community's health and livelihood. Especially, as number of the people in the community use bores to water their gardens, vegetable gardens and fruit trees and use bore water as drinking water for livestock;
- the negative affect on the Declared Rare Flora and Priority Flora populations, which are located on land to the west and northwest of the LWTF, should groundwater contamination occur;
- the CER mentions that the detention/stilling basin is lined with limestone, and some seepage occurs. Public submission stated that:
  - this is not acceptable, as remediation of groundwater contamination is very difficult , and very expensive;
  - monitoring of groundwater to detect contamination after it has occurred is not acceptable; and
  - more effective measures are needed to avoid the possibility of such contamination from seepage.

Assessment

The area considered for assessment of this relevant environmental factor is groundwater beneath the site and down hydraulic gradient, both within and outside the LWTF site boundaries.

Issue	EPA Objective
Groundwater quality	Quality of groundwater is maintained in accordance with the requirements of the draft Western Australian Water Quality Guidelines for Fresh and Marine Waters (EPA Bulletin 711).

The EPA's objective in regard to this environmental factor is to ensure that WMWA continues to implement and upgrade sound design and management practices to avoid contamination of ground water from the plant's operations.

Implementation of the proposal would result in more regular treatment of wastes by the Environmental Services Section with corresponding enhanced utilisation of waste storage areas and larger inventories of chemicals used for treatment.

Since the wastes are stored and processed in above ground tanks located in lined and bunded areas leaks would be contained. The concrete bunds provides ample secondary containment until the spill could be cleaned up. The possibility of waste entering the groundwater below the site in these areas is thus extremely unlikely.

The detention/stilling basin has been constructed as a precautionary measure only. The plant has been designed and operated to ensure that stormwater, with the potential to come into contact with processes, chemicals or wastes associated with site operations, is either contained within impervious bunds draining directly into the treatment plant, or directed into drainage sumps and pumped back into the treatment process. These potentially contaminated waters are not directed to the detention/stilling basin.

The Water and Rivers Commission (WRC) inspected the site on 18 October 2001 and determined that the existing stormwater management system and proposed modifications will ensure that the risk of contaminants being washed from the site is very low.

The plant design complies with Water Quality Protection Note for Industrial Sites Near Sensitive Water Resources, published by WRC (1999).

Since the EPA audit in January 2001, the proponent has upgraded the pumping system within the drainage sumps and improved management of surface water flows, thereby further reducing the potential for contaminated surface water flows entering the detention/stilling basin.

The EPA considers that, replacement of the existing limestone lining with a very low permeable liner is not warranted because:

- the stilling/detention basin provides back-up containment system for other containment systems in process and storage areas; and
- the risk of spills occurring that would result in contaminated water flowing into the basin is very low.

Summary

Having particular regard to:

- proponents commitments to continue upgrading of bunding and pipe work to further reduce the risk of spillage, and subsequent deterioration of groundwater quality;
- the groundwater monitoring programme; and
- successful remediation of past contaminated areas,

it is the EPA's opinion that this environmental factor can be managed to meet the EPA's environmental objective.

5. Conditions and commitments

Section 44 of the *Environmental Protection Act (1986)* requires the EPA to report to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal and on the Environmental Conditions and Procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

In developing recommended Environmental Conditions for each project, the EPA's preferred course of action is to have the proponent provide an array of commitments to ameliorate the impacts of the proposal on the environment. The commitments are considered by the EPA as part of its assessment of the proposal, and following discussion with the proponent, the EPA may seek additional commitments.

The EPA recognises that not all commitments are written in a form which makes them readily enforceable, but they do provide a clear statement of action to be taken as part of the proponent's responsibility for, and commitment to, continuous improvement in environmental performance. The commitments, modified if necessary to ensure enforceability, then form part of the Environmental Conditions to which the proposal should be subject, if it is implemented.

5.1 Proponent's commitments

The Proponent's commitments as set out in the CER and subsequently modified, as shown in Appendix 4, should be made enforceable.

5.2 Recommended Conditions

Having considered the proponent's commitments and information contained in this report, the EPA has developed a set of Environmental Conditions which the EPA recommends be imposed if the proposal by WMWA is approved for implementation. These Environmental Conditions, which would significantly modify the proposal, are presented in Appendix 4. Matters addressed in the Environmental Conditions include:

(a) the proponent shall fulfil the proponent's commitments as set out as an attachment to the recommended Environmental Conditions in Appendix 4;

(b) the environmental approval for this proposal excludes:

- PERC as soon as practicable but no later than 28 February 2002;
- PCBs as soon as practicable but no later than 28 February 2002;
- chlorinated pesticides as soon as practicable but no later than 30 June 2002;
- acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) as soon as practicable but no later than 30 June 2002; and
- the remainder of the hazardous liquid waste pursuant to this proposal as soon as practicable but no later than 31 December 2003;

(c) the Minister for the Environment and Heritage should request that Waste Management WA inform her every three months of those hazardous liquid wastes which can be accepted by other facilities in Western Australia as part of a progressive decommissioning of the hazardous liquid wastes components accepted at the LWTF.

6.0 Other advice

The EPA recognises the community's overwhelming desire for the plant to be closed or relocated.

The EPA also recognises that some members of the public were of the understanding from a consideration of information given by officers of the former Office of Waste Management (whose role is now undertaken by Waste Management WA) at a public meeting in 1994 and subsequent information by the then Acting Director of Waste Management in writing (unsigned) on 13 September 1994 (Appendix 1) that:

- the current contracts for the plant extend to 2002;
- at that stage the plant would revert solely to Government control and a decision would be made as to its future;
- owing to the expected decline in septage delivered to the plant, it was likely that the septage plant would be closed or require substantial modification;
- there was a possibility that the government may opt to close the plant at the end of the current contract because of the increasing pressure on the buffer zone around the site; and

- it was unlikely that the government would be enthusiastic about making substantial capital investment on the site.

This information does not constitute Government Policy, of the day, but it does provide a focus for community interest.

Although the EPA has concluded that overall the proposal can be managed to meet its objectives, there is a broader issue:

- the LWTF was originally designed to deal with septage waste; and
- the Office of Waste Management (whose role is now undertaken by Waste Management WA) provided information in 1994 that indicated that the government may be of a mind to close the plant at the end of the current contract.

The EPA is of the view that the future of the LWTF should be examined by Government in relation to the possibility of the whole facility being decommissioned in a timely manner. It would not be appropriate for an approval of the current proposal to facilitate the long term operation of an expanded function at the LWTF.

7. Conclusions

The EPA has been very conscious that some of the current activities at the LWTF fall outside the approved Environmental Conditions but that those activities have been endorsed to the extent that, pursuant to section 48(4) of the *Environmental Protection Act,* the Minister did not direct that they should cease. As part of its enquiry, the EPA sought information from the proponent in relation to other facilities available to treat hazardous liquid waste substances not covered by the Environmental Conditions. This information indicates that for some of the hazardous material there are no other facilities currently available.

The EPA has undertaken its assessment of the proposal in difficult circumstances noting that:

- the activities for which approval is being sought are mostly already being undertaken;
- there appears to be no other facilities available in the State to receive or treat some of the wastes involved;
- the public has a strong view that rather than the facility being allowed to expand its activities on an on-going basis, it should be relocated; and
- if the proposal is not approved, the facility still has approvals to operate as a non-hazardous liquid waste treatment facility.

The EPA has assessed the proposal and has concluded that overall it can be managed to meet the EPA's objectives and does not impose unacceptable risks to community health and public safety. However, taking into account the historical context and social surrounds, the EPA is of the view that the proposal should be subject to modifications set out in its recommendations (Section 8) and recommended Environmental Conditions presented in Appendix 4 of this report, including a time limit of approval.

The modifications recommended by the EPA include:

- no acceptance after 28 February 2002 of polychlorinated biphenyls (PCB) and

perchloroethylene (PERC) as these can be treated by another approved licensed facility;

- no solvent extraction plant, noting that this plant would have primarily treated perchlorethylene (PERC), as well as other solvents; and
- no acceptance after 30 June 2002 of acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes), as these can be treated by another approved licensed facility.

A proposed biodiesel plant is mentioned in the CER document and the response to submissions but the proponent has stated to the EPA that it is not part of the proposal.

Although the EPA has concluded that overall the proposal can be managed to meet its objectives, there is a broader issue:

- the LWTF was originally designed to deal with septage waste; and
- the Office of Waste Management (whose role is now undertaken by Waste Management WA) provided information in 1994 that indicated that the government may be of a mind to close the plant at the end of the current contract.

The EPA is of the view that the future of the LWTF should be examined by Government in relation to the possibility of the whole facility being decommissioned in a timely manner. It would not be appropriate for an approval of the current proposal to facilitate the long term operation of an expanded function at the LWTF.

Noting that the information provided by the proponent identifies particular wastes for which no other alternative is currently available, the EPA recommends that the LWTF be given a limited approval to 31 December 2003, in relation to hazardous liquid waste, so as to provide an opportunity for Government and the waste industry to work together to make alternative arrangements.

The EPA further concludes that the Minister for the Environment and Heritage should request that Waste Management WA inform her every three months of those hazardous liquid wastes which can be accepted by other facilities in Western Australia as part of a progressive decommissioning of the hazardous liquid wastes components accepted at the LWTF.

Government and the waste industry should actively work towards finding solutions to the waste streams for which no other facility is currently available to accept them.

8. Recommendations

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

1. That the Minister notes:

(a) that the proposal being assessed is to change some plant processes and waste acceptance criteria at the Brookdale Liquid Waste Treatment Facility;

(b) that the proposal does not include solid wastes except for those included in the definition of liquid wastes, nor does the proposal include radioactive or explosive wastes and

(c) that the current treatment of non-hazardous materials, carried out under existing

approvals, are not the subject of this proposal.

2. That the Minister notes that she issued a Direction pursuant to s110N(1) of the *Environmental Protection Act* that no waste is to be received at the LWTF outside existing approvals (including any approvals given as a result of this report) as from 28 February 2002.

3. That the Minister considers the report and relevant environmental factors as set out in Section 4 of this report.

4. That the Minister notes that the EPA has concluded that overall this proposal can be managed to meet the EPA's objectives and does not impose unacceptable risks to community health and public safety, but that it should be subject to modifications set out in Recommendation 6.

5. That the Minister notes that, notwithstanding Recommendation 4, the EPA has concluded that it would not be appropriate for implementation of the proposal to allow for the long term operation of an expanded function (hazardous liquid wastes) at the LWTF.

6. That the Minister excludes environmental approval from this proposal:

(a) PERC as soon as practicable but no later than 28 February 2002;

(b) PCBs as soon as practicable but no later than 28 February 2002;

(c) chlorinated pesticides as soon as practicable but no later than 30 June 2002;

(d) acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) as soon as practicable but no later than 30 June 2002; and

(e) the remainder of the hazardous liquid waste pursuant to this proposal as soon as practicable but no later than 31 December 2003.

7. That the Minister notes that if the modifications set out in Recommendation 6 are adopted, the quantity of bulk hazardous liquid waste proposed to be received by the LWTF would be substantially reduced, as from 28 February 2002, from a rate of approximately 4 600 – 6 000 tonnes per year as documented in the proponent's CER to a rate of approximately 600 tonnes per year as notified by the proponent in writing on 21 December 2001. This quantity of hazardous liquid wastes would be progressively reduced to zero no later than 31 December 2003.

8. That the Minister excludes environmental approval from this proposal of the solvent extraction plant, noting that this plant would have primarily treated perchlorethylene (PERC), as well as other solvents.

9. That the Minister requests the proponent to report to her every three months on progress towards giving effect to Recommendation 6.

10. That the Minister gives consideration to the future of the LWTF in the context of waste management planning.

11. That the Minister imposes the Environmental Conditions and Procedures recommended in Appendix 4 of this report.

APPENDIX 1

Letter from Office of Waste Management

dated 13 September 1994

APPENDIX 2

List of submitters

State and local government agencies:

Conservation and Land Management (CALM)

Chamber of Commerce and Industry, WA

City of Armadale

Department Environmental Protection

Department of Mineral and Petroleum Resources

Department for Planning and Infrastructure

Education Department of Western Australia

Fire and Emergency Service Authority

Health Department of Western Australia

Serpentine Jarrahdale Shire

Water and Rivers Commission

Western Power

Organisations:

Brookwood Community Association

Conservation Council of Western Australia

Environment Centre of Western Australia

Friends of Forrestdale

Forrest Community Association Inc

Forrestdale Community Association

Green Enviro Technologies Pty Ltd

Nufarm

Oakford Oldbury Community Association Inc.

Palomino Reserve Catchment Group

Pollution Action Network

PEET

Westfarmers CSBP Limited

Wetlands Conservation Society Inc

Members of the Public:

Mr J Chambers

Ms J Cullen

Ms M Eade

Mrs CA DeMeo

Mr John DeMeo

Ms S Brown

Mr S Browning

Mr A Mills

Fidela

Mr I MacInnes

L. Crotty

B Mairm

Ms N Peters

Ms W Hannaby

G. Westerlda

S Westerlda

L. Hudson

T Curnow

C, G and T Fontana

KM Turley

Mr V Fontana

G Holler

D Menzies

Ms R Dunston

Ms C. Green

Ms D Brunning

Ms J. Graham

Ms P Graham

Mr CD Mulentty

Mr K Parker

J &A Brunning

Mr R Mance - A/Director General, Education Department WA

Ms S Greene

Mr R Serson – Principal, Good Shepherd School

Ms E Clark

Ms A Gibbins

Mr G Edwards - Environment Centre of WA

Ms J Tiley

MB Porter

NRJ Porter

MT Nield

Mrs D Annett- Stuart

Mrs S McBride

Mr K Murphy - Oakford Oldbury Community Association Inc.

Ms D Kelly

Ms R Wither

Mr R and Ms J Bogoni

Ms F Guetlich

Ms A Carelton

Ms N Thornett

Mr I Cain

Mr B Sutton

Mrs K Scott

Mr LE Scott

Regan Family

Mr and Mrs M Smith

Ms D Fletcher

SN, A, M, and RM D'Orazio

Wilson Family

Mr F Kazimierezak

Mr and Mrs CK Irvine

Mrs A Peirce and Family

Mr B and Mr M Lockwood

Mr W Love

Mr JE and Mrs VM Powell

Mr RA and Mrs OE Barker

JA Dayton

Mr and Mrs J Green

Mr A and Mrs J Bogoni

Mr E McKay

Mr and Mrs DR Fowler

JM West

W and R Napier

Mr I Simpson

Mr Mendez - Assistant Project Manager, PEET

Dr R Giblett - Friends of Forrestdale

Ms S Mintey

Mr D Walsh

Ms M Easton

Mr M Russell – Director, Department of Mineral and Petroleum Resources

Ms ML Clarke

Ms G Cranfield

Mr D and Mrs M Waston

Mr R Clarke - Brookwood Community Association

Ms D Southam - Secretary, Forrest Community Association Inc

Mr M Nield

L Packham

Mr C Schuster – CSBP

Mr B Devine - Principal Environmental Health Officer, Department of Health

Mr G Davis - Program Manager Land Use Planning, Water and Rivers Commission

D and BC Giles

Mr KD and Mrs EJ Blanchard

Mrs A Smith

D James and B Fremlin

Mrs M Loyd

Mr K McNamara - A/Executive Director, CALM

B and S McGill

Mr S Legge

Ms S Daw

Budworth Family

Mr P Donnelly - Forrestdale Community Association

R and M Dorgelo

Mr P Cullen and Ms K Walsh

Mr J Truswell - Fire and Emergency Service Authority

Ms A Carleton

Mr C. Tallentire - Conservation Council

Mr CJ Goldsmith

Mr K Downsborough

Mr N Bowden

Mr K Downsborough - Palomino Reserve Catchment Group

Ms E Barker

Mr R Griffiths - Department for Planning and Infrastructure

Mr P Jennings – President, Wetlands Conservation Society Inc.

Mr B and Mrs S Carlson

Mr A Del Marco Serpentine Jarrahdale Shire

Dr S Appleyard - Water and Rivers Commission

Mr Mahoney

Mr M Boyd

K. Orringe

Mr W.G O'Grady

N Ninkov - General Manager, Strategic Services, Western Power

I. Dunstan

A. Salter

L.G. Rowe - Chief Executive, Chamber of Commerce and Industry, W A

N. Smith

Mrs H Leach

S. Graham-Taylor -Co-ordinator, Pollution Action Network

Ms K Dzubiel

Mr R Fitzgerald

Ms M Murphy

F Tromp -Director, Department Environmental Protection

G Fischer –Director, Green Enviro Technologies Pty Ltd

C. Lee- Manufacturing Manager, Nufarm

APPENDIX 3

References

ANZECC (1992) *Australian Water Quality Guidelines for Marine and Fresh Waters*, National Water Quality Management Strategy, November 1992.

ASHE (2001) *Safety Review of Proposed Facilities,* Cleanaway Technical Services Brookdale*,* June 2001.

DNV (2001) *Brookdale Treatment Facility Level 1 Risk Assessment*, ATA Environmental, January 2001.

EPA (1987) *Risks and Hazards of Industrial Developments on Residential Areas in Western Australia*, Environmental Protection Authority Bulletin 278, May 1987.

EPA (1992a) *Criteria for the Assessment of Risk from Industry*, Environmental Protection Authority Bulletin 611, May 1992.

EPA (1992b) *Criteria for the Assessment of Risk from Industry - Expanded Discussion*, Environmental Protection Authority Bulletin 627, May 1992.

EPA (1993) (Draft) *WA Water Quality Guidelines for Fresh and Marine Waters*, Environmental Protection Authority Bulletin 711, October 1993.

EPA (2000) *Guidance for the Assessment of Environmental Factors No 2 - Guidance for Risk Assessment and Management: Offsite Individual Risk from Hazardous Industrial Plant*, July 2000.

ERS (2001a) *Brookdale Waste Treatment Facility Consequence Analysis Proposed Perchloroethylene Plant*, Cleanaway Technical Services, June 2001.

ERS (2001b) *Brookdale Waste Treatment Facility Quantitative Risk Assessment,* Waste Management WA, October 2001.

ERS (2001c) *Brookdale Waste Treatment Facility Injury Risk – Qualitative Assessment,* Waste Management WA, December 2001.

Lees F.P., (1996) *Loss Prevention in the Process Industries*, 1996.

NOHSC (1996) *National Standard for the Control of Major Hazard facilities* (NOHSC: 1014), AGPS, Canberra 1996.

Waste Management WA (2001) *Proposal to Change Plant Processes and Waste Acceptance Criteria at the Brookdale Liquid Waste Treatment Facility*, Consultation Environmental Review, August 2001.

WorkSafe Australia, (1996) *Control of Major Hazard Facilities,* National Standard and National Code of Practice, Australian Government Publishing Service, Canberra.

APPENDIX 4

Recommended Environmental Conditions and Proponents Commitments

APPENDIX 4

RECOMMENDED ENVIRONMENTAL CONDITIONS

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

CHANGE TO PLANT PROCESSES AND WASTE ACCEPTANCE CRITERIA AT THE BROOKDALE LIQUID WASTE TREATMENT FACILITY, CITY OF ARMADALE

Proposal: The proposal (excluding solid wastes other than those included in the definition of liquid waste, radioactive and explosive wastes) is to allow the acceptance of a wider range of hazardous liquid wastes being:

- acids and alkalis with pH values outside the range of 2-12;
- oxidising and reducing agents that formerly required pre-treatment off-site;
- chlorinated organic chemicals;
- ancillary organic chemicals; and
- flammable liquids.

Proponent: Waste Management WA

Proponent Address: 141 St George's Terrace, PERTH WA 6000

Assessment Numbers: 1000 and 1288

Report of the Environmental Protection Authority: Bulletin 1039

The proposal referred to above may be implemented subject to the following conditions and procedures:

Procedural conditions

1 Implementation and Changes

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions of this statement.

1-2 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is substantial, the proponent shall refer the matter to the Environmental Protection Authority.

1-3 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is not substantial, the proponent may implement those changes upon receipt of written advice.

2 Proponent Commitments

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

2-2 The proponent shall implement subsequent environmental management commitments which the proponent makes as part of the fulfilment of the conditions and procedures in this statement.

3 Proponent Nomination and Contact Details

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

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

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

4 Duration of Proposal

4-1 This proposal may be implemented until 31 December 2003.

4-2 The proponent shall make application for any extension of the duration of this proposal to the Minister for the Environment and Heritage, at least six months prior to the limit of duration referred to in condition 4-1.

Environmental conditions

5 Limitations on Hazardous Liquid Wastes to be Received

5-1 The proponent shall cease to accept the following hazardous liquid wastes at the facility as soon as practicable but no later than the dates specified in each case:

- perchloroethylene - 28 February 2002;
- polychlorinated biphenyls - 28 February 2002;
- chlorinated pesticides - 30 June 2002;
- acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) - 30 June 2002; and
- the remainder of the hazardous liquid waste - 31 December 2003.

5-2 The proponent shall report to the Minister for the Environment and Heritage every three months following approval on progress towards giving effect to condition 5-1.

6 Decommissioning Plan

6-1 At least 12 months prior to the limit of duration of the proposal, referred to in condition 4-1, the proponent shall prepare a Decommissioning Plan which provides the framework to ensure that the site is left in a suitable condition, with no liability to the State, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note:

In preparation of advice to the Minister for the Environment and Heritage, the Environmental Protection Authority expects that the advice of the following agencies will be obtained:

- the Department of Health;
- the Water and Rivers Commission; and
- the Department of Mineral and Petroleum Resources.

The Decommissioning Plan shall address:

- removal of plant and infrastructure associated with the treatment or storage of hazardous liquid wastes;
- ground water quality;
- soil quality;
- remedial actions, if required; and
- rehabilitation of all disturbed areas to a standard suitable for the agreed future land use(s).

6-2 The proponent shall implement the Decommissioning Plan required by condition 6-1 until such time as the Minister for the Environment and Heritage determines that decommissioning is complete.

6-3 The proponent shall make the Decommissioning Plan required by condition 6-1 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

7 Compliance Auditing

7-1 The proponent shall prepare an audit programme in consultation with and submit compliance reports to the Environmental Protection Authority which address:

- the implementation of the proposal as defined in schedule 1 of this statement;
- evidence of compliance with the conditions and commitments; and
- the performance of the environmental management plans and programmes.

Note

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

Schedule 1

The Proposal

The proposal (excluding solid wastes other than those included in the definition of liquid waste, radioactive and explosive wastes) is to allow the acceptance of a wider range of hazardous liquid wastes being:

- acids and alkalis with pH values outside the range of 2-12;
- oxidising and reducing agents that formerly required pre-treatment off-site;
- chlorinated organic chemicals;
- ancillary organic chemicals; and
- flammable liquids.

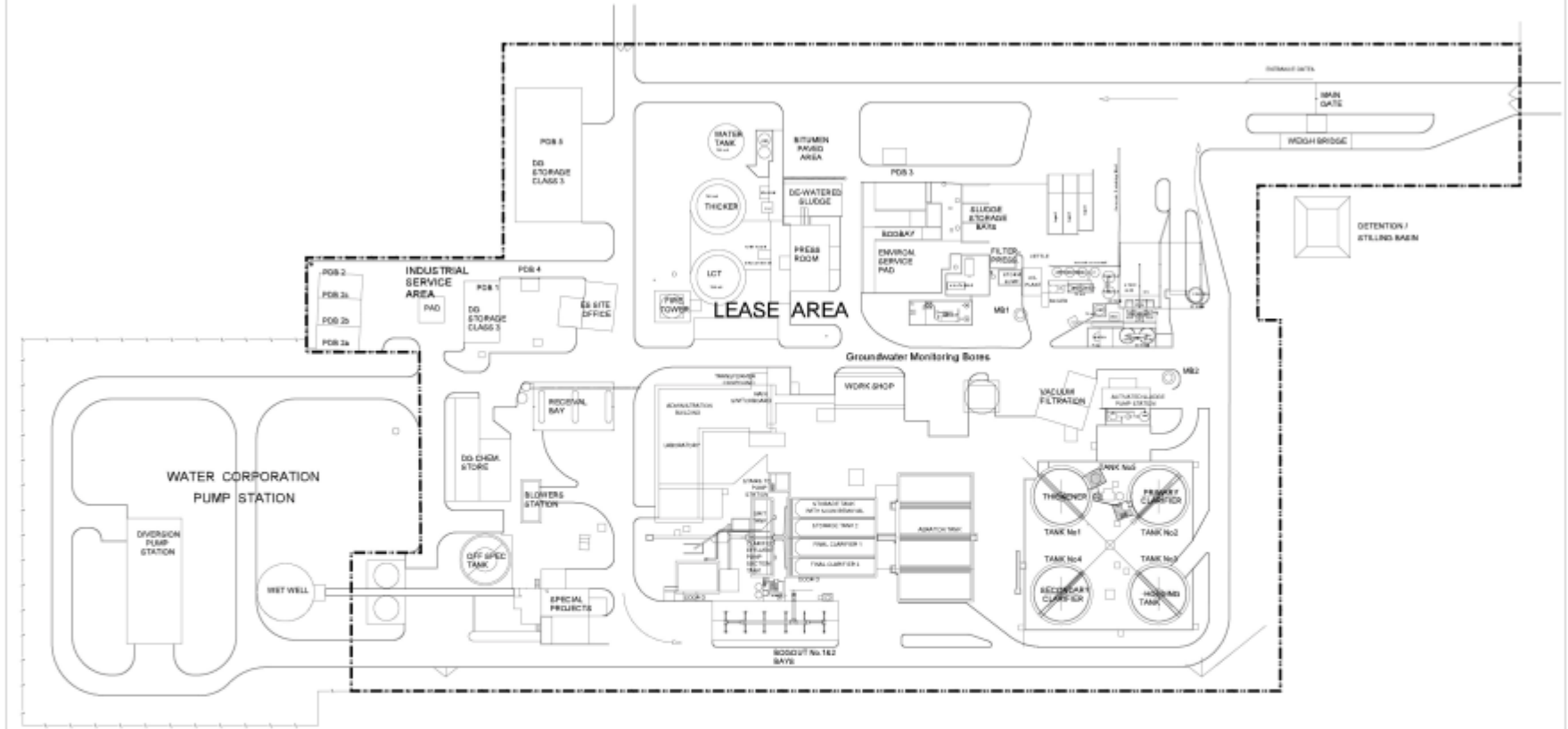
Notes:

1. A proposed biodiesel plant is mentioned in the CER document and the response to submissions but the proponent has stated to the EPA that it is not part of the proposal.
2. The solvent extraction plant is deleted from the proposal, as this plant would have primarily treated perchlorethylene (PERC), as well as other solvents.

The key characteristics of this proposal are included in Table 1 below.

Table 1 – Key Proposal Characteristics

Element	**Description**
Life of project	See Environmental Condition 4.
Area of disturbance	Lease area (refer attached Figure 4 - site layout)
Standard Plant Operation Times	Between 7am and 5pm on weekdays and between 7am and 4pm on Saturdays
Emergency Plant Operating Times	Only available in emergencies where liquid waste poses an immediate risk to the community or the environment
Waste Acceptance Times	Between 7am and 5pm on weekdays and between 7am and 4pm on Saturdays
List of Major of Components	Rotary Kiln Cyclones (3) Bag house Conveyor
Treatment Capacity	Approximately 1500 – 3000 drums (200L) of mixed waste/year Approximately 600 tonnes of bulk hazardous waste per year.
Waste acceptance	Acids, alkalis, salts and organics classed as Dangerous Goods and/or Hazardous substances in bulk or for repackaging in accordance with the Modified Waste Acceptance Criteria, where the use of this facility provides the best environmental outcome (excluding those listed in Environmental Condition 5-1).



BASE SOURCE: CLEANAWAY TECHNICAL SERVICES, 23-11-00

FIGURE 4. SITE LAYOUT

Schedule 2

Proponent's Consolidated Environmental Management Commitments

January 2002

CHANGE TO PLANT PROCESSES AND WASTE ACCEPTANCE CRITERIA AT THE BROOKDALE LIQUID WASTE TREATMENT FACILITY, CITY OF ARMADALE

Assessment Nos 1000 and 1288

WASTE MANAGEMENT WA

1. REVISED SUMMARY OF COMMITMENTS

No.	Topic	Commitment	Objective	Timing	Advice from*
1.1	Environmental Management System	Demonstrate that an Environmental Management System (EMS), certified to ISO 14001 has been implemented to manage all matters relating to environmental protection including the requirements of the Ministerial conditions, procedures and commitments. The EMS will include mechanisms and processes to ensure that: a) Implementation and organisation of actions meet environmental requirements; b) Environmental aspects and impacts are identified and appropriate management plans are implemented to manage them; c) The measurement and evaluation of environmental performance (monitoring programs) is undertaken; d) Appropriate staff training and induction in environmental matters is carried out; e) The premises will be open, except in the case of emergencies, for the receival of wastes only between the hours 7.00am and 5.00pm, on weekdays and between 7.00am and 4.00pm on Saturdays. The premises will be closed to the receival of wastes on Sundays and gazetted public holidays; f) Appropriate inventory maintenance procedures are implemented at the premises to record: • Volume; • pH; • Appearance; • Odour; • DEP classification code (as per the Environmental Protection (Liquid Waste) Regulations 1996, and Environmental Protection (Controlled Waste) Regulations 2001), of all industrial liquid wastes received at the premises. g) Incidents are reported and appropriate investigation and remedial action undertaken as required; h) Appropriate liaison with the community, including maintenance of a complaints	To have a system in place that ensures significant environmental aspects are identified and managed appropriately to meet legislative requirements and company policy which ever is the more stringent. The system should include reviews and audits to check that specified management actions are being undertaken and improved upon where possible. Note: The plant currently operating is under an EMS certified to the ISO 14001 standard.	Within twelve weeks of receiving Ministerial approval for the proposal.	

No.	Topic	Commitment	Objective	Timing	Advice from*
		monitoring system is undertaken; i) A procedure for emergency out-of hours opening is implemented; j) Noise and odour emissions are within acceptable limits; k) Management plans to cover contingencies such as equipment failure, spillages, accidents and out-of-specification waste are developed; l) Preventative maintenance is carried out in accordance with a structured program.			
1.2	Environmental Management System	Maintain the EMS (commitment 1.1).	To provide for sound and continually improving environmental management of the Facility.	Ongoing after acceptance of the Environmental Management System by the EPA.	
2	Environmental Management Program	As part of the EMS submit to the EPA an Environmental Management Program to include but not be limited to commitments 3.1 to 7.3, inclusive.	To provide a mechanism for the implementation of the EMS, identified in commitment 1.1.	Within twelve weeks of receiving Ministerial approval for the proposal.	DEP
3.1	Air Quality Management Plan	Submit to the EPA an Air Quality Management Plan that includes procedures and strategies to: a) Control odour; b) Ensure site personnel, members of the community and the environment are not adversely affected; c) Maintain a complaints register.	To identify and document specific management practices and procedures required to meet legislative and company policy requirements for the maintenance of air quality. This document is intended for use by site personnel as a procedural document.	Within twelve weeks of receiving Ministerial approval for the proposal.	DEP
3.2	Air Quality Management Plan	Make the draft Air Quality Management Plan available to the Forrestdale Plant Liaison Committee Inc for a two-week review period. Comments from the committee shall be incorporated in the final draft as deemed appropriate by the proponent and FESA.	To demonstrate that the proponent is capable of managing air quality issues and improving upon this management if weaknesses are identified.	Within twelve weeks of receiving Ministerial approval for the proposal and prior to referral to the EPA.	FPLC DEP
3.3	Air Quality Management Plan	Implement the approved Air Quality Management Plan.	To minimise impacts on the air quality at and around the facility.	Ongoing after acceptance of the Air Quality Management Plan by the EPA.	DEP

No.	Topic	Commitment	Objective	Timing	Advice from*
4.1	Water Management Plan	Submit to the EPA a Water Management Plan that includes procedures and strategies to: a) Manage surface and stormwaters; b) Monitor and protect groundwater in the area; c) Describe analytical procedures to be adopted during sampling and analysis, including collection preservation and measurement; d) Cover contingencies such as equipment failure, spillages, accidents and the management of out-of-specification wastes; e) Investigate further the groundwater contamination in the vicinity of the Number 4 Clarifier to facilitate appropriate management of the groundwater; f) Monitor and report on water from the stilling basin, groundwater and surface water according to the following schedule: **Stilling/Detention Basin** Collect, analyse and report on water from detention/stilling basin six monthly for • oil and grease. • suspended solids. • 5-day Biological Oxygen Demand. • pH • suspended solids • heavy metals. (silver, mercury, arsenic, cadmium, chromium, cobalt, copper, lead, molybdenum, tin, zinc and nickel). • organochlorines. **Groundwater** EPA designated monitoring bores are sampled every 6 months and analysed for: • pH; • metals; • Electrical conductivity (in S/m);	To identify and document specific management practices and procedures required to meet legislative and company policy requirements for the maintenance of water quality. This document is intended for use by site personnel as a procedural document.	Within twelve weeks of receiving Ministerial approval for the proposal.	DEP

No.	Topic	Commitment	Objective	Timing	Advice from*
		• Total inorganic nitrogen; • Total phosphorus; • Organochlorines; • Total cyanide; • Groundwater levels; • Hydrocarbons. **Surface Water** Collect, analyse and report on water from the surface water monitoring locations SP1, SP2, SP3 and SP4 quarterly for: • pH. • Electrical conductivity • Total inorganic nitrogen. • Total phosphorus. • 5-day biological oxygen demand. • Oil and grease. • Total cyanide. • Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc) subject to the presence of water. g) Ensure surface waters leaving the site comply with the following parameters: • pH in the range 6.5 to 9.2; • Suspended solids less than 80mg/l; • 5-day biochemical oxygen demand less than 10mg/l; • Total inorganic nitrogen as N less than 5mg/l;			

No.	Topic	Commitment	Objective	Timing	Advice from*
		• Total phosphorus less than 1mg/l; • Oil and grease less than 5mg/l; • Metals less than 10 times the criteria for aquatic ecosystems specified in Appendix 9 of the CER; and • presence of discoloration, objectionable odour or floating matter in receiving waters.			
4.2	Water Management Plan	Install a further four monitoring bores at the approximate mid-points of each of the long boundaries of the facility and one bore near the south east corner of the detention/stilling basin and analyse them as indicated in Commitment 4.1.	To improve detection capabilities of contamination in the groundwater.	Prior to receiving Ministerial approval for the proposal.	DEP
4.3	Water Management Plan	Make the draft Water Management Plan available to the Forrestdale Plant Liaison Committee Inc for a two-week review period. Comments from the committee shall be incorporated in the final draft as deemed appropriate by the proponent.	To demonstrate that the proponent is capable of managing water quality issues and improving upon this management if weaknesses are identified.	Within twelve weeks of receiving Ministerial approval for the proposal.	FPLC
4.4	Water Management Plan	Implement the approved Water Management Plan	To maintain and where possible improve the surface and ground water quality at and around the facility.	Ongoing after acceptance of the Water Management Plan by the EPA.	DEP
5.1	Emergency Response Plan	Review and revise the Occupational Health and Safety Management System to address the changes to the facility associated with implementation of the proposal.	To reduce the risk associated with the new proposal to "as low as practicable"	Within twelve weeks of receiving Ministerial approval for the proposal.	
5.2	Emergency Response Plan	Submit to the EPA an Emergency Response Plan to ensure that appropriate responses are adopted in case of an incident, to ensure that: a) All practical measures are taken to protect the welfare and amenity of the community; b) The environment is not adversely affected; c) Any response is coordinated/undertaken with the appropriate authorities; d) Off site emergencies involving wastes being transported to the facility are appropriately managed; e) Any spills and/or Fire wash water is appropriately contained; f) All on site employees and contractors have induction or training as appropriate in the implementation of emergency plans;	To identify and document specific management practices and procedures required to meet legislative and company policy to ensure the safety of site personnel and the community. This document is intended for use by site personnel as a procedural document.	Prior to the commissioning of the new plant proposed in this CER.	FESA MPR

No.	Topic	Commitment	Objective	Timing	Advice from*
		g) An on-site emergency plan for action inside the facility is established and maintained in conjunction with FESA h) FESA and the community are appropriately consulted during the preparation of off-site emergency plans; i) The plans are readily accessible to all employees.			
5.3	Emergency Response Plan	The Emergency Response Plans shall include but not be limited to: a) Details of the facility and its operations; b) 24 hour contact details for the Site Manager and the site officer responsible for emergency response c) a description of actions to be undertaken in the event of a major incident, including a description of employee action and how staff will work with the emergency services once they are on site; d) A description of emergency services notification actions including the information to be provided throughout the incident; e) A detailed map of the facility including the location of fire fighting equipment, utilities, Dangerous Goods stores and site access; f) A map of the surrounding area highlighting access, the location of residents and environmentally significant areas; g) Details of staff numbers, their training and emergency response and communications equipment on site; h) Location of hazardous waste inventory; i) Containment and cleanup procedures following an incident.	To ensure all relevant information, equipment and training is in-place such that relevant parties are adequately prepared for an emergency situation that may arise from activities undertaken at the facility.	Prior to the commissioning of the new plant proposed in this CER.	FESA MPR
5.4	Emergency Response Plan	Have a suitably qualified consultant provide independent clarification that the fire wash water recovery system will prevent the sump from over topping during a fire incident..	To demonstrate that adequate measures are in place to prevent contamination of surface and ground waters.	Within twelve weeks of receiving Ministerial approval for the proposal and prior to referral to the EPA.	FESA
5.5	Emergency Response Plan	Make the draft Emergency Response Plan available to the Forrestdale Plant Liaison Committee Inc for a two-week review period. Comments from the committee shall be incorporated in the final draft as deemed appropriate by the proponent and on advice from FESA.	To demonstrate that the proponent is capable of managing the facility such that the safety of personnel and the community is not compromised; and improving upon these management strategies if weaknesses are identified.	Within twelve weeks of receiving Ministerial approval for the proposal and prior to referral to the EPA.	FPLC FESA

No.	Topic	Commitment	Objective	Timing	Advice from*
5.6	Emergency Response Plan	Implement the approved Emergency Response Plan.	To ensure a safe working and living environment for personnel and the community.	Ongoing after acceptance of the Emergency Response Plan by the EPA.	
5.7	Emergency Response Plan	Undertake: a) A HAZOP study on each new process; and b) A Hazardous Area Classification study, to assess compliance with EPA and MPR risk criteria.	To ensure that the new plant is designed and operated in a manner that reduces risk to "as low as practicable" standards.	During the detailed design phase of the project.	MPR
6.1	Waste Management Plan	Submit to the EPA a Waste Management Plan that includes procedures and strategies to: a) Manage waste receival; b) Dispose of wastes from the facility in a manner that is environmentally acceptable and meets statutory requirements; c) Record the source of the waste from on-site, the approximate volume of material, destination of the waste, and the time and date of disposal off-site for each load of solid waste removed from the premises. A summary of this information will be reported to the EPA annually; d) Collect and store in an appropriate manner a sample from each sludge batch leaving the Facility and on a monthly basis analyse the composite sample for the following: • Moisture content • Total nitrogen; • Hydrocarbons; • Total phosphorus • Total cyanide; • Heavy metals comprising of arsenic, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, silver, tin and zinc; • TCLP, ASLP or other authorised leachate tests for metals, where metals in the preceding dot point exceed thresholds for total concentrations stipulated in landfill acceptance criteria; • Organic compounds by gas chromatography/mass spectrometry. e) Collect, store and analyse at least six samples of liquid wastes annually for the following parameters:	To identify and document specific management practices and procedures required to meet legislative and company policy requirements for the sampling, acceptance, handling, reporting and treatment of wastes. This document is intended for use by site personnel as a procedural document.	Within twelve weeks of receiving Ministerial approval for the proposal.	

No.	Topic	Commitment	Objective	Timing	Advice from*
		• Gas chromatography/mass spectrometry for organic compounds; • pH and electrical conductivity; • Metals including arsenic, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, silver, tin and zinc; • Total cyanide; • Oil and grease. f) Report the results of waste monitoring in the annual performance and compliance report, stating any actions taken. g) Optimise the recovery and reuse of chemicals and materials where applicable; h) Dispose of wastes in a manner that is environmentally acceptable and meets statutory requirements.			
6.2	Waste Management Plan	Make the draft Waste Management Plan available to the Forrestdale Plant Liaison Committee Inc for a two-week review period. Comments from the committee shall be incorporated in the final draft as deemed appropriate by the proponent.	To demonstrate that the proponent is capable of managing specified wastes and improving upon this management if weaknesses are identified.	Within four weeks of receiving Ministerial approval for the proposal and prior to referral to the EPA.	FPLC
6.3	Waste Management Plan	Implement the approved Waste Management Plan.	To ensure wastes brought onto site are handled and/or treated in an appropriate manner.	Ongoing after acceptance of the Emergency Response Plan by the EPA.	DEP
7.1	Decommissioning and Rehabilitation Management Plan	Submit to the EPA a preliminary Decommissioning and Rehabilitation Management Plan that includes consideration of the following: a) Removal or, if appropriate, retention of infrastructure; b) Remediation of any contaminated land/groundwater; c) Rehabilitation of all disturbed areas to a standard suitable for agreed future land use/s.	To identify and undertake preliminary planning for an agreed decommissioning and rehabilitation strategy.	Within twelve weeks of Ministerial approval for the proposal.	DEP MPR
7.2	Decommissioning and Rehabilitation Management	Submit to the EPA a detailed Decommissioning and Rehabilitation Management Plan that includes consideration of the following: a) Removal or, if appropriate, retention of infrastructure;	To identify and plan for an agreed decommissioning and rehabilitation strategy.	Twelve months prior to the decommissioning of the facility.	DEP MPR

No.	Topic	Commitment	Objective	Timing	Advice from*
	Plan	b) Remediation of any contaminated land/groundwater; c) Rehabilitation of all disturbed areas to a standard suitable for agreed future land use/s.			
7.3	Decommissioning and Rehabilitation Management Plan	Implement the approved Decommissioning and Rehabilitation Management Plan.	To implement the agreed decommissioning and rehabilitation strategy.	Within EPA agreed timelines.	DEP MPR
8.1	Performance and Compliance Report	Prepare a Performance and Compliance Report covering the period 1 July-30 June each year and submit to the EPA. The annual performance and compliance report will include: a) An outline of operational outcomes; b) Results of environmental monitoring; c) A description of environmental incidents and impacts (if any) and how they have been managed.	To inform the EPA of the status of activities at the facility.	By 31 August each year.	DEP MPR
8.2	Performance and Compliance Report	Make the Performance and Compliance Report available to the Forrestdale Plant Liaison Committee Inc.	To ensure the Forrestdale Plant Liaison Committee Inc is informed of the status of activities at the Facility.	Within four weeks of obtaining EPA approval for the Performance and Compliance Report	DEP
9	Community Liaison	The proponent will convene at least two meetings a year of the Forrestdale Plant Liaison Committee Inc.	To ensure that the community remains informed of activities at the Facility.	Ongoing.	
10	Security	Review of security arrangements at the facility will be undertaken and reported to the EPA, and will include: a) Site security; b) Sign posting; c) Plant surveillance and monitoring; d) Procedures to discourage unauthorised personnel.	To demonstrate adequate security measures are in place given the range of activities undertaken at the Facility.	Within twelve weeks of receiving Ministerial approval for the proposal.	MPR
11.1	Waste	Develop waste acceptance guidelines and submit them to the EPA and the Department of	To clarify to industry and	Within twelve weeks of	MPR

No.	Topic	Commitment	Objective	Timing	Advice from*
	Acceptance Guidelines	Minerals and Petroleum Resources for approval.	regulators which waste categories, and in what forms the Facility will accept.	receiving Ministerial approval for the proposal.	
11.2	Waste Acceptance Guidelines	Implement the approved waste acceptance guidelines and distribute to all waste generators and licensed transporters: a) A copy of approved waste acceptance criteria; b) An information note describing acceptable pre-treatment procedures.	To facilitate compliance by Waste Treatment Facility and waste generators with the waste acceptance criteria.	Within two weeks of receiving approval of the waste acceptance criteria from MPR and EPA.	DEP
12	Bunding	Demonstrate that bunding meets the requirements of the EPA. The review of chemical storage bunding will include: a) Identification of bunded areas sufficient to retain or direct surface water runoff; b) Demonstration of compliance with Department of Minerals and Petroleum Resources requirements and the appropriate standards and regulations; c) Provision for the collection and re-treatment of contaminated materials. d) The review will ensure that halogenated compound storage bunding areas: i. Have a sufficient effective capacity to contain any spillage which may reasonably be expected to occur, and as a minimum, comply with the appropriate standards and regulations; ii. Are constructed of impervious material, chemically resistant to the chemicals present, to prevent the penetration of the chemicals to groundwater or the loss to other external water-courses and to facilitate the recovery of any spillage; iii. Incorporate features that allow them to be either drained or pumped out to a holding facility in the event of a spillage; iv. Provide complete separation of any chemicals which, on contact, may have hazardous (eg. fire, toxic gas release, explosion, etc.) consequences.	To ensure that in the event of a spill or leakage of containers, that wastes/chemicals can be contained and recovered without contaminating the environment.	Within four weeks of receiving Ministerial approval for the proposal.	MPR DEP
13.1	Change of Proponent/Plant Operator	The proponent shall ensure that no change of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister has advised the proponent that approval has been given for the nomination of a replacement proponent.	To ensure that a new proponent is suitable and aware of the conditions that they must operate under.	As required.	

No.	Topic	Commitment	Objective	Timing	Advice from*
13.2	Change of Proponent/Plant Operator	The proponent shall notify the EPA of any proposed changes to ownership/management of the Liquid Waste Treatment Facility.	To ensure that the EPA are aware of any changes to the proponent.	At least four weeks prior to effecting and transfer of operator.	
14	Light Emissions	The proponent shall ensure that the management of light emissions from the facility is based on the requirements of AS 4382-1997: Control of Obtrusive Effects of Outdoor Lighting, and that emissions do not adversely affect the amenity of the closest resident.	To limit the impact of operations on the community.	Ongoing following Ministerial approval of the proposal.	DEP
15	Storage of Dangerous Goods	The proponent will develop and implement procedures to ensure that dangerous goods that may react dangerously or are incompatible (including those within the same dangerous goods class) are appropriately identified and segregated in accordance with the Explosives and Dangerous Goods (Dangerous Goods Handling and Storage) Regulations 1992.	To ensure all substances are stored in accordance with applicable regulations and in a manner which reduces the storage risk to as low as reasonably practicable.	Prior to receiving any Ministerial approvals for this CER.	MPR.

- FESA (Fire and Emergency Services Authority), EPA (Environmental Protection Authority), DEP (Department of Environmental Protection),
- MPR (Department of Minerals and Petroleum Resources), FPLC (Forrestdale Plant Liaison Committee Inc).

APPENDIX 5

Identification of Relevant Environmental Factors

Appendix 5 - Identification of Relevant Environmental Factors

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
POLLUTION				
Community Health	The LWTF site and surrounding areas including nearby residents.	The LWTF currently operates a Biological Waste Treatment and an Industrial Waste Treatment Plant. Changes to the waste acceptance criteria would allow the LWTF to accept a wider range of hazardous liquid wastes, including acids and alkalis at pH outside 2-12; and oxidising and reducing agents. No radioactive or explosive wastes have been, or are intended to be accepted at the facility.	**Government:** The Department of Health is concerned that issues such as fly breeding control have not been discussed in the CER. Especially in relation to the approval of an emergency storage facility of biosolids. The Education Department of Western Australia recommends that health statistics be investigated to provide a "baseline" for assessment of future possible impacts. **Organisation:** No comments received. **Public:** Members of the community expressed concerns that: • processing of chemicals at the LWTF could affect community health. For example, processing carcinogenic substances can cause, "still births and birth defects"; and • if the EPA cannot guarantee the LWTF will pose no risk to community's health then the government, and the proponent, should compensate nearby residents if the value of their property decreases due to the LWTF.	**Considered to be a relevant factor.** WMWA response to submissions was that: • possible exposure routes for compounds hazardous to human health are: - via inhalation of a substance from the atmosphere; - absorption through the skin; and - ingestion; • the main way for substances to enter the atmosphere, are through evaporation/volatilisation, or from combustion. Evaporation could occur when repackaging dangerous goods, reacting/blending bulk substances in the mixing bays; • the proponent is required to meet WorkSafe criteria for the protection of staff from exposure to the various substances within the boundary of the LWTF; • the substances would be diluted many times from the WorkSafe criteria by the time it reaches the boundary; • in terms of proposed future processes leading to emission of fumes, the solvent distillation process would have the greatest potential of these processes to result in a release through inadequate containment, or as a result of a fire. This has been addressed in the risk assessment studies in the CER. The risk is low because of limited volumes in batches to be processed and low temperatures of distillation; • the main source of air emissions would be from volatilisation occurring during decanting of substances. Owing to the nature of these

				volatile substances, they do not build-up on soil surfaces, therefore limiting the potential for dermal exposure or risk of ingestion from contaminated soils; and • the short-term storage of biosolids is not part of the proposal. The necessity for the biosolids emergency storage facility arose due to a short-term inability to dispose of biosolids off-site during heavy winter rains, which prevented access to landfills. Existing approvals and controls are considered to be adequate. The EPA understands that there would be no process gaseous emissions. However, some fugitive process emissions may occur and there would be some emission of particulates from the pyrometallurgical process. The EPA considers, however, that the proposed process and management controls, if properly implemented would be adequate to maintain emissions within acceptable limits. (Refer to the environmental factor of "Air Quality") In terms of the Education Department's recommendation for providing "baseline" health statistics, the Department of Health has provided written advice that the commitments from the proponent and the proposed ministerial conditions are considered to be adequate to prevent emissions that might impact on the health of the community.

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Air Quality	Proposal site and surrounding areas including nearby residents.	The existing plant has no emission to atmosphere from its Industrial Plant or Environmental Service activities that is likely to cause health, safety or environmental impacts. There would be no gaseous process emissions from proposed activities at the hydrometallurgical, pyrometallurgical and solvent extraction plants. There would be some particulate emissions from the pyrometallurgical plant, which would be kept within relevant regulatory requirements.	**Government:** The Air Quality Management Branch of the Department of Environmental Protection (DEP) identifies that the proponent did not address in the CER any air emissions other than odour. It considers that the proponent should ensure that any such impacts are addressed in its "Air Quality Management Plan". **Organisation:** No comments received. **Public:** Members of the community are concerned about: • the potential of rainwater contamination caused by gaseous emissions, which could have an adverse effect on their livelihood and their health. Especially, as not all properties in the district have mains water to their homes and use a combination of rainwater and bore water; dispersion of air pollution across the region by strong winds that commonly occur in the area; • the impact of gaseous emissions on asthmatics, especially children at the local school.	**Considered to be a relevant factor.** WMWA has indicated in its response to submissions that: • potential sources of air emissions are managed therefore, minimising the potential for contamination of rainwater in rainwater tanks surrounding the facility; • the proposed activities at the hydrometallurgical, pyrometallurgical and solvent extraction plants would be managed to ensure that no adverse off-site impacts would occur. The plants management consists of the following; – the pyrometallurgical plant is located within a sealed building with particulate matter emissions controlled through a fume ducting system; and – the hydrometallurgical plant that has the greatest potential for emissions is sulphuric acid aerosols, which are controlled by limiting the concentration of the solution and undertaking the process in enclosed vessels to reduce the potential to release emissions to the environment.

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Odour	Proposal site and surrounding area.	It is proposed that all additional sources and stages of treatment of odour at the LWTF are subject to odour controls such as activated carbon filters and chemical scrubbers. Odours are principally derived from the Biological Waste Treatment area, and as such it is not expected that odours would increase as a result of the proposal. Complaints of odour have been attributed almost exclusively to biological sources (either septage or sulphide). Additional biological odour control measures are to be implemented.	**Government:** The Air Quality Management Branch of the DEP comments that: • the CER states that odour complaints are unlikely to rise as a result of the proposed changes but does not say why; • the "open drains" mentioned in the CER may be a source of odour; • the issue of whom is responsible for the drains should be addressed; • it has concerns about the validity of the odour modeling and inconsistencies between the report on odour and the CER. **Organisations:** The Forrestdale Community Association considers that: • a buffer of 550m is not adequate to hold back odour; and • a medical investigation should be undertaken to identify the affects of odour on health. Prior to commissioning, the City of Armadale notes both the Environmental Protection Authority (EPA) and the Health Department of Western Australia (HDWA), and the then proponent, provided assurances that it would be an odour free operation, running on a fail safe basis so that no odours should escape (Report and Recommendations of the EPA – August 1987). The City of Armadale and the local residents both indicate that this was never the case as ongoing odour problems have occurred through the life of the LWTF. **Public:** Members of the community suggest further studies on odour, taking into account local meteorology, should be undertaken.	**Considered not to be a relevant factor.** There would be no significant odour emissions associated with the proposal. The proponent has, however, addressed odour issues relating to the existing biological treatment plant. WMWA in its response to submissions indicated that: • the open drains are outside the facility boundary and therefore outside the control of the facility. WMWA does not discharge to these drains; • the facility has demonstrated that it is capable of complying with EPA odour criteria at 550 m from the facility boundary. Once the additional odour control measures have been fully implemented, the distance over which odours can be detected is expected to be reduced to significantly less than 550 m; • the proposed activities at the hydrometallurgical, pyrometallurgical and solvent extraction plants would be managed to ensure that no adverse off-site impacts are experienced by surrounding landusers; • there is not a need to undertake a health study, as whilst the odour emitted from the facility has the potential to cause a nuisance or affect the amenity value immediately surrounding the facility, it does not have the potential to impact on physical health; and • an air quality management plan, which includes ongoing procedures and strategies to manage onsite odour. **The EPA recognises that the issue of odour results from the existing plant operations and the EPA understands that there will be no significant additional odours generated from this proposal that would result in adverse off-site impacts**.

				The EPA considers that its objective with respect to this factor can be met provided that the Environmental Conditions and Proponent Commitments presented in Appendix 4 of this report are satisfactorily implemented.

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Public Risk and Safety	Proposal site and surrounding areas including nearby residences.	It is proposed that the following process plants be installed and operated: • hydrometallurgical plant; • pyrometallurgical plant; and • solvent extraction plant. Implementation of the proposal would also result in an increase in the storage capacity for dangerous goods. Risk assessments have identified the following credible accident scenarios with potential off-site effects: • Perchloroethylene pool fire in the solvent extraction plant; and • Fire and explosion in the Dangerous Goods storage area.	**Government:** The Department of Mineral and Petroleum Resources (DMPR) advised that the proponent should address the following; • other potential off-site impacts of the hazardous events other than risk of fatality need to be addressed; • take into account the proposed additional storage on the site may have an influence on the assessment of risks in the CER. Any other potential ignition sources (other than electrical equipment) within the solvent extraction facility (eg. over-heating of mixing equipment); • the issue of segregation of potentially incompatible dangerous goods within the same class. The report only indicated that separate storage sheds would be provided for each Class of dangerous goods; • potential fire and/or explosion accident scenarios have the potential to impact to a distance of 1500 metres; • the seemingly incorrect statement that "atmospheric Hydrochloric acid concentrations would not significantly contribute to the level of off-site risk" ; and • because of the LWTF's location to sensitive areas the plant should be required to prepare a facility Emergency Plan (both on-site and off-site plans) in conjunction with FESA and in accordance with National Standard NOHSC:1014-Control of Major Hazard Facilities. FESA suggested that if unidentified dangerous goods are located in the receival areas they should be processed as soon as possible before the close of business each day to reduce the risk of a fire from incompatible chemicals mixing due to the failure of packaging containers.	**Considered to be a relevant factor** WMWA in its response to submissions indicated that: • risk studies undertaken found that the likelihood of an off-site fatality is well within EPA criteria at the facility boundary. Even within the site boundary, the risk of fatality has been estimated as only one in one hundred million from the Solvent Extraction Plant. The EPA criterion for residential development surrounding an industrial facility is for a fatality risk of one in a million at the boundary of the residential property. Therefore, the risk posed by the facility to the community is well within the levels deemed acceptable by the EPA; • it agrees with DMPR's rewording of the statement to "..although the ignition of a PERC:diluent and subsequent dispersion of HCl has been identified as the most significant risk contributor, it does not impact significantly on the ability of the site to meet the EPA risk criteria."; • FESA and DMPR have both confirmed that under the current Dangerous Goods licence, the LWTF is not classified as a Major Hazard Facility; • security company patrols the site twice an evening. The proponent is currently evaluating the fire alarm system to ensure that if a fire were to break out, the alarm system will be linked to the contracted security company, who would then contact the Emergency Services and the facility operator's emergency standby personnel; • does not intend to staff the premises on a 24-hour basis. Existing security at the site is within the requirements of DMPR for facilities of this type; • the facility has been appropriately designed to

			The Education Department of Western Australia recommended that if the proposal is approved that the plant be staffed on a 24-hour basis. The Education Department of WA and members of the public, especially staff and parents of children at Forrestdale School, feel they would be unable to evacuate the school in case of an accident. The Department believes it is imperative for the proponent to provide for the quick and safe evacuation of children in case of a alarming accident and that the proponent pays for all emergency provisions. **Organisations:** The Brookwood Community Association considers that the modeling undertaken for hydrogen chloride does not adequately deal with future proposed residential uses and non-residential users who may be using the Golf Course or Commercial Village. The Conservation Council states that the safety issues related to the proposed extension of Tonkin Highway being constructed adjacent to the site have not been addressed. **Public:** Members of the community have expressed concern that: • the facility will be handling "hazardous" chemicals; • the proponent has not demonstrated that an effective emergency procedure is in place, as a backup should the planned pollution containment system fail; • the security and detection of accidental spillages after hours are inadequate; • bush fires occur around the facility and that the Hazard Identification Study identified the consequence of a fire/explosion would be serious in this area. Therefore, an appropriate fire safety plan is considered necessary; • the community's health as well as public	contain a spill. Materials are placed in storage vessels and storage areas are bunded. So even if a leak were to occur and continue unnoticed for a period of time (eg over the weekend), there is minimal chance that the environment or community would be adversely affected; and • off-site risk from the facility is considered to be negligible. EPA risk criteria for land uses such as a golf course or commercial village allows for fatality risk contours of between five in a million and half in a million per year. Consequently, the only component of the facility that was identified as having the potential for an off-site fatality, the Solvent Extraction Plant, within the site boundary was one in ten million.

			safety, is at risk, especially of the safety of the near-by school, if a fire occurred; • the entire site isn't a smoke free area especially where flammable liquids are on site. Smoking, cigarettes and lighters must not be allowed on site.	

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Alternatives	The LWTF site and surrounding areas.	The LWTF currently operates a Biological Waste Treatment and an Industrial Waste Treatment Plant. Changes to the waste acceptance criteria would allow the LWTF to allow the acceptance of a wider range of hazardous liquid wastes including acids and alkalis at pH outside 2-12, and oxidising and reducing agents. As per the request of the EPA the 'Gap Analysis' was undertaken by WMWA to identify alternative sites for either recycling or treatment of hazardous liquid wastes to allow for safe disposal to sewer or approved landfill or repackaged for transport to appropriate facilities within Australia for treatment or disposal. The results of the Gap Analysis are presented in Table 3.	**Government:** Continual use of the site is considered problematic by the City of Armadale council as residents had previously been given assurances that the facility would be scaled down by 2002. **Organisation:** The Friends of Forestdale consider that the CER should include a cost/benefit analysis of the proposal and alternative sites in order to make a valid comparison of the changes and risks involved. The LWTF Sub Committee of the Forrestdale Community Association considers that: • the CER was neither complete nor accurate; • there is a false assumption that one plant has to be able to treat all of the State's waste; and • there are three private companies of Toxfree, ERS and Western Resources trying to compete with what appears to be a government sponsored waste treatment plant. The Oakford Oldbury Community Association is of the understanding that the proposed GOWA project would be able to safely and in an environmentally friendly manner, handle all the material presently, and proposed to be handled by the Brookdale LWTF. **Public:** Members of the public suggest that: • the proposed waste to energy and water plant at Kwinana (GOWA) would have more than sufficient space to accommodate a waste treatment plant within its grounds; • it would be more viable to use the GOWA plant, as there is already a considerable roadway network (as well as a train line) to Kwinana Industrial area for heavy trucks; and • it would be more appropriate to process the	**Considered to be a relevant environmental factor.** The 'Gap Analysis' conducted by WMWA identifies the following wastes for which other alternatives are expected to be available. These wastes are: • PCB's, chlorinated pesticides and perchloroethylene would be able to be treated by another appropriately licensed facility ; and • acids and bases, free cyanide and hexavalent chromium (Group F hazardous wastes) could be treated another appropriately licensed facility.

			toxic liquid waste at GOWA or other alternative in the Kwinana area as this is already a suitably zoned area, with all the necessary buffer zones etc.	

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Surface Water Quality	The site and any area that could be reasonably affected by surface water flow from the site.	It is proposed that the existing surface water management practices continue. The main practices are: • collection of facility run-off, including run-off from roadways, in the stormwater catchment system; • discharge of water in the stormwater collection system into the stilling/detention basin; • evaporation of stormwater from the stilling/detention basin or pumping it back to the perimeter ditch drain; • pumping of liquids of unacceptable quality collected in the basin, back into the treatment plant; • sealing and bunding of areas containing storage vessels and process areas; • collection of four samples from on site surface water sites (drains and stilling basins) quarterly, analysis for contaminants and reporting of results annually to the EPA, • if the results indicate contaminants above Guideline Values in the samples collected these are to be reported immediately to the EPA; and • collection of surface water run-off from the area surrounding the plant in the perimeter ditch drains and piping the collected surplus water to the Forrestdale Main	**Government:** The Water and Rivers Commission queries the design parameter for the drain and the fate of discharge to the drain with respect to flow from the stilling/detention basin. Fire and Emergency Services Authority (FESA) states that the overflow pipe of the existing storm water sump, located on the eastern side of the LWTF adjacent to the front gate, should have a valve that can be closed to prevent fire water run off in the nearby drains and water courses in the event of an emergency. The Department of Conservation and Land Management raises a concern about the potential for contamination of surface water to have a negative effect on the Declared Rare Flora and Priority flora populations that are located on land to the west and northwest of the LWTF. **Organisation:** The Conservation Council of Western Australia considers that collection of the surface water run-off from the area surrounding the plant in the perimeter ditch drains would be unsatisfactory because it could allow contaminated overflow water from the site into the Southern River via the Forrestdale Main Drain. . The Brookwood Community Association considers that the quality criteria for phosphorous and nitrogen in surface water leaving the site should be revised to meet the standards sought by the Swan-Canning Cleanup Program.	**Considered to be a relevant factor.** WMWA in its response to submissions identified that: • Water and Rivers Commission on 18 October 2001 inspected the stormwater management system of the LWTF. It was confident that existing stormwater management system and the proposed modifications would ensure that the risk of contaminants being washed from the site is very low; • WMWA is liaising with FESA to ensure that firewater containment mechanisms are adequate to limit the impact of firewater on the environment. Procedures to address this issue will be detailed in the Emergency Response Plan in accordance with the revised Proponent Commitments; • The storage vessels are placed far enough from the edge of the bund to ensure that any vessel overflow will not discharge outside of the bunded area; • bunded and storage areas all drain into sealed drainage sumps. These sumps contain automatically operated pumps, which direct contaminated liquids back into an appropriate part of the waste treatment facility; • the facility has been appropriately designed to contain a spill and protect the environment even if a leak were to occur and continue unnoticed for a period of time (eg. over the weekend); • main component of concern is contamination as a result of transport accident; • current licence conditions criteria including phosphor and nitrogen for the quality of surface waters leaving the site are those specified within the *Australian Water Quality Guidelines for Marine and Fresh Water* (Australian and New

		water to the Forrestdale Main Drain.	**Public:** Members of the community are concerned about the following issues regarding surface water contamination: • overflow of the detention/stilling ponds causing contamination of surface or groundwater; • overspill of bunds in the hardstand areas, as a result of heavy rainfall causing contamination of surface or groundwater; • spillage of waste spill at the plant outside bunded areas resulting in soil and groundwater contamination; and • contamination of the Swan and Canning Rivers from an accidental spillage via the stormwater system.	Zealand Environment and Conservation Council, 1992); and • all surface water on the Brookdale LWTF is collected in the stilling basin. This minimises the risk of contaminated surface water leaving the site.

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Ground Water Quality	Ground water beneath the site and down hydraulic gradient, both within and outside the site boundaries. Generally ground water occurs within 1.5m of the surface. The superficial aquifer is not used for potable supply, nor does it fall on the Jandakot Mound recharge area, although some local abstraction for domestic irrigation is known to occur.	It is proposed that: • all storage vessels and process areas within the plant are sealed and bunded as required by the EPA; • existing procedures would continue to be used to maintain spill prevention and control facilities in order to minimise the risk of spillages; • as with the existing operations, there would be no irrigation of effluent or disposal of sludge on the site and treated liquid effluent, including process liquors, would be discharged to the Water Corporation sewer in accordance with Water Corporation discharge limits; • as with the existing operations, dewatered sludge would be transported in trucks to a DEP licensed landfill; • the existing groundwater monitoring programme would be expanded to	**Government:** CALM raised a concern about the potential for contamination of groundwater to have a negative affect on affect on the Declared Rare Flora and Priority flora populations that are located on land to the west and northwest of the LWTF. **Organisation:** The Conservation Council of Western Australia notes that the CER mentions that the detention/stilling basin is lined with limestone, and some seepage occurs. It considers that: • this is not acceptable, as remediation of groundwater contamination is very difficult , and very expensive; • monitoring of groundwater to detect contamination after it has occurred is not acceptable; and • more effective measures are needed to avoid the possibility of such contamination from seepage. **Public:**	**Considered to be a relevant factor.** The EPA considers that replacement of the existing limestone lining with a very low permeability liner is not warranted because: • the stilling/detention basin provides back-up containment system for other containment systems in process and storage areas; and • the risk of spills occurring that would result in contaminated water flowing into the basin is very low.

		include a total of 20 groundwater-monitoring bores; • sampling of the bores be undertaken every six months and the samples analysed for a range of chemical compounds and water quality parameters; and • the results of the groundwater monitoring would be reported to the EPA annually, however, if the results indicate contaminants above Guideline Values in the samples collected these are to be reported immediately to the EPA.	Members of the community are concerned about the ramifications of groundwater contamination have on their health and livelihood. Especially, as number of the people in the community use bores to water their gardens, vegetable gardens and fruit trees and use bore water as drinking water for livestock.	

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Soil Quality	The plant site. The study area is situated on a low relief dune comprised of a thin layer of leached quartz sand over sandy clays.	It is proposed that the following measures be used to mitigate soil contamination: • bunding of potential risk areas and re-direction of any liquid waste back into the plant for treatment; • sealing and bunding of waste receival and treatment areas; • isolation of runoff from process areas and access roads by the stormwater collection system; • the use of an emergency response and cleanup procedure for accidental spills • as with the existing operations, there would be no irrigation of effluent or disposal of sludge on the site and Treated liquid effluent, including process liquors, would be discharged to the Water Corporation sewer in accordance with Water Corporation discharge limits.; • as with the existing operations, dewatered sludge would be transported in trucks to a DEP	**Government:** No comments received. **Organisation:** The Brookwood Community Association raised a concern that a more comprehensive assessment of soil quality has not occurred. **Public:** Members of the community are concerned that no biological or health impact study has been conducted to determine the long-term effects of the soil contamination on the nearby residents, flora or fauna. One member of the community raised a concern that the installation of a durable imperious membrane underneath the flooring or pavement to ensure no further soil contamination could occur, has not been suggested in the CER	**Considered not to be a relevant factor**. WMWA in its response to submissions indicates that: • it is not necessary to undertake a health impact study of the impacts of the historic soil contamination on nearby residents, flora or fauna because the instances of soil contamination discovered in the site assessment did not move off-site and thus could not have had an effect.; and • effective measures are in place to prevent soil contamination at the LWTF. **The EPA considers that its objective with respect to this environmental factor can be met provided that the Environmental Conditions and Proponent Commitments presented in Appendix 4 of this report are satisfactorily implemented.** **It should be noted that the EPA recommends assessment of soil quality as part of the decommissioning plan for this proposal as**

		licensed landfill; A soil investigation was undertaken as a component of the CER. This resulted in identification of some contaminated "hot spots" on the site. These were subsequently remediated by excavation of contaminated soil, disposal of the soil in a suitably classed landfill and backfilling the areas with clean fill.		**proposed in the recommended environmental conditions presented in Appendix 4.**

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Social Surroundings				
Traffic	Transport routes to and from this proposal area and surrounding roads.	The proponent estimates that implementation of the proposal would result in: • an increase in heavy vehicle traffic of less than one percent; and • an average, one additional truck movement per day.	**Government:** No comments received. **Organisation:** The Conservation Council of Western Australia identifies that the preferred option for the treatment of liquid waste is for it to be treated in or close to the Perth Metropolitan area where most of the liquid waste is produced, because this will minimise the distance that liquid waste will need to be transported. **Public:** Public submissions suggested that there would be a increase in traffic, which would create a higher incident of disruption and possibly accidents along Tonkin Highway and such increases in traffic would result in the following: risk to the public due to more toxins being transported to the site to be treated; • public risk due to treated toxic substances being transported to another depot for storage; and • if waste was presented for disposal and was deemed unacceptable for processing it would be returned to source or repackaged, and transported to other appropriate facilities.	**Considered not to be a relevant factor.** Much of the waste that is treated at the LWTF is generated within the catchment of the Canning and Swan Rivers. The location of a properly managed facility close to the source of the wastes reduces the risks associated with transporting these wastes as: • by reducing transit distances, any risks associated with transporting the wastes is reduced; • reduces the overall treatment costs due to reduced cost of transportation. This helps to reduce instances of illegal disposal of wastes in a manner that compromises the environment; and • wise use of resources includes reducing unnecessary transportation of products by locating synergistic industries in close proximity to one another. The EPA considers that the increase in traffic resulting from implementation of the proposal is not significant and therefore would not be expected to result in a significant increase in risk of unacceptable environmental impacts. **The EPA considers that its objective with respect to this factor can be met provided that the Environmental Conditions and Proponent Commitments presented in Appendix 4 of this report are satisfactorily implemented.**

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Bush Fire Prone Area	Proposal site and surrounding areas.	The Emergency Response and Evacuations Plans that are in operation for the existing facility would apply to the proposed changes to the facilities and operations. These plans are an integral component of the Occupational Health and Safety Management Strategy (OHSMS). The OHSMS includes the management of bushfires by: • the use of hosing facilities linked to the ring emergency water supply main; and • the rapid response (10 minutes) from the Armadale Fire and Rescue Service Appliances, should a bushfire occur.	**Government:** Fire and Emergency Services Authority (FESA) considers that fire breaks should be provided around the LWTF in accordance with the Bush Fires Act and the City of Armadale Regulations to prevent the spread of fire to and from the Facility. DDMPR considers that the CER does not indicate if the fire protection system complies with the relevant requirements of FESA, which are the Australian Standards in terms of water pressure and flow. Because of location to sensitive areas, the plant should be required to prepare a Facility Emergency Plan (both on-site and off-site plans) in conjunction with the FESA Fire Services and in accordance with National Standard NOHSC:1014-Control of Major Hazard Facilities. **Organisation:** No comments received. **Public:** Public submissions raised the following concerns: • the location of a water hydrant near enough to the plant and if and when there is a fire and/or spillage what happens to the foam/water that is used to quell the fire; • the Armadale bush fire crew is a voluntary organisation and does not have the skills and equipment to tackle hazardous wastes; and • if the plant is allowed to put into practice any new processes, a full-scale practice evacuation plan of Forrestdale should be undertaken with all departments involved: fire, SES, hospitals etc.	**Considered not to be a relevant environmental factor.** In its response to submissions, WMWA states that: • the existing system with FESA to establish what needs to be done to bring the firewater pressure and flow up to the relevant Australian standard for the facility. Once this is completed, any necessary upgrade work would be undertaken; • the LWTF has an emergency response plan (ERP) in place to deal with emergencies including those related to fire. WMWA has made a commitment to review and update this plan in consultation with FESA, should the proposed changes to the facility be approved; • the Armadale Voluntary Bush Fire Crew is not responsible for attending any incidents at the Brookdale LWTF. The emergency call would be placed to the Fire and Emergency Services Authority (FESA), who would deploy the Armadale Fire Brigade, and if the situation requires, a specialist 'hazmat' (hazardous materials) team. In addition on-call experts from the Department of Health, DEP and DMPR are also available to attend the scene if required. **The EPA considers that its objective with respect to this factor can be met provided that the Environmental Conditions and Proponent Commitments presented in Appendix 4 of this report are satisfactorily implemented.**

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Landuse/ Planning	The LWTF site and surrounding areas, particularly the area around the site that is considered as a buffer zone.	Implementation of the proposal.	**Government:** The Department for Planning and Infrastructure notes that the site is adjacent to Bush Forever Site 345 and that the Forrestdale Lake is recognised as a wetland of international significance under the Ramsar Convention. It considers that advice from CALM in relation to these areas should be fully considered. The Department for Planning and Infrastructure considers that the CER needs to be clear as to whether the proposed changes to the LWTF have the potential to result in constraints additional to those addressed in planning schemes for the area. FESA considers that there should be a 500m buffer zone around the facility that is kept clear of all residential and assembly buildings. It also considers that if the buffer zone is used for passive recreation, a warning system should be installed in the event of an emergency. The Shire of Serpentine-Jarrahdale opposes any expansion of activities at the LWTF as believes it to be inappropriate for the area. As urban, commercial and recreational areas surrounds the LWTF and are within 1000m of the facility. The Department of Health supports a buffer of 1000m and suggests that any proposed change should be negotiated with all stakeholders including the community. Also, Department of Health identified that based on a Level 1 Risk Assessment of modeling of hydrogen chloride from the burning of the dry-cleaning agent perchlorethylene, the buffer zone should not be decreased below 500m. CALM raised concerns about potential affects of contamination and possible clearing on the Bush	**Considered not to be a relevant environmental factor.** The proposed changes to the Brookdale LWTF will only involve on-site equipment modifications and will not involve the disturbance of any vegetation off-site. The EPA considers that implementation of this proposal would not result in any additional constraints on development of areas adjacent to the site. **The EPA considers that its objective with respect to this factor can be met provided that the Environmental Conditions and Proponent Commitments presented in Appendix 4 of this report are satisfactorily implemented**

			Forever sites that are characterised by high floristic diversity adjacent to the southwest of the LWTF. **Organisation:** No comments received. **Public:** General comment about the proposed site and why it was chosen. The suitability of the site and the adequacy of buffer distance to residences was questioned	

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Aboriginal Heritage Sites	Proposal site and surrounding areas.	The proponent examined the "Aboriginal Sites Register" at the WA Museum in the State Planning Commission's "Forrestdale Industrial Study" (1994) and did not identify any ethnographic sites on the LWTF site. A further search during 2001 of the "Aboriginal Sites Register" also did not reveal any aboriginal sites on the Brookdale LWTF site.	**Government:** Department of Indigenous Affairs indicated several Aboriginal Heritage sites are located within 1000 m of the site. One of these is situated on the other side of Armadale Road in an area earmarked for industrial development by the City of Armadale. The plant poses no threat of disturbance to this site. The other site is located on City of Armadale land near the access road to the facility. Activities proposed in this proposal would not impact on this site. City of Armadale suggested there are several possible Aboriginal Heritage sites located within the 1000 m zone of the LWTF, particularly near the boundary of the Forrestdale Industrial Business Park. **Organisation:** No comments received. **Public:** One public proforma contested that there were Aboriginal sites near the LWTF.	**Considered not to be a relevant environmental factor.** Since there are no Aboriginal Heritage sites within the site and this proposal does not include disturbance of areas outside the boundaries of the LWTF, the EPA considers that the implementation of the proposal would not pose any threat or impact to the Aboriginal Heritage sites.

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Waste Minimisation and Management	Perth metropolitan area.	Wastes delivered to the Biological Waste Treatment Plant include waste from: • domestic and commercial septic tanks; • soak wells and leach drains; and • grease traps at food preparation and food processing premises. The transport companies, vehicles and drivers licensed under the Environmental Protection Regulations 1996, can only transport these wastes. All outward movements of stabilised wastes are documented with a delivery docket system. Hazardous waste will be tracked through the Environmental Protection Regulations 2001. This will be undertaken through the licensing of waste producer's facilities and that waste is transported through a permitting system. The implementation of these regulations will be undertaken by the DEP. Direct recycling of treated grease waste is not practiced at present, as separation of waste streams is not possible. Treated grease and dewatered septage/biological sludge resulting from the septage treatment process is recycled as compost or transported to an approved landfill, dependant on quality or demand.	**Government:** No comments received. **Organisation:** No comment **Public:** Many members of the community expressed concern on why the LWTF has been allowed to accept waste outside of its current criteria allowance. One member of the public questioned why waste, that is not within the LWTF a licence condition has been accepted in the first place. Concern over the nature of the wastes, was also brought up ie. Was the waste radioactive or explosive?	**Considered not to be a relevant factor.**

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
Community Consultation	Community	The proponent would convene at least two meetings a year of the Forrestdale Plant Liaison Committee.	**Government:** No comments received. **Organisation**: The Conservation Council of Western Australia, and the Pollution Action Network are concerned about the apparent conflict of interest the DEP has in being both the proponent and the regulator for this proposal. The Conservation Council considers that it is difficult for the public to be confident that the proposal will be regulated independently and fearlessly. **Public:** Some members of the community are concerned about the apparent conflict of interest the DEP has in being both the proponent and the regulator for this proposal.	**Considered not to be a relevant factor.** The LWTF is currently operated by Cleanaway Technical Services under contract to WMWA, a body corporate of the DEP. The perception of conflict of interest was addressed in amendments to the Environmental Protection Act 1998 whereby the EPA was given responsibility for monitoring or causing to be monitored this facility. The EPA, an independent statutory body, undertakes regulation of the facility. The EPA is supported in this role by independent consultants.

FACTOR	RELEVANT AREA	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
OTHER ISSUES				
Noise Emissions	LWTF site and adjacent areas.	Ongoing sources of noise relate to transport activities induced draft fans of odour control, centrifuges and process control systems. Majority of the plant is enclosed thus noise emissions will be minimal.	**Government:** No comments received. **Organisation:** No comments received. **Public:** No comments received.	**Considered not to be a relevant environmental factor.**
Light Emissions	Public roads and adjacent residences.	Implementation of this proposal will not require any significant alteration to the current lighting at the plant.	**Government:** No comments received. **Organisations:** No comments received. **Public:** No comments received	**Considered not to be a relevant environmental factor.**
Visual Amenity	Areas surrounding the LWTF.	Implementation of this proposal will not require any significant alteration to the current outlay at the plant.	**Government:** No comments received. **Organisations:** No comments received. **Public:** No comments received	**Considered not to be a relevant environmental factor.**

TABLE 2

Gap Analysis, Options for the Management of Wastes Deemed Hazardous

Presented by Waste Management WA

Table 2 - Gap Analysis Options for the Management of Wastes Deemed Hazardous

Waste Treatment Option	**Wastes Accepted outside of Existing Licence Conditions for CTS**	
	Group A: Chlorinated Organic Chemicals Group B: Ancillary Organic Chemicals Group D: Flammable Liquids	Group F: Acids and Bases, Free Cyanide, Hexavalent Chromium
Current volumes accepted by CTS	235,000 kg	70,000 kg
CURRENT TREATMENT BY CTS	• Repackaging prior to transport interstate for disposal/destruction. • Unless in off-specification loads, flammable wastes are not accepted. • Some wastes may be fixed or encapsulated prior to disposal to land-fill.	• Acids and bases used as reagents where possible. • pH adjustment to fix and/or remove contaminant prior to waste going through Industrial Waste Treatment Plant.
Proposed Treatment by CTS	• Solvent extraction process. Organic species are recovered for re-use, solid residues are disposed to landfill. • Other wastes will be repackaged for treatment/destruction interstate.	• As above, but with improved capabilities to reuse and recycle as a result of the hydrometallurgical plant.
ERS Recycling of combustible solvents and oil filters. Repackaging of a variety of chemicals for treatment at other facilities including the LWTF.	• Already accepting a component of the total waste stream from WA. Are operating close to capacity and are limited in their ability to increase the volumes of waste accepted due to space restrictions. • Do not have a laboratory on site to establish/confirm waste compositions. • Facility backs onto an open stormwater drain, which connects directly to the Bickley Brook main drain.	• Already accepting a component of the total waste stream from WA. Are operating close to capacity and are limited in their ability to increase the volumes of waste accepted due to space restrictions. • Facility backs onto an open stormwater drain which connects directly to the Bickley Brook main drain
WRR – Welshpool Facility designed and approved as a transfer station for transferring wastes to WRR Kalgoorlie. Approved to treat oily water.	• Current DEP licence would allow the acceptance of some of these wastes however, the Works Approval submitted by WRR specifically excluded Dangerous Goods rated materials. The DEP is amending the licence. • Does not have any Dangerous Goods approvals from DMPR.	• Current DEP licence would allow the acceptance of these wastes however, the Works Approval submitted by WRR specifically excluded Dangerous Goods rated materials. The DEP is amending the licence. • Does not have any Dangerous Goods approvals from DMPR. •

Waste Treatment Option	Wastes Accepted outside of Existing Licence Conditions for CTS	
	Group A: Chlorinated Organic Chemicals Group B: Ancillary Organic Chemicals Group D: Flammable Liquids	Group F: Acids and Bases, Free Cyanide, Hexavalent Chromium
WRR Kalgoorlie. Chemical (predominately non-hazardous and bulk), and biological waste treatment with discharge to a lagoon system.	• Do not posses a DEP licence to allow the acceptance of most wastes in Groups A, B and D.	• CAN TREAT THESE WASTES.
Toxfree – Kwinana • Proposed to treat PCB, hydrocarbons, PAH, PERC, pesticides and contaminated sludges/soils via thermal desorption. • Process results in a concentrated waste that is transported interstate for treatment/destruction. • Does not have the necessary approvals to operate, but expected by late December.	• PCBs, Chlorinated pesticides, perchloroethylene will be able to be treated by Toxfree when operational. • A small volume of wastes may also be able to be repackaged on site. The extent of this will however be limited by space restrictions at the site.	• Not approved to treat these wastes.
Storage • Potential storage facilities in metro area. • This option involves the indefinite stockpiling of wastes pending the establishment of an appropriate treatment facility(s).	• High risk solution not favoured by MPR or DEP.	• High risk solution not favoured by MPR or DEP.
Mount Walton • No storage or treatment operations are undertaken at the Intractable Waste Disposal Facility. This is clearly outside the approvals and intent of the facility. Specific waste acceptance criteria prevent liquid wastes and wastes for which there are alternative disposal, recycling or reuse options from being accepted.	• Not appropriate.	• Not appropriate.

Waste Treatment Option	Wastes Accepted outside of Existing Licence Conditions for CTS	
	Group A: Chlorinated Organic Chemicals Group B: Ancillary Organic Chemicals Group D: Flammable Liquids	Group F: Acids and Bases, Free Cyanide, Hexavalent Chromium
Pyromex • Proposed destructive thermal distillation plant that destroys toxic components and gases at high temperatures; • Propose to treat a wide range of wastes including liquid hazardous wastes. • Feasibility study currently being undertaken, but not likely to be operational for at least 18 months.	• Not available	• Not available
Disposal to Landfill. • Liquids are not acceptable for disposal to landfill	• Not appropriate.	• Not appropriate.

POSSIBLE ALTERNATIVES TO THE LWTF

Environmental Recovery Services (ERS)

- Recycling of combustible solvents and oil filters;
- Repackaging of a variety of chemicals for treatment at other facilities including the LWTF; and
- Limited capacity to expand current operations.

Western Resource Recover (WRR) – Welshpool

- Facility designed and approved as a transfer station for wastes going to WRR Kalgoorlie. Can accept non-DG rated wastes; and
- DEP licence does not permit the acceptance of wastes within groups A, B or D.

Western Resource Recovery (WRR) Kalgoorlie.

- Chemical (predominately non-hazardous and bulk), and biological waste treatment with discharge to a lagoon system;
- DEP licence does not permit the acceptance of wastes within groups A, B or D.
- Proposed to treat PCB, hydrocarbons, PAH, PERC, pesticides and contaminated sludges/soils. May also be able to repackage other wastes on site but are limited by space restrictions;
- Process results in a concentrated product that can be transported interstate for treatment/destruction. The process is more efficient for waste with a moisture content <30%; and
- Does not have necessary approvals to operate.

Pyromex

- Proposed destructive thermal distillation plant that destroys toxic components and gases at high temperature;
- Propose to treat a wide range of wastes including liquid hazardous wastes; and
- Feasibility study currently being undertaken, but not likely to be operational for at least 18 months.

Storage

- Potential storage at Dangerous Goods rated facilities in metropolitan area;
- This option involves the indefinite stockpiling of wastes pending the establishment of an appropriate treatment facility(s);and
- High risk solution not favoured by MPR or DEP.

Mount Walton

- No storage or treatment operations are undertaken at the IWDF;
- To establish such operations is clearly outside the approvals and intent of the facility. To accept these wastes would require referral to the EPA;
- The majority of wastes are produced in the metro area and as such should be dealt with here;
- The facility is 565 km from Perth with access to the site via a 100 km unsealed access road not built for ongoing heavy vehicle movements;
- The site is not manned and would require considerable work to store these wastes ie clearing of vegetation, bunding, infrastructure to abide by DG requirements, laboratory; and
- Liquids and wastes for which alternative disposal, recycling or reuse options exist, are not acceptable.