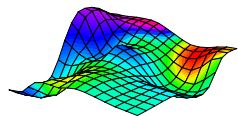


Report prepared for the  
Environment Protection Authority  
Government of South Australia

## A proposed licence fee system for South Australia

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## **1 INTRODUCTION**

The EPA is planning to change the way licence fees are calculated. This section provides some background on the current licensing system, the rationale for change and the process that is being undertaken to develop the new fee system.

### **1.1 The current licensing and fee system in South Australia**

South Australia's Environment Protection Act 1993 provides the EPA with the power to regulate activities that pose significant risk to, or impact on, the environment. An environmental authorisation is required before certain prescribed activities may be undertaken. There are around 60 types of prescribed activities which are outlined in Schedule 1 of the Act. Some examples include: chemical storage and warehousing; oil refining; petroleum production; sewage treatment or septic tank effluent disposal and the production of motor vehicles. This section briefly outlines the costs to the EPA of carrying out its activities under the licensing provisions of the Act and the current system for recovering the costs incurred.

The EPA currently has around 1,950 licences. Licensing by the EPA involves a number of different activities:

- Environmental and compliance assessment and enforcement, including site visits;
- Assessment of monitoring and environmental plans;
- Administration and overhead costs associated with licensing;
- Hot spot monitoring at licensed sources;
- Negotiations with licensees relating to licence conditions, development of environment improvement plans etc;
- Responses to incidents and investigations; and
- Assessment of industry monitoring and development of regulations, policies and programs relating to licensed activities.

The resources required for licensing include staff time within the Operations Division spent on licensing and the industry monitoring assessment branch within the Monitoring and Evaluation Division. There is also time spent on licensing issues in the rest of the Monitoring and Evaluation Division and the Pollution Avoidance Division<sup>1</sup>. There are also corporate overheads associated with licensing such as general administration, finance, human resources and information technology support (from the Corporate & Business Support Division). The costs of licensing for 2005/06 are estimated at around \$7.5m. This includes recurrent costs of around \$7.2m (see Attachment 1) and the cost of one-off projects relating to licensing of around \$300,000. More information on activities included and excluded from the costs of licensing is shown in Attachment 1.

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<sup>1</sup> The EPA is currently undergoing a restructure. This discussion refers to the EPA divisions before the restructure.

Fees are currently set under the Environment Protection (Fees and Levy) Regulations 1994. Fees for prescribed activities are primarily based on indices of levels of economic activity (eg: materials used or processed, production volumes, processing capacity) as proxies for environmental impact. There is a load based fee for monitored discharges to the marine environment based on average daily discharges, salinity of the discharge, types of pollutants and the size of the impact area. The load based fee for marine discharges makes up around 20% of licence fees. There are currently no load based fees for discharges of pollutants to freshwater or the atmosphere.

## 1.2 Why does South Australia need a new licence fee system?

There are two key reasons for revising the licence fee system. These are to:

- provide greater incentives for improving environmental performance;
- ensure fee levels reflect the relative amount of effort required to regulate different licensees.

The existing licensing fee system represents an amalgamation of systems under various Acts that were repealed on commencement of the *Environment Protection Act 1993*. The *Environment Protection (Fees and Levy) Regulations* were developed when the EPA was established in 1995.

Basing fees on levels of economic activity as a substitute for environmental impact provides no incentive to improve environmental performance, as reduced emissions of pollutants will not result in fee reductions, other than in the load based marine discharge fee. The Government has therefore decided to extend the use of load-based licensing so that more licence fees are based on the amount and types of pollutants discharged to the environment. In addition, some activities require more time and effort to regulate than others and this is not fully reflected in the existing fee system. Under the existing system there is some cross-subsidisation and the new structure seeks to address this.

## 1.3 What are the objectives of the new fee system?

The Environment Protection Act 1993 includes the following objective: “*to allocate the costs of environment protection and restoration equitably and in a manner that encourages responsible use of, and reduced harm to, the environment with polluters bearing an appropriate share of the costs that arise from their activities, products, substances and services*” (section 10(1)(b)(vi)).

There are three main parts of the objective:

- Equity – an ‘appropriate’ allocation of EPA costs across all stakeholders;
- Incentives – encouraging reduced harm to the environment; and
- Polluters bearing a share of EPA costs reflective of the costs arising from them.

Efficiency in recovery of costs is also important. The overall costs of administering the fee system must be recovered through the licensing fees, so it is desirable for both the EPA and industry that cost recovery objectives are met at least overall cost. There is a trade-off between precision at the individual licensee level (to maximise equity between licensees) versus minimising the overall costs of the collection system. The EPA is not proposing to recover pollution damage costs through licence fees as

they are limited to cost recovery, however, they are seeking a scheme that is consistent with the polluter pays principle.

The following objectives have been used to guide the development of the new fee system:

- Primary objective – to recover EPA costs for environmental management of licensees in an efficient and equitable manner; and
- Secondary objective – to provide an economic incentive to reduce pollution consistent with the polluter pays principle.

#### **1.4 How was the new fee structure developed?**

In 2002, the South Australian Cabinet endorsed the extension of load based licensing. The original intention was to superimpose a new fee schedule, based on the amount and type of pollutants emitted to the environment, on top of the existing fee schedule, which is primarily based on rates of production for activities of environmental significance. To this end, a load based licensing proposal was developed, which included the selection of pollutants, zones and weightings. However an independent review of the proposal recommended that the prevailing fee schedule should be reviewed, as it was based on an amalgamation of various Acts when the *Environment Protection Act 1993* was established, which had led to a number of inconsistencies between fees.

The EPA commissioned BDA Group to undertake an evaluation of conceptual options for the structure of a revised licensing system. The criteria used to evaluate the conceptual options were:

- Effectiveness – in recovering licensing costs;
- Efficiency – in recovering costs from both the regulator and industry perspectives;
- Cost reflective recovery – to provide equity across and within activity types;
- Transparency – in establishing fee liabilities for each activity;
- Predictability – in fees payable by licensees;
- Availability of incentives for improving environmental performance; and
- Ability to cope with changes in the number and mix of licensed activities.

The evaluation was completed in October 2004 and the EPA consulted with stakeholders on the identified short list of options in November and December 2004. In response to comments received a conceptual licence fee structure proposal was recommended by the Reference Group<sup>2</sup> based on a flat minimum component, an environment management component and a load based component. The EPA Board then endorsed this option for further development. BDA Group was engaged to develop the details of the licence fee structure drawing on the background work carried out by the EPA. The EPA

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<sup>2</sup> The licence fee structure Reference Group consists of members representing industry and the community.

consulted with its Reference Group on the settings for the components of the licence fee structure and the fee estimates in April 2005. The members of the Reference Group are:

- SA Water
- Engineering Employers Association
- Business SA
- SA Chamber of Mines and Energy
- Local Government Association
- SA Wine Industry Association
- Northern Industry Environmental Forum
- Energy sector in Port Adelaide Region
- SA Farmer's Federation
- Environmental Defenders' Office
- Waste Management Association of Australia
- Department of Trade and Economic Development

## 2 PROPOSED LICENCE FEE SYSTEM

This section provides an overview of the proposed fee system, describes each element of the fee system and outlines which components each licensee will need to pay.

### 2.1 Overview of fee system

The EPA has two objectives for the licence fee system. The primary objective is to recover EPA costs for environmental management of licences in an efficient and equitable manner. The secondary objective is to provide an economic incentive to reduce pollution consistent with the polluter pays principle. In consultation with stakeholders the EPA has chosen a hybrid fee structure with different components designed to meet these objectives.

The proposed licence fee structure has three components:

- a flat minimum component;
- an environment management component; and
- a load based component.

### 2.2 What is the purpose of each component?

The flat minimum component will be a set amount payable by all licensees to cover the administrative costs of issuing and managing a licence that are common to all licensees. The environment management component is intended to reflect the relative level of resources (or regulatory effort) required by the EPA to manage different activity groups as well as different licences within activity groups. The load based component is intended to provide an incentive or signal to licensees with significant loads of pollutants that contribute to key environmental problems in South Australia to reduce their emissions.

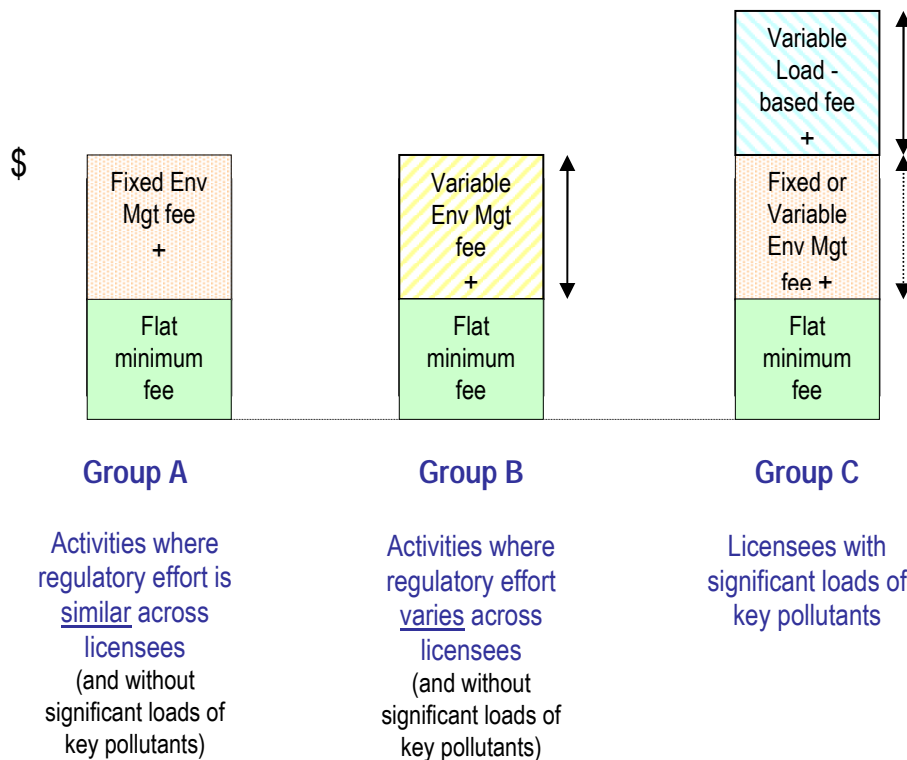
### 2.3 Which components will each licensee need to pay?

Under the proposed licence fee structure, licensees will fall into one of three groups:

- (A) Licensees in activity groups where the level of regulatory effort is *similar* across licensees (and that do not have significant emissions of pollutants of concern in SA) – these licensees will pay the flat minimum component and a fixed environment management component.
- (B) Licensees in activity groups where regulatory effort *varies* across licensees (and that do not have significant emissions of pollutants of concern in SA) – these licensees will pay the flat minimum component and a variable environment management component.
- (C) Licensees with significant emissions of pollutants of concern in SA - these licensees will pay the flat minimum component, a fixed or variable environment management component and a variable load based component.

Figure 1 shows the elements of the proposed fee system.

Figure 1: Elements of proposed fee system



A fixed environment management component refers to a single fee level that applies to all licences within the activity group. For example, under the proposed system concrete batching works fall under Group A and will face a fixed environmental management component, resulting in the same fee for all concrete batching works. However, this fee would be different to the fixed environment management component payable by a mineral works (also in Group A).

A variable environment management component refers to different fee levels applying to different licences depending on the resources required for licensing. For example, under the proposed system saleyards fall under Group B and will face a variable environment management component, with individual saleyards paying different fees depending on their location and volume of effluent discharged.

Licensees in Group C have significant emissions of key pollutants and may face a fixed or variable environment management fee. For example some metallurgical works will fall under Group C and face a fixed environment management component because the resources involved in licensing are similar for all licensees in this activity group. Whereas some sewage treatment works will fall under Group C and face a variable environment management component (with fee levels varying for different licence holders depending on whether they are located in a watershed protection area and their load of key pollutants or volume of effluent). The EPA has developed annual emission thresholds to determine which individual licensees need to pay the load based component. These thresholds are outlined in section 5.

A summary of activities by Group is provided alphabetically in Table 1. Each individual licensee will fall into one of the three groups (A, B or C), however within an activity type different licensees may fall into different groups. Activity types are unique to either Group A or Group B. However some activity groups will include both licensees with significant pollution loads as well as those without. The activities likely to include licensees with significant pollution loads are also shown in Group C (hence the repetition of activity types in Group C).

**Table 1: EPA licensed activities by proposed licence fee groups**

<b>Group A</b> <i>Activities where regulatory effort is similar across licences</i>	<b>Group B</b> <i>Activities where regulatory effort varies across licences</i>	<b>Group C</b> <i>Activities where some licensees will have significant loads of key pollutants</i>
	Abattoirs	
	Abrasive blasting	
Breweries		Breweries
Brukung mine site		
Bulk shipping		
Cattle feedlots		
	Cement works	Cement works
	Ceramic works	Ceramic works
	Chemical storage	Chemical storage
	Chemical works	Chemical works
Coal handling & storage		
Coke works		
	Composting works	
Concrete batching works		
	Crushing, grinding or milling	Crushing, grinding or milling
Curing or drying works		
	Discharge of stormwater to underground aquifers	
	Dredging	
Drum reconditioning works		
	Earthworks drainage	
	Extractive industries	Extractive industries
	Ferrous and non-ferrous metal melting	Ferrous and non-ferrous metal melting
	Fish processing	
	Fuel burning	Fuel burning
Helicopter landing facilities		
	Hot mix asphalt	Hot mix asphalt
	Incineration	Incineration
	Listed waste generators	Listed waste generators
Marinas & boating facilities		
Maritime construction		
Metallurgical works		Metallurgical works
	Milk processing	Milk processing

Group A <i>Activities where regulatory effort is similar across licences</i>	Group B <i>Activities where regulatory effort varies across licences</i>	Group C <i>Activities where some licensees will have significant loads of key pollutants</i>
Mineral works Motor racing & testing venues Oil refineries	Petroleum production Petroleum storage	Oil refineries Petroleum production Petroleum storage
Piggeries Pulp or paper works Railway systems	Produce processing Rendering or fat extraction Saleyards Sewage treatment Scrap metal recovery	Produce processing Pulp or paper works Rendering or fat extraction Sewage treatment
Shooting ranges Vehicle production	Surface coating Tanneries or fellmongeries Waste or recycling depots Waste transport Wineries or distilleries Wood preservation Wood processing	Surface coating Vehicle production Wood preservation Wood processing
Wool scouring or carbonising		Wool scouring or carbonising

### 3 FLAT MINIMUM COMPONENT

The purpose of the flat minimum fee is to reflect the minimum administrative work required for issuing a licence (no matter what activities the licence covers). Therefore the flat minimum component will be a single fee that is the same for each licence.

It is estimated that the EPA spends around \$450,000 per year, including overhead costs, to process around 1,915 licences. This does not include all licences, excluding dredging and earthworks drainage licences where dredging or earthworks drainage is not undertaken every year. It is proposed that the flat minimum component therefore be set at \$235 per licence.

## **4 ENVIRONMENT MANAGEMENT COMPONENT**

The purpose of the environment management fee is to reflect the relative level of resources required by the EPA to manage different activity groups, as well as different licences within activity groups.

Charging the same fee for all licensees would be very simple. However, it would be very inequitable. At the other end of the spectrum, fees could be determined individually for each licensee by tracking and recording all resources used in administering each licence. However, this would significantly increase the level of administrative costs for both licensees and the EPA.

The proposed schedule seeks to achieve a balance, differentiating between types of licences where there are substantial differences in resources likely to be required, while minimising the costs of administering the system. Attachment 2 shows the proposed schedule for the environment management component.

### **4.1 Development of the environment management fee schedule**

Relative fee levels for different types of licences have been derived by looking at the resources likely to be required over the long term for the EPA to manage them. This includes resources for activities such as audits, inspections, environment improvement programs, industry monitoring and other assessments. In developing the schedule it has been necessary to balance precision and cost-effective licensing. The schedule is not intended to incorporate minor differences in the resources required for different licensees, however, the resulting criteria and fee levels have been designed to provide robust relativities.

For some activities, the EPA expects little variation in resources required between licences and these activities will have a single fee level for their environment management component.

For many activities, the nature and diversity of licences means that resources are likely to vary substantially between licences within an activity group. For these activities, different fee levels will apply to different licences. The fee levels will vary according to suitable proxies for regulatory resources required such as location or volume of effluent discharged.

For activities with a flat environment management component, a single fee level has been developed to reflect the relative resources required for licensing compared to other activities. For activities with a variable environment management component, the lowest fee level has been set to reflect the minimum resources likely to be required given the inherent environmental risk of the activity. The number of fee steps and value of the highest fee level depends on the extent to which the resources required vary across licences within the activity group.

#### 4.2 How will licensees determine which environment management fee applies to their licence?

All licensed activities listed under Group A in Table 1 will face a fixed environment management component. All others will face a variable one. To determine their environment management fee licensees can look up their licensed activity in the environment management schedule (Attachment 2). Where they face a variable scale of fees, the actual fee level will depend on specified characteristics, such as the type of plant or the distance between the activity and a watercourse. If an entity has more than one licensed activity on the one site, they only need to pay a single fee - the highest applicable fee for the activities on the site.

Under the current licence fee system a licensee is required to pay fees for all licensed activities (apart from inherent<sup>3</sup> activities). However, the bulk of the current level of regulatory resources is directed at the major activity conducted on a licensed site, and a single site visit generally covers all licensed activities. To reflect this fact, and simplify the system, the environment management component is proposed to be payable on only the highest fee in the environment management schedule that is applicable for each licence. The highest fee now includes the regulatory effort for all licensed activities on the site.

Note that all licensed activities will still continue to be specified on the licence.

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<sup>3</sup> Inherent activities are defined in Section 12 of the *Environment Protection (Fees and Levy) Regulations 1994* as follows: "Where a licence authorises prescribed activities of environmental significance of two or more different kinds referred to in Part A or Schedule 3 (whether or not the activities are to be undertaken at the same location), the fee amounts determined in accordance with that Part in respect of the different activities will be aggregated for the purpose of determining the licence fee unless the Authority determines that any of the activities is an inherent part of another, in which case, only the higher or highest of the amounts determined in accordance with that Part in respect of the activities concerned will be payable."

## **5 LOAD BASED COMPONENT**

### **5.1 Overview of the load based fee component**

The purpose of the load based component is to provide an incentive to reduce pollution. However, the basis for estimating and reporting load fee liabilities should not impose excessive administration or monitoring costs on the EPA or licensees. The proposed structure for the load based component is relatively simple in comparison to interstate load based systems and builds upon current environmental management requirements.

### **5.2 Environmental issues and objectives in South Australia**

The starting point for the development of the new load based component was identification of the major environmental issues in South Australia. EPA specialists identified the major air and water pollution issues in South Australia, based on the EPA's current work in these areas.

The following major air quality issues were identified:

- demonstrated health impacts from airborne lead in Port Pirie;
- exceedences of national health guidelines for sulfur dioxide in Port Pirie;
- potential health problems and impacts on infrastructure from red dust in Whyalla;
- elevated levels of particulates in Adelaide and Mount Gambier; and
- ozone in the Adelaide metropolitan area.

Eight significant water quality issues associated with pollution in South Australia were also identified. These are:

- seagrass loss and degradation of rocky reefs in Adelaide's coastal waters;
- heavily impacted aquatic ecosystems and nuisance algal blooms in the Port River and Barker Inlet;
- heavy metal concentrations requiring bans on collecting shellfish in parts of the Upper Spencer Gulf;
- effects on aquatic ecosystems and impacts on recreation in Lake Bonney;
- high nitrate concentrations in parts of the South East groundwater aquifers;
- impacts on water supplies and river aquatic systems in the River Murray;
- increasing strain on the water supply catchment and aquatic ecosystem health in the Mount Lofty Ranges;
- increasing salinity in groundwater and surface waters.

The lists of key issues above have been used to help focus the development of the settings for the load based component. The settings have been designed to focus on the most pressing environmental issues and pollutants identified where licensed sources make a large contribution to the problem.

### 5.3 Which pollutants are included?

To reflect the most significant environmental issues, thirteen pollutants have been selected as the pollutants of greatest concern in South Australia. These pollutants are causing key problems in South Australia and significant loads are generated by licensed sources. Table 2 shows the pollutants proposed to be included in the load based component of the fee system. Attachment 3 provides information on the potential negative impacts of these pollutants.

**Table 2: Proposed list of pollutants for load based component**

Air	Water
Lead	Nitrogen
Sulfur dioxide	Phosphorus
Particulates	Suspended Solids
Nitrogen Oxides	Organic Matter
Volatile Organic Compounds	Temperature
	Zinc
	Lead
	Copper

The list of pollutants to be included in the load based component was selected by specialists from the EPA and the Department of Human Services through the course of workshops held in 2004 and 2005. The definition of each pollutant is provided in Attachment 4.

### 5.4 Why were these pollutants selected?

This section summarises the reasons for the selection of the pollutants in Table 2 for inclusion in the load based component of the licensing system.

#### *Air pollutants*

Lead was selected because lead exposure results in a decrease in intelligence and general academic performance in young children<sup>4</sup> and in the SA context there have been demonstrated health impacts from airborne lead in Port Pirie.

Sulfur dioxide has been included because levels in Port Pirie have exceeded national health guidelines. While health studies have not yet shown a conclusive relationship between sulphur dioxide levels and health in Port Pirie, they are above national health guidelines<sup>5</sup>.

<sup>4</sup> A Review on Existing Health Data on Six Pollutants, prepared by Dr Jonathon Streeton for the National Environment Protection Council, May 1997

<sup>5</sup> The State of the Environment Report for South Australia 2003, Environment Protection Authority, November 2003

Particulates were selected because of the potential health problems and impacts on infrastructure from red dust in Whyalla, and elevated particulate levels in Mount Gambier and the Adelaide metropolitan area. Particulates in Whyalla from licensed sources are mainly iron rich. Iron rich particulates have been shown to have more significant effects than particulates on their own<sup>6</sup>. Particulates in Mount Gambier are due to licensed sources such as wood processing works as well as domestic wood heaters and in Adelaide on the Le Fevre peninsula elevated particulate levels are mainly due to licensed sources.

Nitrogen oxides and volatile organic compounds have been included because of ozone levels in the Adelaide metropolitan area. Ground level ozone is monitored at a variety of locations throughout the Adelaide air shed. While no exceedences of the NEPM (National Environment Protection Measure) standards have been recorded, the latest annual report (2004) shows the 4-hour ozone peak at Elizabeth as 0.079ppm, only marginally below the NEPM standard of 0.080ppm.

#### *Water pollutants*

The nutrients nitrogen and phosphorus were selected because of their contribution to seagrass loss and degradation of rocky reefs in Adelaide's coastal waters<sup>7</sup>; damage to aquatic ecosystems and contribution to nuisance algal blooms in the Port River and Barker Inlet (where the main contributors are licensed sources); impacts on water supplies and river aquatic systems and algal blooms in the River Murray; and increasing strain on the water supply catchment and aquatic ecosystem health in the Mount Lofty Ranges.

Suspended solids have been included because of their contribution to seagrass loss and degradation of rocky reefs in Adelaide's coastal waters; and contribution to pressure on the water supply catchment and aquatic ecosystem health in the Mount Lofty Ranges.

Organic matter was selected because of its contribution to seagrass loss and degradation of rocky reefs in Adelaide's coastal waters, as well as effects on aquatic ecosystems and impacts on recreation in Lake Bonney. A study is underway to identify the specific compounds which are impacting on aquatic ecosystems and recreation in Lake Bonney. Organic matter as BOD<sub>5</sub><sup>8</sup> was selected as a suitable proxy for the various organic compounds.

Temperature has been selected because of its impact in the Port River and Barker Inlet. Temperature pollution is the result of licensed use of water for cooling purposes. The heated water is returned to the estuary (or marine environment in the case of temperature in the Upper Spencer Gulf) which results in localised impacts.

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<sup>6</sup> Transcript of EJ Maynard's evidence in court case against OneSteel, March 2005

<sup>7</sup> The health of subtidal reefs along the Adelaide metropolitan coastline 1996–1999, Environment Protection Authority, January 2003.

<sup>8</sup> Biological oxygen demand (5-day test)

Studies have shown that zinc, lead and copper bio-accumulate in shellfish in the Upper Spencer Gulf. Metal bioaccumulation in tolerant species such as razorfish suggests that more sensitive species may be at risk of metal-related toxicity. Heavy metal concentrations have required bans on collecting shellfish in parts of the Upper Spencer Gulf.

Attachment 5 discusses the other environmental issues and pollutants that were considered but excluded and the reasons for excluding them from the load based component.

### 5.5 How will pollutant loads be calculated?

A licensee required to pay the load based component will need to pay a fee based on the total kilograms discharged for *each* liable pollutant. The fee for each liable pollutant will be calculated as:

***Pollutant load fee***

$$= \text{kilograms of pollutant emitted} * \text{pollutant weighting} * \text{zone weighting} * \text{fee unit}$$

*(zone weightings greater than 1 only apply for certain pollutant / zone combinations; the default zone weighting is 1)*

The kilograms of pollutant emitted will be determined from data that is already provided to EPA in the form of:

- pollutant discharge loads provided to the National Pollutant Inventory (NPI); and / or
- monitoring reports submitted to the EPA as a condition of licence.

Licensees may choose to develop site specific pollutant emission estimation factors rather than using the general factors available in NPI handbooks. These factors and calculation methods must be approved by the EPA before they can be used as a basis for submitting pollutant discharge loads to the EPA.

Load based licensing schemes in other jurisdictions commonly include pollutant weightings to reflect the relative impact of different pollutants on the environment. Environmental zones are also established to increase fees for selected pollutants in critical areas that are under environmental stress.

The EPA is also proposing a fee cap on the load based component that sets a maximum dollar amount for this component for individual licensees. The rationale for and impacts of the fee cap are discussed in section 7.5 below.

### 5.6 How were the pollutant weightings derived?

Load based licensing schemes in other jurisdictions commonly include pollutant weightings to reflect the relative impact of different pollutants on the environment. There are different approaches

to the development of pollutant weightings. In the proposed load based component of the SA EPA's fee system the pollutant weightings are designed to reflect the *potential harm* of the selected pollutants.

In setting pollutant weightings some jurisdictions have also taken into account the specific characteristics of receiving environments in their State or country. For example by including specific consideration of environmental goals and the level of emission reductions needed to reach those goals, and the relative contribution of licensed activities, as part of the development of pollutant weightings. This complicates the derivation of pollutant weights. Given the modest level of fees proposed under the SA load based component, pollutant weights were designed to reflect relative harm without adjusting them for other factors. Consideration of critical areas that are under environmental stress is incorporated in a separate environmental zone weighting which is discussed in the next section.

Pollutants were grouped into four categories, with category weightings set on a logarithmic scale. A logarithmic scale was chosen for the following reasons:

- The Victorian and WA load based fee systems make use of a logarithmic scale;
- A logarithmic scale is a simple system. It is relatively easy to group pollutants with weightings of 1 / 10 / 100 / 1000 (order of magnitude) rather than some other arbitrary scale; and
- A factor of 10 is often used in toxicological testing<sup>9</sup>.

The proposed pollutant weighting scale is shown in Table 3.

**Table 3: Proposed pollutant weighting scale**

Category	Criteria	Weighting
1	Short term, minor effect	1
2	Short to medium term, significant effect	10
3	Long term, significant effect	100

The proposed pollutant weights for the air pollutants in the scheme are shown in Table 4.

<sup>9</sup> For example, the OECD Guidelines for Testing of Chemicals, December 2001.

**Table 4: Proposed weightings for air pollutants**

Category	Pollutant	Weighting
1	Sulfur dioxide, Nitrogen Oxides	1
2	Particulates, Volatile Organic Compounds	10
3	Lead	100

Sulfur dioxide and nitrogen oxides have been assigned a pollutant weighting of 1. They have acute respiratory health effects especially in young children, asthmatics and adults compromised by chronic cardiac and respiratory disorders. However, these pollutants are non life threatening for the majority of the population. Nitrogen oxides and hydrocarbons (volatile organic compounds) catalysed by sunlight form ozone, which is a pollutant at sea level. It is sometimes referred to as photochemical smog, and affects visibility. Sulfur dioxide and nitrogen oxides are reactive in the environment and therefore not as persistent as other pollutants.

Particulates and volatile organic compounds have been assigned a weighting of ten. Particulates can in themselves cause short term respiratory health effects in susceptible populations but they also act as vehicles for transport of more toxic compounds which may be bound to them. Particulates are a highly visible form of pollution and cause reduced visibility and a reduction in amenity. Risk groups for particulates are healthy children, adults with obstructive lung disease and asthmatics. VOC's may have short term respiratory effects in the whole population but are also associated with chronic disease. They contribute to ozone formation and photochemical smog. VOC's are also associated with nuisance odours.

Lead has been assigned a pollutant weighting of 100. Lead can have both short and long term effects for all members of the population, such as impairment of neurological, intellectual and psychological functioning in young children and other immature mammals. It is highly toxic, highly persistent in the environment and there are many modes of exposure such as ingestion and breathing in lead bound to particulates.

The proposed pollutant weights for the water pollutants in the scheme are shown in Table 5.

**Table 5: Proposed weightings for water pollutants**

Category	Pollutant	Weighting
1	Temperature	1
2	Suspended Solids, Nitrogen, Phosphorus, Organic Matter, Zinc	10
3	Lead, Copper	100

Temperature has been assigned a weighting of 1. Temperature disrupts ecosystems, contributes to algal blooms, increases the likelihood of pests and decreases solubility of oxygen. In South Australia, temperature related discharges are localised in terms of temperature change.

Five water pollutants have been assigned a weighting of 10: suspended solids, nitrogen, phosphorus, organic matter and zinc. Suspended solids can cause ecosystem level impacts<sup>10</sup>. The most immediate is reduced light penetration in water bodies (this is referred to as turbidity). This reduces photosynthesis by plants, which in turn can have numerous community level impacts. Suspended solids will also eventually settle (depending on flow conditions), which can lead to smothering of plants and animals.

The nutrients nitrogen and phosphorus can cause excessive plant growth such as algal blooms, reducing the amount of oxygen available to other aquatic organisms. Organic matter is broken down by bacteria as a natural process in aquatic ecosystems, releasing nutrients back into the system for plants to take up. If there is too much organic matter, the bacterial decay uses more oxygen than can be resupplied, resulting in the level of dissolved oxygen dropping, which in turn stresses fish and other animals. Since the large amount of organic decay releases more nutrients, there can also be an increase in plant growth, with its subsequent changes to the community structure.

Zinc is a trace metal that can cause toxicity to aquatic (fresh and marine) animals by interfering with enzyme functions.

Lead and copper have been assigned the highest weighting of 100 as they can be highly toxic to fresh and marine biota at relatively low concentrations, by interfering with enzyme functions. Copper is an essential nutrient at trace amounts, although the concentration which is tolerated before causing toxicity is much less than zinc, so it is considered more hazardous. Lead is not an essential nutrient.

## **5.7 How were the environmental zones and weightings selected?**

Environmental zones are commonly used in load based fee schemes to provide greater incentives to reduce emissions in particular areas under environmental stress. The environmental zones in the proposed SA licence fee system are intended to reflect areas of environmental stress in South Australia to ensure the fees are targeted to reflect priority pollution load reductions from licensed facilities.

A small number of zone settings have been developed to ensure the incentives are highly targeted. This will facilitate larger fees focused on the key areas rather than smaller fees spread across many areas. As a result not all of the identified environmental issues identified above are included

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<sup>10</sup> Examples of ecosystem level impacts:

- The findings of the Adelaide Coastal Waters Study indicate that turbidity is the primary driver in the seagrass losses off the Adelaide coast.
- Dredging in the vicinity of Horseshoe Reef in the late 1990's led to severe degradation of the reef, which has not subsequently recovered

in the set of proposed environmental zones. The environmental zones were developed by considering the most pressing environmental issues and pollutants identified and instances where licensed sources make a large contribution to the problem.

Relative weightings have been developed for all pollutants/zone combinations to reflect the relative priority of each combination, taking into account the importance of the environmental issues as well as the contribution of licensed sources to each issue. There was a two step process employed to develop the zone weightings:

- Step 1 - broad prioritisation of environmental issues at the State level; and
- Step 2 - practical investigation of the outcomes of the broad prioritisation at an individual licensee level.

Step 1 involved the development of an initial set of weights at a workshop of EPA specialists. Step 2 involved modelling the fee outcomes implied by the initial weights for individual licensees and examining whether these reflected priorities at a local level. The proposed weights for the air pollutants are shown in Table 6.

**Table 6: Proposed environmental zones and weightings for air pollutants**

Zone	Pollutants	Weighting
Port Pirie	Lead	30
Whyalla	Particulates	4
Adelaide metro airshed	Volatile organic compounds and nitrogen oxides	2
Port Pirie	Sulphur dioxide	2
Mount Gambier	Particulates	2

All other possible air pollutant/zone combinations have a zone weighting of 1. That is, if there is no zone weighting defined in tables 6 and 7, then the zone weighting is 1.

Lead in Port Pirie has the highest proposed zone weighting of thirty. Lead is prevalent in Port Pirie, and the main source is licensed. Lead is widespread and persistent in the environment, and is a priority for reduction. Average lead levels in children's blood in Port Pirie are above the level of 10 µg/dl set by the Australian National Health and Medical Research Council.<sup>11</sup> Lead exposure can impair neurological, intellectual and psychological functioning in young children and other immature mammals. It should be noted that the original zone weighting for lead in Port Pirie based on the broad prioritisation of State issues was five. Modelling of individual fees revealed that the zone

<sup>11</sup> National Health and Medical Research Council, Revision of the Australian guidelines for lead in blood and lead in ambient air, 1993 (under review)

weight did not adequately reflect EPA priorities for reducing lead versus other pollutants in some instances. The proposed zone weighting of thirty will ensure that the fees reflect EPA priorities at the local level.

Particulate emissions in Whyalla are proposed to have the second highest zone weighting of four. Emissions from a licensed source in Whyalla are a major community concern due to potential health impacts and amenity issues.

The rest of the air pollutant/zone combinations have a lower weighting of two. VOCs and nitrogen oxides in the Adelaide metro airshed are precursors to ozone formation and contribute to photochemical smog. Reductions in these pollutants are a priority for the EPA. However, they have been assigned a lower weight because unlicensed sources such as motor vehicles and service stations also contribute to emissions of these pollutants.

Sulfur dioxide on occasions exceeds the NEPM standard in Port Pirie, and has potential health effects. The main source is licensed by the EPA. However, the zone weighting is low to reflect a lower priority for sulphur dioxide reduction as compared with the higher priority for lead.

The licensed sources of particulates in Mount Gambier are from industry wood fired power generation and wood processing. The lower zone weighting reflects the fact that there is also a significant contribution to particulate levels in Mount Gambier from unlicensed domestic combustion heating.

The proposed weights for the water pollutants are shown in Table 7. All other possible water pollutant/zone combinations have a zone weighting of 1. That is, if there is no zone weighting defined in tables 6 and 7, then the zone weighting is 1.

There is a much smaller spread of weights for the water pollutant/zone combinations compared with the air emissions to reflect water pollutant priorities. Nitrogen discharges into the Port River and Metro coasts have been assigned the highest weighting of three.

The nitrogen discharges into the Port River (and Barker Inlet) and metro Gulf waters have been shown to cause large algal blooms, substantial seagrass losses and consequential changes to these ecosystems.

The rest of the water pollutant/zone combinations have been assigned the lower weighting of two. Phosphorus is not normally the limiting nutrient<sup>12</sup> in marine/estuarine environments. However, in the Port River the unusually high nitrogen concentrations mean that reductions in both phosphorus and nitrogen are required to reduce algal blooms.

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<sup>12</sup> The nutrient in short supply relative to the others will be exhausted first and will therefore limit growth, i.e. this is the limiting nutrient

**Table 7: Proposed environmental zones and weightings for water pollutants**

Zone	Pollutants	Weighting
Port River	Nitrogen	3
Metro coasts	Nitrogen	3
Port River	Phosphorus	2
Metro coasts	Suspended solids	2
Upper Spencer Gulf	Zinc, lead, copper	2
Lake Bonney (SE)	Organic matter	2

Suspended solids in the metro coast area are implicated in seagrass losses due to their effect on light reduction.

Studies have shown that zinc, lead and copper bio-accumulate in shellfish in the Upper Spencer Gulf. Metal bioaccumulation in tolerant species such as razorfish suggests that more sensitive species may be at risk of metal-related toxicity.

Lake Bonney has received a high load of organic matter from licensed sources for several decades. Toxicants have been found within this organic material which is considered to have caused significant ecological decline within the lake.

### 5.8 Load fees only payable where emissions exceed threshold levels

In some instances, a licensed premise may conduct an activity liable for load based fees, but discharge very small quantities of one or more pollutants covered in the fee system. This may impose costs for emission monitoring and reporting for little potential benefit. Accordingly, to ensure a cost-effective fee system, it is proposed load-based fees will only apply where emissions exceed specified threshold levels. A simple logarithmic scale of kilograms of pollutant thresholds is proposed, with thresholds consistent with the proposed pollutant weightings.

The proposed air and water pollutant emission thresholds levels are shown in Tables 8 and 9.

**Table 8: Proposed air pollutant emission threshold levels**

Pollutant	Emission threshold level (per year)
Sulfur Dioxide, Nitrogen Oxides	10,000 kg
Particulates, Volatile Organic Compounds	1,000 kg
Lead	100 kg

**Table 9: Proposed water pollutant emission threshold levels**

<b>Pollutant</b>	<b>Emission threshold level (per year)</b>
Temperature	10,000 Watt
Suspended Solids, Nitrogen, Phosphorus, Organic matter, Zinc	1,000 kg
Lead, Copper	100 kg

## **6 OPPORTUNITIES FOR REDUCING FEES**

Through reducing pollutant loads discharged or improved environmental management practices, many licensees will be able to reduce their fee liabilities under the proposed fee system. This builds on existing incentives for improved environmental performance in the form of accredited licences or entering into an environment performance agreement.

### **6.1 Applying for an accredited licence**

The EPA has provided licensees with the option of applying for accredited licences which offer possible reductions in licence fees to reflect the lower level of oversight that may be required. This type of licence is available to all licensees regardless of the way in which their fees are charged.

Accredited licences are currently used in Victoria and WA as a means of encouraging or rewarding best practice environmental management. The requirements for accreditation in SA include the following:

- An excellent environmental record and a history of compliance with the Act and relevant preceding legislation
- Comply fully with the Environment Protection Act 1993, including compliance with licence conditions, Environment Protection Policies and the general environmental duty (this does not include exemptions)
- An environment management system that is certified under ISO 14001 by an EMS Certification Body that is accredited by the Joint Accreditation Scheme - Australia New Zealand (JASANZ). The EPA will consider endorsing environment management systems that have been accredited under alternative accreditation standards for licence accreditation purposes on a case by case basis;
- A licensee's environmental policy and objectives specified in the environment management system must contain a clear commitment to best practice environmental management including compliance with the Environment Protection Act 1993, Environment Protection Policies and the general environmental duty and must be endorsed by the EPA;
- An environmental audit and compliance program that has been approved by the EPA;
- Demonstrate a commitment to excellence in environmental performance; and
- Where appropriate, an environment improvement program that specifies quantifiable targets and deadlines for improved environmental performance that has been prepared in consultation with the local community where such interest exists, takes the licensee beyond compliance and is approved by the EPA.

Given that accreditation reflects a high standard of performance accredited licensees will receive a 50% reduction on the total licence fee payable. Other benefits to licensees will include:

- A 10 year licence with an assurance of no change to licence conditions during this time (other than those regarding discharge limits and/or monitoring requirements), unless the licence is revoked;
- More flexible, less prescriptive licence conditions that focus on better environmental outcomes;
- Enhanced credibility with customers and the community due to EPA recognition of their environmental credentials.

## **6.2 Entering into an environment performance agreement**

As an additional incentive for improved environmental performance fee reductions are available to licensees who enter into Environment Performance Agreements with the EPA. Entering into an environment performance agreement can provide immediate fee reductions for licensees who are willing to commit to future sustained reductions in emissions of pollutants.

Licensees who enter into a performance agreement can pay fees based on their agreed future pollutant loads or performance standards. This fee reduction is facilitated via a waiver of fees under section 116 of the Act. Money that would otherwise be paid in fees can then be used for investment in improving environmental performance. This arrangement is similar to regulatory arrangements in NSW that provide similar fee reductions for licensees who enter into Load Reduction Agreements with the NSW EPA.

An environment performance agreement may comprise of the following parameters:

- A clear definition of the pollutant emissions that are to be dealt with under the performance agreement;
- Quantification of levels of emissions of these pollutants at the time of commencement of the performance agreement and the targets for each pollutant that is to become the basis upon which fees are calculated during the term of the performance agreement;
- Clear and detailed specification of the program to be undertaken including dates and milestones to achieve the targeted environmental improvements; and
- A requirement that the emissions specified in the agreement will become the discharge limit or performance standard for the licence upon expiry of the performance agreement. Lower required performance levels may be set subject to agreement between the EPA and licensee. Fees would be set to reflect the performance standards specified in the licence.

Fee reductions of up to 50% may be offered to licensees who **do not** pay a load based component as an incentive to implement environment performance agreements. However, in order for the EPA to assess proposals and consider the appropriate fee reduction to be offered, licensees need to be able to:

- define the significance of the matter to be addressed via the performance agreement relative to their overall environmental impacts for which they are licensed; and
- accurately measure the pollutant emissions that are to be dealt with via the agreement.

For licensees that **do** pay a load based component there would be no restriction on the achievable fee reduction on pollutants for which specific load based fees apply and accurate monitoring is undertaken. For example, an 85% reduction in the discharge of a specific pollutant that is accurately measured would result in an 85% reduction in the charges for that pollutant. Where performance agreements are proposed in relation to pollutants that are not specifically subject to load based licensing fees, the proposed fee reduction limits and measurement requirements specified for other licensees will apply.

The following provides a summary of key regulatory provisions that would apply to both types of licensees.

- Applicants must be in compliance with licence conditions when applying to enter into a performance agreement;
- The maximum term for a performance agreement would be 4 years;
- Licensees must report on progress with implementation of the performance agreement in accordance with key dates and milestones specified in the agreement. The EPA may also require additional reports to be prepared if it is concerned that the licensee is not complying with a condition of the agreement or if it considers that the licensee is unlikely to achieve the targets specified in the agreement;
- Licensees must notify the EPA as soon as possible upon becoming aware they will not be able to achieve the targeted environmental improvements specified in the performance agreement;
- The provisions of a performance agreement may be amended by consent between a licensee and the EPA. Where a licensee becomes aware that the environment performance requirements of an agreement cannot be met, the terms of the agreement will be amended to reflect less ambitious performance objectives. However, this would result in higher licence fees for the remaining term of the agreement that would be set in accordance with the revised performance objectives; and
- Licensees may terminate performance agreements if they believe that they will not be able to achieve the targets specified in the agreement. If a licence is to be transferred or surrendered by the licensee or is suspended or revoked any performance agreement relating to the licence will be considered to have been terminated by the licensee. The EPA may also terminate a performance agreement if the licensee fails to comply with a condition of the agreement or if it considers that the licensee is unlikely to achieve the targets specified in the agreement.

### **6.3 Implication of fee reductions for cost recovery**

Through reducing pollutant loads discharged or environmental management practices, many licensees will be able to reduce their fee liabilities under the proposed fee system. In addition, uptake of the flexibility mechanisms described above (applying for an accredited licence; or entering into an environment performance agreement) may serve to further reduce licence fees payable. This presents a potential risk as the primary objective of the new fee system is cost recovery and licensing costs may not fall in line with the environmental improvements.

A similar risk is presented through potential changes in the structure of licensed industry over time in South Australia impacting upon the number of licensees and fees payable. The EPA would be able to review licensing costs and fee levels over time and amend the fee system as necessary to ensure the cost recovery objective is achieved.

## 7 PROPOSED FEES

### 7.1 Setting overall fee levels

The licence fee scheme will be set to recover the same amount as current total licence fee income (estimated at around \$7.4m for 2005/06). This is just under the current costs of licensing (estimated at around \$7.5m for 2005/06). The EPA has decided not to seek another increase in overall licence fees at this time as the difference between current licence fee income and costs is minimal.

The proportion of total fees to come from the flat minimum, environment management and load based fee components has been the subject of much discussion within the EPA and the Reference Group. A very high load based component in the overall fee structure would make a few industries pay for the majority of the cost of EPA licence management in South Australia. A small load based component would mean that individual businesses with high discharge loads have little or no financial incentive to reduce their discharges of pollutants.

Currently about 1% of licences provide 20% of the EPA licence fee income in the form of marine discharge fees. The proposed load based component would be spread across approximately 100 licences (or 5% of EPA licences). Interstate EPA's collect around 57% to 70% of fees through their load based component, however the amount of licences liable for a load based component is 9-25%. The EPA has proposed a load based component of between 30% and 40% for application to 5% of licensees. In this range, there is some financial encouragement to reduce pollution loads without making a few industries pay most of the EPA licence fees. Table 10 shows the comparison across States.

**Table 10: Interstate load based components**

State	Percentage of EPA regulated activities which have a load based component <sup>13</sup>	Percentage load based component (as % of total revenue from EPA regulated activities)
NSW	9%	70%
Vic	25%	57%
WA	10%	60%
SA proposal	5%	30-40%

As a starting point for consultation the EPA has recommended 35% of total fees come from the load based component (this will be referred to as the starting point option).

<sup>13</sup> Regulated activities include waste transport permits in Victoria, and registered premises and waste transport licences in WA, as these activities are also licensed in South Australia

The full breakdown of fees for the starting point option is:

- Flat minimum component – 6% of total fees (around \$450,000)
- Environment management component – 59% of total fees (around \$4.4m)
- Load based component – 35% of total fees (around \$2.6m)

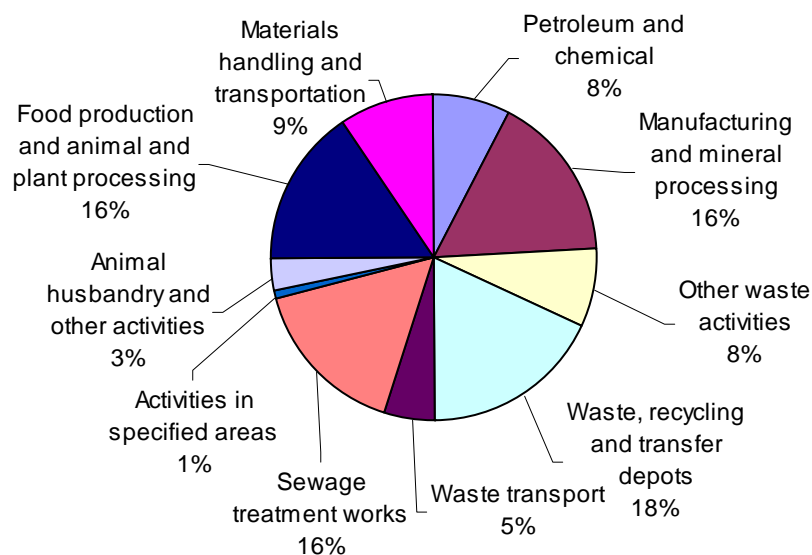
However as a safeguard to ensure an equitable recovery of licensing fees, the EPA is proposing a fee cap that limits the load based fee payable for any single licence to \$500,000. All fee estimates in the following sections incorporate this fee cap. The rationale for and impact of the fee cap is discussed further in section 7.5.

## 7.2 Environment management fees

Under the starting point option the value of the fee unit for determining the environment management component (set out in Attachment 2) would be \$348. Attachment 6 shows how the value of the environment management fee unit changes under different fee settings (see Table A6.1).

Figure 2 presents the breakdown of environment management fees across the broad industry categories set out in the Regulation under the starting point option.

Figure 2: Breakdown of environment management fees by industry categories



The highest percentage of environment management fees would be payable by waste, recycling and transfer depots (representing some 18% of the total). Manufacturing and mineral processing; food production and animal and plant processing; and sewage treatment works each represent around 16% of environment management fees. The percentages directly reflect the level of resources required to manage licences in each sector.

### 7.3 Load based fees

The fees per tonne (or per megawatt) of pollutants under the starting point option would range from \$3.70 to \$369. Tables 11 and 12 show the fee per ton pollutant (excluding zone weighting) for pollutants discharged to air and water respectively.

**Table 11: Draft fees for air pollutants under starting point option**

Pollutant	\$ / tonne
Sulfur dioxide, nitrogen oxides	3.70
Particulates, volatile organic compounds	37
Lead	369

**Table 12: Draft fees for water pollutants under starting point option**

Pollutant	\$
Temperature	3.70 per MW
Suspended solids, nitrogen, phosphorus, organic matter, zinc	37 per tonne
Lead, copper	369 per tonne

Attachment 6 shows how the value of the fees per tonne of different pollutants changes under different fee settings (see Tables A6.2 and A6.3).

Under the starting point option most of the load based fees would come from air pollutants. Table 13 shows the breakdown of fees from air and water pollutants under the starting point option. This is a reflection of the environmental priorities set out in the fee settings as well as the quantities of different pollutants discharged.

Table 13 Total load based fees for air and water pollution<sup>14</sup>

Pollution media	Total fees	% of total
Air	\$2,025,148	78%
Water	\$563,827	22%
<b>Total</b>	<b>\$2,588,975</b>	

Figure 3 shows the percentage shares of total load based fees for individual pollutants. Under the starting point option, the pollutants contributing the greatest share of fees are volatile organic compounds (26%), particulates (25%), lead emissions to air (17%) and sulfur dioxide (11%). These are followed by nitrogen (9%) and suspended solids (8%).

Figure 3: Breakdown of load based fees by pollutant

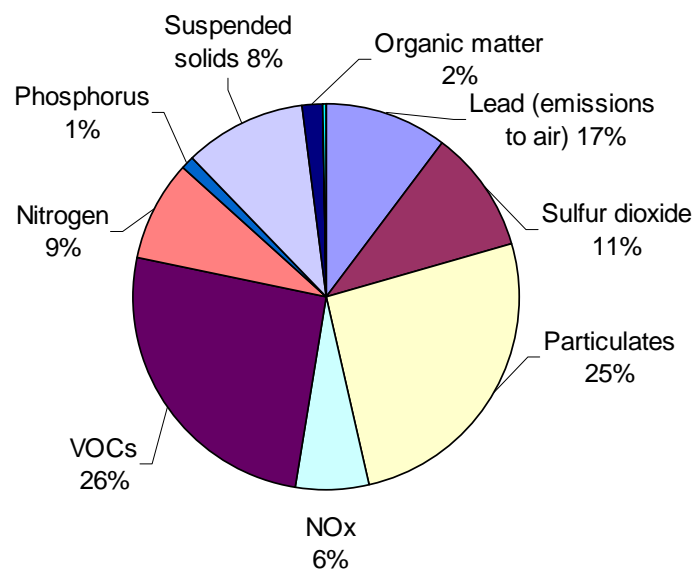
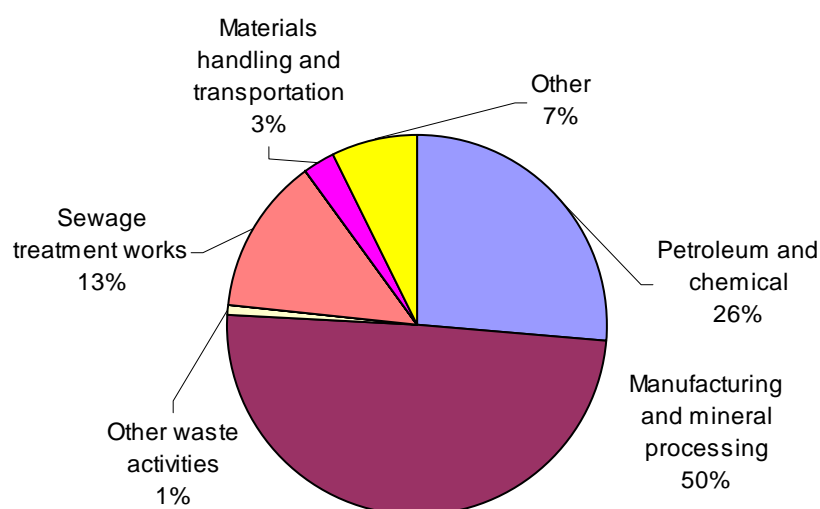


Figure 4 shows the estimated load based fees payable under the starting point option across the broad industry categories set out in the Regulation.

<sup>14</sup> To incorporate the impact of the fee cap in these results the fees for the two licensees above the cap have been reduced on a pro rata basis across their major pollutants. The rationale for and impact of the fee cap is discussed further in section 7.5.

Figure 4: Breakdown of load based fees by industry category



As would be expected the load based fees are concentrated on a smaller number of industry categories than the environment management fees. Around 90% of the load based fees would come from three industry categories: manufacturing and mineral processing; petroleum and chemical and sewage treatment works.

#### 7.4 Fees by activity group

The total fees, number of licences and average fee for each regulated activity group are shown in Table 14.

Table 14: Total and average fees by activity group

Regulation reference	Activity group	Number of licences	Total fee	Average fee
1(1)	Chemical storage and warehousing	25	\$84,313	\$3,373
1(2)	Chemical works	23	\$351,027	\$15,262
1(4)	Oil refineries	1	\$17,612	\$17,612
1(5)	Petroleum production and storage	8	\$427,127	\$53,391
1(6)	Wood preservation works	12	\$140,814	\$11,735
2(1)	Abrasive blasting	76	\$104,398	\$1,374
2(2)	Hot mix asphalt preparation	10	\$33,594	\$3,359
2(3)	Cement works	2	\$49,748	\$24,874
2(4)	Ceramic works	7	\$59,238	\$8,463
2(5)	Drum reconditioning works	91	\$116,264	\$1,278
2(6)	Concrete batching works	2	\$2,555	\$1,278
2(7)	Ferrous and non-ferrous metal melting	24	\$160,025	\$6,668
2(8)	Metallurgical works	4	\$1,094,010	\$273,502
2(9)	Mineral works	1	\$4,406	\$4,406
2(10)	Pulp or paper works	1	\$22,300	\$22,300
2(11)	Scrap metal recovery	5	\$11,601	\$2,320

Regulation reference	Activity group	Number of licences	Total fee	Average fee
2(12)	Surface coating works	47	\$126,296	\$2,687
2(13)	Wood processing works	9	\$55,837	\$6,204
2(14)	Maritime construction	1	\$1,278	\$1,278
2(15)	Vehicle production	2	\$194,789	\$97,394
3(1)	Incineration	19	\$148,885	\$7,836
3(2)	Sewage treatment works or septic disposal	103	\$1,038,854	\$10,086
3(3)	Waste depots	361	\$823,714	\$2,282
3(4)	Activities producing listed wastes	175	\$230,511	\$1,317
3(5)	Waste transport (Category A)	229	\$185,610	\$811
3(6)	Waste transport (Category B)	306	\$112,528	\$368
4(1)	Brukung mine site	1	\$10,661	\$10,661
4(2)	Stormwater discharge to underground aquifers	6	\$26,433	\$4,406
5(1)	Cattle feedlots	11	\$17,877	\$1,625
5(3)	Saleyards	8	\$14,392	\$1,799
5(4)	Piggeries	36	\$108,553	\$3,015
6(1)	Abattoirs/slaughterhouses/poultry	15	\$81,910	\$5,461
6(2)	Breweries	1	\$7,358	\$7,358
6(3)	Composting works	33	\$123,199	\$3,733
6(4)	Fish processing	34	\$72,623	\$2,108
6(5)	Milk processing	6	\$26,907	\$4,485
6(6)	Produce processing	15	\$34,148	\$2,277
6(7)	Rendering or fat extraction works	7	\$44,829	\$6,404
6(8)	Curing or drying works	1	\$1,278	\$1,278
6(9)	Tanneries or fellmongeries	6	\$23,305	\$3,884
6(11)	Wineries or distilleries	91	\$291,658	\$3,205
7(1)	Bulk shipping facilities	21	\$63,323	\$3,015
7(2)	Railway systems	10	\$30,154	\$3,015
7(3)	Crushing, grinding or milling	49	\$150,544	\$3,072
7(4)	Dredging	13	\$136,041	\$10,465
7(6)	Earthworks drainage	7	\$32,613	\$4,659
7(7)	Extractive industries	27	\$77,459	\$2,869
8(2)	Fuel burning	43	\$342,300	\$7,960
8(3)	Helicopter landing facilities	1	\$583	\$583
8(4)	Marinas and boating facilities	25	\$31,941	\$1,278
8(5)	Motor racing and testing venues	3	\$3,833	\$1,278
8(6)	Shooting ranges	4	\$2,330	\$583
8(7)	Discharges to marine or inland waters	3	\$32,679	\$10,893
	Exemptions and works approvals		\$10,809	
			<b>\$7,397,071</b>	

Under the proposal the highest total fees would be payable by metallurgical works (around \$1m), sewage treatment works (\$1m) and waste depots (\$0.8m).

The average fees are highest for metallurgical works (around \$270,000), vehicle production (over \$90,000), and petroleum production and storage (over \$50,000). Average fees for cement works

and pulp and paper works are over \$20,000. There are twelve activity groups with average fees of around \$1,000 or less. Table 15 shows the minimum and maximum fees by activity group.

**Table 15: Minimum and maximum fees by activity group**

Regulation reference	Activity group	Minimum fee	Maximum fee
1(1)	Chemical storage and warehousing	\$1,625	\$9,589
1(2)	Chemical works	\$1,278	\$254,177
1(4)	Oil refineries	\$17,612	\$17,612
1(5)	Petroleum production and storage	\$1,278	\$265,683
1(6)	Wood preservation works	\$3,015	\$23,629
2(1)	Abrasive blasting	\$1,278	\$1,625
2(2)	Hot mix asphalt preparation	\$3,015	\$4,406
2(3)	Cement works	\$13,507	\$36,241
2(4)	Ceramic works	\$1,625	\$27,484
2(5)	Drum reconditioning works	\$1,278	\$1,278
2(6)	Concrete batching works	\$1,278	\$1,278
2(7)	Ferrous and non-ferrous metal melting	\$3,015	\$19,006
2(8)	Metallurgical works	\$17,612	\$517,612
2(9)	Mineral works	\$4,406	\$4,406
2(10)	Pulp or paper works	\$22,300	\$22,300
2(11)	Scrap metal recovery	\$1,278	\$3,015
2(12)	Surface coating works	\$1,278	\$4,510
2(13)	Wood processing works	\$1,278	\$13,707
2(14)	Maritime construction	\$1,278	\$1,278
2(15)	Vehicle production	\$41,544	\$153,245
3(1)	Incineration	\$1,278	\$24,482
3(2)	Sewage treatment works or septic disposal	\$1,278	\$205,684
3(3)	Waste depots	\$1,278	\$10,661
3(4)	Activities producing listed wastes	\$583	\$7,572
3(5)	Waste transport (Category A)	\$104	\$14,311
3(6)	Waste transport (Category B)	\$104	\$8,237
4(1)	Brokunga mine site	\$10,661	\$10,661
4(2)	Stormwater discharge to underground aquifers	\$4,406	\$4,406
5(1)	Cattle feedlots	\$1,625	\$1,625
5(3)	Saleyards	\$1,278	\$4,406
5(4)	Piggeries	\$3,015	\$3,015
6(1)	Abattoirs/slaughterhouses/poultry	\$1,278	\$10,800
6(2)	Breweries	\$7,358	\$7,358
6(3)	Composting works	\$3,015	\$7,186
6(4)	Fish processing	\$1,278	\$3,015
6(5)	Milk processing	\$3,015	\$8,576
6(6)	Produce processing	\$1,625	\$3,054
6(7)	Rendering or fat extraction works	\$4,406	\$7,275
6(8)	Curing or drying works	\$1,278	\$1,278
6(9)	Tanneries or fellmongeries	\$1,278	\$4,406
6(11)	Wineries or distilleries	\$1,278	\$10,743
7(1)	Bulk shipping facilities	\$3,015	\$3,015
7(2)	Railway systems	\$3,015	\$3,015
7(3)	Crushing, grinding or milling	\$1,625	\$38,698

Regulation reference	Activity group	Minimum fee	Maximum fee
7(4)	Dredging	\$583	\$87,122
7(6)	Earthworks drainage	\$87	\$21,722
7(7)	Extractive industries	\$1,278	\$31,023
8(2)	Fuel burning	\$1,278	\$127,989
8(3)	Helicopter landing facilities	\$583	\$583
8(4)	Marinas and boating facilities	\$1,278	\$1,278
8(5)	Motor racing and testing venues	\$1,278	\$1,278
8(6)	Shooting ranges	\$583	\$583
8(7)	Discharges to marine or inland waters	\$1,625	\$28,039

Attachment 7 shows how total fees by activity group would vary under different overall fee settings.

### 7.5 Rationale for and impact of the fee cap

Under the proposed fee system, a small number of licensees would pay very high fees with the load-based component in the overall fee system set at 35%. The EPA has already encouraged these licensees to invest significant amounts in reducing their discharges to lower levels through environment improvement plans. The EPA is therefore proposing a fee cap limiting the load based fee payable to \$500,000 for any individual licence. Under the starting point option the fee cap would affect two licences and would collectively reduce their fees by around \$300,000 per annum.

The highest current SA EPA licence fee is over \$800,000. The proposed setting of the level of the fee cap at \$500,000 has been a policy decision. While the proposed fee cap would reduce the incentive force of the scheme for the two licences affected by the fee cap, it would increase the incentive force for the remaining load based licences. This may be seen to be inconsistent with the polluter pays principle. The proposed fee cap would serve to redistribute around 13% of the load based fees across all other licensees paying load fees and may be seen to shift the incidence of fees away from the environmental priorities expressed in the pollutant and zone weights set out earlier.

Of the three interstate load based systems, Victoria and WA have fee caps, NSW does not. The Victorian EPA has a fee cap of \$440,580 for discharges to air, water or land. The fee cap applies to each type of discharge, i.e. a licence fee may be higher than \$440,580.

WA has the following fee caps:

- \$510,000 in 2007/08 (\$410,000 in 2005/06) where the fee is predominantly attributable to discharge to air or land (plus \$55,000 for defined areas where there is a higher priority for reductions in emissions); and
- \$600,000 in 2007/08 (\$500,000 in 2005/06) where the fee is predominantly attributable to discharge to water.

The EPA is seeking comment on the proposed fee cap through the consultation process.

## **8 IMPACTS OF THE NEW FEE SYSTEM**

The new fee system will have a range of impacts on licensees, the EPA and the broader community. This section discusses the nature of the administrative and compliance costs to industry, administrative costs to the EPA and benefits to both licensees and the broader community.

### **8.1 Costs of the new fee system**

There will be some additional costs to the EPA in further developing and implementing the new fee system. In 2006/07 the EPA plans to spend around \$350,000 on changing information technology and administrative systems, training staff in preparation for implementation and finalising the details of the fee structure.

The annual costs of implementing the new fee system are expected to be very similar to costs under the current system. There may be some small increase in costs in the first year as licensees and EPA staff adapt to the new system. For example, licensees and EPA licence coordinators will need to establish which fee scale in the environment management schedule applies to each licensee. This will be straightforward in some cases and more involved for others (for example taking into account factors such as proximity to watercourses). For some licensees they will also need to determine whether the emission thresholds for paying load based fees are triggered. It is difficult to estimate the additional effort likely to be required, however, if on average an additional half an hour of both licensee and EPA staff time was required, the additional costs in the first year of implementation would be around \$100,000<sup>15</sup>. It should be noted that the EPA expect actual costs to be less than this.

After the first year, the costs of implementation are likely to be very similar to the current fee system for both the EPA and licensees. Most pollutants included in the load based component are already reported and verified for the National Pollutant Inventory (NPI) and therefore there would be little additional work involved. For the other pollutants, the licensees that will be affected are already measuring and reporting loads as part of their annual licence requirements. NPI measurement will be the primary method for reporting emissions for the load based component of the proposed licence fee system. However, some licensees may choose to develop site specific emission estimation factors or undertake additional monitoring to more accurately determine their emissions. This could result in additional costs.

The licence fees payable by licensees represent financial transfers to government to recover the costs of licensing. While the fees impact on licensees, they do not represent an additional cost of the proposed licensing system (as this would be double counting). The financial impact of the fees on licensees is highlighted in section 8.4.

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<sup>15</sup> Cost of time has been estimated at \$50 per hour (based on average annual salary of \$65,000 for both EPA and industry, 30% overheads and 240 working days per year)

The fee system could lead to some new economic costs for licensees. For example a licensee may choose to reduce pollution in response to the new fee system and may incur costs of purchasing and installing pollution abatement equipment. Licensees may also make management changes in response to the fee system to reduce the fees payable. The likely response from licensees will depend on the level of the fees payable and how this compares to the cost of improving environmental performance. Licensees are only likely to incur these costs where they are lower than the fees payable. Section 8.6 provides an assessment of the likely significance of the fees payable by licensees.

## **8.2 How do the proposed fees compare to pollution damage costs?**

Although the settings of the load based fees are not attempting to internalise the external impacts of the key pollutants, it is useful to examine the likely size of the damage costs in order to put the fees in perspective.

The NSW EPA's ENVALUE database provides data on the impacts of different pollutants on the environment from a broad range of studies. Sixteen studies from the US and Europe provide a median value for a reduction of one tonne of nitrogen oxides at \$1,385 and nine studies provide a median value for VOCs at \$1,440 per tonne. A survey study provides a median value of \$1,810 per tonne of total particles (although this does not include the health costs of the fine particle fraction). Many of these estimates are conservative and exclude impacts on the community that are more difficult to quantify<sup>16</sup>.

The highest pollutant fees for these three pollutants under the starting point option (with maximum zone weightings) are all less than 5% of the estimated damage costs.

## **8.3 Benefits of new fee system**

The benefits of the new fee system are recovery of EPA costs of licensing in an efficient way, while providing greater equity as well as incentives for improving environmental performance. Any reductions in pollution that result from the system would be for the most harmful pollutants in areas where there are greatest environmental problems in SA.

To provide an indication of the extent of pollution reduction that would be required for the benefits of the proposal to outweigh the implementation costs of the new proposed fee system outlined in section 8.1, the estimated benefits of reducing nitrogen oxides, volatile organic compounds or total particulates reported in section 8.2 are considered. Based on these valuation estimates, reductions of the following magnitude over a five year period would be enough to make the environmental benefits outweigh the implementation costs of the new proposed fee system:

- 0.1% reduction in annual NO<sub>x</sub> emissions from licensed industry in South Australia; or

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<sup>16</sup> For example, a more recent study of urban air pollution health costs, using particulates as an 'indicator' pollutant, has put the cost at \$132,000 / tonne in Sydney, \$35,000 in the Hunter region and \$26,000 in Wollongong (DEC 2005, Air Pollution Economics: Health Costs of Air Pollution in the Greater Sydney Metropolitan Region)

- 0.4% reduction in annual VOC emissions; or
- 0.7% reduction in annual emissions of particles.

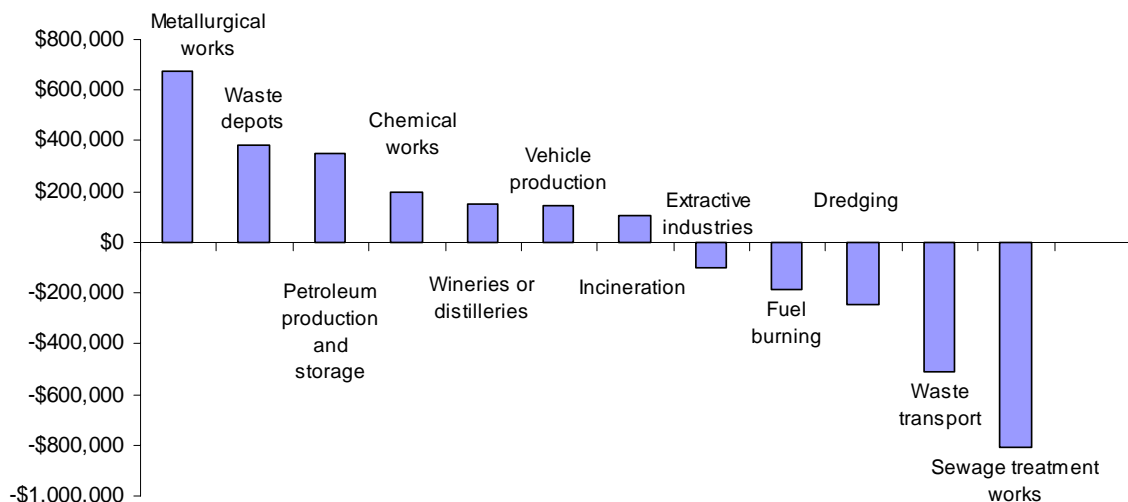
Even though the magnitude of possible benefits is difficult to assess, it is likely that the benefits of only a small reduction in loads of key pollutants discharged in South Australia would be enough to offset the additional implementation costs because of the significant impacts of these pollutants.

#### 8.4 How do the proposed fees compare to current fees?

Although the total fees to be collected will not change under the new fee system, there will be changes in the distribution of fees among licensees. These changes reflect the proposed settings for the fee structure including the split between the environment management and load based components as well as the individual activity fee scales and pollutant weights and zones. This section presents changes in fee levels for activity groups as a whole under the starting point scenario compared with estimated fees for 2005/06. The estimates are based on the licensing data from 2004/05 adjusted for the agreed statutory increase in fees for all licensees being implemented by the government to collect \$7.4m in 2005/06.

Figure 4 summarises the major changes (for activity groups with an increase or decrease of around \$100,000 or more).

Figure 4: Major changes in fees from 2005/06 by activity groups



Under the starting point option, total fees for metallurgical works would increase by around \$670,000 per annum (with two licences paying the bulk of the fees for this activity). Total fees for the 360 waste depots would increase by \$380,000 per annum. Total fees for petroleum production/storage would increase by around \$350,000 and for chemical works would increase by around \$200,000 per annum. Fees from vehicle producers and wineries would increase by around \$150,000 per annum each, with the increase for wineries spread across 90 licences.

There are also a number of activity groups that would have significant decreases in fee levels from 2005/06 under the starting point option. The greatest decreases are for sewage treatment (by \$800,000), waste transporters (by \$500,000), dredging (by \$250,000), fuel burning (by \$180,000) and incineration and extractive industries (by around \$100,000) each.

The reason for the significant decrease in fees for sewage treatment plants is that they pay such a large proportion of the existing fees through the load based fee for marine discharges. The new scheme better reflects the relative resources required for licensing and the new load based component incorporates a wider set of environmental issues and associated pollutants.

Attachment 8 shows the change in fees for all activity groups.

### **8.5 How do the proposed fees compare to licence fees payable in other jurisdictions?**

This section compares the proposed pollutant load fees with pollutant fees payable in other jurisdictions. Table 16 provides a comparison with other Australian States. The SA fees in the table show a range of fees with zone weights where they apply. The NSW figures show the range of possible per tonne fees payable depending on whether discharges are above or below the fee rate threshold and whether they are in a critical zone. For particulates, the NSW range also depends on the type of particulate emissions. The WA fees show ranges for some pollutants where the fee varies according to location.

The pollutant fees for South Australia under the starting point option are generally lower than those in NSW and higher than those in Victoria. The WA fees for air pollution are lower, whereas most of the water pollutant fees in WA are higher than for SA. It is interesting to note that the proportion of fees collected through a load based component is higher in the other jurisdictions, at 70% for NSW, 60-65% for Victoria and 60% for WA. These States also have a higher proportion of licensees paying load based fees. The role of the load fees also differs among the States. The NSW fees were initially explicitly set beyond cost-recovery towards a true polluter pays fee regime. Both Victoria and WA have a fee system set to achieve cost recovery (WA proposed to achieve it by 2005/06).

Table 16: Comparison of base case SA pollutant load fees with other Australian States (\$/t)

Pollutant	SA	NSW	VIC <sup>3</sup>	WA <sup>4</sup>
Lead (emissions to air)	\$369-\$11,083	\$26,250-\$52,500	\$4	\$114
SOx	\$3.70-\$7	\$5-\$11	\$4	\$4.60
Particulates	\$37-\$74	\$42-\$602	\$4	\$4.60
NOx	\$3.70-\$7	\$21-\$294	\$4	\$4.60
VOCs	\$37-\$74	\$16-\$221	\$42	\$4.60-\$45
Nitrogen	\$36-\$111	\$81-\$483	\$0.05	\$132-\$658
Phosphorus	\$37-\$74	\$2,380-\$14,280	\$0.03	\$132-\$658
Suspended solids	\$37-\$74	\$273-\$546	\$0.01	\$33
Organic matter	\$37-\$74	\$4-\$7	\$0.03	\$33
Temperature	\$3.70 <sup>1</sup>	-	\$0.03 <sup>2</sup>	\$2-\$3 <sup>2</sup>
Zinc	\$37-\$74	\$25-\$49	\$0.50	\$6,575
Lead (emissions to water)	\$369-\$739	\$22,400-\$44,800	\$0.50	\$6,575
Copper	\$369-\$739	\$5,950-\$11,900	\$0.50	\$6,575

Sources: Pollution Control Regulation 1998, Victorian Environment Protection (Fees) Regulation 2001, WA Environment Protection Regulations 1987

Notes: 1: \$ per 1,000 MW for temperature

2: \$ per degree of Celsius of temperature above ambient

3: Note that Victoria includes a bigger range of pollutants and charges higher fees for some other pollutants. Also the fees are payable on licence limits (which are higher than actual discharges).

4: WA has fee caps so actual fees per pollutant may be lower than this for some licensees

Table 17 compares average non-load based, load based and overall fees with interstate systems. The table indicates that under the proposal for South Australia, average *overall* fees would be lower than interstate, other than states which have not achieved full cost recovery. Proposed average *non-load based* fees for SA are lower than every state except Queensland. It should be noted that the average fee is low in Queensland in part because there are a much higher number of licences than any other State and several licences may apply to a single site.

Average *load based* fees for SA would be lower than NSW, while they would be higher than Victoria and WA. It should be noted that interstate load based fees apply to a greater proportion licences than is proposed for SA.

Table 17: Comparison of average licence fees across States

State	Year	Fee type	Indicative average fees (\$)	Cost recovery (%)
<i>SA (proposed)</i>	<i>2005/06(f)</i>	non-load based	\$2,000	
		load based	\$32,500	
		<i>Overall</i>	<i>\$3,800</i>	<i>100%</i>
<i>NSW *</i>	<i>2004/05</i>	non-load based	\$4,200	
		load based	\$98,100	
		<i>Overall</i>	<i>\$12,500</i>	<i>100%</i>
<i>QLD **</i>	<i>2003/04</i>	<i>Overall</i>	<i>\$1,000</i>	<i>50%##</i>
<i>TAS ^</i>	<i>2005/06(f)</i>	<i>Overall</i>	<i>\$2,900</i>	<i>55%</i>
<i>VIC</i>	<i>2004/05</i>	non-load based	\$12,500	
		load based	\$14,600	
		<i>Overall</i>	<i>\$13,700</i>	<i>100%</i>
<i>WA</i>	<i>2004/05</i>	non-load based	\$4,500	
		load based	\$14,000	
		<i>Overall</i>	<i>\$8,400</i>	<i>100%</i>

(f) Forecast

\* NSW EPA is able to charge fees in excess of cost recovery

\*\* Fees in Queensland have not been adjusted for inflation since 1995.

## Estimated maximum current cost recovery ratio.

^ An 80% increase in fees is proposed in Tasmania

Table 18 compares fees under the starting point option for two key air pollutants with fees payable under international load based licensing schemes.

**Table 18: Comparison of selected SA pollutant load fees with international jurisdictions**

Fees for sulfur dioxide	\$A/tonne	Fees for nitrogen oxides	\$A/tonne
SA	\$3.70-\$7	SA	\$3.70-\$7
US (Minnesota)	\$23	US (Minnesota)	\$24
France	\$33	France	\$33
US (California)	\$238-\$576	Czech Republic	\$33
Japan	\$258-\$2,322	Poland	\$76
Norway	\$3,148	US (California)	\$195-\$479
Sweden	\$5,778	China	\$350
		Sweden	\$7,859

Source: Table drawn from NSW EPA's Regulatory Impact Statement for the Pollution Control Regulation 1998.

The fee levels proposed for South Australia are well below all other international schemes.

Table 19 compares proposed fees for a range of activities with fees that would be payable for similar activities in other States. The fees are based on examples of activities and are not necessarily representative of the activity class as a whole. Attachment 9 provides a description of the activity used for each example.

The purpose of the fee comparison is to compare the fees that would be paid under the starting point option for a set of selected activities if they were located in other States. There are significant differences in the licensing and fee systems among the States that need to be considered in examining the likely fees.

The categories of activities to be licensed differ across States, as well as the activities that are required to pay load based fees. States also include different pollutants in their load based schemes, for example NSW specifies pollutants for each activity whereas Victoria includes only those pollutants that are specified in an individual licence. WA includes pollutants reported via licence conditions as well as those reported to the National Pollutant Inventory, where the pollutants are included in the fee schedule. The definitions of loads of pollutants also differ: Victoria and WA include only air emissions from stacks whereas NSW and the SA proposal include both stack and fugitive emissions to air. NSW, WA and Vic include discharges to water. The fees have been estimated based on the most relevant equivalent activity class.

In most cases fees under the starting point option are lower than or similar to other States. The only activities that would pay the highest fees in SA are the piggery, brewery, abrasive blasters and milk processor (by a small margin).

Table 19: Comparison of fees under starting point option with interstate fees (for selected activities)

Activity	SA	NSW	VIC	WA	QLD <sup>1</sup>
Chemical works	\$240,000	\$2,700,000	\$620,000	\$ 400,000	\$5,800
Petroleum production	\$250,000	\$1,100,000	\$200,000	\$ 200,000	\$21,000
Abrasive blasting – mobile	\$1,600	n/a	n/a	registration	\$650
Abrasive blasting - fixed	\$1,300	n/a	n/a	registration	\$400
Cement works	\$35,000	\$1,000,000	\$ 34,000	\$ 25,000	\$7,620
Metallurgical works	\$520,000	\$3,650,000	\$640,000	\$ 310,000	\$16,300
Vehicle production <sup>2</sup>	\$145,000	\$323,000	\$96,000	\$ 86,000	n/a
Large sewage treatment works	\$195,000	\$2,670,000	\$330,000	\$ 400,000	\$15,210
Waste depots – medium	\$1,600	\$2,700	\$500	\$600	\$1,000
Cattle feedlots	\$1,600	\$ 4,800	\$500	\$360	\$2,000
Piggeries	\$3,000	\$1,400	\$500	\$1,500	\$500
Brewery	\$7,300	\$ 500	\$500	\$800	\$4,740
Milk processing	\$4,400	\$1,400	\$500	\$800	\$4,100
Wineries or distilleries	\$10,700	\$12,800	\$500	\$2,200	n/a
Marinas & boating facilities	\$1,300	\$1,400	n/a	\$700	\$500

Notes: 1 QLD licence fees are based on 50% cost recovery. NSW, Vic and WA achieve cost recovery, and SA will achieve cost recovery in this financial year (2005/06).

2 Vehicle production is not licensed in NSW or WA, and therefore the fees for vehicle production in NSW and WA in this table reflect the load based component only.

3 Load based fees in Victoria are based on stack emission limits for pollutants specified in the licence. In the calculation, actual stack emissions for pollutants reported to NPI as well as BOD and suspended solids were used. This may result in a lower fee than would be the case, as stack emission limits are generally higher than actual emissions.

4 All fees are based on 2005/06

5 n/a means this activity is not licensed in this state.

6 Registration means that a once-off registration fee of \$360 is payable in WA.

## 8.6 What impact will the new fees have on licensees?

While there will not be a net increase in total fees as a result of the changes to the structure of the fee system, some activity groups will face higher fees if current discharge levels continue. This section puts these increases in perspective for individual industry groups by examining the size of the fee increases compared with estimates of turnover and profitability.

Table 20 below shows the estimated fee increases under the starting point option as a proportion of estimated industry turnover and industry value added for industry classes expected to have significant increases in fees and where information on turnover and value added is available. The industry classes are ANZSIC codes used in the ABS publication on the manufacturing industry.

The industry classes chosen are those most closely aligned with the activity groups expected to face significant fee increases.

**Table 20: Fees as a proportion of industry turnover and industry value added**

Industry class	Estimated fee increase in 2005/06 (\$)	Estimated industry turnover <sup>1</sup> for 2005/06 (\$m)	Fee change as % of estimated turnover	Estimated industry value <sup>2</sup> added for 2005/06 (\$m)	Fee change as a % of industry value added
Petroleum refining	\$346,703	\$110	0.31%	\$50	0.69%
Chemical manufacturing	\$197,452	\$367	0.05%	\$92	0.21%
Basic non-ferrous metal manufacturing	\$676,887	\$754	0.09%	\$100	0.68%
Motor vehicle manufacturing	\$147,294	\$5,308	0.003%	\$887	0.02%
Wine manufacturing	\$153,013	\$1,923	0.008%	\$863	0.02%

Sources: Turnover/value added figures from Australian Bureau of Statistics (ABS) Manufacturing Industry South Australian 1999/2000, Catalogue No. 8221.4 adjusted for real GDP growth using figures from Australian National Accounts: State Accounts 2003/04 Catalogue No. 5220.0 and growth forecasts from SA State Budget 2005/06: Budget papers, Government of South Australia.

Notes:

1. Turnover is defined in ABS Cat. 8221.4 as sales (exclusive of excise and sales tax) of goods, plus service income, funding by Federal, State or Local Governments for operational costs, and own account capital work.
2. Industry value added is the measure of the contribution by industries to gross domestic product. It is defined in ABS Cat. 8221.4 as turnover plus closing inventories less opening inventories less intermediate input expenses.

The fee increases represent less than one percent of industry turnover or value added for the activities in the table. There will also be a number of activity groups that will have a reduction in fee levels.

## **9 CONSULTATION**

The EPA will be writing to all licensees seeking comments on the proposed license fee system and conducting public meetings during May and June 2006. The following public meetings are planned:

Monday 29 May	Port Lincoln
Tuesday 30 May	Port Augusta
Wednesday 31 May	Barossa Valley
Thursday 1 June	MacLaren Vale / Victor Harbour
Monday 5 June	Mount Gambier
Tuesday 6 June	Riverland
Wednesday 7 June	Port River area
Thursday 8 June	Edwardstown / Adelaide southern suburbs

## ATTACHMENT 1: COSTS OF LICENSING BASED ON 2005/06 BUDGET

Resource	Operations	Pollution Avoidance	Monitoring & Evaluation	Policy Coordination	Radiation Protection	Chief Executive	Total
<b>Salaries (including on-costs)</b>	3,132,707	60,457	675,170	335,285	0	16,177	<b>4,203,619</b>
<b>Non-Salary Operating Costs</b>							
• Motor Vehicle Costs	116,544	600	3,893	4,194	0	852	<b>125,230</b>
• Travel, fares & meals	31,140	1,006	2,605	12,036	0	730	<b>46,787</b>
• Contractors' fees	56,072	644	40,352	184,630	0	600	<b>281,698</b>
• Telephone charges	16,057	252	1,147	150	0	325	<b>17,606</b>
• Office consumables, printing, & other goods & services	102,177	1,578	60,710	14,658	0	1,080	<b>179,123</b>
• Staff Training & development – divisional	24,486	438	4,409	4,060	0	111	<b>33,394</b>
<b>EPA Corporate Charges</b>							
• Services Division (CABS)	526,613	9,704	105,347	68,471	0	3,032	<b>710,135</b>
<b>Corporate Overhead Allocation Costs</b>							
• Corporate Overheads	603,148	11,054	113,845	73,436	0	3,454	<b>801,483</b>
• Occupational Health & Safety	4,097	71	767	499	0	22	<b>5,434</b>
• Capital Depreciation Charges	25,086	1,312	23,706	2,409	0	87	<b>52,600</b>
• Terminal Leave Provision	4,916	85	921	599	0	27	<b>6,547</b>
• DEH charges	605,836	10,454	113,490	73,763	0	3,267	<b>803,543</b>
<b>Total</b>	<b>5,248,879</b>	<b>97,653</b>	<b>1,146,362</b>	<b>774,190</b>	<b>0</b>	<b>29,764</b>	<b>7,267,198</b>

Notes: The cost of one-off projects related to licensing is approximately \$300,000 for 2005/06

The following is included in the costs of licensing:

- Environmental and compliance assessment, including site visits and inspections of licensed sites
- Assessment of monitoring and environmental plans such as Environment Improvement Plans and Environment Management Plans for licensed premises
- Enforcement of compliance for licensed sites
- Legal services relating to licences
- Advice provided by EPA specialists on licensed activities
- Administration and overhead costs associated with licensing. This includes superannuation, finance, personnel, accommodation, staff development and training, IT, telephone and other office services, depreciation of fixed assets relating to licensing and other overhead costs
- Specific environmental monitoring where the EPA covers the costs eg hot spot monitoring at licensed premises
- The costs of handling applications, issuing licences and invoices and the licence renewal process
- Maintaining licence information on the public register
- Accommodation costs, motor vehicle and other travel and subsistence costs
- Policy work related to licensed activities
- Capital depreciation, where the capital is directly related to licensing
- Costs of services provided by others (eg contractors), where these costs relate directly to licensing
- Media and Public Affairs directly related to licensed activities
- Chief Executive costs relating to licensed activities

The following activities undertaken by the EPA are not included in the costs of licensing, and are covered by general taxation revenue, a portion of the waste levy, development application fees and Commonwealth and other grants for specific projects:

- Enforcement for unlicensed activities
- General environmental monitoring (eg monitoring of ambient air quality, ambient water quality monitoring)
- Advice to other government departments
- Services undertaken specifically at the request of Ministers or Parliament, that are not part of the core business of managing EPA licences (eg responses to Ministerial requests)
- Assessment of development applications
- Policy work not associated with licensed activities (note: where policy work is associated with licensed *and* unlicensed activities, only the portion deemed to be associated with licensed activities is included in the costs of licensing)
- Aquaculture (this is now licensed by PIRSA, who undertake cost recovery of aquaculture licences directly)
- Costs of radiation protection is covered by radiation protection licence fees
- Community education and awareness eg Water Watch, Water Care and Air Watch.

- Development of codes of practice not relating to licensed activities, eg code of practice for environmentally responsible wood heater use
- Administration and overhead costs not associated with licensing
- Responses to community enquiries, where these relate to unlicensed premises
- General environmental training for industry such as eco-efficiency training
- Administrative processes associated with the waste levy
- Media and public affairs not directly related to licensed activities
- All other costs not directly related to licensing activities

**ATTACHMENT 2: ENVIRONMENT MANAGEMENT FEE SCHEDULE**

The EPA's preferred split between the environment management and load-based performance components is in the range 30-40% load-based component, with 35% recommended as the starting point for consultation. At 35% load-based component, the draft monetary value of the environment management component fee unit is \$348. Environment management fee units payable by activity are shown in Table A2.1.

**Table A2.1: Environment management fee units payable by activity**

Regulation reference	Prescribed activity	Characteristics	Fee units payable
1(1)	Chemical storage and warehousing	100 metres or less from watercourse <sup>17</sup>	20
		More than 100 metres but less than 500 metres from watercourse <sup>17</sup>	8
		500 metres or more from watercourse <sup>17</sup>	4
1(2)(a)(i)	Chemical works— inorganic	Soda ash plant	50
		Uranium plant, where the main or a significant co-product is uranium	20
		Other (i.e. not soda ash or uranium plant)	8
1(2)(a)(ii)	Chemical works— organic	500 metres or less from residents <sup>19</sup> and VOC emissions above 100 tonnes per year	20
		Other (i.e. emissions below thresholds and/or more than 500 m from residents <sup>19</sup> )	8
1(2)(b)	Chemical works—salt production	Chemical works—salt production	3
1(3)	Coke works	Coke works	50
1(4)	Oil refineries	Oil refineries	50
1(5)(a)	Petroleum storage	500 metres or less from watercourse <sup>17</sup>	8
		Other (i.e. further than 500 metres from watercourse <sup>17</sup> )	3
1(5)(b)	Petroleum production	1000 tonnes per year or more of VOC (volatile organic compound) emissions	50
		500 tonnes per year or more, but less than 1000 tonnes per year of VOC emissions	30
		Other (i.e. emissions below 500 tonnes VOC)	8
1(6)	Wood preservation works	Other than LOSP (light organic solvent preservation)	30
		LOSP (light organic solvent preservation)	8
2(1)	Abrasive blasting	Mobile	4

<sup>17</sup> Watercourse is defined as a blue line on a 1:50,000 map for the purposes of the fee schedule

Regulation reference	Prescribed activity	Characteristics	Fee units payable
		Other (i.e. not mobile)	3
2(2)	Hot mix asphalt preparation	Mobile	12
		Other (i.e. not mobile)	8
2(3)	Cement works	500 metres or less from residents <sup>19</sup> and emitting 100 tonnes per year or more of particulate emissions	50
		Further than 500 metres from residents <sup>19</sup> and emitting 100 tonnes per year or more of particulates; or 500 metres or less from residents <sup>19</sup> and emitting less than 100 tonnes per year	30
		Other (i.e. >500 m from residents <sup>19</sup> and <100 tonnes per year particulate emissions)	20
2(4)	Ceramic works	Glass works with 25 tonnes per year or more of particulate emissions	30
		Brick works with 2 tonnes per year or more of fluoride emissions	12
		Other (e.g. pottery)	4
2(5)	Concrete batching works	Concrete batching works	3
2(6)	Drum reconditioning works	Drum reconditioning works	3
2(7)	Ferrous and non-ferrous metal melting	Within 1000 metres of residents <sup>19</sup> and does not meet EPA guidelines on odour (EPA Guideline 373/06)	50
		Within 1000 metres of residents <sup>19</sup> and meets EPA guidelines on odour (EPA Guideline 373/06)	20
		Other (i.e. more than 1000 metres from residents <sup>19</sup> )	8
2(8)	Metallurgical works	Metallurgical works	50
2(9)	Mineral works	Mineral works	12
2(10)	Pulp or paper works	Pulp or paper works	50
2(11)	Scrap metal recovery	Distance to watercourse <sup>17</sup> 50 metres or less	8
		Other (i.e. further than 50 metres from watercourse <sup>17</sup> )	3
2(12)(a)	Surface coating works—metal finishing	Surface coating works—metal finishing	12
2(12)(b)	Surface coating works—hot dip galvanising	Surface coating works—hot dip galvanising	12
2(12)(c)	Surface coating works—spray painting or powder	Surface coating works—spray painting or powder coating	3

Regulation reference	Prescribed activity	Characteristics	Fee units payable
	coating		
2(13)	Wood processing works	100 metres or less from residents <sup>19</sup> and emitting 50 tonnes per year or more of particulate emissions	20
		Further than 100 metres from residents <sup>19</sup> and emitting 50 tonnes per year or more of particulate emissions; or 100 metres or less from residents <sup>19</sup> and emitting less than 50 tonnes per year of particulate emissions	12
		Other (i.e. further than 100 metres from residents <sup>19</sup> and emitting less than 50 tonnes per year of particulate emissions)	3
2(14)	Maritime construction	Maritime construction	3
2(15)	Vehicle production	Vehicle production	30
3(1)(a)	Incineration—chemical wastes	Incineration—chemical wastes	50
3(1)(b)	Incineration—medical wastes, cytotoxic wastes, quarantine wastes	Incineration—medical wastes, cytotoxic wastes, quarantine wastes	50
3(1)(c)	Incineration—cremation	Incineration—cremation	3
3(1)(d)	Incineration—solid municipal waste	Incineration—solid municipal waste	50
3(1)(e)	Incineration—solid trade waste	Incineration—solid trade waste	50
Note: For sewage treatment works or septic tank effluent disposal schemes listed below, licensees can drop a fee level if all discharge is sustainably irrigated to land			
3(2)(a)	Sewage treatment works or septic tank effluent disposal schemes—discharge to marine	Wastewater 10,000 ML or more per year	50
		Wastewater 20 ML or more but less than 10,000 ML per year	30
		Wastewater <20 ML per year	4
3(2)(b)	Sewage treatment works or septic tank effluent disposal schemes—discharge to waters (Mt Lofty Ranges Water Protection Area)	Wastewater 10,000 ML or more per year	50
		Wastewater 20 ML or more but less than 10,000 ML per year	30
		Wastewater <20 ML per year	8

Regulation reference	Prescribed activity	Characteristics	Fee units payable
3(2)(c )	Sewage treatment works or septic tank effluent disposal schemes—discharge other than Mt Lofty Ranges Water Protection Area or marine	Wastewater <20 ML per year	4
		Wastewater 20 ML or more but less than 10,000 ML per year	20
		Wastewater 10,000 ML or more per year	50
	Sewage treatment works or septic tank effluent disposal schemes—discharge to inland waters not in Mt Lofty Ranges Water Protection Area		
<p>Note: Landfills complying with the technical specifications in the draft landfill guidelines can move down a fee level in the fee schedule. The levels are 50, 30, 20, 12, 8, 4, 3 or 1 fee units.</p> <p>Note: Apply fees as listed under activity 3(2) above to a liquid wastewater treatment plant that is similar in function to a sewage treatment works</p>			
3(3)	Waste depots (liquid waste)	Open facility located 300 metres or less from residents <sup>19</sup>	30
		Open facility located more than 300 metres from residents <sup>19</sup>	20
		Enclosed facility further than 300 metres from residents <sup>19</sup>	12
	Waste depots (other than liquid waste)	Landfill classification L	30
		Landfill classification MB+	8
		Landfill classification MB-	8
		Landfill classification SB+	4
	Recycling depot or transfer station	Landfill classification SB-	4
		Open facility located 300 metres or less from residents <sup>19</sup> , with a crusher	20
		Open facility located 300 metres or less from residents <sup>19</sup> , without a crusher	8
		Open facility located more than 300 metres from residents <sup>19</sup> , with a crusher	8
		Open facility located more than 300 metres from residents <sup>19</sup> , without a crusher	4
		Enclosed facility	3

Regulation reference	Prescribed activity	Characteristics	Fee units payable
		Waste oil recycling facility taking less than 20,000 litres of waste oil per year	3
		Battery collection and recycling facility only	1
3(4)	Activities producing listed wastes	More than 250 tonnes per year	12
		More than 100 tonnes but not more than 250 tonnes per year	4
		Medical waste only	1
		Listed waste produced from metal finishing works or waste containing chlorohydrocarbons	8
		Up to and including 100 tonnes per year	3
3(5)	Waste transport business (Category A) per vehicle excluding the transport of 40 litres or less medical waste per trip	Waste transport business (Category A) per vehicle excluding the transport of 40 litres or less medical waste per trip	0.9
3(6)(a)	Waste transport business transport of 40 litres or less per trip medical waste (per vehicle)	Transport of 40 litres or less medical waste (per vehicle per trip)	0.3
3(6)(b)	Waste transport business (Category B) per vehicle	Waste transport business (Category B) per vehicle	0.3
4(1)	Brukung mine site	Brukung mine site	30
4(2)	Discharge of stormwater to underground aquifers Mount Gambier city, Mount Gambier country or Adelaide <sup>18</sup>		12
5(1)	Cattle feedlots	Cattle feedlots	4
5(3)	Saleyards	Facility located within South East region and volume of effluent 20 ML or more per year	12
		Facility located within South East region and volume of effluent below 20 ML per year	4

<sup>18</sup> Metropolitan Adelaide

Regulation reference	Prescribed activity	Characteristics	Fee units payable
		Facility located outside South East region and volume of effluent 20 ML or more per year	8
		Facility located outside South East region and volume of effluent below 20 ML per year	3
5(4)	Piggeries	Piggeries	8
6(1)(a)	Abattoirs, slaughterhouses or poultry processors - not poultry	100 ML per year or more wastewater and buildings and/or disposal areas within 500 metres of residents <sup>19</sup>	30
		100 ML per year or more wastewater, OR buildings and/or disposal areas within 500 metres of residents <sup>19</sup>	12
		Less than 100 ML per year wastewater or all wastewater discharged to sewer, and buildings and/or disposal areas further than 500 m from residents <sup>19</sup>	4
6(1)(b)	Abattoirs, slaughterhouses or poultry processors—poultry only	100 ML per year wastewater or more and buildings and/or disposal areas closer than 300 metres to residents <sup>19</sup>	30
		100 ML per year or more wastewater, OR buildings and/or disposal areas within 300 metres of residents <sup>19</sup>	12
		Less than 100 ML per year wastewater or all wastewater discharged to sewer, and buildings and/or disposal areas further than 300 m from residents <sup>19</sup>	4
6(2)	Breweries	More than 20 ML of wastewater produced per year and wastewater management and disposal facilities located within 50 metres of watercourse <sup>17</sup>	30
		More than 20 ML of wastewater produced per year and wastewater management and disposal facilities located further than 50 metres of watercourse <sup>17</sup>	20
		Up to and including 20 ML of wastewater produced per year and wastewater management and disposal facilities located within 50 metres of watercourse <sup>17</sup>	
		All effluent disposed to sewer and wastewater management and disposal facilities within 50 metres of watercourse <sup>17</sup>	12
		Other (i.e. less than 20 ML wastewater, wastewater management and disposal facilities further than 50 metres from watercourse <sup>17</sup> , not to sewer)	8
		All effluent disposed to sewer and wastewater management and disposal facilities located further than 50 metres from watercourse <sup>17</sup>	4
			3

Regulation reference	Prescribed activity	Characteristics	Fee units payable
6(3)	Composting works	Within 500 metres of residents <sup>19</sup> , and waste other than green waste only	20
		Green waste only, and within 500 metres of residents, or waste other than green waste only and further than 500 metres from residents <sup>19</sup>	12
		Green waste only, and further than 500 metres from residents <sup>19</sup>	8
6(4)	Fish processing	Discharge to marine or inland waters	8
		No discharge to marine or inland waters (i.e. discharge to land)	4
		Discharge to sewer only, or no discharge at all	3
6(5)	Milk processing	Effluent not discharged to sewer	12
		Effluent discharged to sewer	8
6(6)(a)	Produce processing works—deep fat frying, roasting or drying		4
6(6)(b)	Produce processing works—more than 10,000 litres of wastewater (not to sewer)	Olive processing	12
		Other than olive processing	8
<p>Note: Rendering or fat extraction works can move down one fee level in the schedule if they achieve 90% or more reduction in BOD, 99% or more reduction in oil and grease and 95% reduction in suspended solids. The levels in the fee schedule are 50, 30, 20, 12, 8, 4, 3 or 1 fee units.</p>			
6(7)	Rendering or fat extraction works	Greater than 100 Mega litres of wastewater produced per year, and 1000 metres or less from residents <sup>19</sup>	30
		Greater than 100 Mega litres of wastewater produced per year, and further than 1,000 metres from residents <sup>19</sup>	20
		100 Mega litres or less of wastewater produced per year, and 1000 metres or less from residents <sup>19</sup>	20
		100 Mega litres or less of wastewater produced per year, and further than 1000 metres from residents <sup>19</sup>	12
6(8)	Curing or drying works	Curing or drying works	3
6(9)	Tanneries or fellmongeries	Volume of wastewater greater than 10 ML per year and/or located 500 metres or less from residents <sup>19</sup>	12

<sup>19</sup> For the purposes of the environment management fee schedule, 'residents' is defined as 'residential zone'.

Regulation reference	Prescribed activity	Characteristics	Fee units payable
		Other (i.e. volume of effluent below 10 ML per year or all discharged to sewer, and located further than 500 metres from residents <sup>19</sup> )	3
6(10)	Wool scouring or wool carbonising works	Wastewater discharge not to sewer	8
		Wastewater discharge to sewer	3
<p>Note: Wineries meeting the technical EPA requirements for BOD, suspended solids and salt removal can move down a fee level in the schedule below. The requirements are: Implementation of treatment recovery system capable of removing &gt;85% of BOD and suspended solids load and implementation of salt recovery or salt removal systems removing &gt;50% of EC or TDS load. The levels in the fee schedule are 50, 30, 20, 12, 8, 4, 3 or 1 fee units.</p>			
6(11)	Wineries or distilleries In Mt Lofty Ranges Water Protection Area	More than 10 ML of wastewater produced per year and wastewater management and disposal facilities located within 50 metres of watercourse <sup>17</sup>	30
		More than 10 ML of wastewater produced per year and wastewater management and disposal facilities located further than 50 metres of watercourse <sup>17</sup>	20
		Up to and including 10 ML of wastewater produced per year and wastewater management and disposal facilities located within 50 metres of watercourse <sup>17</sup>	20
		All effluent disposed to sewer and wastewater management and disposal facilities within 50 m of a watercourse <sup>17</sup>	12
		Other (i.e. up to and including 10 ML of wastewater produced per year and wastewater management and disposal facilities located further than 50 metres from a watercourse <sup>17</sup> )	8
		All effluent disposed to sewer and wastewater management and disposal facilities located further than 50 metres of watercourse <sup>17</sup>	4
	Wineries or distilleries not in Mt Lofty Ranges Water Protection Area	More than 20 ML of wastewater produced per year and wastewater management and disposal facilities located within 50 metres of watercourse <sup>17</sup>	30
		More than 20 ML of wastewater produced per year and wastewater management and disposal facilities located further than 50 metres of watercourse <sup>17</sup>	20
		Up to and including 20 ML of wastewater produced per year and wastewater management and disposal facilities located within 50 metres of watercourse <sup>17</sup>	12
		All effluent disposed to sewer and wastewater management and disposal facilities within 50 metres of watercourse <sup>17</sup>	8

Regulation reference	Prescribed activity	Characteristics	Fee units payable
		Other (i.e. less than 20 ML per year wastewater, wastewater management and disposal facilities further than 50 metres from watercourse <sup>17</sup> , not to sewer)	4
		All effluent discharged to sewer and wastewater management and disposal facilities located further than 50 metres from watercourse <sup>17</sup>	3
7(1)	Bulk shipping facilities	Bulk shipping facilities	8
7(2)	Railway systems	Railway systems	8
7(3)(a)	Crushing, grinding or milling Chemicals and rubber	300 metres or less from residents <sup>19</sup>	20
		Greater than 300 metres but within 1000 metres from residents <sup>19</sup>	12
		Further than 1000 metres from residents <sup>19</sup>	4
7(3)(b)	Crushing, grinding or milling Agricultural crop products	Mobile	8
		Other (i.e. not mobile and not olive processing)	4
		Olive processing	12
7(3) (c)	Crushing, grinding or milling rock ores or minerals	300 metres or less from residents <sup>19</sup>	12
		Greater than 300 metres but closer within 1000 metres from residents <sup>19</sup>	8
		Further than 1000 metres from residents <sup>19</sup>	4
7(4)	Dredging	Dredging (if suspended solids >25 mg/L)	1 fee unit per day
7(5)	Coal handling and storage	Coal handling and storage	3
7(6)	Earthworks drainage	Earthworks drainage (if suspended solids >25 mg/L)	1/4 fee units per day
7(7)	Extractive industries In watershed protection area	Within 1000 metres of residents <sup>19</sup>	8
		Further than 1000 metres from residents <sup>19</sup>	4
	Extractive industries not in watershed protection area	1000 metres or less from residents <sup>19</sup>	4
		Greater than 1000 metres from residents <sup>19</sup>	3
8(1)	Aerodromes	Aerodromes	3
8(2)(a)	Fuel burning coal or wood (refer to Figure B.1 in Attachment B for the Adelaide airshed)	Located within Adelaide airshed with emissions above 500 tonnes per year of nitrogen oxides	50
		Located within Adelaide airshed with emissions above 30 tonnes per year and up to 500 tonnes per year of nitrogen oxides	30

Regulation reference	Prescribed activity	Characteristics	Fee units payable
		Located outside Adelaide airshed with NOx emissions above 500 tonnes per year	30
		Located within Adelaide airshed with emissions below 30 tonnes per year of nitrogen oxides	12
		Located outside Adelaide airshed with emissions between 30 and 500 tonnes per year of nitrogen oxides	12
		Located outside Adelaide airshed with emissions below 30 tonnes per year of nitrogen oxides	4
	Fuel burning not coal or wood (refer to Figure B.1 in Attachment B for the Adelaide airshed)	Located within Adelaide airshed with emissions above 500 tonnes per year of nitrogen oxides	30
		Located outside Adelaide airshed with emissions above 500 tonnes per year of nitrogen oxides	20
		Located within Adelaide airshed with emissions above 30 tonnes per year and up to 500 tonnes per year of nitrogen oxides.	20
		Internal combustion engines using diesel for greater than 25 hours per year	8
		Located within Adelaide airshed with emissions below 30 tonnes per year of nitrogen oxides	8
		Located outside Adelaide airshed with emissions greater than 30 tonnes and up to 500 tonnes per year of nitrogen oxides	8
		Located outside Adelaide airshed with emissions below 30 tonnes per year of nitrogen oxides	3
		Internal combustion engines using diesel for less than 25 hours per year	1
8(2)(b)		Fuel burning—stove enamel and baking or drying materials	Fuel burning—stove enamel and baking or drying materials
8(3)	Helicopter landing facilities	Helicopter landing facilities	1
8(4)	Marinas and boating facilities	Marinas and boating facilities	3
8(5)	Motor racing and testing venues	Motor racing and testing venues	3
8(6)	Shooting ranges	Shooting ranges	1
8(7)	Discharges to marine or inland waters	Discharges of 100 ML per year or greater	20
		Discharges of <100 ML per year but more than 10 ML per year	8

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Regulation reference	Prescribed activity	Characteristics	Fee units payable
		Discharges of less than 10 ML per year	4
Various activities	Licensed site post permanent closure, when the scheduled activity of environmental significance is no longer taking place on the site	Post-closure licence if requested by EPA	3

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## ATTACHMENT 3: IMPACTS OF POLLUTANTS

Pollutants can affect humans, animals, plants and infrastructure. Each pollutant that has been selected in the load based component is listed below, along with a description of its environmental effects. Ozone has also been included below, as its precursors nitrogen oxides and volatile organic compounds (VOCs) are included in the load based component.

### Air pollutants

#### *Sulfur dioxide*

Sulfur dioxide attacks the respiratory tract leading to irritation, aggravation of pre-existing inflammatory conditions (for example chronic bronchitis or emphysema) and increases susceptibility to respiratory tract infections. Sulfur dioxide exposure results in the development of an acute irritant response initially in the upper airways leading to coughing, wheezing, sputum production, increased incidence of respiratory infections, aggravation of asthma and chronic obstructive airways diseases, with resultant measurable increases in community patterns of respiratory and cardiovascular morbidity and mortality.

Ozone and sulphur oxides are the pollutants most hazardous to plants. These chemicals damage plants directly, causing stems to become brittle and leaves to become spotted. Ozone and sulphur oxides damage agricultural crops as well.

The Australian NEPM (National Environment Protection Measure) standard for human exposure to sulfur dioxide is 0.20 ppm averaged over 1 hour, 0.08 ppm averaged over a day and 0.02 ppm averaged over 1 year.

#### *Nitrogen oxides*

Exposure to nitrogen oxides results in disturbances in respiratory function, increase in lower respiratory tract symptoms in children, aggravation of asthma, and impairment of lung defences.<sup>20</sup> It damages the respiratory tract, leading to increased susceptibility to and severity of respiratory infections and asthma at high concentrations.

Nitrogen oxides can cause plant damage, and contribute to acidification and ozone formation (photochemical pollution).

The Australian NEPM (National Environment Protection Measure) standard for human exposure to nitrogen dioxide is 0.12 ppm averaged over 1 hour and 0.03 ppm averaged over 1 year.

#### *Photochemical pollution (volatile organic compounds, nitrogen and ozone)*

Ozone is produced from a reaction between VOCs (volatile organic compounds) and nitrogen oxides, catalysed by sunlight. Ozone is highly irritating to mucous membranes, principally in lungs

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<sup>20</sup> ibid

but can also cause eye and throat irritation and nasal congestion. It also causes damage to materials such as rubber.

Ozone is corrosive and easily breaks down rubber and some synthetic fibre.

Ozone (O<sub>3</sub>) is a photochemical oxidant and the major component of smog. Photochemical smog is an atmospheric haze reducing visibility.

While O<sub>3</sub> in the upper atmosphere is beneficial to life by shielding the earth from harmful ultraviolet radiation from the sun, high concentrations of O<sub>3</sub> at ground level are a major health and environmental concern. O<sub>3</sub> is not emitted directly into the air but is formed through complex chemical reactions between precursor emissions of volatile organic compound (VOC) and oxides of nitrogen (NO<sub>x</sub>) in the presence of sunlight. The reactivity of O<sub>3</sub> causes health problems because it damages lung tissue, reduces lung function and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of O<sub>3</sub> not only affect people with impaired respiratory systems, such as asthmatics, but healthy adults and children as well, eg reduction in lung function and causing respiratory inflammation accompanied by symptoms including chest pain, coughing, sneezing and pulmonary congestion in healthy people during exercise.<sup>21</sup>

Ozone results in upper and lower airway irritation especially for asthmatics, leading to an increased requirement for additional medication and medical services; it has cardiovascular effects resulting in increased mortality (death).<sup>22</sup>

Ozone and sulphur oxides are the pollutants most hazardous to plants. These chemicals damage plants directly, causing stems to become brittle and leaves to become spotted. Ozone and sulphur oxides damage agricultural crops as well.

#### ***Volatile organic compounds (VOCs)***

Volatile organic compounds contribute to photochemical pollution including the formation of ozone (see previous section).

Some VOCs are human carcinogens, such as benzene, others such as toluene can cause dysfunction of the central nervous system at high concentrations. VOCs also have an amenity impact due to odour.

#### ***Particulates (PM<sub>10</sub>)***

Particulate matter includes dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires and natural windblown dust. Particulates affect human breathing and respiratory systems, aggravations of existing respiratory and cardiovascular disease, alterations in the body's defence systems against foreign materials, damage to lung tissue, carcinogenesis and premature death. Individuals with chronic

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<sup>21</sup> US EPA Criteria Pollutants, [www.epa.gov/cgi-bin/epaprintonly.cgi](http://www.epa.gov/cgi-bin/epaprintonly.cgi)

<sup>22</sup> A Review on Existing Health Data on Six Pollutants, prepared by Dr Jonathon Streeton for the National Environment Protection Council, May 1997

obstructive pulmonary or cardiovascular disease or influenza, asthmatics, the elderly and children are most at risk. Particulate matter also soils and damages materials and agricultural crops, and causes impaired visibility (reduction in local visual distance). Particulates smaller than 10 µm (PM10) are likely responsible for most of the adverse health effects of particulate matter because of their ability to reach the thoracic or lower regions of the respiratory tract.<sup>23</sup>

Studies have shown increases in total mortality as well as in mortality from respiratory (eg lung disease) or cardiac disease of the order of 1% for every 10 µg/m<sup>3</sup> increase in PM10 levels, increases in hospital admissions, hospital casualty and medical surgery visits for asthma and other respiratory conditions, increases in functional limitation (restricted activity days or absence from school), increases in the daily prevalence of respiratory symptoms and small decreases in the level of pulmonary function in healthy children and in adults with obstructive airways disease.<sup>24</sup>

The Australian NEPM (National Environment Protection Measure) standard for human exposure to particulates as PM10 is 50 µg/m<sup>3</sup> averaged over 1 day.

### ***Lead***

Effects of lead exposure at higher concentrations include chronic renal disease, chronic anaemia and neurological disorders. Low level exposure can impair neurological, intellectual and psychological functioning in young children and other immature mammals (a decrease in intelligence and general academic performance in young children.<sup>25</sup>)

Exposure to lead can occur through multiple pathways, including inhalation of air and ingestion of lead in food, water, soil or dust. Excessive lead exposure can cause seizures, mental retardation and/or behavioural disorders. Infants and young children are especially susceptible to low doses of lead, which can lead to central nervous system damage. Lead may be a factor in high blood pressure and in subsequent heart disease in middle-aged males.<sup>26</sup>

Grazing animals such as cattle and sheep can take in large amounts of lead as they feed and drink. The bones and teeth of these animals become weak. Lameness and weight loss often lead to death in severely poisoned animals.

The Australian NEPM (National Environment Protection Measure) standard for human exposure to lead is 0.50 µg/m<sup>3</sup> averaged over 1 year.

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<sup>23</sup> US EPA, Criteria Pollutants, [www.epa.gov/cgi-bin/epaprintonly.cgi](http://www.epa.gov/cgi-bin/epaprintonly.cgi)

<sup>24</sup> A Review on Existing Health Data on Six Pollutants, prepared by Dr Jonathon Streeton for the National Environment Protection Council, May 1997

<sup>25</sup> A Review on Existing Health Data on Six Pollutants, prepared by Dr Jonathon Streeton for the National Environment Protection Council, May 1997

<sup>26</sup> US EPA, Criteria Pollutants, [www.epa.gov/cgi-bin/epaprintonly.cgi](http://www.epa.gov/cgi-bin/epaprintonly.cgi)

## Water pollutants

### *Temperature*

Increased temperature in a water body has several interrelated consequences that are generally related to more rapid chemical and biological processing. The amount of dissolved oxygen concentration drops, which can stress fish. The decay of organic matter increases through increased microbial activity and this can further reduce the dissolved oxygen concentration. Nutrient cycling is therefore more rapid, which can affect algal activity and lead to altered community structure.

Temperature pollution disrupts ecosystems, contributes to algal blooms, increases likelihood of pests, and decreases solubility of oxygen.

The degree to which temperature impacts occur depends on the amount of temperature increase and its spatial extent. In South Australia, temperature related discharges are moderate in terms of temperature change and relatively isolated, and hence attract a lower load based fee.

### *Suspended solids*

The presence of suspended solids in waters has three principal effects: asphyxiation, light reduction and sedimentation. Asphyxiation may lead to the death of animal life such as fish through smothering. Alternatively, animals may avoid the affected environment causing a reduction in biodiversity. Sedimentation can result in the total transformation of the environment from clear, free flowing waters with a rich array of aquatic plants and animals to an environment where sediment build-up excludes water plants and restricts animal diversity to a few species. Once the sediment has accumulated in the water bodies, natural removal processes may not provide sufficient flushing to remove the new accumulations. Often, the effects are permanent unless significant resources are applied. In South Australian marine waters, suspended solids have caused a reduction in light penetration, resulting in loss of plants such as seagrass.

Suspended solids stress receiving waters through reducing clarity, which in turn may cause significant reductions in plants and photosynthesis, the primary energy source for many ecosystems. Sediment deposition may smother organisms and habitats, killing plants and potentially preventing re-establishment and completely altering ecosystems through constant stress, light reduction and habitat degradation. Low clarity can also degrade other environmental values including recreation through reduced visibility and drinking water through increased treatment costs.

### *Nitrogen*

Nitrogen is a nutrient which stimulates large blooms or growths of cyanobacteria and nuisance plants which can dominate and change the dynamics of the receiving environment. These changes can include displacing local native species, obstructing waterways, reducing light availability, smothering benthic species (eg fish), creating large changes in dissolved oxygen and causing odour problems and blackened water, release of toxins from some cyanobacteria etc.

Ammonia, nitrate and nitrite are known to cause toxic effects to aquatic biota at low concentrations, so excessive concentrations in discharges may cause unexpected ecosystem impacts on receiving environments that may include lakes, rivers and creeks, estuaries, coastal lakes or marine environments.

Effects are often extremely difficult to reverse due to wholesale changes to habitat and species dominance.

### ***Phosphorus***

Phosphorus is a nutrient which stimulates algal and other plant growth, reducing the amount of oxygen to other aquatic organisms. The algal and other plants can dominate and change the dynamics of the receiving environment.

Some algal blooms are toxic at high concentrations.

### ***Organic matter***

Organic matter is broken down by bacteria as a natural process in aquatic ecosystems, releasing nutrients back into the system for plants to take up. If there is too much organic matter, the bacterial decay uses more oxygen than can be resupplied, so the dissolved oxygen concentration drops, which stresses fish and other animals. Since the large amount of organic decay releases more nutrients, there can also be an increase in plant growth, with its subsequent changes to the community structure.

Biochemical oxygen demand (BOD) is a measure of the tendency for dissolved oxygen in water to be depleted through the oxidation of soluble substances over time. The depletion of oxygen means that less oxygen is available to other organisms such as fish.

Organic matter stresses receiving waters by stimulating oxygen-consuming microbes. The processes associated with the breakdown of the organic matter in the received waters may kill plants and animals, either directly by anoxia (lack of oxygen), by related hydrogen sulfide or associated changes to water chemistry. Organic loading strongly favours scavenger species, potentially significantly changing whole ecosystem balances.

### ***Zinc***

Studies have shown that heavy metals decrease photosynthetic ability in seagrass at concentrations as low as 1.0 mg/l zinc and 0.1 mg/l copper.

Studies have shown that mussels are accumulating lead and zinc at sites around Port Pirie.<sup>27</sup>

High levels of zinc are toxic to plants and micro-organisms.

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<sup>27</sup> Heavy metal concentrations in razorfish and sediments across the Northern Spencer Gulf, Tracy Corbin and Sam Wade, August 2004

### ***Lead***

Lead can be extremely toxic to marine organisms such as fish, algae and invertebrates, and can be accumulated in the tissues of animals and plants.

Studies have shown that zinc, lead and copper bio-accumulate in shellfish in the Upper Spencer Gulf<sup>28</sup>. Metal bioaccumulation in tolerant species such as razorfish suggests that more sensitive species may be at risk of metal-related toxicity. In July 1996 the taking of marine benthic molluscs was prohibited from the majority of Germein Bay and this prohibition is still in place. This was in response to a sampling program conducted by the South Australian Health Commission which showed that metal concentrations in razorfish in the area exceeded the applicable food standard guidelines at the time for zinc and lead.<sup>29</sup>

### ***Copper***

Copper is an essential element for both plants and animals. It is a key component of some enzymes and an essential part of haemocyanin, a respiratory pigment in the blood of many invertebrates. It is, however, only required in small amounts and is toxic in higher concentrations. Copper is readily bioaccumulated in plants and animals.

Studies have shown that heavy metals decrease photosynthetic ability in seagrass at concentrations as low as 1.0 mg/l zinc and 0.1 mg/l copper.

Copper is a toxicant to aquatic animals, particularly fish.

In fresh water, copper adds an unpleasant taste to drinking water and causes staining of laundry and plumbing fixtures. However, copper is more of an environmental issue in the marine environment in South Australia.

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<sup>28</sup> Heavy metal concentrations in razorfish and sediments across the Northern Spencer Gulf, Tracy Corbin and Sam Wade, August 2004

<sup>29</sup> *ibid*

**ATTACHMENT 4: POLLUTANT DEFINITIONS**

<b>Pollutant</b>	<b>Definition</b>
<b><i>Air pollutants</i></b>	
Lead	Lead & compounds as defined for NPI
Sulfur dioxide	SO <sub>2</sub> as defined for NPI
Particulates	Particulate matter ≤ 10.0µm (PM <sub>10</sub> ) as defined for NPI
Nitrogen Oxides	Oxides of nitrogen as defined for NPI
Volatile Organic Compounds	Total volatile organic compounds as defined for NPI
<b><i>Water pollutant</i></b>	
Nitrogen	Total nitrogen as defined for NPI
Phosphorus	Total phosphorus as defined for NPI
Suspended Solids	Total suspended solids
Organic Matter	Biological oxygen demand (BOD5)
Temperature	Thermal pollution as megawatt added
Zinc	Zinc and compounds as defined for NPI
Lead	Lead & compounds as defined for NPI
Copper	Copper & compounds as defined for NPI

**ATTACHMENT 5: OTHER ENVIRONMENTAL ISSUES/POLLUTANTS CONSIDERED**

A number of environmental issues were considered but excluded from the load based component.

Noise pollution was excluded from the load based component as this is generally a localised issue. Guidelines for noise levels are used by the EPA to manage noise at acceptable levels. Licensed facilities are required to ensure that their noise levels are below the required standards. Requirements for noise levels are based on amenity, and are applied when complaints have been received. Noise pollution from the rail corridor is not localised and data is available for this source of pollution. However, this is not a constant source of pollution.

Waste was excluded from the load based component as this is already addressed by the waste levy.

Soil contamination and discharges to groundwater were excluded from the load based component, as site contamination legislation is still under development. The EPA requires discharges to land or groundwater to be sustainable. The EPA manages allowable discharges to land or groundwater via licences to ensure that they are sustainable, and hence these discharges would not attract a load based fee.

Odour emissions are not included in the load based component due to measurement issues. Data on current levels of odour emissions is not readily available. Odour modelling is usually only undertaken for a development application, and is generally not updated unless there is a significant issue.

Despite the fact that greenhouse gas emissions are a significant environmental issue in South Australia, these pollutants are not included in the proposed load based component because:

- Climate change is probably the most significant global environmental issue that confronts us today. The State of the Environment Report requires the government to develop and implement a State Greenhouse Plan and Action Plan as a matter of priority. This would address all sources of greenhouse gases, not just licensed sources.
- Data on greenhouse gas emissions is not yet required to be reported to the NPI database. The EPA does not yet require reporting of levels of greenhouse gas emissions from licensed premises as a condition of licence. Therefore, data is not available for fee calculations. While there is industry data available to other areas of government, this data does not identify individual sites and therefore cannot be used to calculate a load based fee for licensed sources.
- The inclusion of greenhouse gas emissions in the load based component may counteract a potential future emissions trading system. In an emissions trading system, it does not matter where the emissions are reduced, as long as they are reduced overall. If greenhouse gas emissions are included in the load based component, this would indicate that emissions need to be reduced at each particular licensed site liable for greenhouse gas load fees.

High nitrate concentrations in parts of the South East groundwater aquifers were also considered, however, the main sources of high nitrate concentrations are unlicensed and diffuse, such as agricultural, urban (septic tanks) and stormwater.

Increasing salinity in groundwater was also considered. However, contributors to salinity are:

- Increased extraction of groundwater (therefore less dilution)
- Irrigation, which leaches salt (built up over many years in the soil) into the groundwater
- Change in groundwater flows so that more saline aquifers mix with less saline aquifers.

The direct addition of salt is not a major contributor to salinity in groundwater, and has therefore not been included in the load based component.

The following pollutants were also considered but were not included in the load based component:

- Dioxins: The main source of dioxins in SA is from wood heaters, which are unlicensed sources<sup>30</sup>. Emissions of dioxins and furans from licensed sources in SA are very low in comparison with the pollutants selected for the load based component. While they are highly toxic, and were included in the previous draft version of load based licensing, their contribution to overall fees was insignificant compared with the pollutants selected. In addition, they were not identified as a major pollution issue in SA.
- Volatile organic compounds in the form of ethanol emissions from wineries were not included, as the main environmental issue for wineries is wastewater treatment and disposal. If ethanol emissions were included, this would result in less attention being focussed on wastewater treatment and disposal, which is contrary to EPA requirements for wineries.
- Organophosphates and organochlorins were not included as the main sources are diffuse agricultural and domestic use. However, wastewater treatment plants are secondary sources of organophosphates and organochlorins.
- NaCl (salt) was not included, as the only salt load causing some stress to the environment is discharge from the salt fields into the marine environment. This is currently seen as a secondary pollution issue rather than a major issue.
- Coliforms were not included as discharges from the most common licensed source, wastewater treatment plants, are usually chlorinated, with zero discharge of coliforms such as *E.Coli*. If there are potential sensitive receptors, the wastewater discharge is chlorinated. Other sources not licensed by the EPA include aquaculture and some agricultural activities. Pathogens from cattle and septic tanks also contribute to strain on the water supply catchment and ecosystem health in the Mount Lofty Ranges.

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<sup>30</sup> Environment Australia Technical Report No 4 – Review of literature on Residential firewood use, Wood Smoke – Air Toxics 2002

- Pesticides and herbicides have significant impacts in the Mount Lofty Ranges catchment, but the main source of these pollutants is agricultural, which is unlicensed. Pathogens from cattle and septic tanks also have significant impacts but these activities are not licensed by the EPA.

## ATTACHMENT 6: FEE UNIT AND POLLUTANT FEES WITH DIFFERENT OVERALL FEE SETTINGS

**Table A6.1: Environment management fee unit under different options**

% load based component	Fee unit (\$)
10%	\$495
20%	\$436
30%	\$377
35%	\$348
40%	\$318
50%	\$259
60%	\$200

**Table A6.2: Air pollutant fees under different load based component (\$/tonne)**

Pollutant	Load based component						
	10%	20%	30%	35%	40%	50%	60%
Sulfur dioxide and Nitrogen oxides	0.85	1.7	2.9	3.7	4.6	6.3	8.2
Particulates and Volatile organic compounds	8.5	17	29	37	46	63	82
Lead	85	171	292	369	455	627	816

Notes: 10% load based component means 10% of the total EPA fees are collected through the load based fees

**Table A6.3: Water pollutant fees under different load based component (\$/tonne or \$/MW)**

Pollutant (\$/tonne)	Load based component						
	10%	20%	30%	35%	40%	50%	60%
Temperature (\$/MW)	0.85	1.7	2.9	3.7	4.6	6.3	8.2
Suspended solids, Nitrogen, Phosphorus Organic matter and Zinc	8.5	17	29	37	46	63	82
Lead and Copper	85	171	292	369	455	627	816

## ATTACHMENT 7: FEES BY ACTIVITY GROUP FOR DIFFERENT OVERALL FEE SETTINGS

Table A7.1: Total fees by activity group under different fee settings

Activity group	Total fees payable under alternative load based components						
	10%	20%	30%	35%	40%	50%	60%
Chemical storage and warehousing	\$113,707	\$101,873	\$90,038	\$84,121	\$78,204	\$66,370	\$54,536
Chemical works	\$192,863	\$250,129	\$307,395	\$336,028	\$364,661	\$421,927	\$479,192
Oil refineries	\$24,986	\$22,037	\$19,087	\$17,612	\$16,138	\$13,188	\$10,239
Petroleum production and storage	\$155,006	\$254,946	\$354,887	\$404,858	\$454,828	\$554,769	\$654,709
Wood preservation works	\$175,668	\$161,260	\$146,852	\$139,648	\$132,444	\$118,036	\$103,628
Abrasive blasting	\$141,119	\$126,430	\$111,742	\$104,398	\$97,054	\$82,365	\$67,677
Hot mix asphalt preparation	\$46,089	\$41,076	\$36,063	\$33,556	\$31,049	\$26,036	\$21,023
Cement works	\$41,845	\$44,439	\$47,033	\$48,330	\$49,627	\$52,221	\$54,815
Ceramic works	\$55,696	\$56,562	\$57,428	\$57,861	\$58,294	\$59,160	\$60,026
Concrete batching works	\$156,524	\$140,420	\$124,316	\$116,264	\$108,212	\$92,107	\$76,003
Drum reconditioning works	\$3,440	\$3,086	\$2,732	\$2,555	\$2,378	\$2,024	\$1,670
Ferrous and non-ferrous metal melting	\$208,592	\$188,832	\$169,072	\$159,192	\$149,312	\$129,551	\$109,791
Metallurgical works	\$417,806	\$723,870	\$1,029,934	\$1,182,966	\$1,335,998	\$1,642,062	\$1,948,126
Mineral works	\$6,175	\$5,467	\$4,759	\$4,406	\$4,052	\$3,344	\$2,636
Pulp or paper works	\$26,249	\$24,563	\$22,877	\$22,033	\$21,190	\$19,504	\$17,817
Scrap metal recovery	\$16,026	\$14,256	\$12,486	\$11,601	\$10,716	\$8,947	\$7,177
Surface coating works	\$174,552	\$155,237	\$135,922	\$126,264	\$116,606	\$97,291	\$77,975
Wood processing works	\$55,524	\$55,195	\$54,865	\$54,700	\$54,535	\$54,206	\$53,876
Maritime construction	\$1,720	\$1,543	\$1,366	\$1,278	\$1,189	\$1,012	\$835
Vehicle production	\$76,917	\$120,122	\$163,328	\$184,931	\$206,534	\$249,740	\$292,946
Incineration	\$198,310	\$178,306	\$158,303	\$148,301	\$138,300	\$118,296	\$98,293

Activity group	Total fees payable under alternative load based components						
	10%	20%	30%	35%	40%	50%	60%
Sewage treatment works or septic disposal	\$1,073,469	\$1,051,830	\$1,030,192	\$1,019,372	\$1,008,553	\$986,914	\$965,276
Waste depots	\$1,137,244	\$1,011,832	\$886,420	\$823,714	\$761,008	\$635,596	\$510,184
Activities producing listed wastes	\$300,065	\$272,031	\$243,996	\$229,979	\$215,962	\$187,927	\$159,893
Waste transport (Category A)	\$245,824	\$221,738	\$197,653	\$185,610	\$173,567	\$149,482	\$125,396
Waste transport (Category B)	\$139,737	\$128,854	\$117,970	\$112,528	\$107,086	\$96,203	\$85,319
Brukung mine site	\$15,086	\$13,316	\$11,546	\$10,661	\$9,777	\$8,007	\$6,237
Stormwater discharge to underground aquifers	\$37,051	\$32,804	\$28,557	\$26,433	\$24,310	\$20,062	\$15,815
Cattle feedlots	\$24,366	\$21,770	\$19,175	\$17,877	\$16,579	\$13,984	\$11,388
Saleyards	\$19,701	\$17,577	\$15,453	\$14,392	\$13,330	\$11,206	\$9,082
Piggeries	\$151,026	\$134,037	\$117,048	\$108,553	\$100,059	\$83,069	\$66,080
Abattoirs/slaughterhouses/poultry	\$114,955	\$101,733	\$88,511	\$81,900	\$75,289	\$62,066	\$48,844
Breweries	\$10,182	\$9,048	\$7,915	\$7,348	\$6,781	\$5,648	\$4,514
Composting works	\$172,117	\$152,549	\$132,980	\$123,196	\$113,411	\$93,842	\$74,274
Fish processing	\$100,348	\$89,258	\$78,168	\$72,623	\$67,078	\$55,988	\$44,898
Milk processing	\$37,179	\$33,060	\$28,940	\$26,880	\$24,821	\$20,701	\$16,582
Produce processing	\$47,097	\$41,917	\$36,736	\$34,146	\$31,555	\$26,375	\$21,194
Rendering or fat extraction works	\$63,051	\$55,761	\$48,470	\$44,824	\$41,179	\$33,888	\$26,597
Curing or drying works	\$1,720	\$1,543	\$1,366	\$1,278	\$1,189	\$1,012	\$835
Tanneries or fellmongeries	\$32,596	\$28,880	\$25,164	\$23,305	\$21,447	\$17,731	\$14,015
Wineries or distilleries	\$405,676	\$360,056	\$314,436	\$291,626	\$268,816	\$223,195	\$177,575
Bulk shipping facilities	\$88,098	\$78,188	\$68,278	\$63,323	\$58,367	\$48,457	\$38,547
Railway systems	\$41,952	\$37,232	\$32,513	\$30,154	\$27,794	\$23,075	\$18,356
Crushing, grinding or milling	\$166,178	\$159,071	\$151,964	\$148,410	\$144,857	\$137,749	\$130,642
Dredging	\$192,470	\$169,898	\$147,327	\$136,041	\$124,755	\$102,183	\$79,611
Earthworks drainage	\$46,351	\$40,856	\$35,360	\$32,613	\$29,865	\$24,369	\$18,874

Activity group	Total fees payable under alternative load based components						
	10%	20%	30%	35%	40%	50%	60%
Extractive industries	\$72,468	\$73,772	\$75,076	\$75,729	\$76,381	\$77,685	\$78,989
Fuel burning	\$263,381	\$290,621	\$317,860	\$331,480	\$345,100	\$372,340	\$399,580
Helicopter landing facilities	\$730	\$671	\$612	\$583	\$553	\$494	\$435
Marinas and boating facilities	\$43,001	\$38,577	\$34,153	\$31,941	\$29,728	\$25,304	\$20,880
Motor racing and testing venues	\$5,160	\$4,629	\$4,098	\$3,833	\$3,567	\$3,037	\$2,506
Shooting ranges	\$2,920	\$2,684	\$2,448	\$2,330	\$2,212	\$1,976	\$1,740
Discharges to marine or inland waters	\$46,247	\$40,820	\$35,393	\$32,679	\$29,966	\$24,539	\$19,112
Exemptions and works approvals (flat minimum component only)	\$10,809	\$10,809	\$10,809	\$10,809	\$10,809	\$10,809	\$10,809
<b>Total</b>	<b>\$7,397,071</b>	<b>\$7,397,071</b>	<b>\$7,397,071</b>	<b>\$7,397,071</b>	<b>\$7,397,071</b>	<b>\$7,397,071</b>	<b>\$7,397,071</b>

**ATTACHMENT 8: CHANGE IN TOTAL FEES FOR ALL ACTIVITY GROUPS**

It is difficult to accurately estimate the 2005/06 fee levels for the activity groups as many licensees are licensed for a number of different activities and the number of licensees within the groups changes over time. The estimates below are based on the licensing data from 2004/05 adjusted evenly across activity groups for the statutory increase to \$7.4 million in 2005/06. The change in fees is based on 35% load based component in the overall fee structure.

**Table A8.1: Change in total fees for all activity groups**

Regulation reference	Activity group	Change in fees from 2004/05
1(1)	Chemical storage and warehousing	-\$15,521
1(2)	Chemical works	\$182,453
1(4)	Oil refineries	\$8,432
1(5)	Petroleum production and storage	\$324,434
1(6)	Wood preservation works	-\$17,476
2(1)	Abrasive blasting	-\$64,210
2(2)	Hot mix asphalt preparation	-\$14,319
2(3)	Cement works	-\$4,674
2(4)	Ceramic works	-\$17,813
2(5)	Drum reconditioning works	\$4,119
2(6)	Concrete batching works	-\$2,586
2(7)	Ferrous and non-ferrous metal melting	\$31,365
2(8)	Metallurgical works	\$765,843
2(9)	Mineral works	\$2,202
2(10)	Pulp or paper works	-\$38,927
2(11)	Scrap metal recovery	-\$9,882
2(12)	Surface coating works	\$36,048
2(13)	Wood processing works	-\$5,117
2(14)	Maritime construction	-\$2,170
2(15)	Vehicle production	\$137,436
3(1)	Incineration	\$104,417
3(2)	Sewage treatment works or septic disposal	-\$828,886
3(3)	Waste depots	\$382,755
3(4)	Activities producing listed wastes	\$51,786
3(5)	Waste transport (Category A)	-\$319,645
3(6)	Waste transport (Category B)	-\$190,894
4(1)	Brukunga mine site	-\$19,941
4(2)	Stormwater discharge to underground aquifers	-\$34,322
5(1)	Cattle feedlots	-\$12,383
5(3)	Saleyards	-\$2,501
5(4)	Piggeries	\$52,318
6(1)	Abattoirs/slaughterhouses/poultry	-\$92,630
6(2)	Breweries	-\$3,485
6(3)	Composting works	\$64,055
6(4)	Fish processing	\$52,303

Regulation reference	Activity group	Change in fees from 2004/05
6(5)	Milk processing	-\$10,883
6(6)	Produce processing	-\$29,349
6(7)	Rendering or fat extraction works	-\$13,014
6(8)	Curing or drying works	-\$2,762
6(9)	Tanneries or fellmongeries	-\$8,362
6(11)	Wineries or distilleries	\$152,980
7(1)	Bulk shipping facilities	-\$25,425
7(2)	Railway systems	-\$8,528
7(3)	Crushing, grinding or milling	\$7,031
7(4)	Dredging	-\$247,906
7(6)	Earthworks drainage	-\$44,421
7(7)	Extractive industries	-\$102,368
8(2)	Fuel burning	-\$195,393
8(3)	Helicopter landing facilities	-\$152
8(4)	Marinas and boating facilities	\$13,763
8(5)	Motor racing and testing venues	\$2,364
8(6)	Shooting ranges	\$372
8(7)	Discharges to marine or inland waters	\$9,470

**ATTACHMENT 9: DESCRIPTION OF ACTIVITIES USED FOR INTERSTATE FEE COMPARISON****Table A9.1: Activities used for interstate fee comparison**

Activity	Description
Chemical works	Large inorganic chemical works producing around 250,000 tonnes of chemicals and significant water discharges including nitrogen, phosphorus, suspended solids and metals.
Petroleum production	Large operator processing around 1,500,000 tonnes of petroleum products with significant air emission of nitrogen oxides, VOCs, particulates and sulfur oxides.
Cement works	Producing around 500,000 tonnes per annum and air emissions of nitrogen oxides and particulates.
Metallurgical works	Large metallurgical works with production at around 200,000 tonnes per year and significant air emissions including sulfur oxides, particulates and lead and discharges of metals to water
Vehicle production	>10,000 units pa Vic, SA large emissions (largest vehicle producer); SA >50,000 units; NSW hypothetical fee based on emissions (this activity not licensed in this state, therefore no admin fee defined, but as this is included in the total load based fee calculation, this was not required for the purposes of comparison. VOCs have zone weighting in NSW and WA, as they would have this in SA. WA hypothetical fee applies to load based component only; the premises fee would have to be added to this as it is not regulated in this state because this industry does not exist in this state.
Large sewage treatment works	Large sewage treatment plant discharging around 45,000 megalitres per year to the marine environment including nitrogen, phosphorus, suspended solids, organic matter and metals.
Waste depots - medium	Medium size waste depot with around 5,000 tonnes per year of solid waste disposal that has high risk site conditions (class MB+) and complies with the technical specifications in the landfill guidelines.
Cattle feedlots	Processing around 1,500 cattle per day, includes 50% discount under current (old) SA EPA fee schedule for wastewater disposal.
Piggeries	Around 10,000 pigs, includes 50% discount under current (old) SA EPA fee schedule for wastewater disposal.