

Financial assurance calculation for landfills, prescribed industrial waste management (PIW), container washing, and PIW composting

Draft guideline



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Purpose

This guideline provides information to assist duty holders in the calculation of the financial assurance required as a condition of a licence or a works approval for landfills, prescribed industrial waste (PIW) management, container washing, PIW composting and scheduled activities.

Legal status

This Guideline is not mandatory in nature. However, under sections 21(1)(ba) and 67B of the *Environment Protection Act 1970* ('the Act') EPA may require duty holders to provide a financial assurance as a condition of a licence or works approval.

Publication 1568: EPA Position on Financial Assurance in Licences and Works Approvals explains how the Environment Protection Authority ('EPA') applies financial assurance.

EPA will publish separate guidance on types of financial assurance.

Introduction

EPA's financial assurance system is intended to prevent clean-up costs from being borne by the Victorian community.

EPA requires duty holders operating certain scheduled premises to provide a financial assurance. Under the Act, this requirement can be specified in a works approval, licence or a Pollution Abatement Notice. The types of scheduled premises that may be required to submit a financial assurance are specified in Schedule 1 of the *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007*.

This document provides guidance on how to determine the amount of financial assurance for:

- landfills
- Prescribed Industrial Waste (PIW) management
- container washing
- PIW composting.

In the event that a premises, at which one or more of the above activities are undertaken, is deemed by EPA to present significant or unique risks, a tailored financial assurance calculation may be required.

This guideline does not address calculation of financial assurance for:

- bulk storage
- contaminated sites - onsite soil containment
- ash ponds
- Type 1 landfills - landfills accepting PIW (Category B).

Financial assurance in each of these instances is determined in consultation with EPA.

Landfills

Financial assurance for landfills consists of two 'components':

- operational
- closure and aftercare.

Operational landfills are required to maintain both the operational, and the closure and aftercare components of financial assurance. Closed landfills are required to maintain the closure and aftercare component.

The documents that are required in order to support the calculation of financial assurance for landfills are:

- a cell map illustrating current operating cells, partially rehabilitated cells and fully rehabilitated cells including the dates of rehabilitation and cell volumes for each cell
- the audit report identification numbers for audit reports containing as-constructed details of landfill cells, identifying cells constructed to the requirements specified in the most recent version of *Publication 788: Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills* ('Landfill BPEM')
- the audit report identification number for the most recent audit report that verifies the area of the landfill that has already been filled and the area that is proposed to be filled;
- a list of approved variations to BPEM requirements for future capping
- the audit report identification numbers for reports containing auditor verification of capping and rehabilitation of cells closed after 2011
- the most recent rehabilitation plan

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- the most recent independent survey of landfill filled volume
- any evidence supporting a variation to the default 30-year aftercare period (used for calculation purposes).

Landfill operational financial assurance

Landfill operational financial assurance is intended to fund the costs that may be incurred by EPA in the caretaking of an operational landfill in the event a site is abandoned or an uninsured event exceeds the operator's capacity to pay.

The events covered by the financial assurance are uncertain but can be significant. It is therefore not possible to accurately calculate these contingent events. EPA has instead derived a formula to calculate the required Landfill operational financial assurance.

The formula is based on the surveyed filled volume of open cells plus cells that are not fully rehabilitated. Fully rehabilitated cells include proven phytocapping, where phytocapping is used. The filled volume of cells represents the scale of the activity at the site and the potential environmental risk.

The volume used in the formula is cubic metres.

The formula is:

$$\text{Operational financial assurance} = \$ (0.20 \times \text{filled volume}) + \$370,000$$

The formula was derived using estimated remediation costs for the following types of events at variably sized landfills:

- excessive seepage or loss of leachate containment
- illegal dumping
- slumping of batters
- failure or erosion of temporary capping or vegetation.

It is assumed that contingent events do not occur simultaneously. These events were selected as being representative of a wide variety of contingent events at landfills that could result in unexpected costs.

Landfills deemed by EPA to be outside the assumptions inherent in the formula should instead calculate the required landfill operational financial assurance in consultation with EPA.

The formula is based on 2015 costs and shall be indexed using the Consumer Price Index adjustment calculation below for financial assurance calculations performed in subsequent years.

Landfill closure and aftercare financial assurance

The calculation of the closure and aftercare financial assurance should address the costs of complying with the

most recent version of the Landfill BPEM and Publication 1490: *Closed Landfill Guidelines*.

The calculation should be verified by a suitably qualified person such as an environmental engineer or scientist/geoscientist, as suitably accredited by an organisation such as Engineers Australia or the Australian Institute of Geoscientists or similar, or a suitably accredited quantity surveyor. The qualifications and experience of the person verifying the estimate should be clearly stated in the submitted calculation document.

The same calculation method applies to closed landfills in order to address any remaining costs associated with capping and closing the site and includes the aftercare of the landfill.

The closure and aftercare financial assurance should address the cost of the following activities at a minimum:

Closure financial assurance cost to include:

- capping of the uncapped area and any area with temporary or intermediate capping, as well as any additional works on existing caps as specified in the rehabilitation plan
- haulage and purchase of capping material if the latter is not available onsite
- vegetation establishment and management
- final gas and leachate collection infrastructure installation
- decommissioning and removal of redundant operational infrastructure
- Hydrogeological assessment¹
- Landfill gas risk assessment²
- Environmental monitoring program³
- Rehabilitation plan for the remaining rehabilitation work required as well as an aftercare management plan⁴.

¹ The cost of a hydrogeological assessment is not required in the closure and aftercare financial assurance estimate if this assessment has already been undertaken, or where all cells onsite are fully engineered to the standard in the most recent version of the Landfill BPEM.

² The cost of a landfill gas risk assessment is not required if this assessment has already been undertaken.

³ The cost of establishing an environmental monitoring program is not required in the closure and aftercare financial assurance estimate if this program is already in place in accordance with Publication 1323: *Landfill Licensing Guidelines*

⁴ The cost of preparing a rehabilitation plan and an aftercare management plan is not required in the closure and aftercare financial assurance estimate if the documents are already in place in accordance with the Landfill BPEM.

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Any area that is fully capped and rehabilitated (including proven phytocapping where phytocapping is used) does not need to be included in the closure calculation.

In areas where clay is not available for capping, the calculation should incorporate the cost of purchasing and hauling clay unless an alternative capping design is approved by EPA.

Where final capping design has not yet been approved by EPA, the capping design used as a basis for calculating financial assurance should be in accordance with the Landfill BPEM.

Aftercare cost to include:

- operation and maintenance of all structures including capping (and vegetation), wells and bores, and associated pipework
- capping augmentation for phytocaps
- leachate extraction/collection, treatment and disposal
- landfill gas extraction and treatment
- environmental monitoring
- infrastructure and leachate pond decommissioning (at the conclusion of the aftercare period)
- inspection, audit and annual reporting costs
- stormwater management and surface water monitoring.

Aftercare calculation principles:

AREA: Use the total area of the landfill - the filled area plus the currently approved area.

If this area cannot be determined from audit reports, use the default area specified in Schedule 1 of the licence.

TIME: Use an aftercare period of 30 years from the final closure date of the entire site.

A different aftercare period can be used only where sufficient evidence is provided with the calculation proposal.

ACCOUNTING: Neither discounting nor inflation should be applied. Adjustments for inflation are included in the periodic re-evaluation of financial assurance amounts.

If an accumulating, interest-bearing fund is used to provide for closure and aftercare costs, discounting can be incorporated into the determination of pay-in schedules.

Progressive release of the closure and aftercare financial assurance

The financial assurance for closure and aftercare can be reduced to remove the costs associated with closure upon auditor verification that the closure activities are completed.

EPA has sole discretion about the release of financial assurance. Progressive release of aftercare financial assurance during the aftercare period is most likely to be based on a risk based calculation that considers the remaining environmental risks at the site.

EPA requires the following four criteria to all be met before making any consideration of progressively reducing the aftercare financial assurance:

1. all auditor recommendations have been actioned
2. no additional remedial notices or sanctions have been applied in the previous five years
3. the most recent environmental audit report confirms that the risks to the environment associated with aftercare management are being adequately identified, managed and monitored
4. costs to date have been aligned with expected expenditure and therefore the financial assurance for the remaining aftercare period can be reduced accordingly.

The entire closure and aftercare financial assurance is released once EPA determines that the site no longer poses a risk to human health or the environment.

PIW management and container washing

The financial assurance for PIW management and container washing facilities consists of a cost calculation for waste disposal, based on the amount of waste that is permitted to be stored on the site. Financial assurance for PIW composting is addressed below separately.

Calculation of financial assurance associated with site contamination is not addressed within this guideline. Financial assurance for site contamination is addressed through pollution abatement notices and is calculated in consultation with EPA.

Waste disposal costs

The waste disposal cost is calculated by multiplying the total amount of waste that the facility is licensed to store by the relevant unit disposal cost.

Waste disposal cost = amount of waste x unit disposal cost

where: amount of waste = maximum amount of waste the facility is licensed to store (m³, tonnes or 1000L)

unit disposal cost = the highest unit disposal cost that is associated with the range of wastes permitted to be stored on the site

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Unit disposal costs are provided in Tables 1 and 2.

Where the facility is licensed to store a number of different wastes, the unit disposal cost is based on the waste with the highest disposal cost.

To minimise financial assurance costs, licence holders can apply to vary their licence to specify separate waste limits for high-cost wastes. The financial assurance is then calculated by totalling the waste disposal costs for the permitted amount of each waste.

A separate calculation of the costs of transport, sampling and site management is not required. The waste disposal costs used in the financial assurance calculation are designed to include these additional costs and are therefore set deliberately higher than commonly charged gate fees.

Table 1: Waste disposal costs for high-cost wastes

Waste type	Waste code	Unit disposal cost (2015 dollars)
Mercaptans	M260	\$113/kg
PCBs or material contaminated with PCB >50mg/kg	M100	\$20,000 per tonne or m ³
Equipment containing PCBs	M110	\$10,000 per tonne or m ³
Solvents/oils contaminated with PCBs <50mg/kg	M120	\$3,500 per tonne or m ³
Biocide waste	H100	\$4,500 per tonne or m ³
Mercury waste	D120, D121	\$3,000 per tonne or m ³
Chlorinated or halogenated waste	G110, G130, G150	\$2,000 per tonne or m ³
Cyanide waste	A100, A110, A130, M210, M220	\$1,500 per tonne or m ³
Pesticide liquids	H110, H120, H130, H150, H160	\$1,500 per tonne or m ³
Pesticide residue	H160	\$4,500 per tonne or m ³

A default rate of \$1,000 per tonne or cubic metre applies for all other waste types.

Table 2: Waste disposal costs for containers.

Waste type	Waste code	Disposal cost
Containers	N100	\$20 each or \$2/kg
	N105	\$50 each or \$1/kg

The costs are quoted in 2015 and shall be indexed in subsequent years using the CPI adjustment formula outlined at the end of this document.

PIW composting

Calculation of financial assurance for sites that are licensed to accept and compost prescribed industrial waste is based on the cost of offsite disposal of the PIW or PIW-contaminated wastes.

There are two 'components' of financial assurance that are potentially relevant to PIW composters:

1. PIW storage - for premises where PIW is permitted to be stored
2. PIW mixing - for premises where there is an area or pit for mixing PIW with other materials.

The total financial assurance is calculated by adding the financial assurance components that are relevant to each premises.

PIW storage

The PIW storage component is applicable where a waste storage limit is specified in the licence. This component of financial assurance is calculated in the same manner as for PIW Management (see previous section).

PIW mixing

The PIW mixing component is applicable to sites where a mixing area or pit(s) is designated in the licence. This component is calculated by multiplying the volume of the mixing pit(s) by the waste disposal costs for the most expensive waste type that is permitted to be mixed into the compost.

Calculating a Consumer Price Index adjustment for the financial assurance

CPI means the Consumer Price Index (All Groups Index) issued by the Australian Statistician.

The following formula is used when calculating an adjustment to the financial assurance at EPA's request or before any licence is transferred.

$$N = E \times \left(1 + \left(\frac{A - B}{B} \right) \right)$$

where:

N is the updated financial assurance calculation

E is the existing financial assurance

A is the CPI number for the previous December quarter

B is the CPI number for the December quarter of the year before the financial assurance was last adjusted.