

Explainer: how much landfill does Australia have?

Written by Bernadette McCabe, Associate Professor and Principal Scientist, University of Southern Queensland



A compactor at work on Australian landfill.via Wikimedia commons

Since Australia stopped incinerating rubbish in the middle of the 20th century, most of our solid waste has ended up in landfill. Some [20 million tonnes](#) of garbage each year makes its way to hundreds of landfill sites, mostly clustered around our capital cities. This represents about [40% of total waste generation](#) in Australia.

Surprisingly, we don't know exactly how many landfills exist, where they all are, or how large they are. However, [government data](#) suggest that there are around 600 officially registered sites, and perhaps as many as 2,000 unregulated ones, most of them small.

Since the 1990s, the number of landfills in Australia has fallen but the average size has grown. These large sites are increasingly sophisticated and generally run by large private companies. Around 75% of landfilled waste in Australia goes to [38 sites](#) .

What's in landfill?

Waste in landfills falls into three major categories: household rubbish, commercial and industrial waste, and construction and demolition waste.

The average domestic bin contains [60% organic material](#) , with the bulk coming from food (40%) and garden waste (20%). This is a primary source of landfill gas, mainly methane, which is produced when organic waste decomposes. The methane is collected and combusted using [a flare or an electricity generation system](#) . Flaring of landfill gas converts the methane to carbon dioxide, which has a significantly lower global warming potential than methane.

Of course, it's better to reduce landfill gas in the first place. New technologies in composting and [anaerobic digestion](#) can help divert organics from landfill.

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In 2013-14, the commercial sector [generated 17 million tonnes of waste](#) , representing just under a third of all waste in Australia. Around 7 million tonnes ended up in landfill. The major trends in commercial waste treatment include sourcing separated food and organics collection, and alternative waste treatment as levies and grants increase.

When water passes through toxic or hazardous waste it picks up contaminants and becomes [leachate](#) , which can contaminate the surrounding land and water.

Around 40% of Australia's waste, or some 19 million tonnes a year, comes from construction and demolition. This typically includes timber, concrete, plastics, wood, metals, cardboard, asphalt and mixed site debris such as soil and rocks. However, only 8.5 million tonnes ended up in landfill, as levies in most states make it cheaper to recycle this material.

About [10.5 million tonnes](#) , or 55%, was recovered and recycled in 2008-09 with recovery rates of greater than 75% being achieved by best performing jurisdictions.

How many landfills are in Australia, and where?

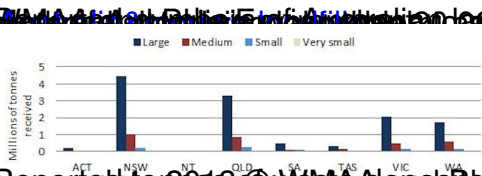
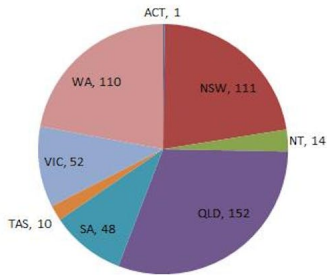
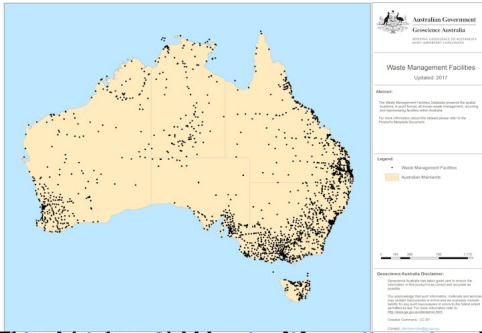
We calculate the number of landfills in Australia by looking at national databases like the [National Pollution Inventory](#) or the [National Greenhouse and Energy Reporting Scheme](#)

. However, while all operating landfills are licensed by their local councils, many regional sites fall below the size threshold where they're required to report to these programs, or apply for environmental licenses. Therefore, we can't say exactly how many landfills are in Australia – although someone could find out by calling every local council in the country.

The map below, from the [National Waste Management Facilities Database](#) , shows all known waste management, recycling and reprocessing facilities in Australia.

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Reported in 2015. © Waste Australia. Data by landfill size class and jurisdiction. Analysis of landfill

Who's in charge?

Local councils are responsible for landfills in their areas, but the largest sites in Australia are run by private companies. In jurisdictions with small populations, like Tasmania and the Northern Territory, no private companies operate.

The [Woodlawn landfill](#), 240km southwest of Sydney, gets more waste than any other landfill in Australia.

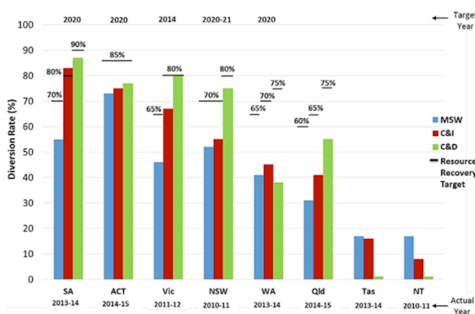
The [Rosedale landfill](#), 18km south east of Brisbane, was in the countryside when established in the early 1990s. Now surrounded by suburban houses, it highlights the importance of appropriate planning and management of these sites. This is why Adelaide's largest landfill is located 90km north of the city.

The variety of jurisdictions and operators involved, and their different sizes, suggests that landfills are not consistently managed.

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The [National Resource Recovery](#) targets encourage private operators to reclaim and divert some of the waste going to landfill. The diversion targets vary from state to state. South Australia and the ACT have the most ambitious targets and are most advanced in meeting them. Queensland, on the other hand, is the furthest from their targets – this is likely to be a consequence of not having a landfill levy.



National Resource Recovery Targets. MSW represents household waste, C&I represents commercial waste and C&D represents construction and demolition waste. Since 2014, Victoria has aimed to maximise diversion without a headline target. MRA Consulting Group, October 2015

Landfills, however, can offer an average 50% methane gas capture during its life. The solid waste in landfills can also be [an energy resource in its own right](#), though this has largely been untapped.

The future of landfills and resource recovery

So what lies ahead? Landfills will remain an integral part of the Australian waste cycle into the foreseeable future. Well managed, best practice landfills provide safe disposal of residual waste and the potential for resource recovery.

We have observed an increase in investment in resource recovery infrastructure, which is possibly driven by [rises in landfill levies](#). But more is needed: the [2016 Infrastructure Australia report](#) did not mention waste or recycling.

In order to provide key integrated infrastructure, governments need to recognise that waste (and its proper management) delivers essential services like electricity or water.

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