

Improved Landfill Management

Waste

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Definitions of waste

Environmental Protection Act 1986, Landfill Waste Classification and Waste Definitions 1996 (as amended 2019) classifies waste as:

- Clean fill – raw excavated natural material
- Inert waste – largely non-biodegradable, non-flammable and not chemically reactive
 - Type 1 as listed and contains contaminants in concentrations less than the specified criteria
 - Type 2 - non-biodegradable organic materials such as tyres and plastics, which are flammable and require special management to reduce the potential for fires e.g. tyres
 - Type 3 - material from licensed secondary waste treatment plants, subject to appropriate assessment and approval of that waste and the specified landfill

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Definitions of waste (cont.)

- Putrescible waste – components likely to become putrid - including wastes that contain organic materials such as food wastes or wastes of animal or vegetable origin, which readily bio-degrade within the environment of a landfill
- Hazardous waste – poses a threat or risk to public health, safety or the environment
- Intractable waste – poses a management problem by virtue of its toxicity or chemical or physical characteristics which make it difficult to dispose of or treat safely and is not suitable for disposal in a Class I, II, III or IV landfill

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Special waste

- Special waste type 1 includes asbestos and asbestos cement products
- Special waste type 2 consisting of certain types of biomedical waste which are regarded as hazardous but which, with the use of specific management techniques, may be disposed of safely within specified classes of landfill
- Special waste type 3 means solid waste, including soils and other solid wastes impacted by Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS).

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Other wastes

- Industrial waste
 - From commercial, industrial, trade activities, laboratories
 - Containing substances which are potentially harmful to human beings or equipment
- Municipal waste
 - Residential
 - Collected by or on behalf of Council
 - Does not include industrial waste

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Municipal waste

- Garbage and household domestic waste
- Residential kerbside collections
- Residential hard waste collections
- Residential self-haul waste
- Residential garden waste
- Municipal litter collections
- Municipal street sweepings
- Park waste

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Kerbside collection - garbage and recycling



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Kerbside recycling



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Typical MSW arriving at landfill



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Opportunities for recycling

- Differential pricing for disposal of different materials



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Mornington Peninsula Resource Recovery infrastructure



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National Waste Reporting

- <https://www.dcceew.gov.au/environment/protection/waste/publications/national-waste-reports/2013/mapping-tool>
- Interactive web-based tool developed to assist governments, industry and the community to find information on:
 - The availability of collection services for a range of recyclable materials, and
 - The distribution of waste infrastructure (reprocessing facilities, transfer stations and landfills) and the National Television and Computer Recycling Scheme collection points

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Iron and steel recycled at Council yard



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Mixed/contaminated separated waste



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Recycling – aluminium cans



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Recycling – glass bottles



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Recycling – glass for roads, Waverley, VIC



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Recycling – plastic bottles



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Baled recyclables

- Tableland Regional Council, QLD



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Plastic drum separation



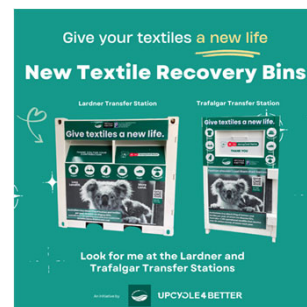
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Silage film baler – Kilmany landfill, Wellington Shire, VIC



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Textile recycling



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Recycling - batteries



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Recycling - cellphones



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Recycling - kerbside pickup - e-waste



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Recycling - computers



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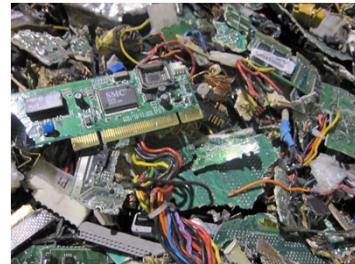
Recycling - E-waste stockpile, Sunshine Coast, QLD



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e-waste Recycling

- WA ban on e-waste disposal to landfill by 2024



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E-waste monitor stripping for plastic



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Separate tyre storage



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Ecoflex recycled tyre hardstand



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Bioplant – tyres to diesel



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Food waste dumping at landfill



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Food waste dumping - vegetables



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Green waste drop off

- Kimbriki, Sydney, NSW



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Greenwaste steaming



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Greenwaste compost windrows



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Separate green waste composting area



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Popular for compost sales

- Southern landfill, Wellington, NZ



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Separate storage of recyclables



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C&D waste separation



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Timber recycling

- Kimbriki, Sydney, NSW



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Recycling C&D waste - gyprock



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Stockpiled C&D waste awaiting crushing



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Crushed brick stockpile (for sale/reuse)



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Crushed and screened recycled concrete



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Waste asbestos

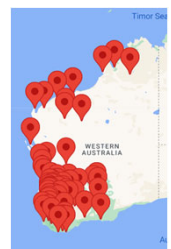
- Stabilised asbestos waste in bonded matrix (e.g. asbestos cement sheeting)
- Asbestos fibre and dust waste (e.g. dust resulting from the removal of thermal or acoustic insulating materials or from processes involving asbestos material, and dust from ventilation collection systems)



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Landfills accepting asbestos in WA

- <https://www.asbestossafety.gov.au/who-contact/search-disposal-facilities>
- Provides a searchable map of sites
- Details of site addresses
- Details of site websites



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Example

- <https://karratha.wa.gov.au/environment/waste-and-recycling/waste-facilities/7-mile-waste-facility>
- **7 Mile Waste Facility**
- Exploration Drive , Gap Ridge, WA, 6714
- (08) 9186 8555
- City of Karratha
- **Disposal Costs:** \$261.55 per tonne (minimum charge 1 tonne)
- **Opening Hours:** 7am-4.30pm 7 days a week (closed Christmas Day, New Year's Day and Good Friday)
- **Prior Notification:** Yes - waste disposal permit required - Phone 08 9186 8555 to arrange
- **Quantity Limit:** No
- **Conditions:** Yes - waste disposal permit required - Phone 08 9186 8555 to arrange
- **Residential Requirements:** No
- **Landfill:** Operating
- **Waste transfer station:** Not Applicable

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Illegal dumping - asbestos



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Animal waste - Brewarrina, NSW

- Kangaroo bone pit



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Animal waste – kangaroo bones, Brewarrina, NSW



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Dead whale, Scarborough Beach, Stirling

- Gas hazard, explosion



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Hazardous waste separation – gas bottles



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Septage

- Septage receival point and ponds
- Beware settlement and liner damage



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Other wastes

- Mining and extractive industry wastes
- Can typically be managed at sites
- Other sites require a license
- Scheduled wastes (PCBs, organochlorine pesticides etc.) managed under national agreement at special facilities
- Acid Sulfate soils can be treated and neutralized before disposal at Class 1 landfills

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Waste behaviour in landfills

- Some wastes problematic in landfills

PRODUCT BEHAVIOURS IN LANDFILL

Product	Behaviours
Plastic bags and film	Contribute to litter around landfills (aesthetic, wildlife and farm impacts).
Timber and wood products	Contribute to the methane emissions (biodegradable), treated timber may contain copper chrome arsenate (CCA) which may be present in leachate.
Paper / cardboard	Contributes to methane emissions (biodegradable).
Plastics	Some plastics contain phthalates (PVC) and heavy metal pigments and stabilisers which may be present in leachate. These materials have the potential to impact on the health of humans and other organisms.
Electronics and appliances	Certain heavy metals and flame retardants which may be present in leachate.
Batteries	Certain heavy metals which may be present in leachate.
Garden and food organics	Contribute to methane emissions (biodegradable).
Household chemicals	Oil, paints and pesticides contain toxic substances which may be present in leachate.
Tires	"Float" to the surface and cause problems in landfill management.

Source: Department of the Environment and Heritage, 2006 Submission to the Productivity Commission Inquiry into Waste Generation and Resource Efficiency.

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