

Improved Landfill Management

The Regulatory Environment

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The Regulatory Environment

- The role of Federal, State and Local Government
- In Australia, Government at each level has an involvement in waste management
- Roles differ widely and cover international agreements, broad policy, regulation and implementation

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Federal Government

International Conventions:

- London Convention, 1975 - regulates dumping at sea
- Basel Convention, 1989 - regulates the import and export of waste from one country to another

Policies and strategies:

- National Waste Policy, 2018 – sets policy on waste and resource recovery to 2030

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2009 National Waste Policy - Five key areas

- **Taking responsibility** - Shared responsibility
- **Improving the market** - Efficient and effective markets for reused and recycled products
- **Pursuing sustainability** - Less waste and improved use of waste
- **Reducing hazard and risk** - Reduction of hazardous content, safe handling and disposal
- **Tailoring solutions** - Increased capacity in communities to manage waste
- **Providing the evidence** - Access to meaningful, accurate data to measure progress and inform the community

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2009 National Waste Policy – Strategies included:

- National definition and classification for wastes
- Continued government focus to reduce the amount of biodegradable material sent to landfill
- Management of safety and health risks arising from landfill gas emissions
- Identification of actions to build capacity and ensure an appropriate suite of services is available to regional and remote communities
- Audit of existing waste infrastructure and local capability in selected remote Indigenous communities

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Updated 2018 National Waste Policy

Five key areas to help transition to a circular economy

- **Avoid waste**
- Improve **resource recovery**
- Increase use of **recycled material** and **build demand** and markets for **recycled products**
- **Better manage material flows** to benefit human health, the environment and the economy
- **Improve information** to support innovation, guide investment and enable informed consumer decisions
- <https://www.environment.gov.au/protection/waste-resource-recovery/publications/national-waste-policy-2018>

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2018 National Waste Policy

- Responds to the challenges facing waste management and resource recovery in Australia – excluding radioactive waste
- Reflects the global shift towards a circular economy, better resource-efficient systems, waste avoidance and conservation of resources
- Acknowledges the need for better design, reuse, repair and recycle of goods
- Provides a framework for businesses to embrace innovation and develop technologies that create new opportunities

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2018 National Waste Policy

- Sets a national framework for action
- Seeks greater participation and collaboration
- Gives effect to Australia's international obligations
- Supports Australia's engagement in the United Nations' Sustainable Development Goal 12 on responsible consumption and production
- Notes that the 2009 National Waste Policy directions and strategies have improved stewardship of goods and resources and established national reporting of national waste and resource recovery data to inform policy and decisions

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2018 National Waste Policy – Strategies include:

- Focuses on waste avoidance, improved material recovery and use of recovered materials
- Presents a common vision on priorities for responding to changing international waste markets
- Helps Australia move closer to a more circular economy
- Helps to increase the capacity of resource recycling systems and restore confidence in Australian resource management
- Guides continuing collaboration between all Australian governments, businesses and industries

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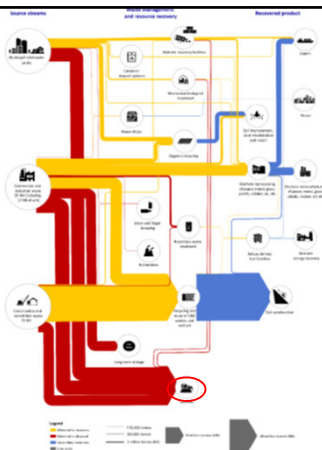
Australia - Waste Generation

National Waste report 2022:

- 75.8 Million tonnes (Mt) of waste generated
- 25.2 Mt of Construction and demolition waste
- 14.4 Mt of organics
- 12.0 Mt of ash
- 7.4 Mt of hazardous waste (mainly contaminated soil)
- 5.8 Mt of paper and cardboard, 5.7 Mt of metals and 2.6 Mt of plastics
- Equivalent to 2.95 tonnes (t) per capita

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Australian waste flows



- Landfills still play and will continue to play an important part
- Indeed, in view of recent changes to recycling markets, may well have a greater role

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WA - Waste Generation

National Waste report 2022:

- 8.0 Million tonnes (Mt) of waste generated (2020/21)
- Additional 5.0 Mt recycled
- 109% increase in recycling over 15 years to 2022
- 0.2 Mt waste to energy recovery
- 2.73 Mt to landfill
- 1.09 Mt MSW
- 1.12 Mt C&I waste
- 0.52 Mt C&D waste

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National Waste Action Plan 2019

7 ambitious targets:

- **Regulate waste exports**
- **Reduce total waste generated** by 10% per person by 2030
- **Recover** 80% of all waste by 2030
- Significantly **increase the use of recycled content** by governments and industry
- **Phase out problematic and unnecessary plastics** by 2025
- **Halve the amount of organic waste sent to landfill** by 2030
- **Provide data** to support better decisions

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National Waste Action Plan 2022

Annexure:

- Banning the export of waste plastic, paper, glass and tyres, commencing in the second half of 2020
- Reducing the total waste generated in Australia by 10% per person by 2030
- Achieving an 80% average recovery rate from all waste streams by 2030
- Significantly increasing the use of recycled content by governments and industry
- Phasing out problematic and unnecessary plastics by 2025
- Halving the amount of organic waste sent to landfill by 2030
- Making comprehensive, economy-wide and timely data publicly available to support better consumer, investment and policy decisions

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Includes: WA WasteSorted toolkit

www.wastesorted.wa.gov.au

- Toolkit provides a range of resources
- Ensure consistent state-wide communications and aligns with 'knowledge sharing, education and behaviour change' commitments in the National Waste Policy Action Plan.
- Supports local governments with free templates and multimedia resources in 11 languages to help local governments communicate about kerbside services, including Food Organics and Garden Organics (FOGO).
- Encourages behaviours – gifting, recycling, earth-cycling, avoiding and taking
- Adopted by 27 local governments and regional councils

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United Nations Sustainable Development Goal 12 (2020 Agenda)

Responsible Consumption and Production

- Global population of 9.8 billion by 2050, requires the equivalent of almost three planets to provide the natural resources needed
- Global crises triggered a resurgence in fossil fuel subsidies, nearly doubling from 2020 to 2021
- In 2021, governments spent an estimated \$732 billion on subsidies for coal, oil and gas, nearly doubling the \$375 billion spent in 2020
- In 2021, with 828 million people facing hunger, 13.2 per cent of the world's food was lost after harvest along the supply chain from farm to consumer
- Sustainability reporting trend is rising, with around 70 per cent of monitored companies publishing sustainability reports in 2021
- In 2022, 67 national governments reported to the United Nations Environment Programme on the implementation of sustainable public procurement policies and action plans, a 50 per cent increase from 2020.
- Support should be provided to developing countries to move towards more sustainable patterns of consumption by 2030

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UN Sustainable Development Goal 12 Targets

- Implement 10-year framework of programmes on sustainable consumption and production
- Promote public procurement practices that are sustainable
- Encourage companies to adopt sustainable practices
- Achieve the environmentally-sound management of chemicals and wastes to minimize their adverse impacts on human health and the environment

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UN Sustainable Development Goal 12 Targets

By 2030:

- Achieve the sustainable management and efficient use of natural resources
- Halve per capita global food waste
- Substantially reduce waste generation through prevention, reduction, recycling and reuse
- Ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

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Waste Hierarchy

- Australian approach based on:

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Roles of Governments

- The regulation and management of waste and resource recovery in Australia is primarily the responsibility of state and territory governments
- Local governments play an important role in providing household waste collection and recycling services, managing and operating landfill sites and delivering education programs
- Local governments may also form regional bodies to address waste management issues

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Product Stewardship

- An approach to managing the impacts of different products and materials
- Those involved in producing, selling, using and disposing of products have a shared responsibility to ensure that those products or materials are managed in a way that reduces their impact, throughout their lifecycle, on the environment and on human health and safety

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Product Stewardship

2017 - 2018 priority classes:

- Plastic microbeads and products containing them
- Batteries
- Photovoltaic systems
- Electrical and electronic products
- Plastic oil containers

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Product Stewardship

Current priorities:

- Mandatory
 - Oil
- Co-regulatory arrangements
 - TVs and computers
 - Plastics and packaging
- 2023-24 Minister’s list - five products: clothing textiles, tyres, plastics in healthcare products in hospitals, mattresses, and child car seats

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Product Stewardship

Government accredited, industry led voluntary schemes:

- Mobile phones: [MobileMuster](#)
- Tyres: [Tyre Stewardship Australia](#)
- Large plastic bags: [Big bag recovery](#)
- Batteries [Battery Stewardship Scheme](#)
- Aluminium Cladding: [Fairview aluminium cladding scheme – Ecoloop](#)
- Plastics and packaging: [Australian Packaging Covenant Organisation \(APCO\)](#)
- Plastic Paint Pails: [Dulux Project Earth](#)

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National Television and Computer Recycling Scheme

- Established in 2011
- Sets annually increasing targets for the proportion of TV and computer waste that is collected for recycling
- 90% of the weight of the collected materials re-used or manufactured into new products
- 130,000 tonnes of waste has been collected and recycled to date
- Funded by manufacturers and importers of TVs and computers

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National Television and Computer Recycling Scheme

Companies delivering e-waste collection services in WA:

- e-Cycle Solutions Pty Ltd
Website: www.ecyclesolutions.net.au
- TechCollect
Website: techcollect.com.au

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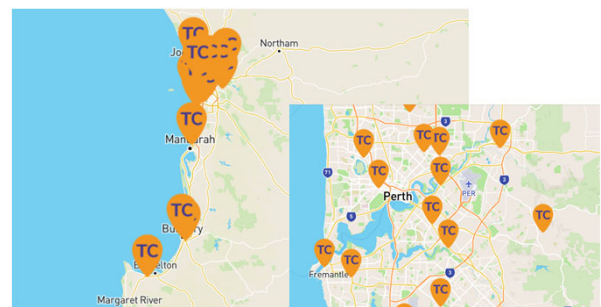
e-cycle Solutions drop-off spots

<https://ecyclesolutions.net.au/drop-off-locations/>
218 locations Australia wide



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TechCollect e-waste drop-off spots



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Product stewardship for end-of-life tyres


- www.tyrestewardship.org.au
- Established 2014
- Estimated 56 million tyres (~450,000 tonnes) reached their end of life in Australia in 2018-19
- 323,000 tonnes recovered: re-use (85,000 tonnes), processing into products and fuels (190,000 tonnes), and whole thermal processing (48,000 tonnes)
- 64,000 tonnes (20%) was used domestically for re-use and as a tyre-derived product and 259,000 tonnes (80%) was exported

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Product stewardship for end-of-life tyres

- Volume exported comprised 131,000 tonnes of tyre-derived fuel and 128,000 tonnes was exported whole
- In 2018-19, it was estimated that 130,000 tonnes was disposed to landfill or on-site burial, and 13,000 tonnes was stockpiled



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Circular Economy

- A circular economy is a way of achieving sustainable consumption and production, as well as nature positive outcomes
- In a circular economy, products are either recycled, remanufactured or re-used after they have served their initial purpose
- This minimises pressure on the environment, and helps tackle global challenges like climate change, biodiversity loss, waste, and pollution

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Circular Economy

- Eliminates waste and pollution
- Circulates products and materials (at their highest value)
- Regenerates nature
- Reduces waste to landfills

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Impact of “Big Picture” Strategies

- Now want to review these Principles and Strategies from the point of view of their impact on landfills
- Which have had or will have a bearing on the landfill(s) with which you are associated?
- How hard (or easy) is it for landfills to change their direction and operations in the light of changes in the Federal Government’s direction? And over what timeframe?

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In WA Waste Authority administers:

- Environmental Protection Act 1986 (EP Act)
- Environmental Protection Regulations 1987 (EP regulations)
- Environmental Protection (Rural Landfill) Regulations 2002
- Environmental Protection (Controlled waste) Regulations 2004
- Waste Avoidance and Resource Recovery Act 2007
- Review of the Waste Avoidance and Resource Recovery Act 2007
- Waste Avoidance and Resource Recovery Regulations 2008
- Waste Avoidance and Resource Recovery Levy Act 2007
- Waste Avoidance and Resource Recovery Levy Regulations 2008

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State Government - WA

The Waste Authority Waste Avoidance and Resource Recovery Strategy 2030

- Builds on Western Australia’s previous waste strategy Creating the Right Environment, which was introduced in 2012 and achieved significant improvements in recycling, reducing waste generation, diverting construction and demolition waste, and better managing commercial and industrial waste

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Waste Avoidance and Resource Recovery Strategy 2030

Targets:

- 2025 – 10% reduction in waste generation per capita
- 2030 – 20% reduction in waste generation per capita

Recovery:

- 2025 – Increase material recovery to 70%
- 2030 – Increase material recovery to 75%
- From 2020 – Recover energy only from residual waste

Protect Environment:

- 2030 – No more than 15% of waste generated in Perth and Peel regions is landfilled
- 2030 – All waste is managed and/or disposed to better practice facilities

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WA Waste Directions

Figure 1: Waste disposal and resource recovery by state (Pickin and Randell, 2017)



	2010-11	2014-15	Percentage change
Generation – total	6.53 million tonnes	6.23 million tonnes	↓ 5%
Generation – per capita	2,764 kilograms	2,437 kilograms	↓ 12%
Waste to landfill	4.49 million tonnes	3.61 million tonnes	↓ 20%
Resource recovery	2.04 million tonnes	2.62 million tonnes	↑ 28%

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WA Waste Authority

- Landfill Waste Classification and Waste Definitions 1996
 - Criteria to be applied generally in determining the acceptance of wastes to various classes of landfill in Western Australia
- Guidelines for the design and operation of facilities for the acceptance and storage of household hazardous waste
 - Relates to temporary storage of materials prior to treatment or disposal

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Landfill siting guidelines

- There are no WA guidelines on the siting, design or management of landfills
- WA Department of Water, Water Quality Protection Note WQPN 111 Landfills for disposal of putrescible materials
 - Provides guidance with respect to water quality protection

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Licensing and approval

- Certain industries with a significant potential to pollute the environment, including landfills, must hold a Works Approval (for construction) and a Licence or Registration (for operation) under the Environmental Protection Act 1986.
- Licences and Works Approvals are issued with legally binding conditions that apply to specific premises, including landfills, and are intended to prevent or minimise this potential for pollution.
- Occupiers of a waste facility that receives controlled waste have obligations to keep records under Environmental Protection (Controlled Waste) Regulations 2004 Division 4

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Landfill Classes

Landfill Class	Common name	Waste types permitted for disposal	Landfill Class	Common name	Waste types permitted for disposal
Class I (Prescribed Premises Category 63)	Inert Landfill	<ul style="list-style-type: none"> • Clean Fill • Inert Waste Type 1 • Uncontaminated fill • Neutralised acid sulfate soil (where authorised under an Environmental Protection Act licence) • Contaminated solid waste meeting waste acceptance criteria specified for Class I landfills (where authorised under an Environmental Protection Act licence) • Inert Waste Type 2 (where authorised under an Environmental Protection Act licence) • Inert Waste Type 3 (where authorised under an Environmental Protection Act licence) • Special Wastes Type 1 and Type 3 (where authorised under an Environmental Protection Act licence) 	Class II (Prescribed Premises Category 64 or 65)	Putrescible Landfill	<ul style="list-style-type: none"> • Clean Fill • Inert Waste Type 1 • Uncontaminated fill • Neutralised acid sulfate soil • Putrescible Wastes • Contaminated solid waste meeting waste acceptance criteria specified for Class II landfills (where authorised under an Environmental Protection Act licence) • Inert Waste Type 2 (where authorised under an Environmental Protection Act licence) • Inert Waste Type 3 (where authorised under an Environmental Protection Act licence) • Special Wastes Type 1, Type 2 and Type 3 (where authorised under an Environmental Protection Act licence)
Class III (Prescribed Premises Category 64)	Putrescible Landfill	<ul style="list-style-type: none"> • Clean Fill • Inert Waste Type 1 • Uncontaminated fill • Neutralised acid sulfate soil • Putrescible Wastes • Contaminated solid waste meeting waste acceptance 	Class IV (Prescribed Premises Category 65)	Secure Landfill	<ul style="list-style-type: none"> • Inert Waste Type 1 • Uncontaminated fill • Neutralised acid sulfate soil • Contaminated solid waste meeting criteria specified for Class I, Class II or Class IV landfills (where authorised under an Environmental Protection Act licence) • Inert Wastes Type 2 (where authorised under an Environmental Protection Act licence) • Special Wastes Type 1, Type 2 and Type 3 (where authorised under an Environmental Protection Act licence)
			Class V (Prescribed Premises Category 66)	Intractable Landfill	<ul style="list-style-type: none"> • Intractable and other wastes in accordance with the approvals for the site.

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Landfill levies

- Applies to waste received at licensed landfills in the metropolitan region and waste collected within the Perth metropolitan region that is received at licensed landfills outside of the metropolitan region
- In accordance with the Waste Avoidance and Resource Recovery Act 2007, each year the Minister for Environment must allocate not less than 25 per cent of the forecast levy amount to the Waste Avoidance and Resource Recovery Account (WARR Account)
- Funds in the WARR Account are applied to programs for the management, reduction, reuse, recycling, monitoring or measurement of waste and to support implementation of the waste strategy

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Current landfill levies

Financial year	Levy rate to take effect	Levy rate per tonne	Levy rate per cubic metre
2023-24	1 July 2023	\$70	\$105
2024-25	1 July 2024	\$85	\$129
2025-26	1 July 2025	\$88*	\$133*
2026-27	1 July 2026	\$90*	\$136*
2027-28	1 July 2027	\$93*	\$141*

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Lodging Returns

- Landfill licensees must submit quarterly returns, declaring the amount of waste received
- Returns due within 28 days of end of quarterly reporting period
- Accompanies by payment
- Penalties on late payments are calculated at 20 per cent per annum pro rata
- Sites that do not have a weighbridge have to convert volume to mass using an approved method

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Other requirements

- The licensee of a category 63 licensed landfill in the metropolitan region must have a survey of the premises conducted by a surveyor (as defined in regulation 10(1) of the WARR Levy Regulations) to establish a base from which the volume of waste subsequently disposed of to landfill on the premises can be measured
- Licensees must maintain records in respect to waste received at the premises. A penalty of \$10,000 is applicable for the failure to keep or provide appropriate records

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Estimating waste volumes and weights

Column 1: Vehicle type	Column 2 : Category 63 Volume (m ³)	Column 3 : Category 64 or 65 Weight (tonnes)
Single axle trailer, ute, car and van	1	0.3
Tandem axle trailer	2	0.6
Open trucks, gross weight <5 tonnes	3	0.9
Open trucks, gross weight 5-12 tonnes	6	1.8
Open truck - 3 axles ("6 wheeler")	10	3
Open truck - 4 axles ("8 wheeler")	12	3.6
Open truck - 5 axles ("Bogey Semi" or "6 wheel pig trailer")	18	5.4
Open truck - 6 axles ("Tri-axle Semi")	20	6
Open truck - 8 axles	20	7.8
Open truck - 9 axles ("6 wheeler plus trailer")	32	8.6
Open truck - 11 axles ("Road Train")	40	12
Bins 2-4m ³	3	1.2
Bins 4-8m ³	6	2.4
Bins 8-12m ³	10	5
Bins 12-18m ³	15.5	6.5
Bins > 20m ³	20	8
Compactor trucks <8m ³	4	1.7
Compactor trucks 8-12m ³	10	4.25
Compactor trucks 12-18m ³	15.5	4.34
Compactor trucks 18-32m ³	25	10.6
Compactor trucks >32m ³	35	14.9

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Exemptions

- Cover material (daily and for closure)
- Material for reuse, reprocessing, recycling or energy recovery
- Waste removed from an orphan site by a public authority
- Hazardous waste removed by a public authority
- Disaster waste
- Shoreline recovery waste
- Waste used for landfill construction and maintenance
- Asbestos containing material (ACM)

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Annual Reporting

- Waste Data Online
- <https://der.wa.gov.au/your-environment/waste-data-online>
- Annual returns under r.18C of the Waste Avoidance and Resource Recovery Regulations 2008 (WARR Regulations)
- Annual reports on the implementation of waste plans developed under s.40(4) of the *Waste Avoidance and Resource Recovery Act 2007*
- Non-metropolitan landfill annual return
- Reports waste received and stockpiled by waste type

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Regional Waste Management Groups

- The Municipal Waste Advisory Council (MWAC) WasteNet is a standing committee of the Western Australian Local Government Association (WALGA).
- WasteNet is actively involved in:
 - Member engagement and services
 - Advocacy
 - Delivery of grant funded programs
 - Information exchange
- Programs:
 - Household hazardous waste
 - Bin tagging
 - Better practice guidance material

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Local Government

- Implements Federal and State policies and regulations
- Is responsible for household waste collection services, processing and disposal
- In many areas, Councils operate waste recycling facilities, transfer stations and landfill sites
- Maintain licence conditions
- Landfill operation may be part of broader Waste Management Strategy

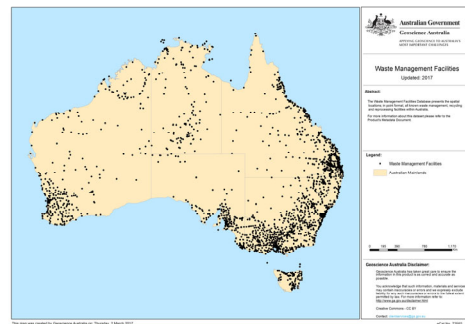
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National Waste Management Facilities Database

- <https://www.dcceew.gov.au/environment/protection/publications/waste-resource-recovery-infrastructure-db>
- More up-to-date information
- Identifies 435 landfills in WA
- 23 Materials recovery facilities
- 185 Transfer stations

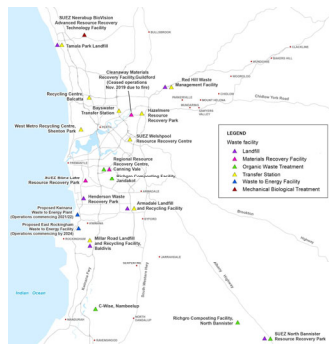
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National Waste Management Facilities Database



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Landfills in WA (Perth and Peel)



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