ENERGY-FROM-WASTE (EFW) FAQS

What is Energy-from-Waste (EfW)

EfW provides a safe and proven way to manage residual waste, generate reliable energy and support Australia's circular economy.

EfW, also referred to as Waste-to-Energy (WtE) or Energy Recovery Facility (ERF), converts non-hazardous residual waste, which can't be recycled, into energy sources such as heat and electricity, and enables the recovery of other resources such as metals and construction aggregates.

EfW is critical waste management infrastructure that supports a circular economy by complimenting recycling, enabling energy recovery and avoiding landfilling and associated emissions.

Many countries, including the US, Europe and the UK, prefer EfW over landfill. There are more than 2,000 such facilities operating safely around the world.

Current technology

Modern EfW facilities are very different from the waste incinerators of the past.

Emission control
Older facilities had limited pollution control. Modern EfW plants use advanced flue gas treatment and automated systems to ensure emissions remain well below safe limits.

Energy efficiency
Current plants recover more energy – often 25–30% compared to less than 20% previously.

Regulation
Strong environmental laws now require continuous monitoring and automatic shutdowns if any system fails.

Resource recovery
Metals and aggregates are recycled from the bottom ash, reducing landfill and supporting circular economy goals.

Why EfW?

EfW provides a sustainable solution for managing non-recyclable, non-reusable residual waste that would otherwise go to landfill.

It sits in the waste management hierarchy as a preferred treatment method compared to landfill because it:

- Reduces landfill by diverting non-recyclable materials that can't be composted or recycled
- Generates energy by converting waste into a reliable, local source of base load electricity for the region
- Supports recycling by focusing only on residual waste – EfW works alongside existing recycling and resource recovery systems, not in competition with them
- Improves environmental outcomes by reducing greenhouse gas emissions from landfill and using proven, advanced combustion and emission control technologies that meet strict environmental and health standards
- Plays a vital role in the circular economy by recovering valuable metals that would have otherwise gone to landfill.

Waste Management Hierarchy


Blue Phoenix - IBA Aggregates

Reusable residues

What types of residues are produced?

1. Incinerator Bottom Ash (IBA)
The non-combustible portion of waste - usually 20–25% of what is processed - is treated to recover metals and turned into Incinerator Bottom Ash Aggregate (IBAA) for use in road building and concrete.

2. Air Pollution Control Residue (APCr)
A fine powder collected from emission control systems, makes up about 3–5% of the waste received and is managed safely at licensed facilities or treated for reuse under strict regulation.

Air quality and health

How are emissions controlled?

EfW facilities use advanced monitoring and cleaning systems:

- Continuous Emissions Monitoring Systems (CEMS) check key pollutants such as nitrogen oxides (NO_x), carbon monoxide (CO), dust and acid gases.
- Flue gas cleaning removes particles and gases using lime scrubbers, activated carbon and baghouse filters.
- Combustion temperatures of around 850–1,100°C destroy harmful compounds.
- Independent testing verifies results and compliance.

Are emissions safe?

Yes. Emissions from modern EfW plants are well below limits set by the World Health Organization and the European Union. Studies in Europe, the UK and Australia show no increased health risks for communities living near EfW facilities.

The main emissions are nitrogen (~65%), oxygen (~6%), water vapour (~20%), and carbon dioxide (~10%).

Myths and facts

Is Europe closing EfW plants?

No. With more than 500 operating plants in Europe[1], EfW remains a key part of the waste management hierarchy. Some older plants are being replaced, but EfW continues to support the EU's Circular Economy Plan.

At least six (6) new UK projects have been announced in the past two (2) years.

Does EfW discourage recycling?

No. Countries with the highest recycling rates also have the most EfW capacity. EfW is designed to treat waste that cannot be reused, recycled or recovered.

Does EfW support the circular economy?

Yes. EfW recovers metals and other resources that would otherwise go to landfill.

Up to 25% of residual waste can be turned into Incinerator Bottom Ash Aggregate (IBAA), used in road construction and concrete production.

Australia's Energy-from-Waste Facility

ACCIONA owned Kwinana is Australia's first operational Energy-from-Waste (EfW) facility. It diverts up to 460,000 tonnes of waste from landfill each year and generates 38 megawatts of baseload electricity for the Western Power grid – enough to power more than 50,000 homes.


Kwinana Energy Recovery facility

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