



Government of **Western Australia**  
Department of **Housing and Works**

## Western Australia's Intractable Waste Disposal Facility (IWDF) Mt Walton East

### What are intractable wastes?

Intractable wastes are materials that are a management problem due to their toxicity or chemical or physical characteristics which make them difficult to dispose of or treat safely. Intractable wastes include:

- industrial byproducts like arsenic trioxide and pesticides which contain hazardous chemicals that cannot be easily destroyed; and
- radioactive wastes which need time to break down or decay to safe levels for the environment.



### What is the purpose of the IWDF?

The IWDF, established in 1992, is Australia's first long-term disposal site for intractable waste. The IWDF is owned by the State Government and can only be used for intractable waste generated in Western Australia.

For the benefit of the community and the environment, we need to be able to safely dispose of these intractable wastes. The goal of intractable waste disposal is to isolate the waste permanently from the environment. In Western Australia, wastes for which there are no reuse, recycle or destruction options are taken to the IWDF and buried in trenches or shafts according to appropriate codes and guidelines.

### Where is the IWDF?

The IWDF is approximately 475 km north-east of Perth and is located on 25 km<sup>2</sup> of Crown Reserve Land, within the Shire of Coolgardie. Access to the site is by a 100 km unsurfaced road that extends northward from Boorabbin siding on Great Eastern Highway.

### Why Mt Walton East?

Mt Walton East was chosen as the preferred site for the IWDF after extensive scientific investigations. Studies proved that the site had no significant environmental, historical or cultural characteristics or known rare species or ecosystems. The geology of the site was assessed using geophysics and drilling. The results showed that there was no permanent groundwater and that the underlying geology consisted mostly of clay down to the granite bedrock.

The site was chosen for its:

- Geological stability
- Remoteness
- Arid climate (with evaporation exceeding rainfall by a factor of 10)
- Lack of groundwater
- Presence of clay to limit the potential for downward migration of wastes
- Lack of potential for flooding
- Lack of potential for mineral resources
- Lack of potential for agriculture
- Absence of human population, or potential for human occupation
- Lack of special environmental features
- Absence of known rare species or ecosystems
- Absence of areas of cultural or historical significance.

### What wastes have been disposed of at the IWDF?

The IWDF has in place Waste Acceptance Criteria, approved by the Environmental Protection Authority, which describe the properties and characteristics that deem wastes unsuitable for disposal at the IWDF. Wastes that are in the following categories are not acceptable for disposal at the IWDF:

- Wastes for which there are alternative, readily available, and practicable, reuse,

recycling, treatment, destruction or disposal options in Australia

- Waste generated outside Western Australia
- Liquids
- Explosive materials
- Highly flammable materials
- Highly reactive materials
- Gases
- Materials that decompose
- Intermediate (and High) Level radioactive material.

Since 1992, fourteen disposal cells have been established at the IWDF. Waste disposed includes:

- Soil contaminated with pesticides, DDT, PCB or toluene
- Arsenical sheep dip chemicals
- Arsenic trioxide powder from the processing of gold ore
- Arsenic trioxide fume from the processing of tantalum
- Arsenic waste from industrial processes
- Industrial equipment contaminated with low levels of naturally occurring radioactive materials (NORMs)
- Relatively small quantities of low-level radioactive wastes including depleted "Exit" signs, sources from industrial/agricultural gauges, medical waste, sources used in schools, and smoke detectors.

## How are the wastes disposed of at the IWDF?

Wastes are disposed of by burial in shafts or trenches. The waste is isolated from the environment by placing the waste into a natural kaolinitic clay horizon underlying the IWDF. The waste is encapsulated in the clay which has been tested and found to provide an adequate barrier against leaching. A natural silcrete horizon (rock layer), which overlies the clay, affords natural erosion protection to the clay.

The waste disposal cell is constructed such that the waste is a minimum of 5 m above the crystalline bedrock, which underlies the clay. This is to allow for the possible establishment of a future groundwater table. Regular groundwater monitoring at the IWDF indicates that no groundwater has been encountered down to bedrock.



The waste is further segregated from the surface environment by the construction of a compacted multilayer cap above the waste cell. This multilayer cap comprises compacted clay and silcrete material, which is excavated during construction of

the disposal trench. The clay cap, silcrete layer and water-shedding clay dome, which comprise the multilayer cap, are placed and compacted to geotechnical specifications. This ensures that there are adequate barriers to prevent the infiltration of rainwater and erosion.

## Monitoring at the IWDF

Baseline monitoring was undertaken prior to the first disposal. Ongoing monitoring has been conducted twice annually and then prior, during, and after each disposal operation.

Monitoring includes environmental and occupational testing for radioactivity and chemicals; rehabilitation monitoring; disposal dome (capping) monitoring; groundwater monitoring; biological monitoring; dust monitoring; flora surveys; and fauna surveys.

The IWDF has in place a comprehensive Environmental, Health and Safety and Quality Management System which is designed to identify areas of risk resulting from activities at the IWDF. The system then guides the formulation of procedures and objectives which minimise or eliminate these risks.

## Information

For further information about the IWDF contact:

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<https://www.wa.gov.au/organisation/departmen-t-of-housing-and-works/intractable-waste-disposal-facility-mt-walton-east-iwdf>