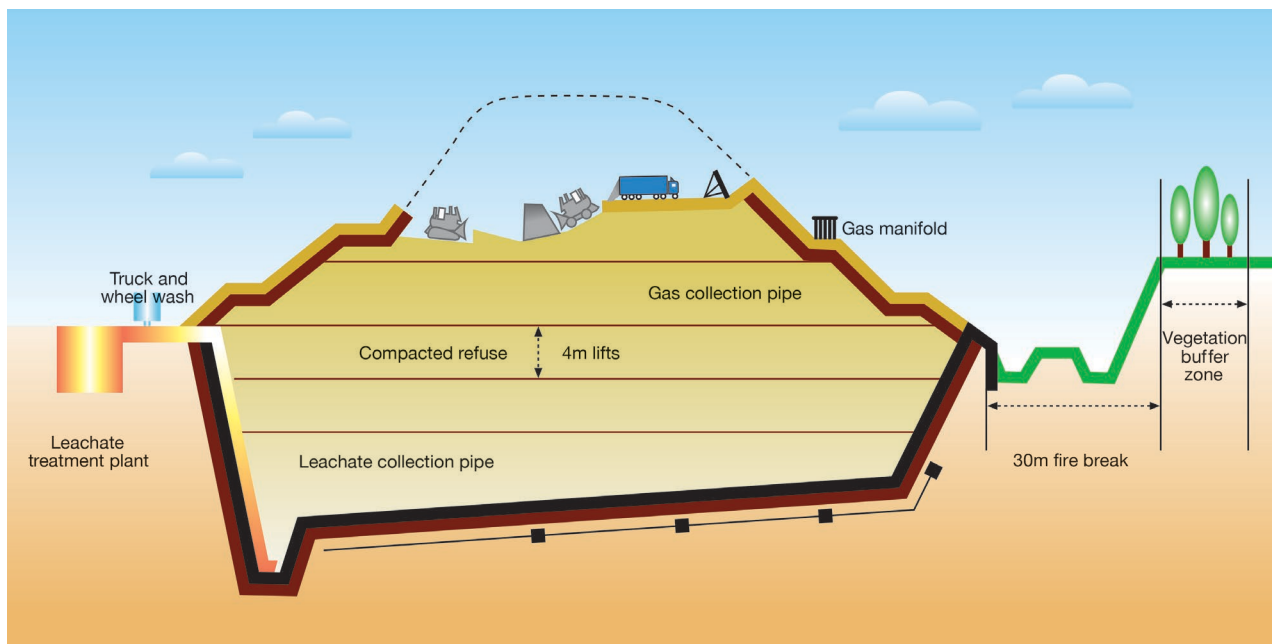


Landfill

Approximately 550,000 tonnes of Brisbane's waste is landfilled each year. Around 70% of this waste is sent to the Brisbane Landfill, where waste from Brisbane residents is buried if it is not diverted for beneficial reuse or recycling. The Brisbane Landfill began operating in 1993 as a world-class engineered facility with landfill gas recovery, leachate collection and treatment, and a comprehensive range of environmental monitoring.

Composition

The Brisbane Landfill is made from a series of cells. Each cell has a liner of thick clay just under a metre thick plus a 1.5 millimetre layer of HDPE (high density polyethylene) plastic. This liner creates a barrier between the waste and the natural environment to prevent contamination of the surrounding area. A drop of liquid would take 300 years to pass through this liner. Once a cell is full, it is capped with clay similar to the base of the landfill. It is then topped with a thick layer of soil and finally, resurfaced with turf, bushes and trees. As each cell is completed, the tipping activity is moved to a new cell.



1 Cross-section of Brisbane Landfill

What happens to waste at landfill?

All trucks carrying waste enter the landfill site via a weighbridge. The trucks are weighed on both entry and exit to the site. The weight difference is recorded and used to calculate the annual amount of waste deposited. Trucks drive to the 'tipping face' and unload their rubbish. The waste is spread, pushed and compacted by a bulldozer and a compactor until a predetermined height is reached. This way it is possible to reach the required density and pack as much waste as possible into each area.

At the end of each day, waste is covered with soil and a layer of plastic to reduce odour, prevent litter from blowing away and deter wildlife which scavenge to survive in urban environments, such as ibis. The final height and profile of each cell within the site will vary depending on the future plans for the site. For example, a sporting field may not be built as high as a picnic or multi-use recreational area.

Landfill gas to energy

Landfill gas is generated within the landfill from the decomposition of organic waste such as food scraps and garden clippings. Horizontal pipes and vertical wells collect the gas and transport it to the waste to an energy plant located on site. Gas is either converted into electricity or burnt off in flares.

Did you know?

Over 34,000 megawatt hours (MWh) of green energy is generated annually from landfill gas at Brisbane Landfill, which is enough to power more than 6500 homes every year.

Environmental controls

Landfills are required to comply with strict environmental guidelines outlined by the Queensland Government. A buffer zone between the landfill and residential housing helps to minimise any impact that the landfill may have on the surrounding areas, but waste within a landfill requires continual and ongoing monitoring to ensure that it complies with legislative guidelines.

Environmental controls are required while the landfill is in operation and for many years after to ensure that health and safety issues are not compromised. The main concerns are toxins, leachate and methane gas, which are outlined below but there are other environmental issues such as litter blowing into neighbouring environments, smell, the possible spread of disease by pests and contamination of ground and stormwater.

Environmental controls at the landfill include:

- collection and treatment of groundwater
- monitoring of gas
- collection and treatment of leachate
- mobile litter screens to collect litter
- deodorisers to neutralise unpleasant smells
- collection, treatment and monitoring of stormwater run off
- pest control
- dust suppression
- vegetation management.

Toxins

Many materials that end up as waste contain toxic substances. Over time, these toxins can leach into our soil and groundwater and if they are not carefully controlled they can become environmental hazards. For example, electronic waste, contains many hazardous substances such as lead, mercury, acid and solvents. Ideally these materials should never be buried in landfill, but unfortunately due to the increase of electronic goods, battery operated products and harmful cleaning products, these substances have become increasingly common. Environmental monitoring and treatment is carried out to ensure that these toxins do not seep into groundwater or run off.

Leachate

Leachate is the liquid that collects within the confines of a landfill and is smelly and toxic. It is made up of rainwater and the liquid that collects from the breakdown of waste. Leachate and groundwater are collected and taken to the onsite treatment plant where microorganisms are used to reduce the toxicity of this material before it is released into the sewer system. Stormwater is also monitored and is collected in a sedimentation pond where it checked for contamination before being released.

Methane gas

Greenhouse gases are produced in landfill from the breakdown of organic waste. When organic material such as food scraps and green waste is put in landfill, it is compacted and covered, which removes the oxygen and causes the waste to break down in an anaerobic process. Eventually this releases methane, a greenhouse gas that is more than 21 times more potent than carbon dioxide.

The potential harm caused by methane varies greatly and can be up to 72 times more potent. Methane is a flammable gas that can become extremely dangerous if allowed to build up in concentration. Landfill gas is monitored for quality, quantity and flow within the extraction system and on the surface and perimeters of the landfill.

Decomposition

The waste within a landfill is compacted so tightly that there is very little air and virtually no microorganisms to break down waste. Any decomposition that does happen occurs incredibly slowly and most of the buried waste will remain largely unchanged for many years to come.

Rehabilitation and revegetation

Rehabilitation occurs once a landfill cell has been capped with a thick layer of clay and soil. The area is revegetated and eventually will be used for recreation purposes, such as parks and ovals.

Did you know?

Suncorp Stadium was originally one of Brisbane's earliest rubbish dump sites.