

From high-rise towers to underwater cities of the dead – what is the future of Australian cemeteries?

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Sydney's famous Waverley Cemetery sits between Coogee and Bondi Beach. Australia's annual number of deaths will more than double by 2050 and cemetery space is already at a premium. *(Pexels: Kate Trifo)*

Our culture largely avoids the thought of death. Although talking about our mortality, and planning for what happens next— in a very practical sense — can be comforting.

Gillian and Geoff Senior, a couple from Camperdown Victoria, say its just "common sense planning for the inevitable." And their afterlife plans are all sorted.

"It's a simple approach that considers the environment," Mrs Senior says of Kurweeton Road Cemetery, also known as Australia's first ever vertical burial ground.

The couple, both in their eighties, have pre-booked their final resting place — a scenic open meadow surrounded by farmland in south-western Victoria.

Here, bodies are not embalmed, but instead frozen and placed in shrouds of biodegradable fabric before being placed — feet first — into the earth.

At Kurweeton, the dead rest standing vertically.



Mount Elephant in the distance. Kurweeton cemetery sits 200-kilometres west of Melbourne. (*Upright Burials Facebook*)

Mrs Senior says that for each person buried a tree is planted on nearby Mt Elephant, an extinct volcano, with the aim to offset carbon emissions.

"With normal cemeteries, there's all of that concrete and we just think 'what a waste,'" she said.

The landscape is kept in a natural state, there are no individual headstones or grave markers.

Instead, a memorial wall at the entrance of the cemetery provides the deceased's name, coordinates and a grid reference for the precise location.



A catafalque is used to transport the body from vehicle to grave site. Attached to a cable, the body is slowly lowered feet first. (*Upright Burials Facebook*)

Tony Duplex says Kurweeton cemetery, which spans four hectares and has the capacity for approximately 30,000 graves, aims to leave the lightest possible carbon footprint.

He's the sheep farmer, owner, manager, gravedigger and filler-innerer of the site.

"Each person has their own motivation behind their choice for coming here," he says. "It can range from financial, environmental, or can be seen as a kind of way to go out on your own terms."

What is the future of cemeteries?

Our cemeteries are [filling up](#).

In death, as it is in life, land is a sought-after commodity. We're dying to get in.

By 2042, ABS estimates the number of Australians aged 85 or over will have doubled from 2017 to more than a million people. The national stats also forecasts Australia's annual number of deaths will more than double, from around 142,000 in 2012 to more than 300,000 by 2050.

Although, this urgent need for cemetery space is not unique to Australia, it's a worldwide phenomenon.



Melbourne General Cemetery spans 43 hectares in Carlton North, three kilometres north of the city. (*Wikipedia: John O'Neill*)

Dr Hannah Gould, a cultural anthropologist from the University of Melbourne, says Kurweeton Cemetery is best understood as an attempt to "re-think the resources that are devoted to burying the dead".

"This challenging of traditional norms is timely... Especially as we are facing serious consequences for how we use urban and regional space," she says.

"Looking to the future, cities are going to have to embrace dramatic shifts in the way they deal with the dead."

Dr Gould is part of the "Death Tech" research team – yeah, that's a thing – a group of anthropologists, social scientists, and human-computer interaction specialists based at the University of Melbourne and the University of Oxford, exploring such issues on emerging alternatives to body disposal and the future of cemeteries.

And for good reason.

Housing the dead— a global dilemma

In Hong Kong, home to more than 7.6 million people, space is at a premium.



The dense graveyards of Hong Kong snapped by artist and architectural photographer Finbarr Fallon. *(Supplied: Finbarr Fallon)*

As land and space is increasingly limited, cemeteries around the globe have taken on new forms. And then there's the shift to vertical, with the introduction of high-rise cemeteries.

The Memorial Necrópole Ecumênica in Santos Brazil is the world's tallest. Since 1991, it has been listed in the Guinness Book as the tallest cemetery in the world standing more than 100 metres high.

Its website says the structure can house the remains of 25,000 people.

Dr Gould says such vertical burials shape city skylines, bringing "the dead back from the outskirts of town into the heart of an urban landscape".



The high-rise cemetery, Memorial Necrópole Ecumênica in Santos, Brazil, is the tallest cemetery in the world, according to Official Guinness Records. *(Memorial Necrópole Ecumênica Facebook, Google Earth)*

Sydney is home to the [largest operating cemetery in the southern hemisphere, Rookwood Necropolis](#). Spanning 314 hectares, it's home to more than 1 million internments, 15 kilometres west of Sydney CBD, in the suburb of Lidcombe.

While a high-rise tower is not on the cards here, it is home to a mausoleum and above-ground crypts —catering for singles, couples and families — designed to meet urgent demand at Australia's largest cemetery.

How about an eternal swim?

Known for its high-rises, Queensland's Gold Coast City has considered building upwards in response to its own urgent need for cemetery space, although this was "ruled out" mid-last year by Mayor Tom Tate who said such skyscrapers would "be seen as inappropriate".

But an underwater burial site like that built off Florida's coastline in the United States, is still being explored.



An underwater city of the dead? Located off the coast of Key Biscayne in Miami, this undersea cemetery opened in 2007. (*Neptune Memorial Reef*)

Known as the Neptune Memorial reef, this cemetery is modelled after the lost city of Atlantis and acts as an artificial reef.

Here, cremated remains are cast into concrete memorials and placed where divers and loved ones can visit.

The Neptune Society, a cremation company, says the man-made reef will cover 16 acres of ocean floor and be a final resting place for more than 250,000 people when complete.

Although such construction costs. The company's website says its first construction phase alone cost more than \$US1.5 million (\$2.1m), and it touts plans for further construction phases.

As for Gold Coast City's own underwater plans, a spokesperson told the ABC it had progressed a "number of commitments relating to the regeneration and expansion of its existing cemeteries", and that it "continues to be open to exploring other non-traditional interment options such as underwater graves, natural burials and mausoleum-style structures over the longer term."

Death and 'a relationship to the sea'

When it comes to environmental impact, the underwater burial model requires cremation.

A standard cremation releases large amounts of carbon dioxide into the atmosphere for each body, explains Bec Lyons, president of the Natural Death Advocacy Network (NDAN).

Dr Gould says she's not aware of any sites in Australia making reef structures out of cremated remains.

"But I would assume the issue would be with conservation efforts around our reefs – I'm not sure what the long-term environmental impact would be."

Both whole body burial and ash scattering in the ocean is legal in Australia.

"Although the former can be difficult to access, as you have to get special permission from the federal government and demonstrate a long standing relationship to the sea," Dr Gould said.

Five visions of future cemeteries

To date, Dr Gould says the death tech research team's five models for the future cemetery include:

- The traditional cemetery, as is.
- The nature park cemetery, integrating burial grounds with native bushland to provide public space that invites social use such as walks and picnics.
- The socially activated cemetery. Dr Gould explains this allows for both educational and leisure activities such as birdwatching, playgrounds and cafes.
- The high-rise cemetery, such as an urban building that allows the deceased to be located close to loved ones in central locations.
- The digital cemetery. Dr Gould says this could increasingly co-exist with, or one day replace, the physical cemetery. Here loved ones can share images, video and stories about the deceased.

She says these models are hypothetical — and no cemetery in the near future is likely to follow one single model.

"They do point towards options cemetery designers have to think about when planning for the next 100 years," Dr Gould says.

Seeking end-of-life options

We're often unaware of the end-of-life choices available to us, Mrs Lyons says.

"By being proactive, becoming informed and raising your own levels of death literacy, you will find there is much more agency in the end of life than you may have thought."



Gillian and Geoff Senior say it's just "common sense planning ahead for the inevitable".

(Supplied: Gillian and Geoff Senior)

As for their own informed choice, Mrs Senior says she and her husband's plans for an upright burial at Kurweeton are driven by a desire for "simplicity and sustainability".

"Death is inevitable," she says, "it's part of the rich tapestry of life".

"We both thought it would be a very pleasant place for people to visit if they really want to."