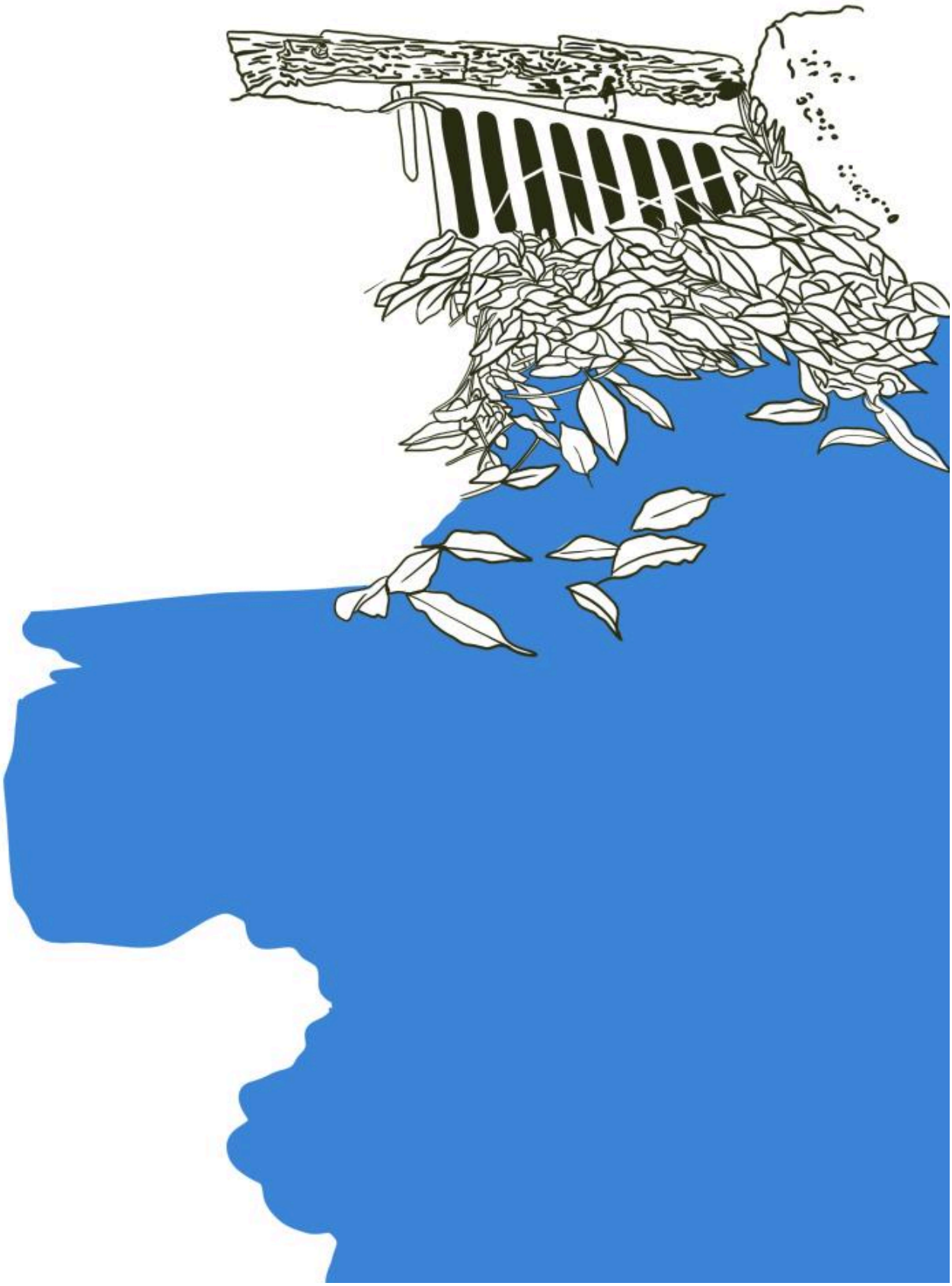


Water Stories

Archives as estuaries in Green Square

Welcome to Water Stories, a project that maps, materialises and activates social and environmental histories and practices of water in Green Square, Australia's largest urban renewal project, which spans the Sydney suburbs of Beaconsfield, Rosebery, Zetland, Alexandria and Waterloo.

The Country that is now known as Green Square is nadunga gurad, sand dune Country, known for millennia for its nattai bamalmarray, freshwater wetlands and ephemeral ponds. Country here is an important refuge on the Songlines that traverse this place, providing shelter, food, medicines and resources on the north/south journey between two main areas of garigalo, saltwater Country, and its bays: War'ran (Sydney Cove) and Gamay (Botany Bay).

Ngeeyinee bulima nandiritah
(May you always see the beauty of the earth)

Shannon Foster D'harawal eora Knowledge Keeper & registered Sydney Traditional Owner

Water Stories

This story map is an invitation to explore the water stories of Green Square. If you're located close by, we recommend you take a walk in the area before, during or after using this resource.

But this is not your typical map. Choose an object to enter the archives and flow through time and space. A cauliflower, camellia, frog and stormwater drain are each a portal to the water stories of Green Square.

Don’t worry about getting lost when streams diverge, canals are blocked or drains flood. Don’t get confused when water evaporates and fills your nose with the stench of industry or the sweet scent of tea trees. Watery archives are unruly and ephemeral. You can always come back to the map and choose a different portal.

We researched this project during the 2021–2022 La Niña event. As the Bureau of Meteorology explains, most parts of New South Wales received above average rainfall and many parts experienced severe flooding.

Australia’s temperature and rainfall variability are also influenced by global warming
caused by human activities. In Green Square, these and other water stories are waiting to be told.

Credits

Creative directors: Ilaria Vanni, University of Technology Sydney, Faculty of Arts and Social Sciences and Alexandra Crosby, University of Technology Sydney, Faculty of Design, Architecture and Building

Concept design: Ilaria Vanni, Alexandra Crosby

Curatorship: Ilaria Vanni, Alexandra Crosby

Place-based research: Ilaria Vanni, Alexandra Crosby, James Goodman, Shannon Foster, Kane Pham, Amy Lin.

Writing: Ilaria Vanni, Alexandra Crosby with words by Shannon Foster, D'harawal eora Knowledge Keeper & registered Sydney Traditional Owner

Illustrations and visual communication: Ella Cutler

Photography: Ilaria Vanni, Alexandra Crosby

Interaction design: Sebastian Groundstroem, Elise van den Hoven

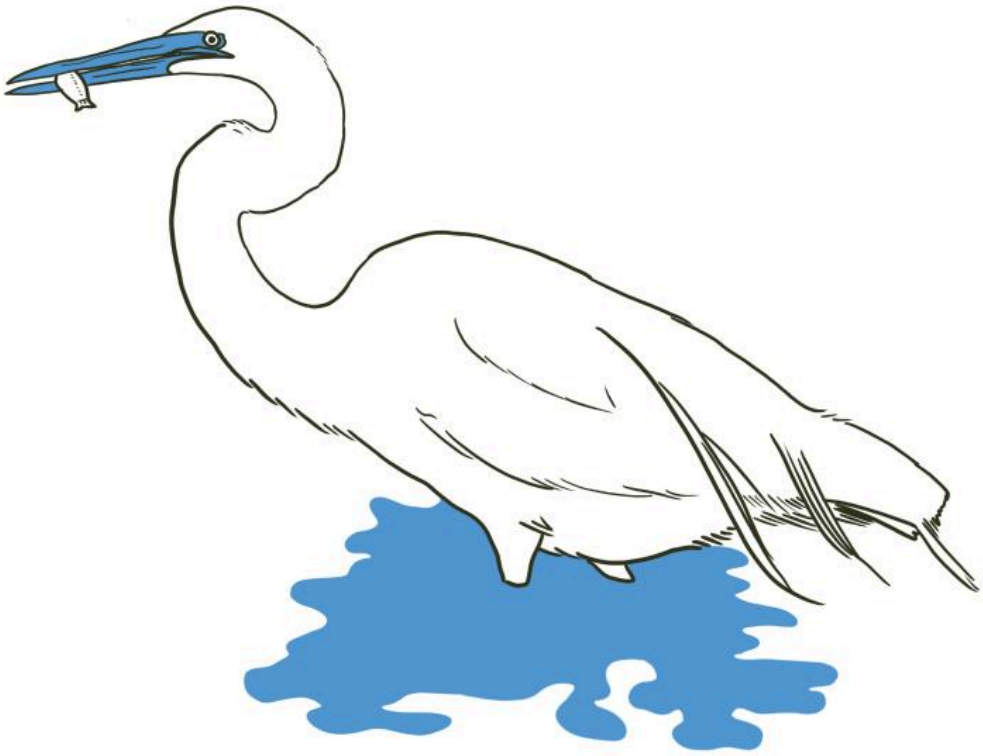
Copy editing: Claire Thompson of Petunia Brown

This project was funded by the University of Technology Sydney Cross-Faculty Grant PRO21-12458 and is part of UTS 2027 Strategic Funding

Alexandra Canal

Terraforming and egrets

As the tide ebbs, pelicans, egrets, cormorants, magpies and seagulls feed and bathe in the shallow water of Alexandra Canal, named after Princess Alexandra, Princess of Wales and later Queen consort to Edward VII.



Birds are not expected to read the warning signs: DO NOT EAT FISH OR RAW FISH CAUGHT IN COOKS RIVER AND ITS

TRIBUTARIES. ALEXANDRA CANAL: NO FISHING BY ALL METHODS OR DISTURBING BED SEDIMENT, says one.

DANGER ASBESTOS, reads another.

Not seen here for much of the 20th century, birds are back in the canal, and so are plants growing on the edge between water and warehouses.

Yet the canal itself remains a dangerous waterway: more than a century of industrial waste has sedimented on its bed, a veritable archaeology of pollution.

Daragun Stream, watercourse

Multiple water stories are also deposited along the canal: narratives of care, dispossession, extraction, terraforming and renewal. Chronicles of labour; industrial and natural histories.

The New South Wales Department of Public Works begun dredging Sheas Creek for a canal in 1887, propelled by industrial and commercial interests and by the fantasy of a navigable commercial waterway connecting Botany Bay to Sydney Cove.

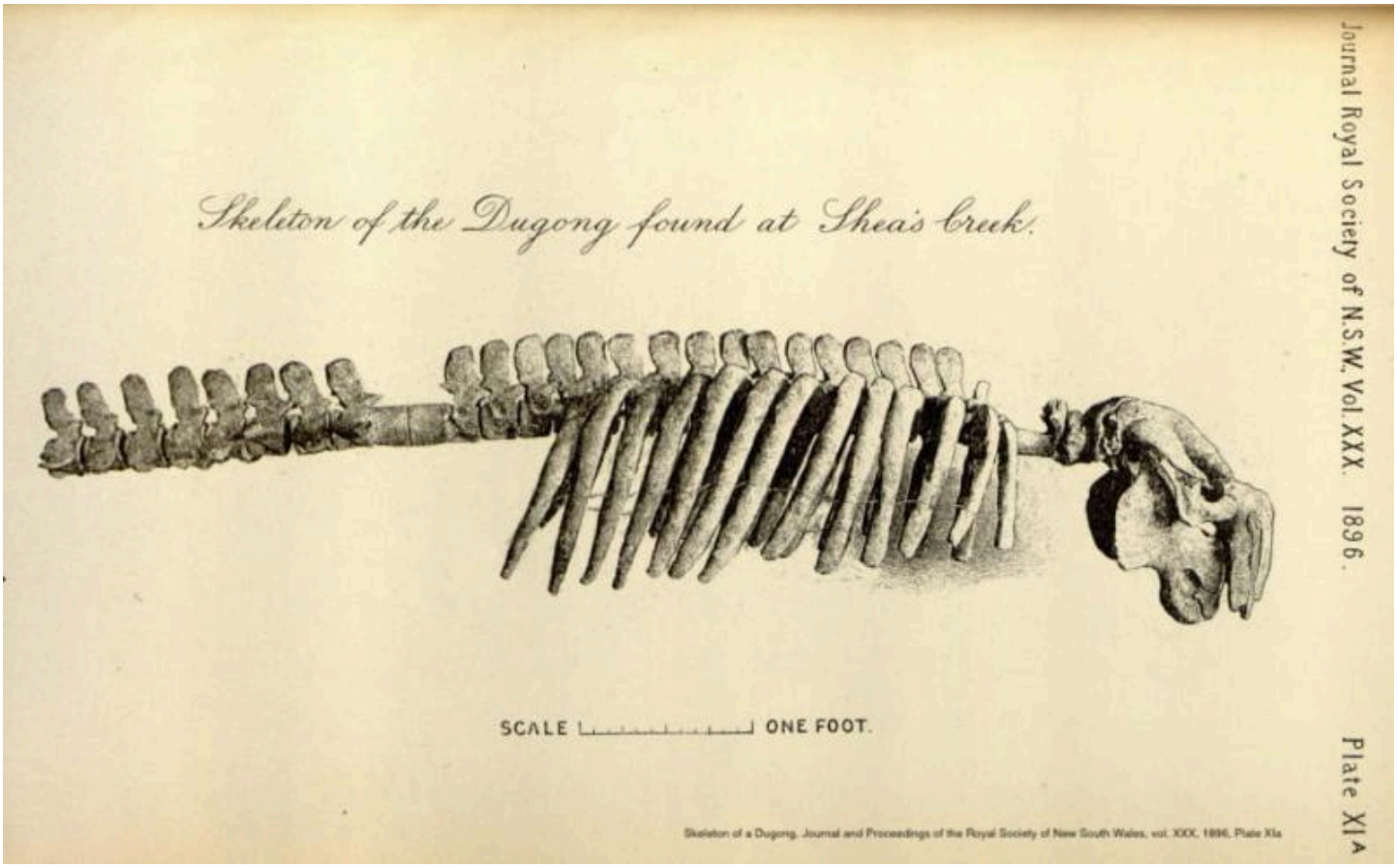
The canal itself was modelled on the canals of Birmingham. Caught in a narrative of industrial progress, modernity and nation building, Alexandra Canal formed part of a public project to transform the Parish of Alexandria from a mid-18th century noxious trade site into ‘the Birmingham of Australia’.

But in the late 1880s Sheas Creek meandered through wetlands and ephemeral ponds, rushes, casuarinas and swamp mahogany forests. It met other bodies of water and joined the Cooks River and, finally, the ocean at Kyeemagh.

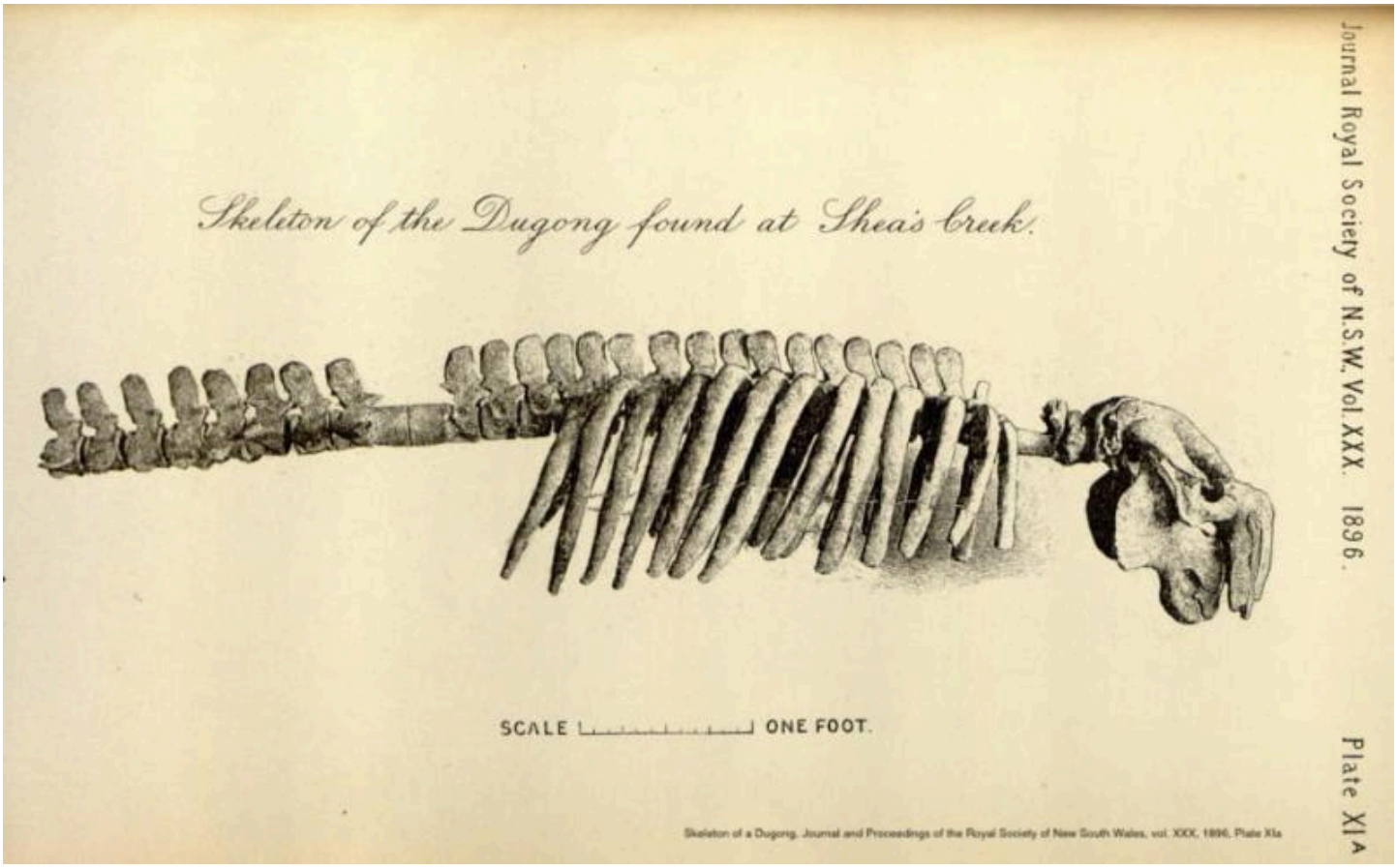
For efficient transportation, the creek was terraformed into a straight canal. Its banks were enclosed in sandstone blocks, hand cut by labourers given relief work during Australia’s first economic depression.

During this terraforming, the creek revealed an extraordinary archive: bones of a dugong, now at the Australian Museum; three ground-edge stone hatchets; and a submerged forest of *Eucalyptus resinifera* turned the canal into a site of scientific interest.

Ngadyung Water



The presence of cuts on the dugong bones reshuffled 19th century Western assumptions that Aboriginal people had been in Australia for a relatively short period of time.



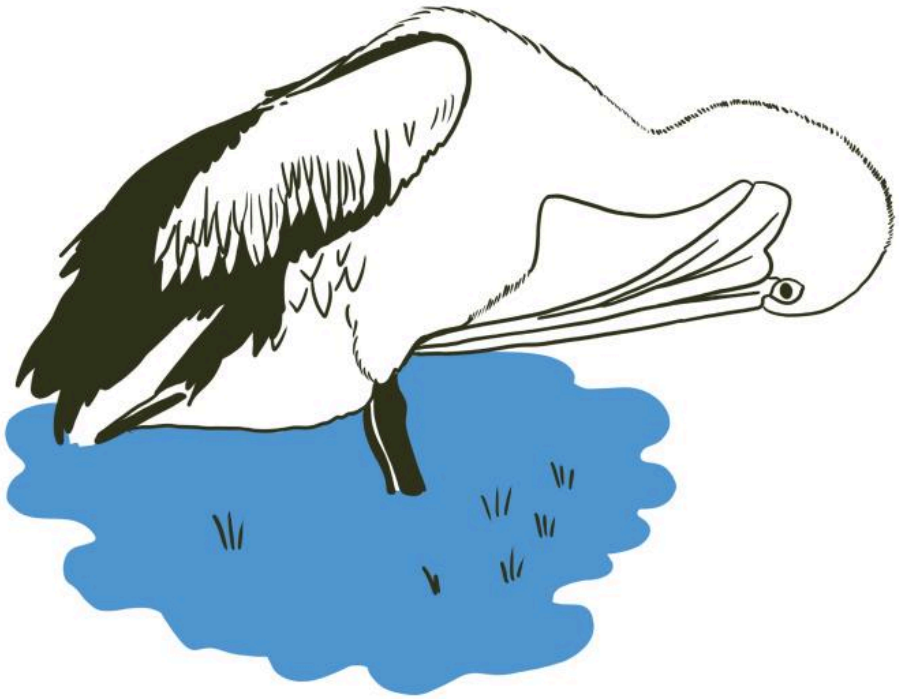
These bones, from a tropical mammal that lived in open bays, revealed that climate and sea level had changed in Sydney and that the coastline and landscape ebbed and flowed with water levels. The skeleton was later radiocarbon dated to 6,000 years ago.

Terraforming continued: the vision of a commercial canal cutting through Sydney was never completed, but industries grew, driven by coal-burning steam power.

A system of weirs, dykes, dams, bridges and wharves shaped the creek into a trade corridor.

The wool washers, tanneries, glue, soap and candle factories, fellmongers, gave way to foundries, brickworks excavating clay from the wetlands, wool stores.

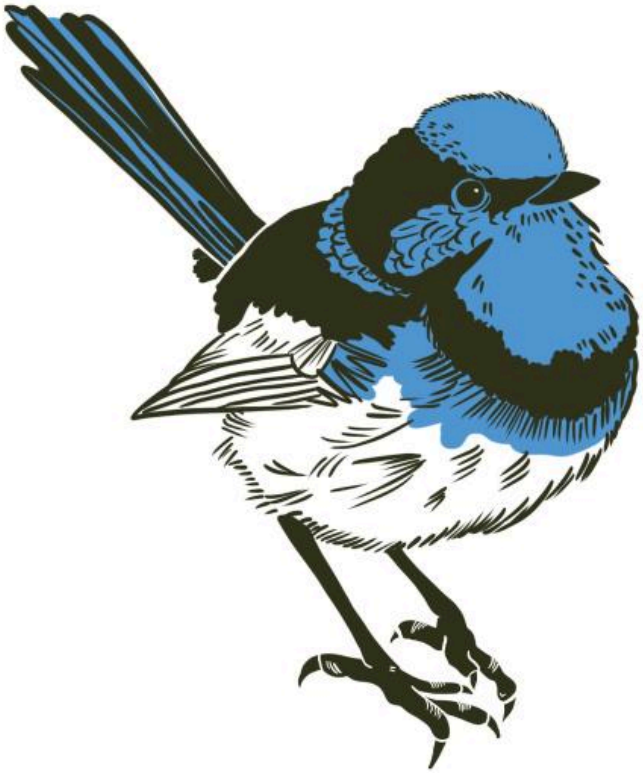
The canal was both a waterway and a dump for industrial waste.



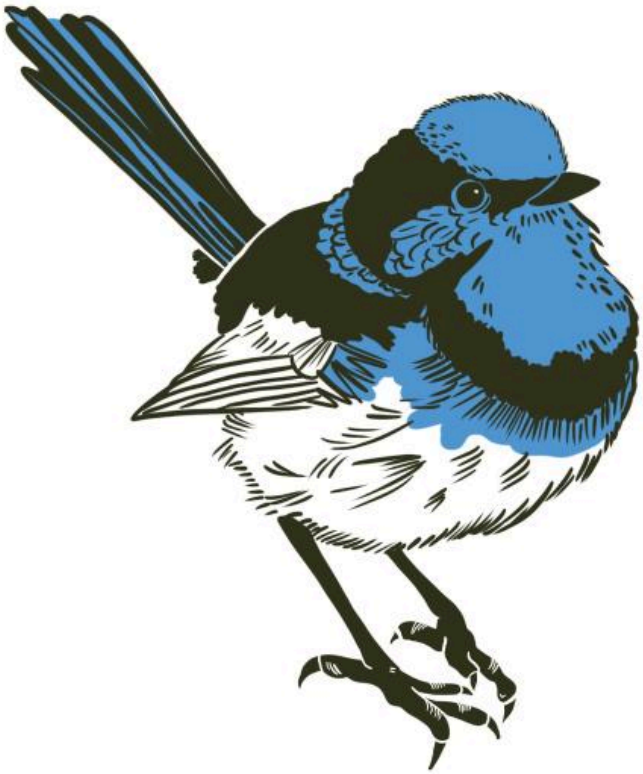
Today, Alexandra Canal collects stormwater from high points around it, and from the ***stormwater drain*** in Green Square.

Plans to renew the canal have been abandoned; the sediment on the bed is too toxic.

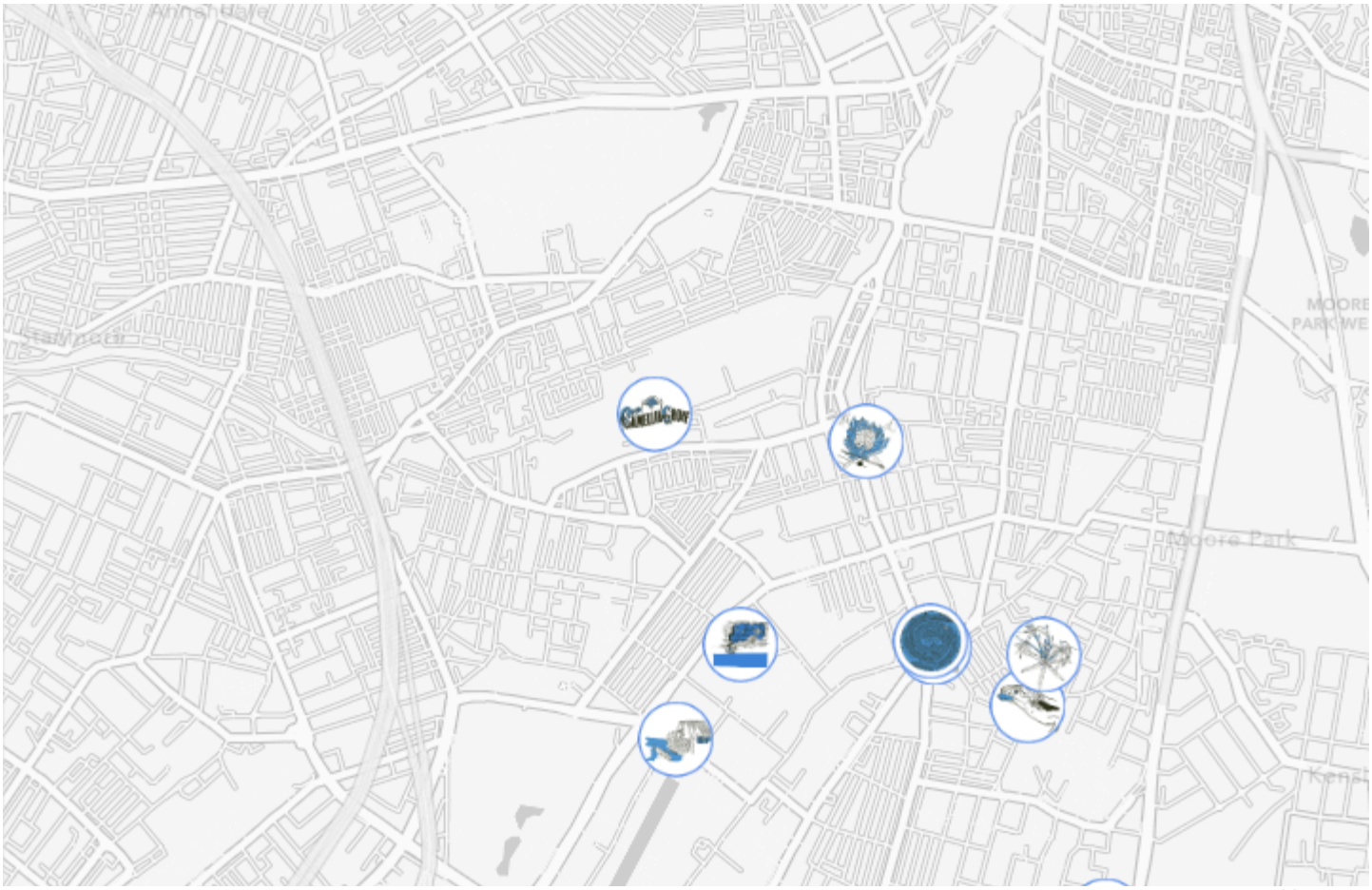
Nadun Drinking water



In the meantime, the banks of the Alexandra Canal are home to patches of endangered coastal saltmarsh plants and casuarinas.



These plants provide habitat connectivity to reptiles, frogs and birds, some of which are threatened and priority species.



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Camellia Grove

492 roses, 3 wells and 1 spring

In the second half of the 19th century, the Camellia Grove Nursery stretched for four acres west of today's Alexandria Park.

An 1887 issue of *The Sydney Mail* lists abundant features: small beds fringed by box hedges, a propagation house full of cuttings, a hothouse brimming with the variegated leaves of tropical plants, spindly yuccas, begonias of all sorts, swaying hoyas, passionfruit vines, native and imported orchids.

Sixty varieties of geraniums and pelargoniums next to beds of ornamental trees and shrubs: magnolias, gardenias, camelias, and conifers.

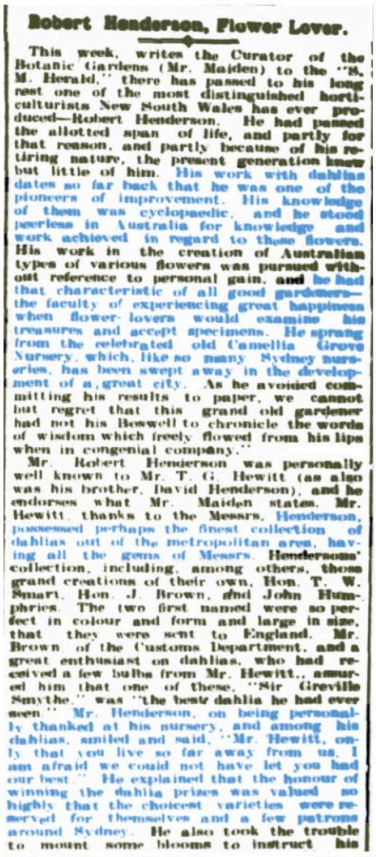
Here and there a burst of orange birds of paradise. Whites of rice paper plants and of a rare bougainvillea. Fruit trees.

Bangala Water-carrying vessel

Four hundred and ninety-two varieties of new and rare roses, the largest collection in New South Wales, a specialty of Camellia Grove Nursery.

A selection of multicolour dracaenas, including the rare and prized *Dracaena hendersonii*, named after Robert Henderson Jr, who co-owned Camellia Grove with his brother Charles.

Northern Star (Lismore, NSW : 1876 - 1954), Tuesday 23 February 1909, page 2

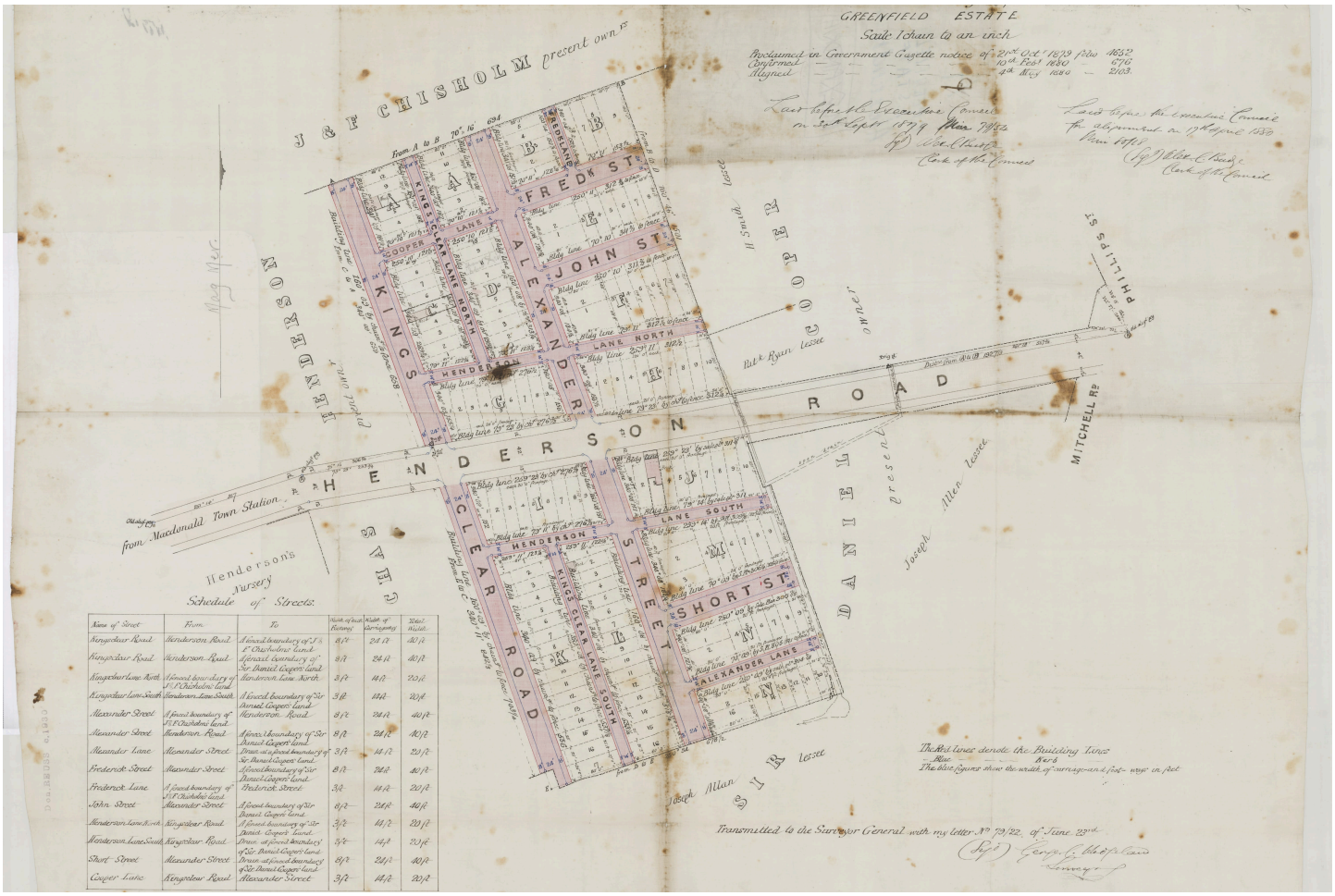


Robert Henderson, Flower Lover.

This week, writes the Curator of the Botanic Gardens (Mr. Maiden) to the "S. M. Herald," there has passed to his long rest one of the most distinguished horticulturists New South Wales has ever produced—Robert Henderson. He had passed the allotted span of life, and partly for that reason, and partly because of his retiring nature, the present generation knew but little of him. His work with dahlias dates so far back that he was one of the pioneers of improvement. His knowledge of them was cyclopaedic, and he stood peerless in Australia for knowledge and work achieved in regard to those flowers. His work in the creation of Australian types of various flowers was pursued without reference to personal gain, and he had that characteristic of all good gardeners—the faculty of experiencing great happiness when flower-lovers would examine his treasures and accept specimens. He sprang from the celebrated old Camellia Grove Nursery, which, like so many Sydney nurseries, has been swept away in the development of a great city. As he avoided committing his results to paper, we cannot but regret that this grand old gardener had not his Boswell to chronicle the words of wisdom which freely flowed from his lips when in congenial company."

Mr. Robert Henderson was personally well known to Mr. T. G. Hewitt (as also was his brother, David Henderson), and he endorses what Mr. Maiden states. Mr. Hewitt thanks to the Messrs. Henderson, possessed perhaps the finest collection of dahlias out of the metropolitan area, having all the gems of Messrs. Hendersons' collection, including, among others, those grand creations of their own, Hon. T. W. Smart, Hon. J. Brown, and John Humphries. The two first named were so perfect in colour and form and large in size, that they were sent to England. Mr. Brown, of the Customs Department, and a great enthusiast on dahlias, who had received a few bulbs from Mr. Hewitt, assured him that one of these, "Sir Greville Smythe," was "the best dahlia he had ever seen." Mr. Henderson, on being personally thanked at his nursery, and among his dahlias, smiled and said, "Mr. Hewitt, only that you live so far away from us, I am afraid we could not have let you had our best." He explained that the honour of winning the dahlia prizes was valued so highly that the choicest varieties were reserved for themselves and a few patrons around Sydney. He also took the trouble to mount some blooms to instruct his

Born in Sydney in 1837, alderman on Newtown Council in 1871-76, Chair of the Horticultural Society of NSW, Henderson Jr was remembered on his death by Joseph Maiden, the director of the Botanic Gardens, as the most distinguished horticulturalist New South Wales had ever produced, peerless in Australia for his dahlia expertise.



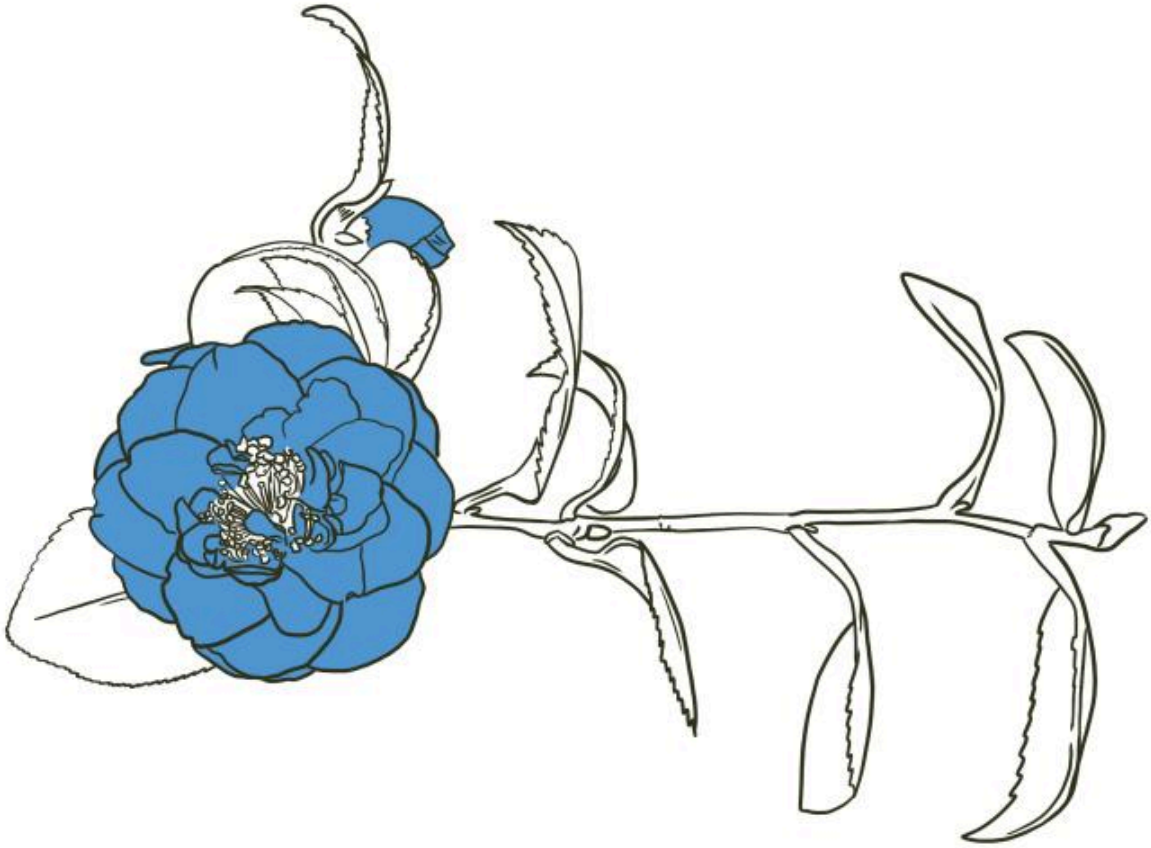
But this isn't just the tale of a flower lover. It's also a story about water, droughts, accumulation by dispossession, urban development and serendipity.

Greenfield Estate between Eveleigh & MacDonald town Railway Stations - Alexander St, King's Clear Rd, Henderson Rd, Alexandria Subdivision Plans, 1879, State Library of New South Wales

Several droughts affected Sydney in the 19th century. One of the longest recorded in Australia was given its own name: The Federation Drought. It started in 1895, peaked in 1901 and ended in 1902.

Greenfield Estate between Eveleigh & MacDonald town Railway Stations - Alexander St, King's Clear Rd, Henderson Rd, Alexandria Subdivision Plans, 1879, State Library of New South Wales

And yet Camellia Grove Nursery, abundant with rare plants and flowers, continued to prosper. By the late 19th century it was a meeting point for middle-class men to take a stroll, talk about plants and have a refreshing drink of water. There was a spring and three wells on the property.



Dibur Dew or small drops of water

Let’s step back in time.

To 1794, when convict John King received a grant of 30 acres to be cleared and developed. The spring and wetlands had been the foodbowl for a large Aboriginal camp of 100 people.

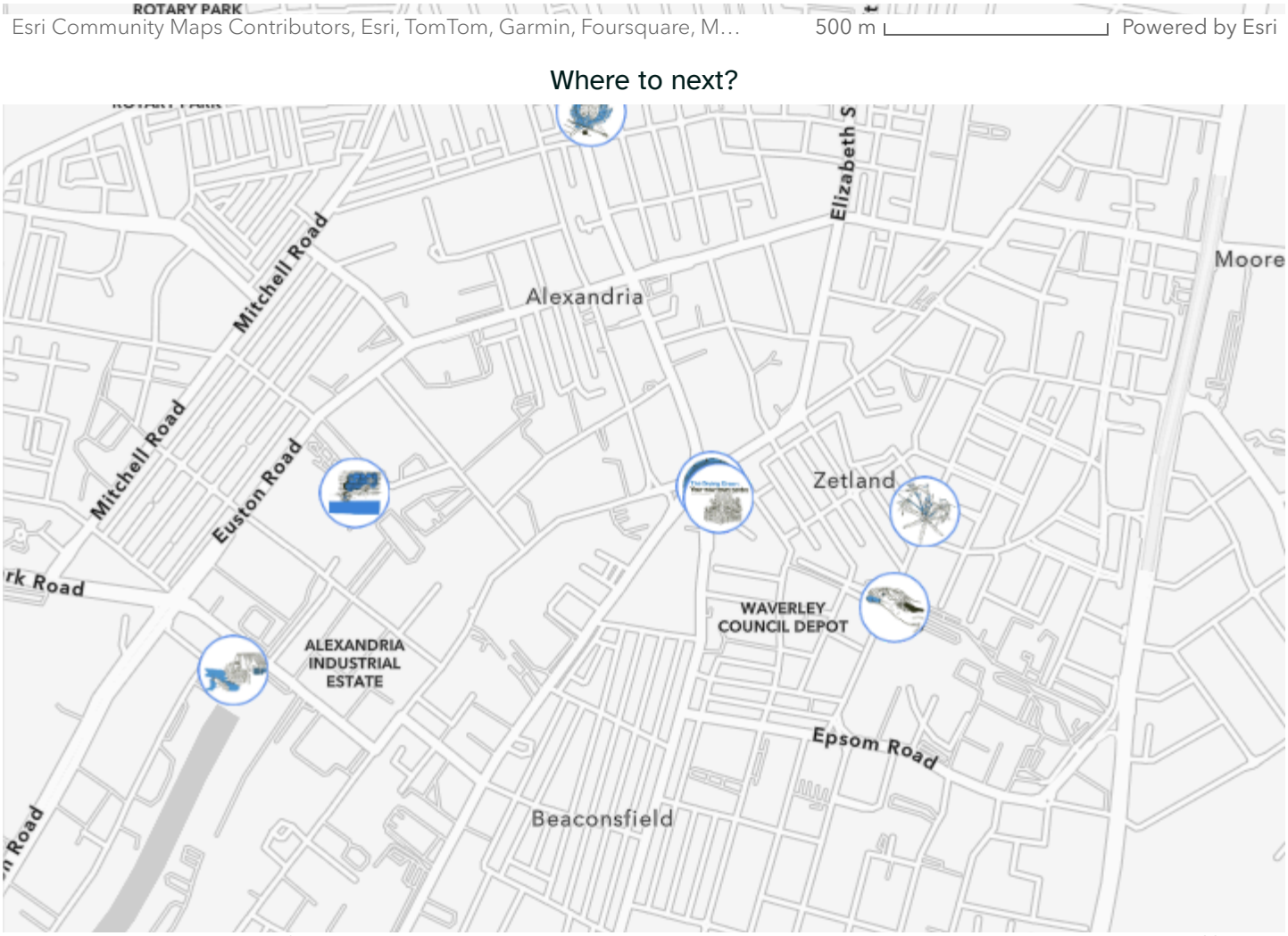
To 1832 when the fertile wetlands around the camp were auctioned. Mr Robert Henderson Snr, a settler originally from Newcastle-upon-Tyne, acquired 14 acres. He established a nursery on the edge of the new urban development in Sydney.

An ‘old man living on the Newtown Road’ the story goes, ‘advised Mr Henderson to pick the middle 10 acres, which was pretty heavily timbered with mahogany.’ (Salmon, p. 3) And then there was a three-years drought.

The next year water was two shillings and six pence a bucket, slightly more than $50 in today's money. Yet Camellia Grove bloomed and Mr Henderson's prospered.

The old man from Newtown Road, turned out, had given Henderson top real estate advice. The three wells on the property kept the nursery watered.

And one day, the spring suddenly opened, gurgling enough water to keep the business flourishing, and to supply the whole of Sydney through the drought.



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Cauliflower Hotel

Market gardens and race relations

The Cauliflower Hotel was founded by George Rolfe, a well-known market gardener.

He was 39 when he opened the pub, by which time he had acquired large tracts of land on the Waterloo Estate.

Although it has undergone many changes, the Cauliflower Hotel is still open, making it one of the oldest pubs in Sydney today.

Locals believed that Rolfe had made enough money to build his pub from the sale of a bumper crop of cauliflower grown nearby – a remarkable achievement given the area's many years of drought.

The wetlands and the rich alluvial soil around the hotel were considered prime locations for agriculture and were leased to market gardeners.

The market gardens spread around bodies of water, such as the streams in today’s Alexandria Park.

Bamal A natural earth material used for decoration

The story forms part of ***the market garden histories*** of Green Square, which were punctuated by strong anti-Chinese sentiment and racial violence (reported here as 'The Cowardly Cauliflower Gang')...

… as well as the perceived superiority of European (i.e. British) market gardens, European ways of gardening – and, perhaps, of European cauliflowers.

In the report of the court statement of a Chinese market gardener in 1911 ... 'he was driving along the road with a load of manure, and when he was in front of the Cauliflower Hotel the accused and several other young fellows commenced to call out to him and frightened his horse ... Fearing violence he grabbed his pitchfork.'

The market gardens in Alexandria and other areas of Sydney produced many of the city's vegetables until the 20th century when most were replaced by heavier industries.

The reserves of water underground were a vital resource, not only for industries like ***wool washing*** but also for growing food, a practice that continues in Green Square today.

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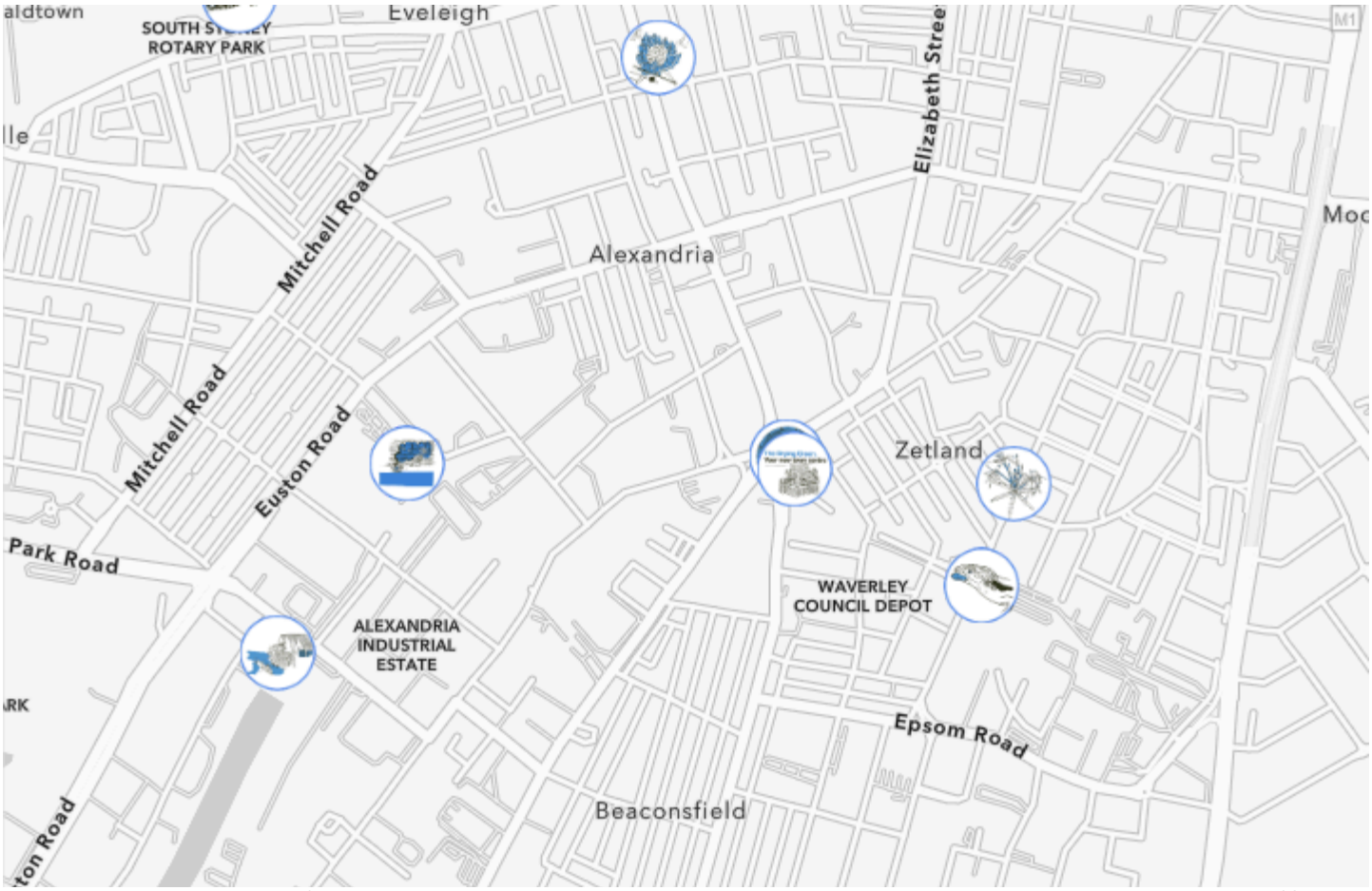

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Gunyama Park

Eastern Suburbs Banksia Scrub and bangala

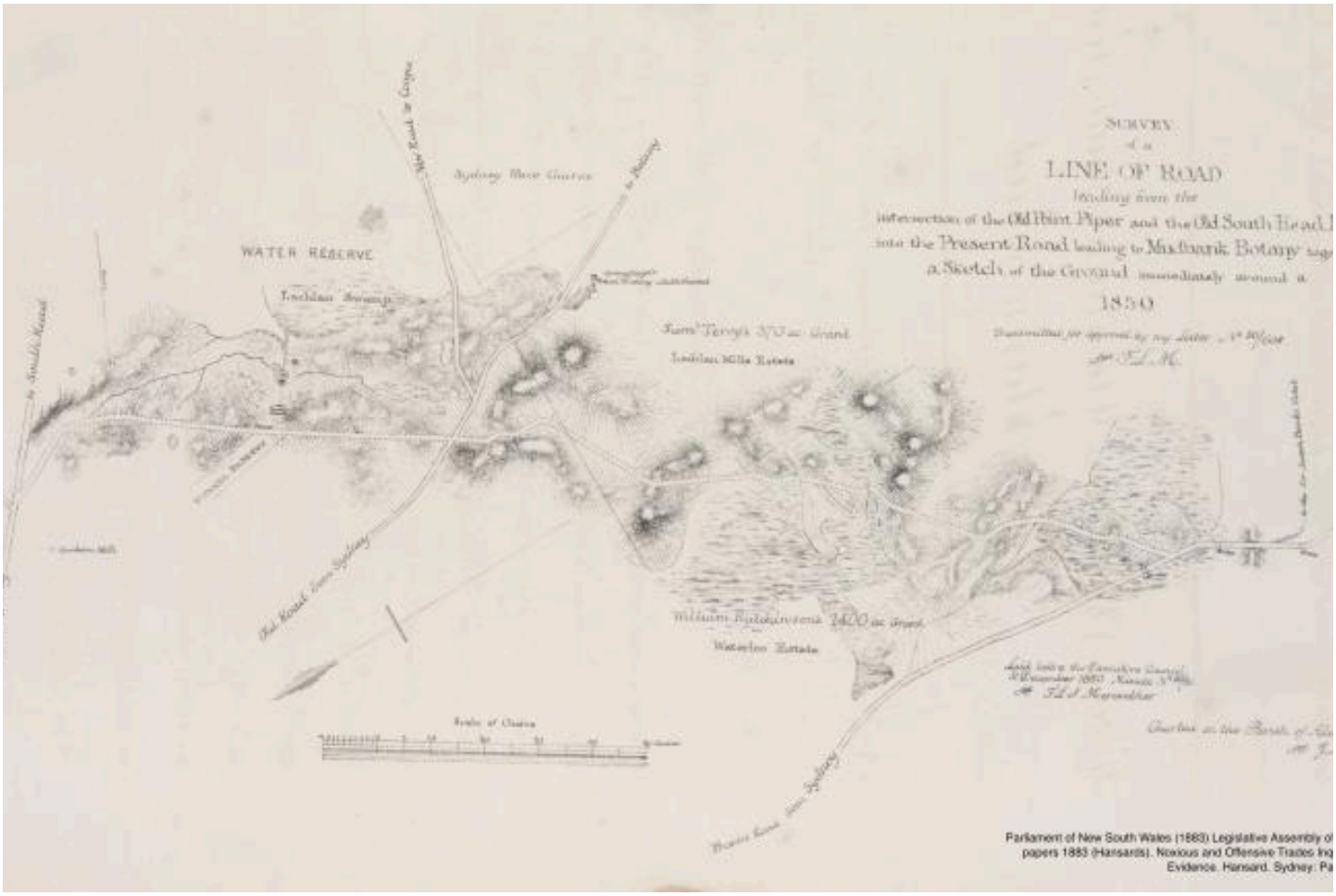
Gunyama Park and Gunyama Park Aquatic and Recreation Centre opened in 2021, surfacing many water stories of the area.

One of these is the ephemeral artwork *Marray* (meaning wet), designed by Danièle Hromek, Sarah Jane Jones, Annabel Stevens, Isabelle Toland and Fauzima Rafiq,.

Murray is a physical expression of the Indigenous Interpretation Strategy for Gunyama Park.

Gulima Water or food vessel

The strategy is 'guided by the Country that Gunyama is located within — from which culturally appropriate themes, narratives and resultant interpretations can be derived.'



According to the City of Sydney Gunyama Park takes its name from the Aboriginal Sydney language word meaning "wind from the southwest".

924. Is it not closed now? No, it is open now. One thing that caused the nuisance was this: after this sewer or creek (Shea's Creek) leaves our tanyard it goes through Magill's garden, and then through the sand at the foot of Bourke-street. In droughty weather the southerly wind used to blow this sand into the sewer, which was all open, and everything that came down was kept there stagnant. They had to depend entirely upon heavy rains or thunderstorms to open up the channel and let all the stuff away. Those people below had great reason to complain on that account. That sand belonged to Sir Daniel Cooper. He happened to be here at the time, and he proposed to lease that sand to me, which was done, and then I went to work and made a deep channel through the sand, and began to sell the sand, and it is all disappearing from there now. The neighbours below afterwards said it was the greatest blessing they ever experienced—my leasing that sand and getting rid of it in that way.

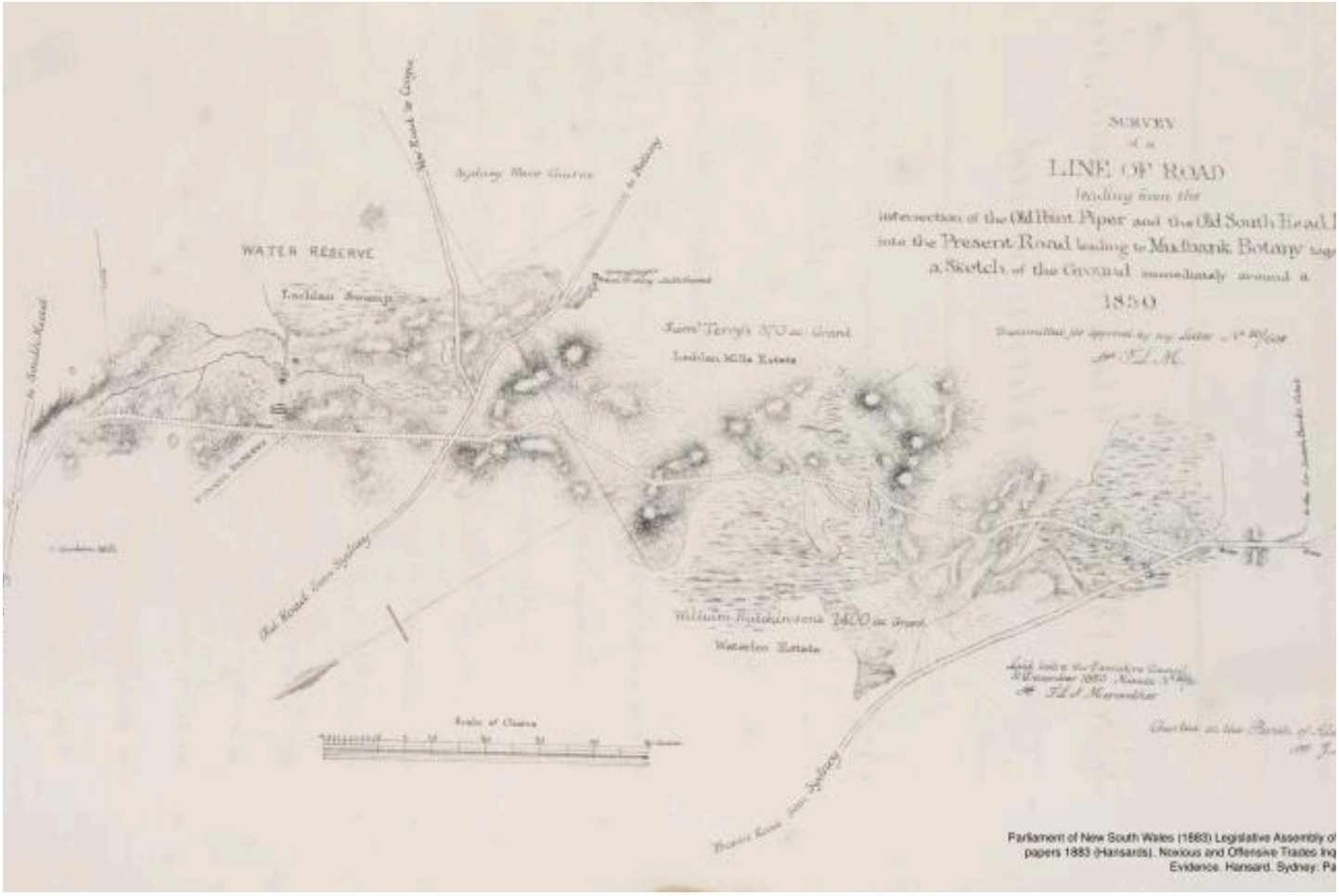
Survey line of Road, Illustrations from Progress in Public Works & Roads in NSW, Sir Thomas Mitchell. Opp. p. 174, 1850, State Library of New South Wales

'Strong southerlies regularly blew through the district. With the development of noxious trades such as boiling down works, tanneries and fellmongeries, the south-west wind was a distinctive and unavoidable olfactory presence.'

924. Is it not closed now? No, it is open now. One thing that caused the nuisance was this: after this sewer or creek (Shea's Creek) leaves our tanyard it goes through Magill's garden, and then through the sand at the foot of Bourke-street. In droughty weather the southerly wind used to blow this sand into the sewer, which was all open, and everything that came down was kept there stagnant. They had to depend entirely upon heavy rains or thunderstorms to open up the channel and let all the stuff away. Those people below had great reason to complain on that account. That sand belonged to Sir Daniel Cooper. He happened to be here at the time, and he proposed to lease that sand to me, which was done, and then I went to work and made a deep channel through the sand, and began to sell the sand, and it is all disappearing from there now. The neighbours below afterwards said it was the greatest blessing they ever experienced—my leasing that sand and getting rid of it in that way.

Survey line of Road, Illustrations from Progress in Public Works & Roads in NSW, Sir Thomas Mitchell. Opp. p. 174, 1850, State Library of New South Wales

An associated word with "gunyama" is "gunyamara" meaning "stink" – a historically appropriate and evocative description of Waterloo in the 1850s.



But this Country was rich with stinky winds before the industrial waste. Imagine stagnant water in some parts and mangrove mud in others. Pong!

Between Gunyama Park and the Aquatic Centre, you will find a corridor of Eastern Suburbs Banksia Scrub (ESBS).

ESBS once occupied around 5,300 hectares of land between North Head and Botany Bay in Sydney's eastern suburbs, including the area where Green Square is today.

Badoburra Water rushes down

ESBS is now classified by the NSW Office of Environment and Heritage as critically endangered.

This landscape saves water, enacts Country and Indigenous knowledges, recuperates environmental memories and contributes to the crucial regeneration of native ecologies.

Shannon Foster, D’harawal eora Knowledge Keeper, writes that today the presence of plants emerging in urban development areas represent ‘the un-forgetting of knowledges and stories that have been silenced and, sometimes, erased from our lives.’ (Foster, 2022)

The Aboriginal owned and operated IndigiGrow, a social enterprise that sustains people, land and culture through the propagation of native plants, specialises in ESBS.

They provided many of the plants used by the City of Sydney to landscape Green Square and recreate ESBS communities.

Facing the ESBS corridor are two bronze cast representations of *bangala* by Wiradjuri/Kamilaroi artist Jonathan Jones and Gorawarl/Jerrawongarla artist Aunty Julie Freeman and commissioned by the City of Sydney.

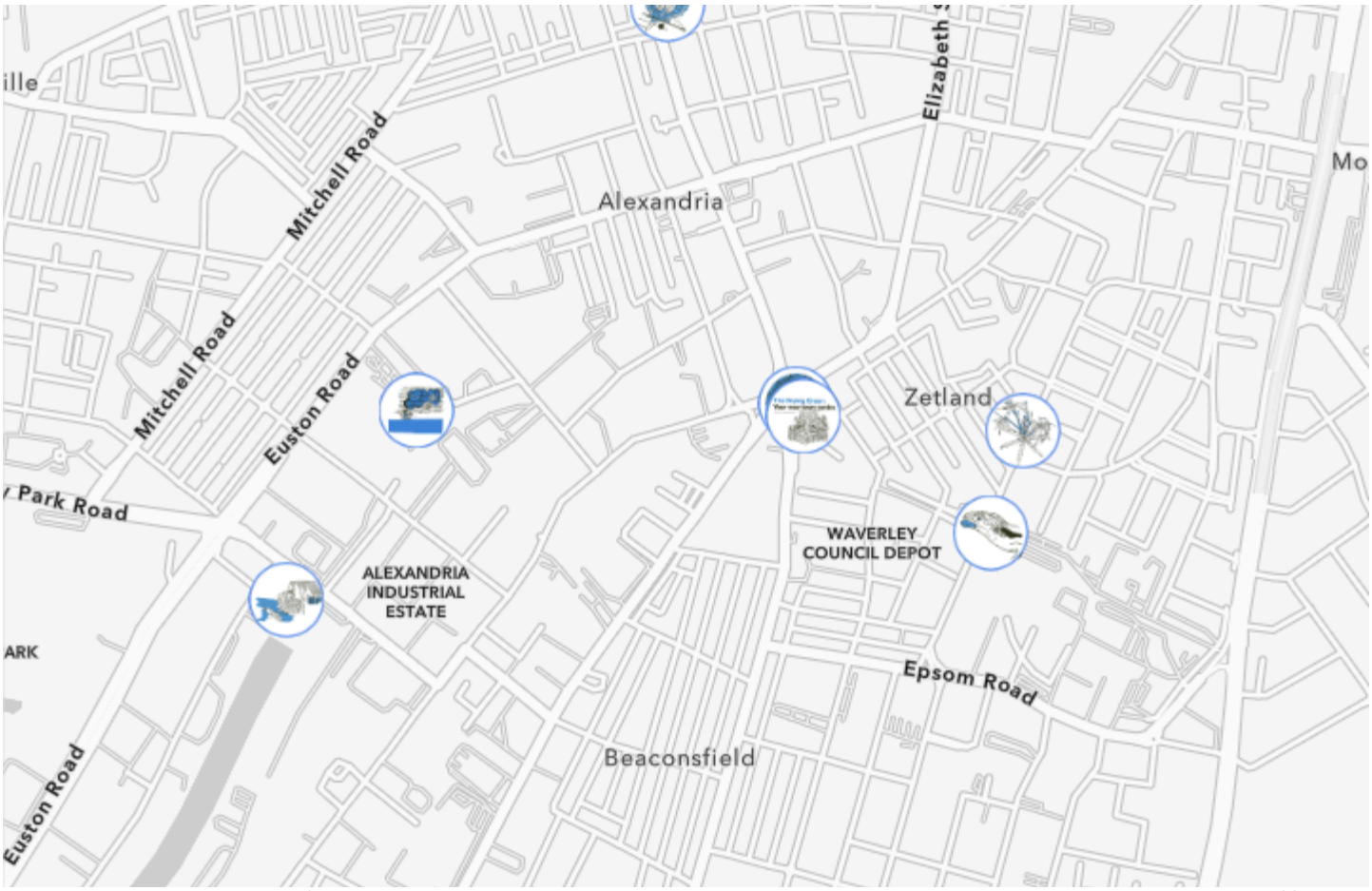
In local D'harawal language, bangala is a water-carrying vessel made from bark tied at each end. 'When we make bangala, we use stringy bark with two simple scrunched, tied ends,' says Shannon Foster.

Have you seen any creatures taking refuge in the Eastern Suburbs Banksia Scrub at Green Square?

They remind us that the waterways and plants of Green Square have always provided habitat for reptiles, birds, insects, fish and eels.

Bamalmarray Wetland

Where to next?



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Kimberley Grove

A frog pond and a swimming pool

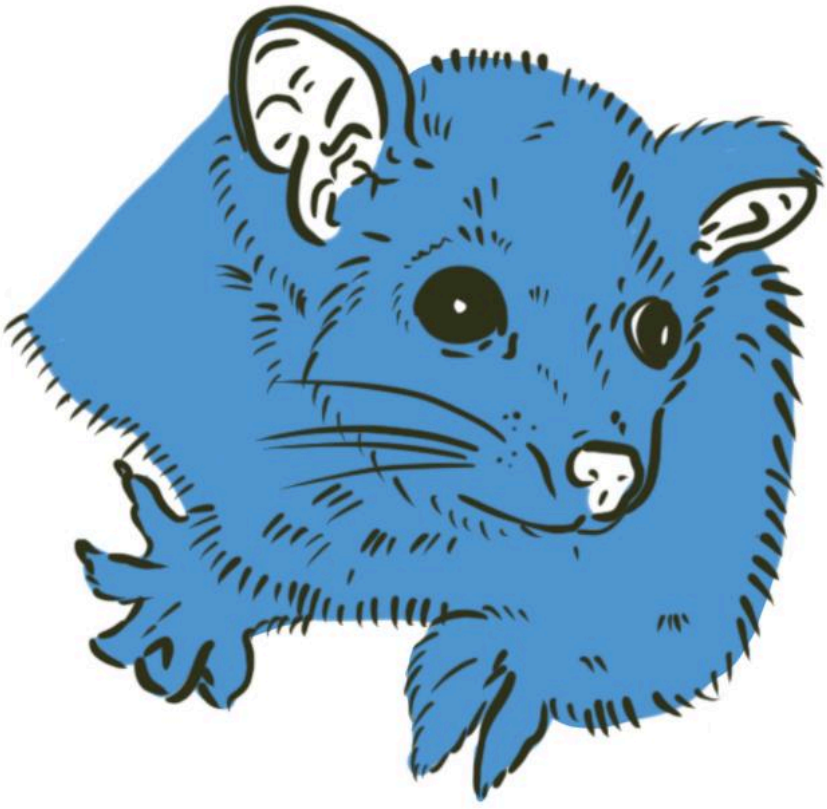
Have you seen or heard any frogs at Kimberley Grove?

Green Square is home to an important habitat of the endangered Green and Golden Bell Frog (*Litoria aurea*).

Kedumba Waterfall

The area was once a rich breeding ground for bell frogs, which are found on the east coast of Australia. They have been declining in numbers since the 1990s due to disease and loss of habitat to urban development.

Creating new urban habitat for the frogs is an important part of preventing their extinction.



In 2016, a frog pond was established at Kimberley Grove Reserve in Rosebery.

Where did the frogs come from?

Nadyung'kamira Pool, waterhole

Prior to the 1980s, the Rosebery frogs would have been linked to the bell frog population in the Botany wetlands at Eastlakes only 1.5 km away.

In 1980, the Southern Cross Drive was created, excising the Rosebery site from the Botany wetland corridor.

Burara Dry earth, waterless

In 1995, two important things happened.

1. Green and Golden Bell Frogs were the first animals listed as endangered under the *NSW Threatened Species Conservation Act*.

2. Meriton, the largest apartment developer in Australia, gained approval from South Sydney Council to build Kimberley Estate in Rosebery. This would be its largest-ever single development.

Kimberly Estate was planned on a site already greatly disturbed by human activities, including 30 years of sand mining. The disturbances had created some watery homes for frogs.

Zoologists Grahame Pyke and Arthur White explain:

'The site consisted of a large, levelled rectangular block of ground.... A drainage pond was excavated in the south-western corner of the site and the land contoured so that stormwater runoff was diverted into the pond. This pond was later colonised by bell frogs. The water level in the pond fluctuated markedly over time and would go dry for short periods each year. The eastern part of the Rosebery site contained mounds of bricks and concrete, which were being crushed for recycling. The remainder of the site was vacant.'

Although they would have originally been part of the much larger and more extensive population, the Rosebery bell frogs were considered the last survivors on the south side of the city and had become isolated.

In 2004, bell frogs were discovered in the backyard swimming pool of a Rosebery home. The Frog and Tadpole Study Group (FATS) started the Rosebery Bell Frog Project, converting the pool into a healthy habitat for frogs.

Frog enthusiasts, environmentalists and scientists lobbied for the frog pond now at Kimberly Grove Reserve.

The site was selected because it didn’t impact on the social use of the park; it was away from neighbouring properties, which meant it wouldn’t impact upon local amenities in terms of frog noise and insects and mosquitos); and because of its potential to link to other habitats in a watery corridor.

The design of the pond promotes conditions that favour bell frogs.

With a deep-water zone, a shallow-water bank, a shelter and hunting zone, each planted with specific native grasses such as lomandra, dianellas and kangaroo grass, it mimics the frogs' habitat.

And it's only a short hop, skip and jump from other watery habitats such as drains and ponds.

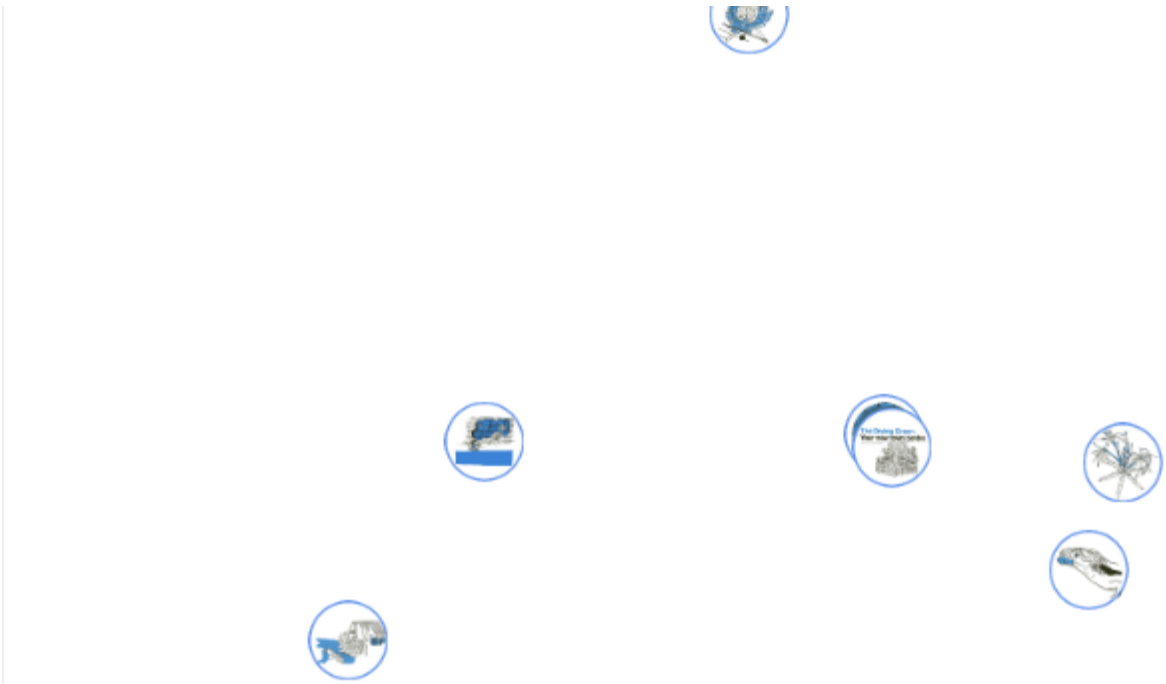
Bali Withered, waterless, parched

Detailed interpretation signage provides information to visitors.

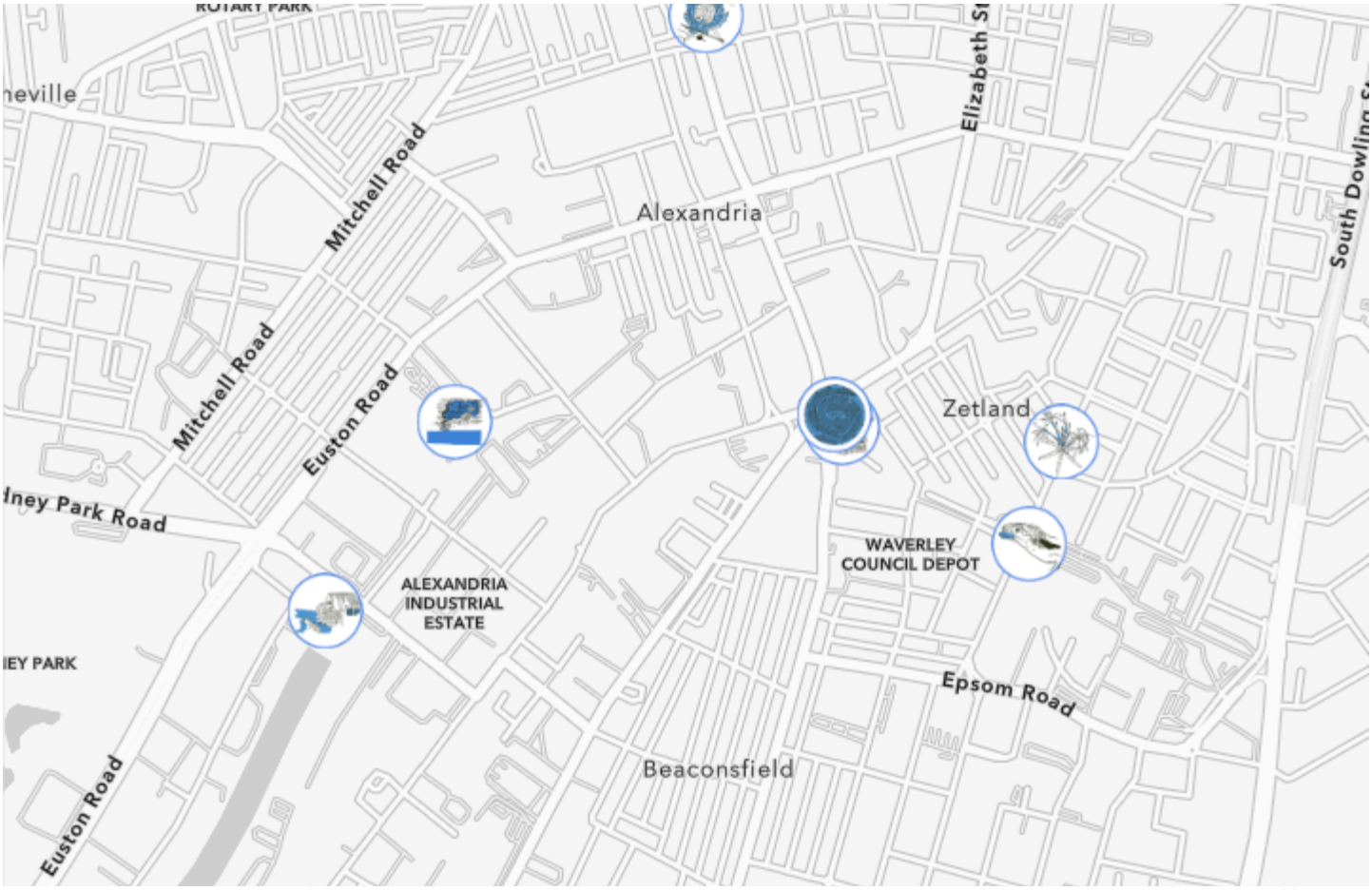
The pond is part of the City of Sydney's *Urban Ecology Strategic Action Plan (UESAP),* which has a target to 'progressively increase

the number of habitat features for priority fauna species established along potential habitat linkages by 2023'.

The plants used for the pond are also found in rain gardens, which direct water to the ***stormwater drains.***



Where to next?



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Sheas Creek

Extractivism and market gardens

Historian Ian Tyrrell describes the arrival of the colonists from the perspective of the river system:

‘If we picture the crew rowing their British naval longboat upstream in early May 1770, they first would have seen the river joined by Muddy Creek from the south. Round a long bend, Sheas Creek (now Alexandra Canal) would loom on the northern side…

… Both creeks were tidal and salty, with extensive coastal mangroves and saltmarsh species backed by banksia scrub and tea trees in the sandy soil along the bay.’ (25)

We know that Aboriginal peoples lived and hunted along Sheas Creek for millenia, adapting to changes in climate, geology and environment.

The wetlands and the ephemeral lakes connected to the creek were a route from Botany Bay to Sydney Cove.

According to The State Library of New South Wales, 'Early linguists and ethnologists sought out John (Johnny) Malone (c 1820–1880) and his wife Lizzie (c 1830–1901), later Golden, as language and cultural knowledge holders. '

Paul Irish writes that Johnny Malone grew up around the bay and lived in Botany where he led boat excursions and fishing parties (pp. 75-76). He and his family also camped at Sheas Creek, near what became ***Camellia Grove*** Nursery, according to journalist Mary Salomon.

Then Sheas Creek was colonised, seen as a resource ripe for extraction. Oyster beds near the Cooks River were raided for lime and clay was mined for the bricks of the booming construction industry.

Marray Wet

But the creek's primary resource was water, setting the scene for years of extractivism that transformed surrounding wetlands into agricultural land.

The flat land around the creek, now the property of a few rich settlers and leased out in allotments, was put to work to farm food for Sydney.

Farming transformed the landscape: fences, palings, drains, a goods rail, ponds and retaining walls attempted to contain the unruliness of the creek. A local map informs us that the creek's banks were broken and indefinite; the water escaped to mix with the surrounding wetlands.

Farming also transformed the social fabric of the creek, turning it into a racialised landscape.

After the gold mining rush of the 1850s, Chinese migrants came to Sydney as market gardeners.

They were perceived as a threat because of their productivity – the result of long labour hours, leaseholds, organisation of business and agricultural innovations.

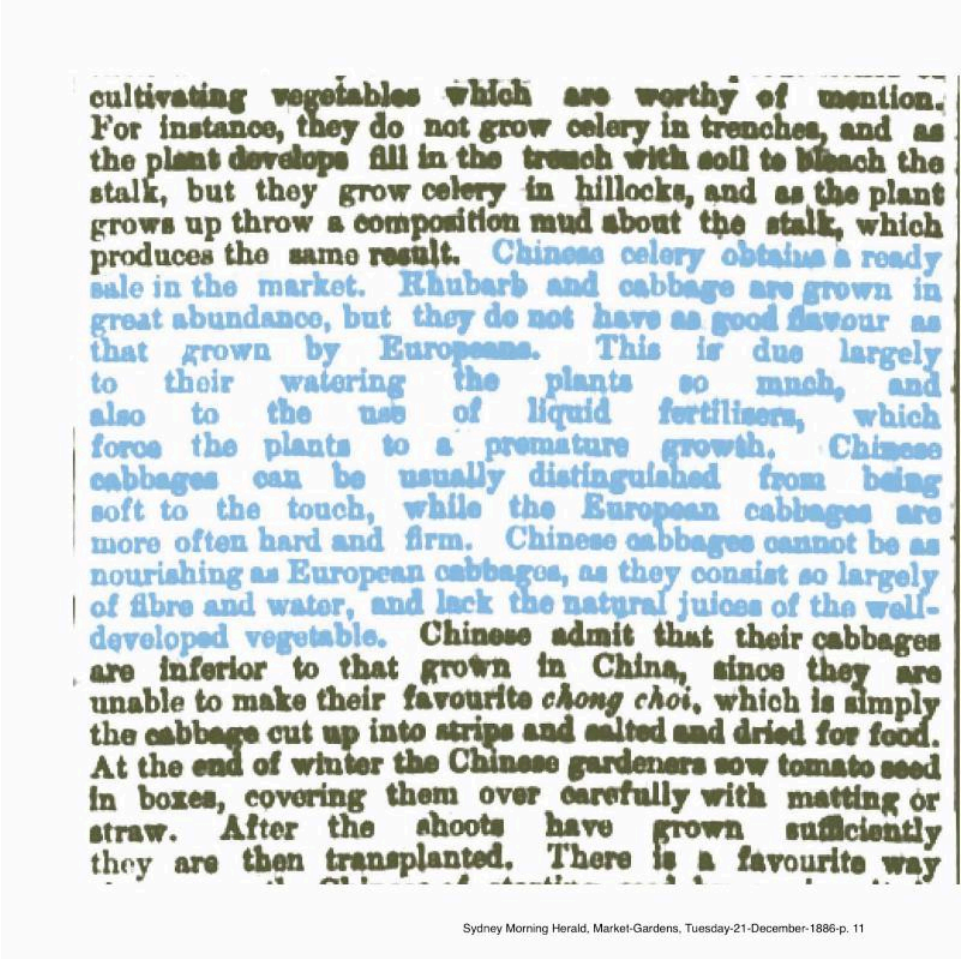
Gurbuni Fog, thick mist

As written in *The Sydney Morning Herald* (1886):

'When the Chinaman adopts gardening as his business in Australia, he is simply in his native element. He is following a calling that the traditions of his country characterise as highly honourable and becoming. If, therefore, other industries in the colony are threatened because of the Chinese competition, certainly market gardening is pre-eminently so.'

One such innovation deployed by Chinese market gardeners was a system of pumps, some small and portable, others powered by horses and steam, that used water from the creek to irrigate plants both from above and below.

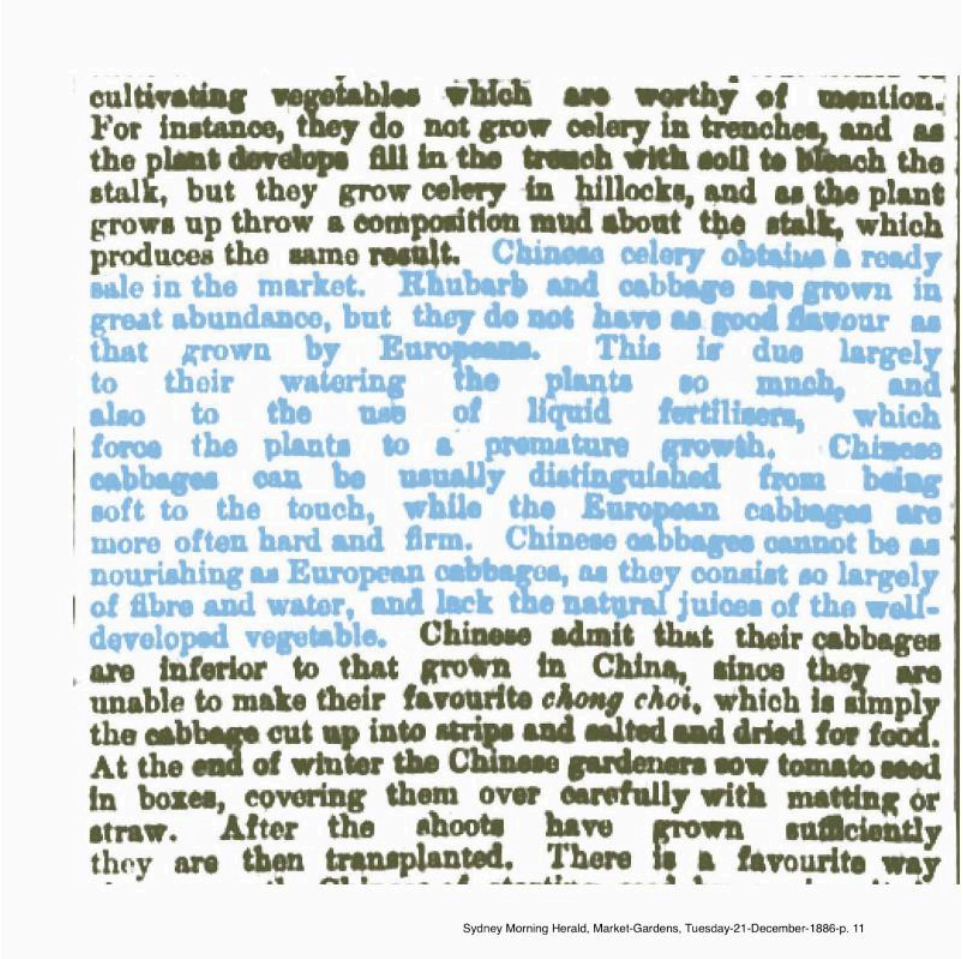
A second innovation was a system of trenches dug between the beds to channel or pump water from the creek. Another was the use of nightsoil (human excreta) as fertiliser, stored in clay vessels buried in the ground and covered with straw.



cultivating vegetables which are worthy of mention. For instance, they do not grow celery in trenches, and as the plant develops fill in the trench with soil to bleach the stalk, but they grow celery in hillocks, and as the plant grows up throw a composition mud about the stalk, which produces the same result. Chinese celery obtains a ready sale in the market. Rhubarb and cabbage are grown in great abundance, but they do not have as good flavour as that grown by Europeans. This is due largely to their watering the plants so much, and also to the use of liquid fertilisers, which force the plants to a premature growth. Chinese cabbages can be usually distinguished from being soft to the touch, while the European cabbages are more often hard and firm. Chinese cabbages cannot be as nourishing as European cabbages, as they consist so largely of fibre and water, and lack the natural juices of the well-developed vegetable. Chinese admit that their cabbages are inferior to that grown in China, since they are unable to make their favourite *chong choi*, which is simply the cabbage cut up into strips and salted and dried for food. At the end of winter the Chinese gardeners sow tomato seed in boxes, covering them over carefully with matting or straw. After the shoots have grown sufficiently they are then transplanted. There is a favourite way

Sydney Morning Herald, Market-Gardens, Tuesday-21-December-1886-p. 11

These innovations were the subject both of admiration and of a racialised campaign that aimed to smear the gardeners and their vegetables.



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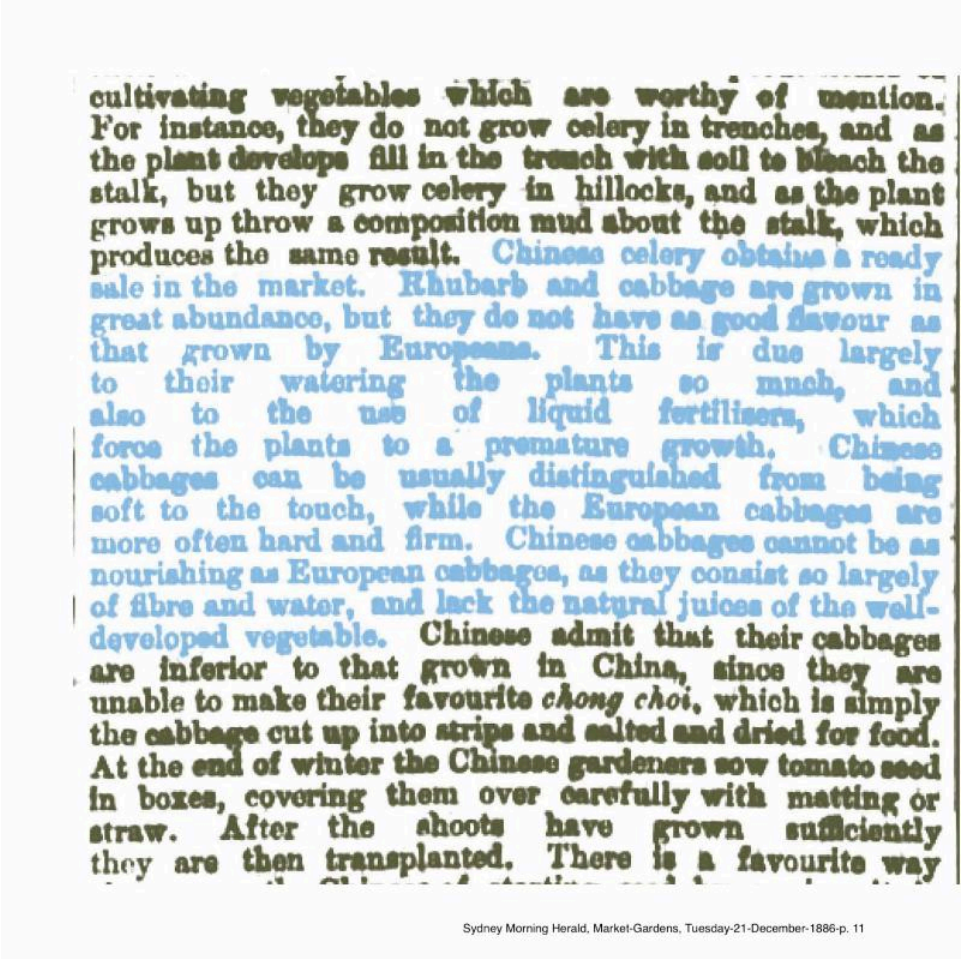
Sydney Morning Herald, Market-Gardens, Tuesday-21-December-1886-p. 11

As described by *The Sydney Morning Herald* in 1886:

'Rhubarb and cabbage are grown in great abundance, but they don't have as a good a flavour as that grown by Europeans. This is due largely to their watering the plants so much, and the use of liquid fertilisers, which force the plants to a premature growth. Chinese cabbages can be distinguished from being soft to the touch, while ***European cabbages*** are more often hard and firm. Chinese cabbages cannot be as nourishing as European cabbages as they consist so largely of fibre and water, and lack the natural juices of well developed vegetables.'



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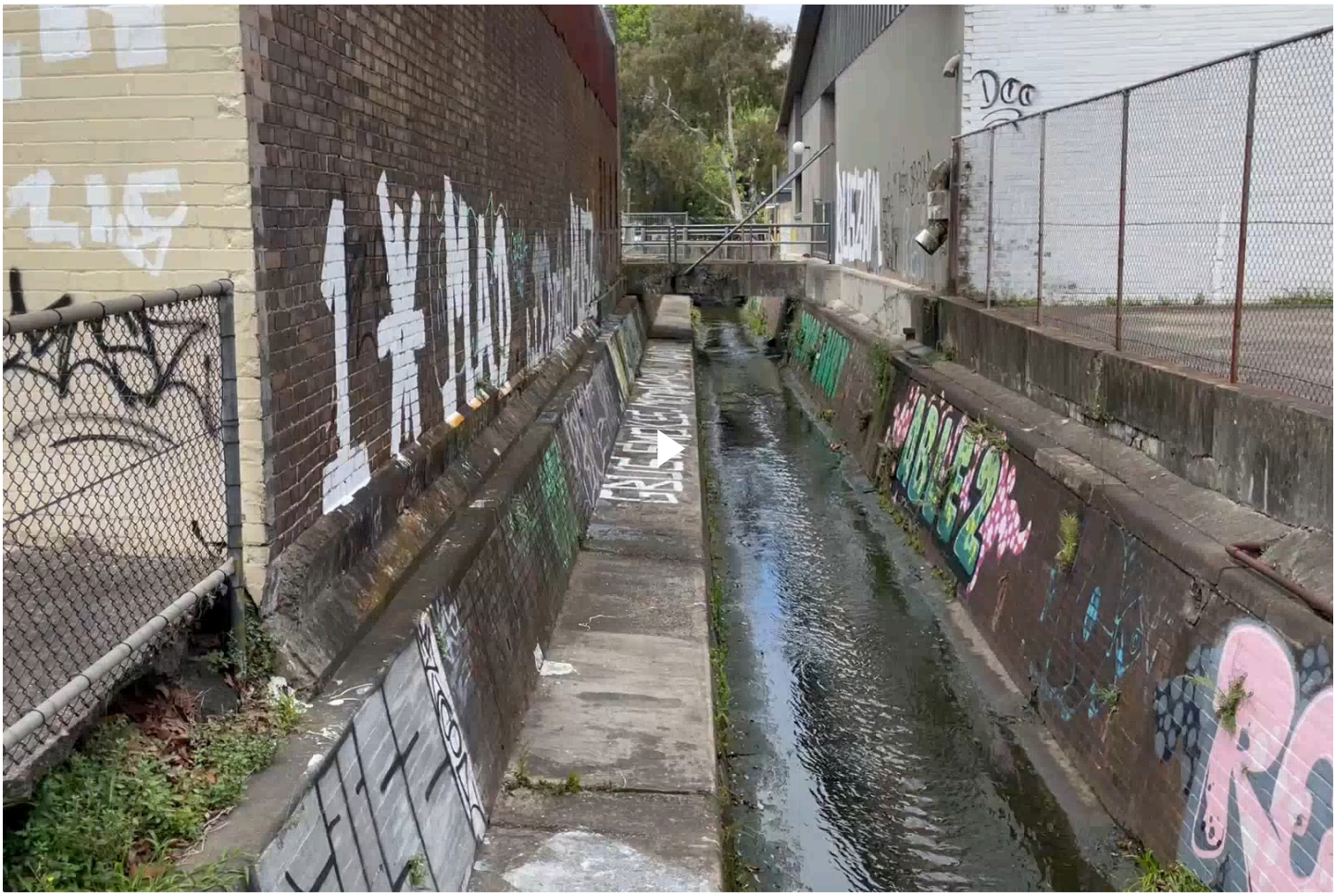
Sydney Morning Herald, Market-Gardens, Tuesday-21-December-1886-p. 11

'Where the Europeans have made vegetable gardening a matter of careful and intelligent study, the Chinese will never successfully compete with them'.

Gunuman Drizzle

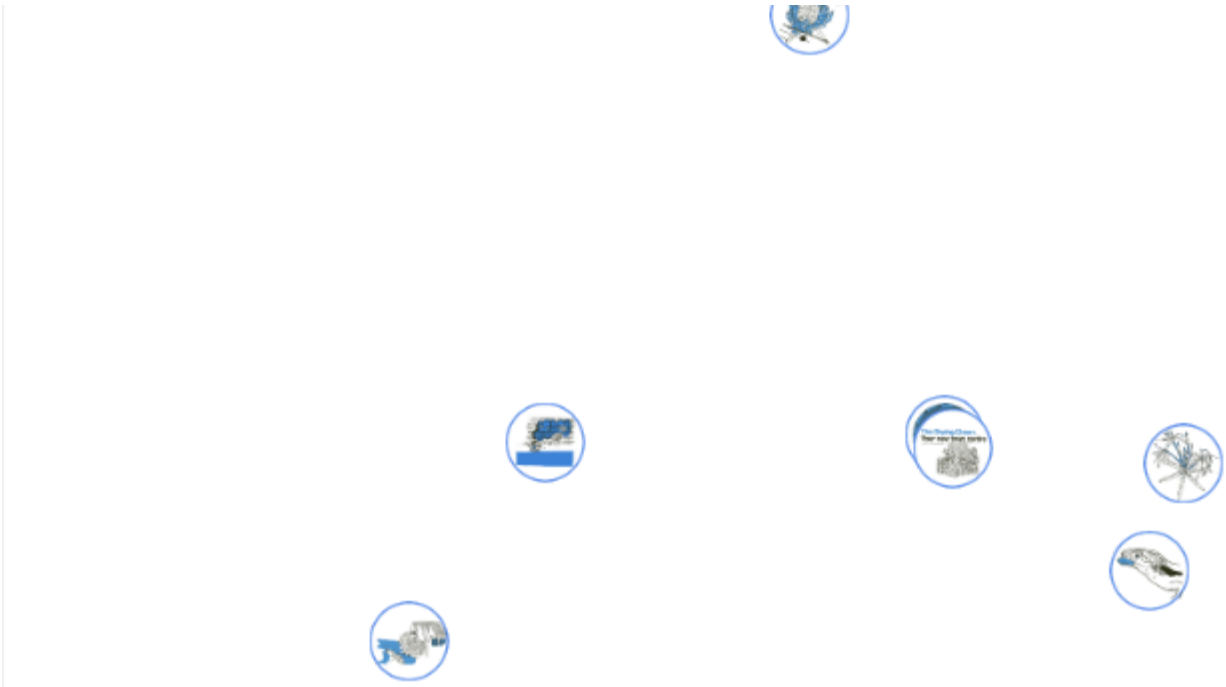
After the market gardens had disappeared, the polluted and depleted ***Sheas Creek*** became drains, cutting through the factories of the noxious trade sites of the Alexandria Parrish.



Burara Moistureless

Today, Sheas Creek collects filtered water from the Green Square ***stormwater drain***.

A small section along its banks has been landscaped, right at the point it becomes the ***Alexandra Canal*.** The creek is recognised as an industrial heritage site.



Where to next?

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Stormwater Drain

Weather and pipes

Green Square sits on a floodplain that used to be a network of wetlands and creeks.

Country provided porous surfaces and natural drainage that connected overflow to the ocean.

Plants such as lomandra, paperbarks and kangaroo grass (which can now be found at ***Kimberley Grove*** and ***Gunyama Park***) provided natural rain gardens that prevented erosion.

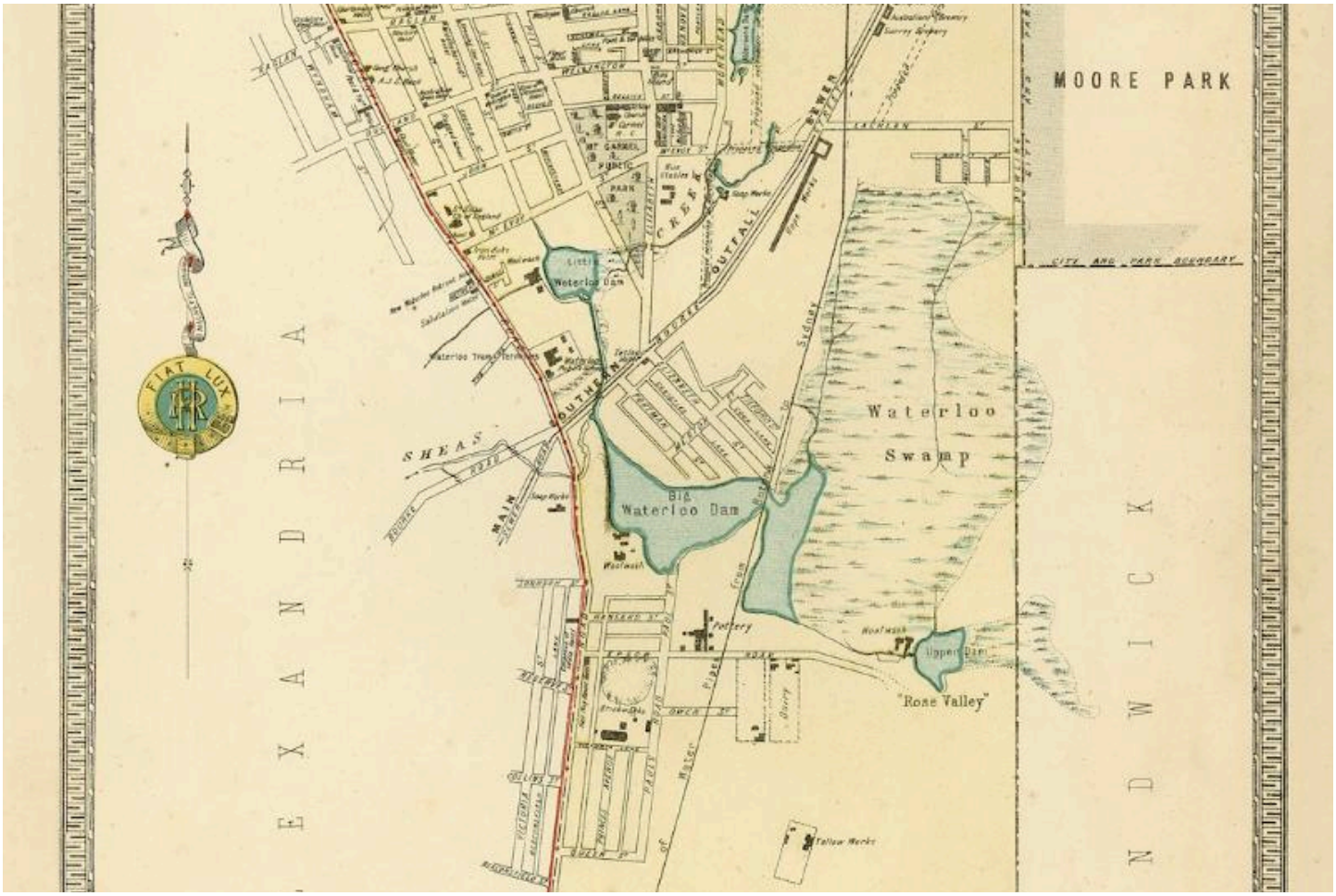
Colonial uses of the land changed the flows of stormwater.

Walan Rain

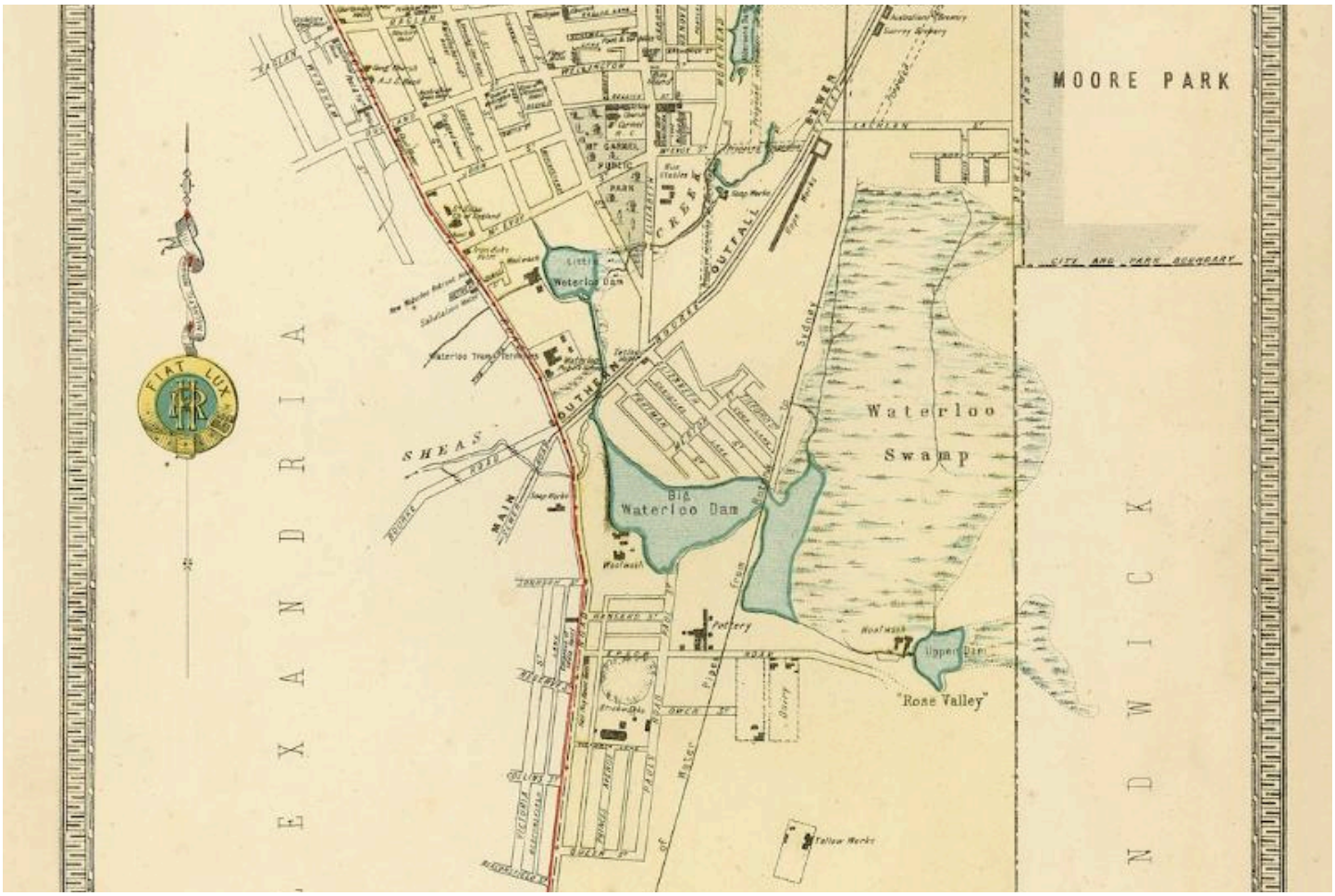
Marshy swamps were drained. Winding streams were straightened. Groundwater was covered over.

In the 20th century, sand dunes were mined for glass manufacturing. This created new artifical ponds.

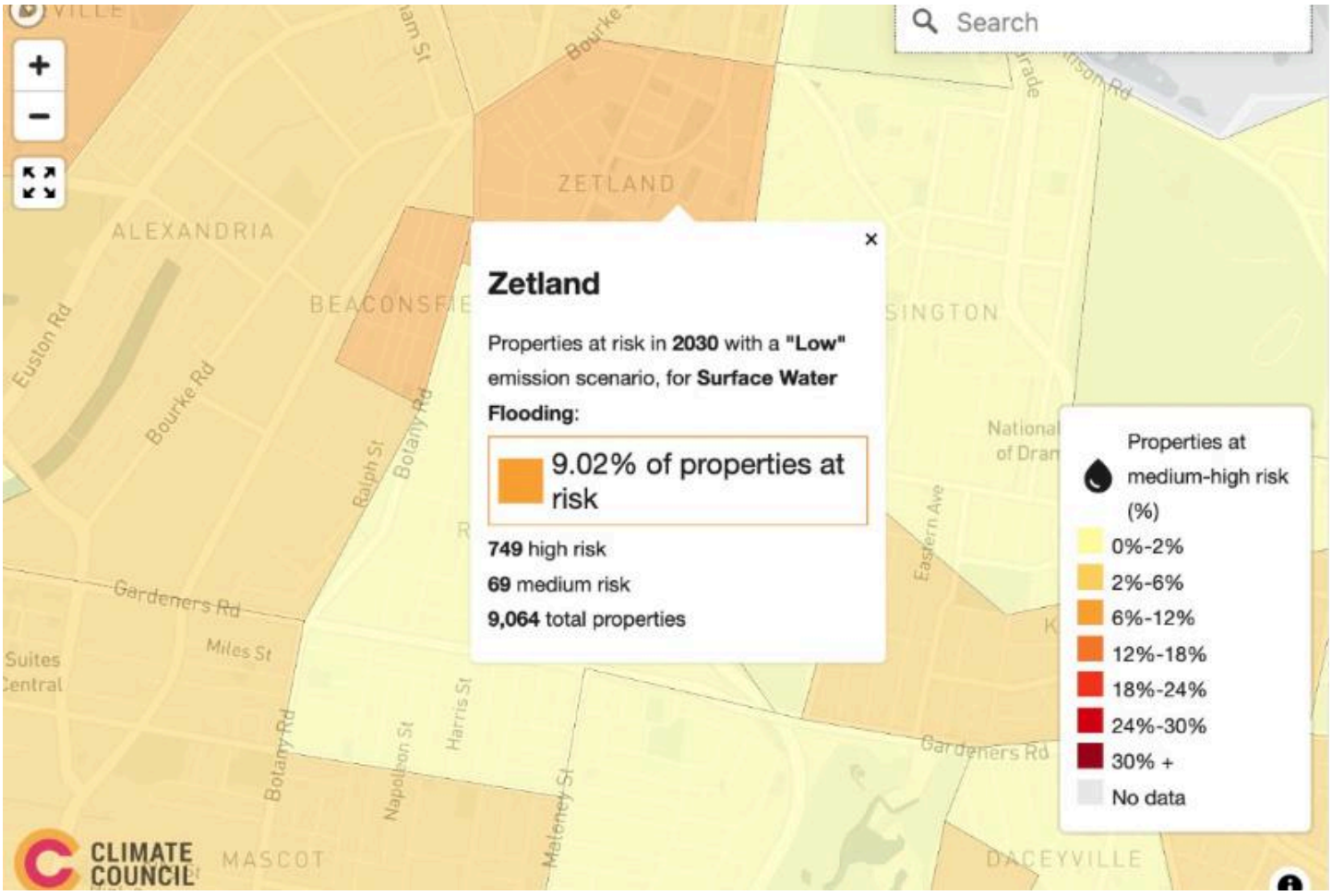
As roads, footpaths and roofs were built, the hard surfaces prevented water from soaking into the soil.



Infrastructure like gutters and drains were built to redirect stormwater during rain and wastewater from residents and industry.



Daragun A small watercourse



According to the *Climate Council Climate Risk Map of Australia*, 749 properties in Zetland will be at risk of surface water flooding by 2030.

Rain gardens have been included in the infrastructure of Green Square.

These gardens are designed to prevent soil erosion and stormwater overflow.

Private gardens, community gardens, verge gardens and shared rain gardens also collect water from hard surfaces, filtering it in preparation for reuse and slowing its release into drains, canals and rivers.

Daragun Stream, watercourse

Rain gardens are usually planted into layers of materials, including sandy soil, stones and recycled crushed glass, that filter out rubbish and retain precious nutrients.

Because the gardens are lowered and layered, they reduce the risk of flooding by slowing the entry of stormwater into the underground drainage system during periods of heavy rain.

Raingardens are also planted with lomandra, dianella and native grasses, and other important native species.

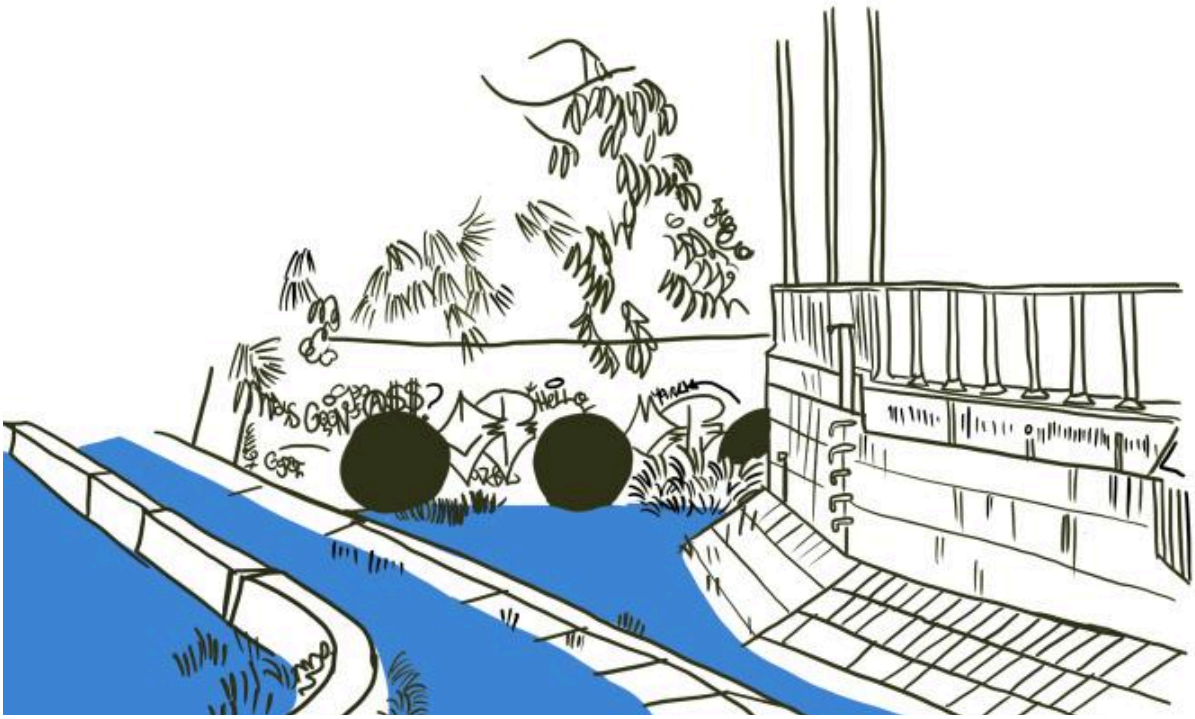
These provide frogs and tadpoles with ***shelter***.

The City of Sydney states that flooding is the 'most complex and critical' of all challenges at Green Square.

Baruk To fill to overflowing

Flooding has always been part of Green Square's history.

During storms in April 2015, floodwaters reached 2.3m in Joynton Avenue.



Through the Green Square town centre, there is a 2.4km underground drain from Epsom Road in Zetland to ***Alexandra Canal***.

This system diverts stormwater to recycled water treatment plant.

This plant delivers up to 320 million litres of recycled stormwater each year to buildings and open spaces in Green Square.

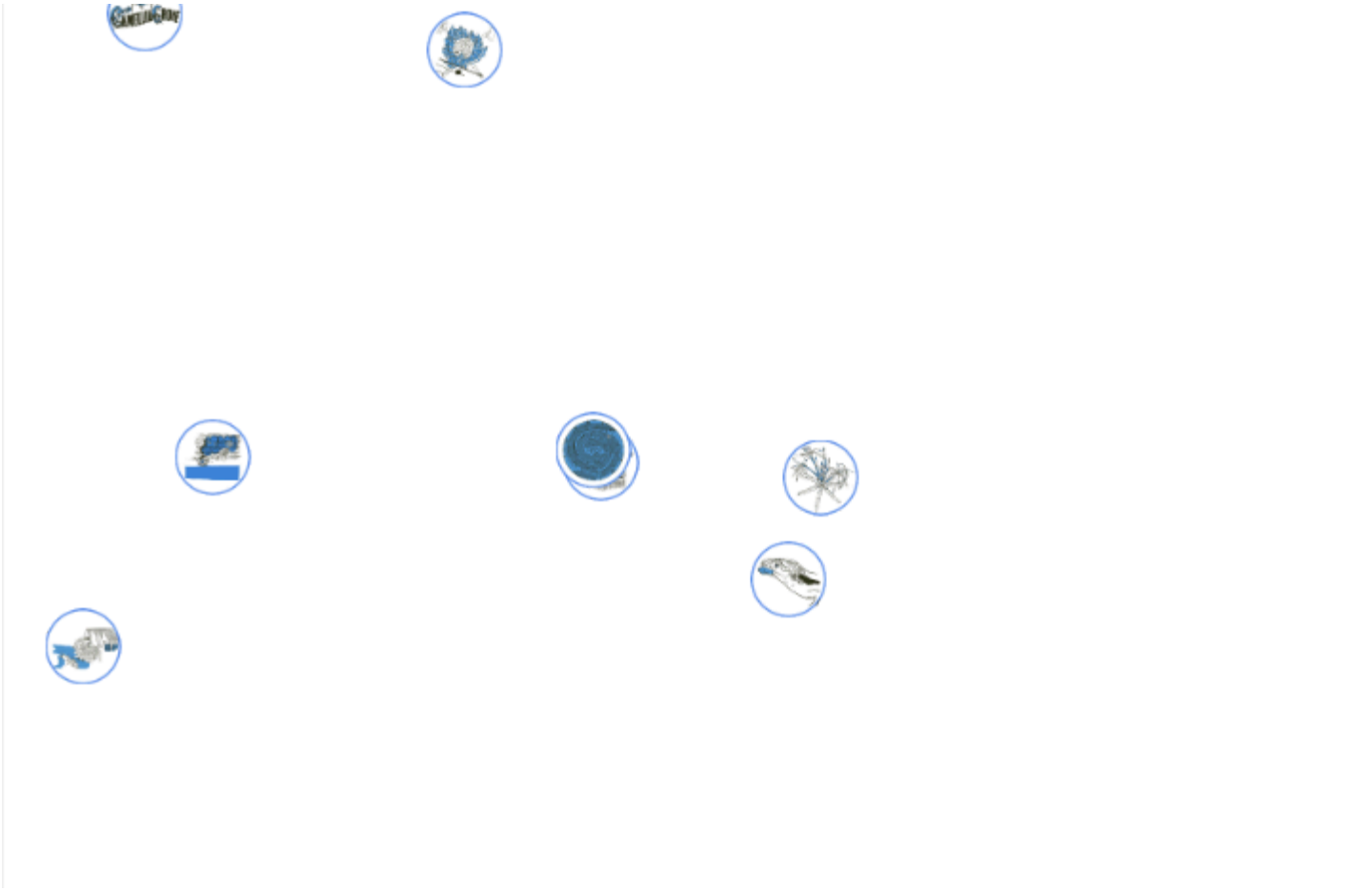
Garagula Low tide

In 2022, Sydney experienced a La Niña year of unprecedented rain. It was the wettest year on record for year-to-April rainfall totals.

When it rains, you can observe the ways water flows at Green Square. Pay attention to infrastructure like rain gardens, underground stormwater channels, canals and drains.

Notice also where water collects, where infrastructure fails, and where there are weaknesses in urban systems. These observations are also water stories.

Where to next?



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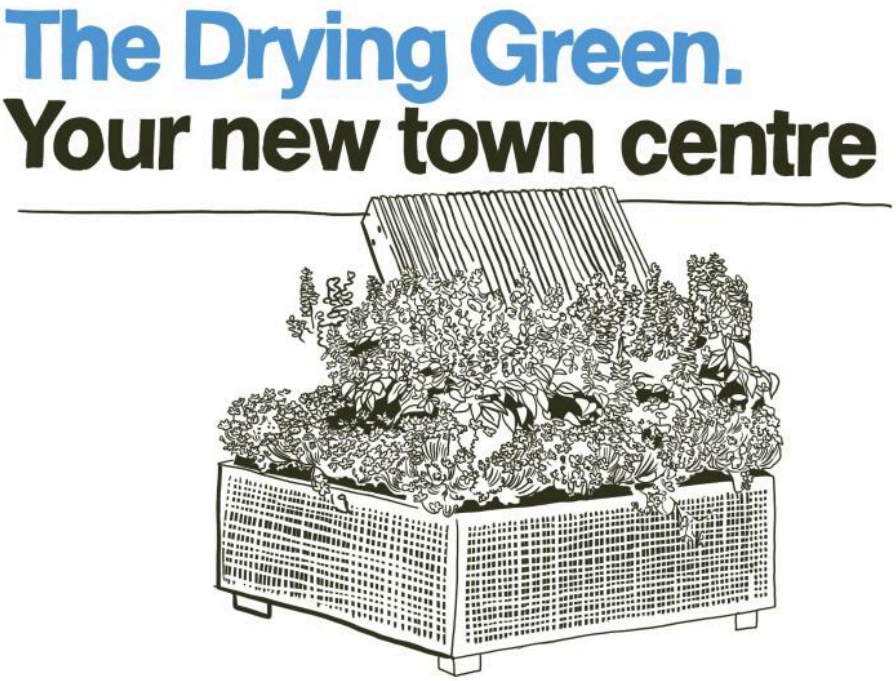


The Drying Green

Wool and stench

Green Square town centre was, at one point, Sydney's industrial heartland.

This is a story of water and progress. In the 19th century, industrial development, nation building and the idea of modernity went hand in hand.

In the settler colonial town of Sydney, developing industries in Green Square meant erasing Indigenous presence; absenting Indigenous ecological, cultural and spatial knowledges; and treating land as *terra nullius*, an empty space belonging to nobody.

Terra nullius finds a counterpart in the idea of *tabula rasa*, a clean slate to be built upon, as Shannon Foster and Jo Kinniburgh explain: ‘Colonial processes of city building in Australia in the past century deployed the neutralising tabula rasa of international modernism, but also prior to that the eradicating colonial practice of *terra nullius*’ (p. 65)

Gami Estuary

The upper dam establishment is bounded by Botany-road on the west, Randwick racecourse on the east, Goodlet and Smith's factory on the south, and Bourke-street, Surry Hills on the north. A magnificent supply of the purest water is secured by a dam, embracing a catchment area, with percolation from Botany-swamps, of about 25 acres in extent, the scenery of the margin of which is pleasantly diversified. By the aid of a steam-engine, colonially manufactured by Mather, of 34 horse-power with a 3ft stroke, making 28 revolutions per minute, giving motion to a powerful centrifugal pump with a

3ft pipe, delivering 16 tons per minute, the water is elevated into a large tank, 30ft long, with a depth and width of 3ft respectively. From thence the water is conveyed along the ceiling of the washing-house,

Australian Town and Country Journal (1877) The Waterloo Mills Woolwashing Establishment. Australian Town and Country Journal, 16 June. Sydney

The beginning of Sydney's industrial history is in this imagined ‘empty’ space, connected by road to the city. It's crucially rich with ***water to power steam engines, and with sand*** and ***clay*** ready to be extracted.

The upper dam establishment is bounded by Botany-road on the west, Randwick racecourse on the east, Goodlet and Smith's factory on the south, and Bourke-street, Surry Hills on the north. A magnificent supply of the purest water is secured by a dam, embracing a catchment area, with percolation from Botany-swamps, of about 25 acres in extent, the scenery of the margin of which is pleasantly diversified. By the aid of a steam-engine, colonially manufactured by Mather, of 34 horse-power with a 3ft stroke, making 28 revolutions per minute, giving motion to a powerful centrifugal pump with a

3ft pipe, delivering 16 tons per minute, the water is elevated into a large tank, 80ft long, with a depth and width of 3ft respectively. From thence the water is conveyed along the ceiling of the washing-house,

Australian Town and Country Journal (1877) The Waterloo Mills Woolwashing Establishment. Australian Town and Country Journal, 16 June. Sydney

The first wheat mill in Green Square, The Lachlan and Waterloo Mills, was built in the 1820s. By 1827, it had been converted into a woollen mill as wool became the driving resource in the colony.

Dams were built to harness wetlands and creeks.

Dyiral Shallow water

The Hinchcliffe Waterloo Mills Woolwashing Establishment was located on one of the dams in Waterloo.

Woolwashing industries were built around ***Sheas Creek*** and the wetlands down to Botany.

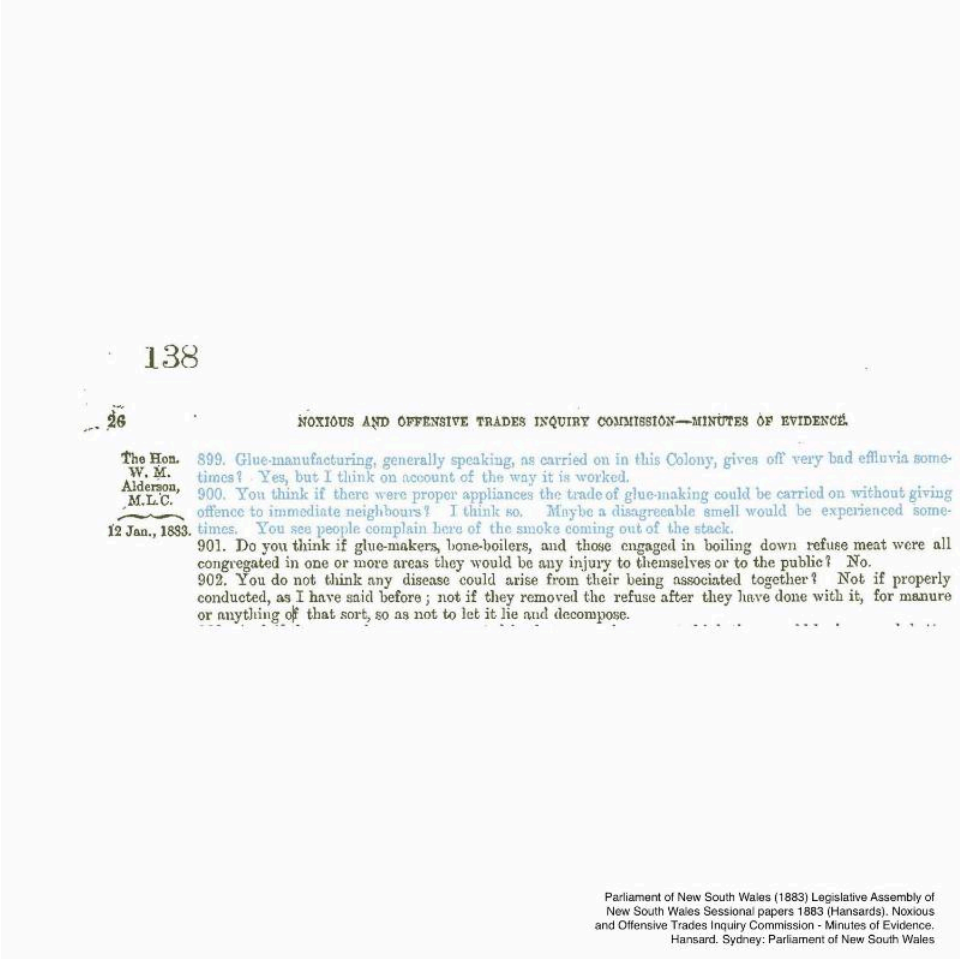
Wool was sorted, soaked in water heated by steam and washed with a chemical-free soap that was gentle on the fibres. It was scoured by washers and carried in baskets to the Drying Green where it was left in the sun.

Samuel Elyard 1862-1873 Wool washing estate in Botany, State Library of New South Wales

Next, the wool was weighed, packed, and transported to be shipped.

Today, Sydney's woolwashing history is celebrated by the public park, The Drying Green.

But it was not just soft white fleece drying in the sun.



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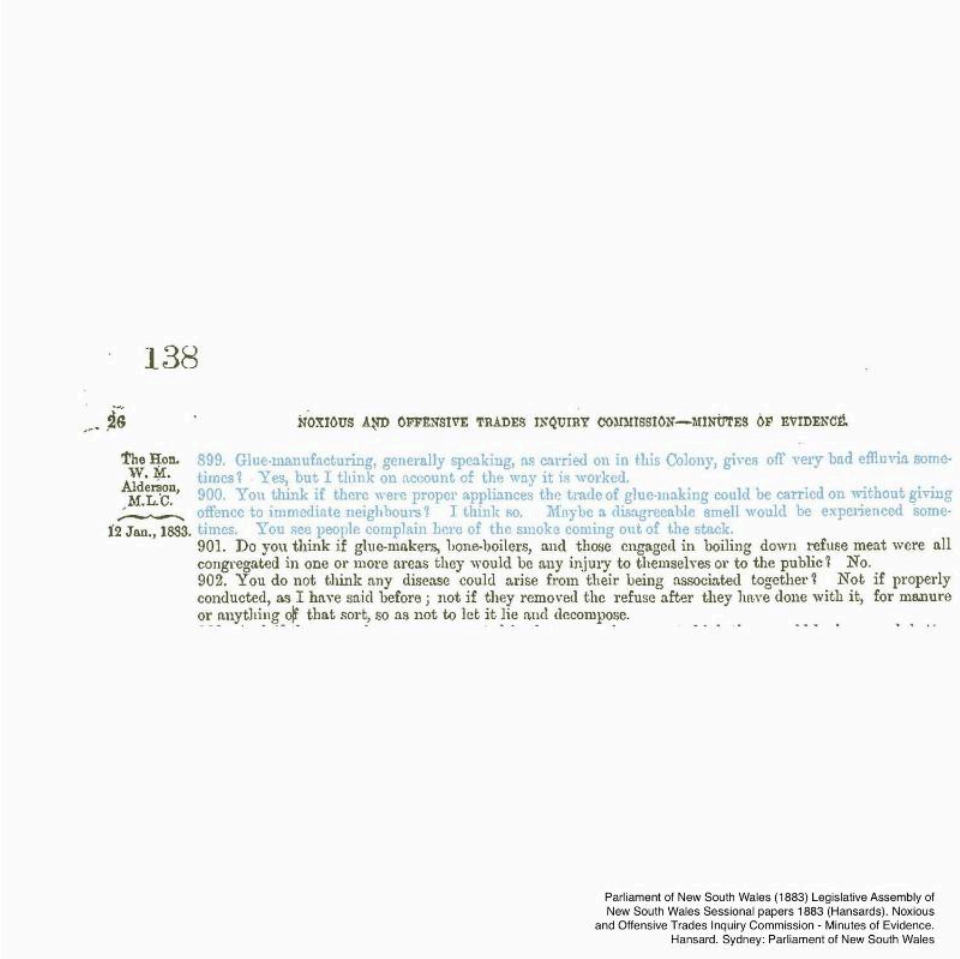
26 NOXIOUS AND OFFENSIVE TRADES INQUIRY COMMISSION—MINUTES OF EVIDENCE.

The Hon. W. M. Alderson, M.L.C. 12 Jan., 1883.

899. Glue-manufacturing, generally speaking, as carried on in this Colony, gives off very bad effluvia sometimes? Yes, but I think on account of the way it is worked.
900. You think if there were proper appliances the trade of glue-making could be carried on without giving offence to immediate neighbours? I think so. Maybe a disagreeable smell would be experienced sometimes. You see people complain here of the smoke coming out of the stack.
901. Do you think if glue-makers, bone-boilers, and those engaged in boiling down refuse meat were all congregated in one or more areas they would be any injury to themselves or to the public? No.
902. You do not think any disease could arise from their being associated together? Not if properly conducted, as I have said before; not if they removed the refuse after they have done with it, for manure or anything of that sort, so as not to let it lie and decompose.

Parliament of New South Wales (1883) Legislative Assembly of New South Wales Sessional papers 1883 (Hansards). Noxious and Offensive Trades Inquiry Commission - Minutes of Evidence. Hansard. Sydney: Parliament of New South Wales

Woolwashing was a noxious trade, one of many that soon multiplied in the area.



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By the end of 19th century, tanneries, boiling down and tallow, glue and soap manufacturing had polluted creeks and drenched the soil in a foul ‘soup’, creating a misty miasma that rose over the landscape.

'There were outbreaks of diseases such as cholera and typhoid with growing frequency and social impact. At the time, the prevailing miasmic theory was that disease was caused by the foul smell emanating from open drains and marshes – that is, the smell was actually the disease itself, rather than its by-product.' (Hector, p. 10)

Ngadyung Water

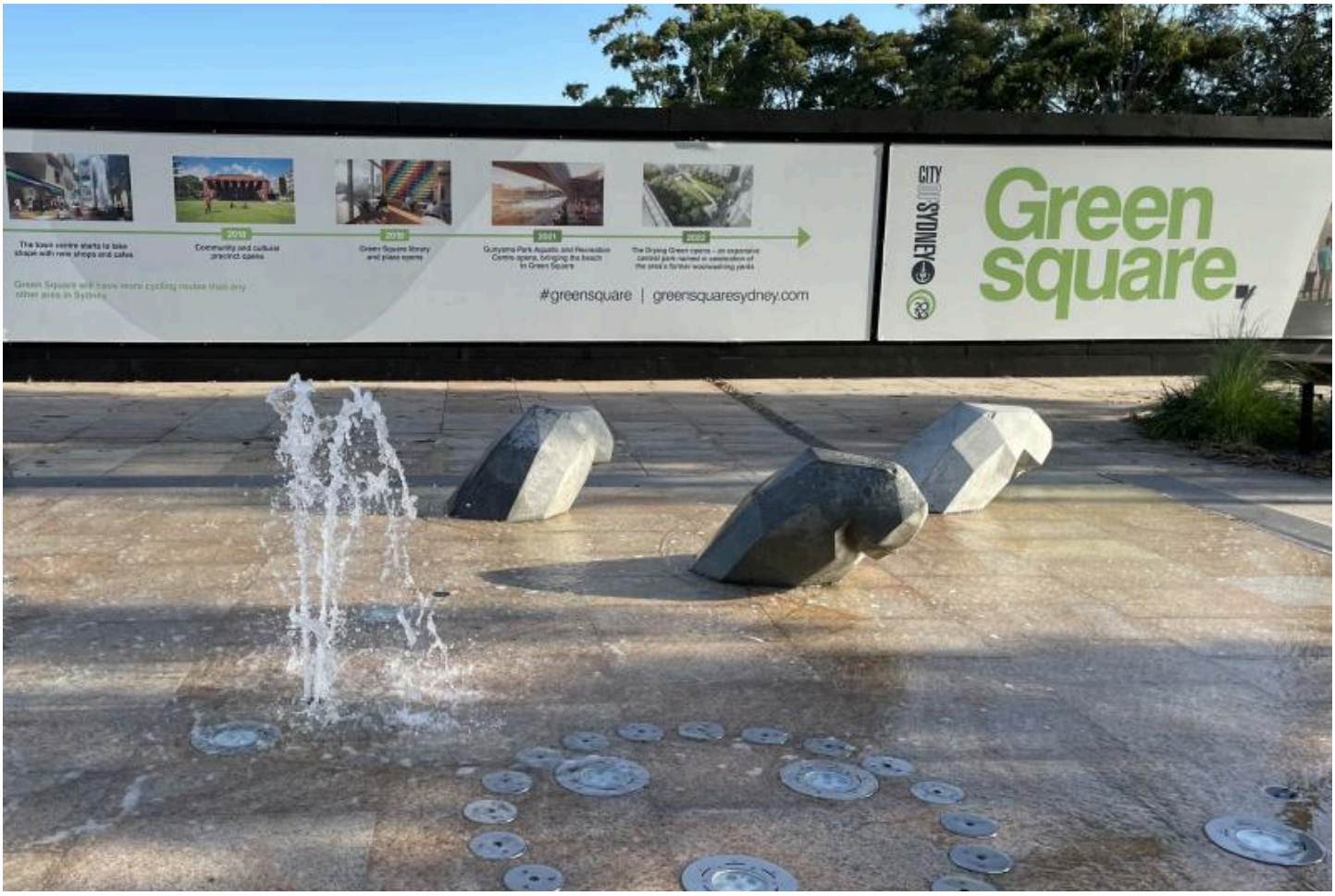
The area became known for its foul smell, drawing so many complaints from residents, mostly working class and living in Redfern, Waterloo and Alexandria, that in 1883 there was a Royal Commission into noxious trades.

It revealed that sewage and the refuse from multiple factories clumped together from dam to dam until it was discharged into ***Sheas Creek*** and, finally, into Botany Bay.

These trades continued well into the 1900s. By mid-century, the conditions they created had been sanitised and the damage of industry was less visible. Water disappeared from the landscape, drained in concrete channels underground.

The 1950s also marked the beginning of decline of industry in the Sydney city.

Miluni A natural earth material used as medicine



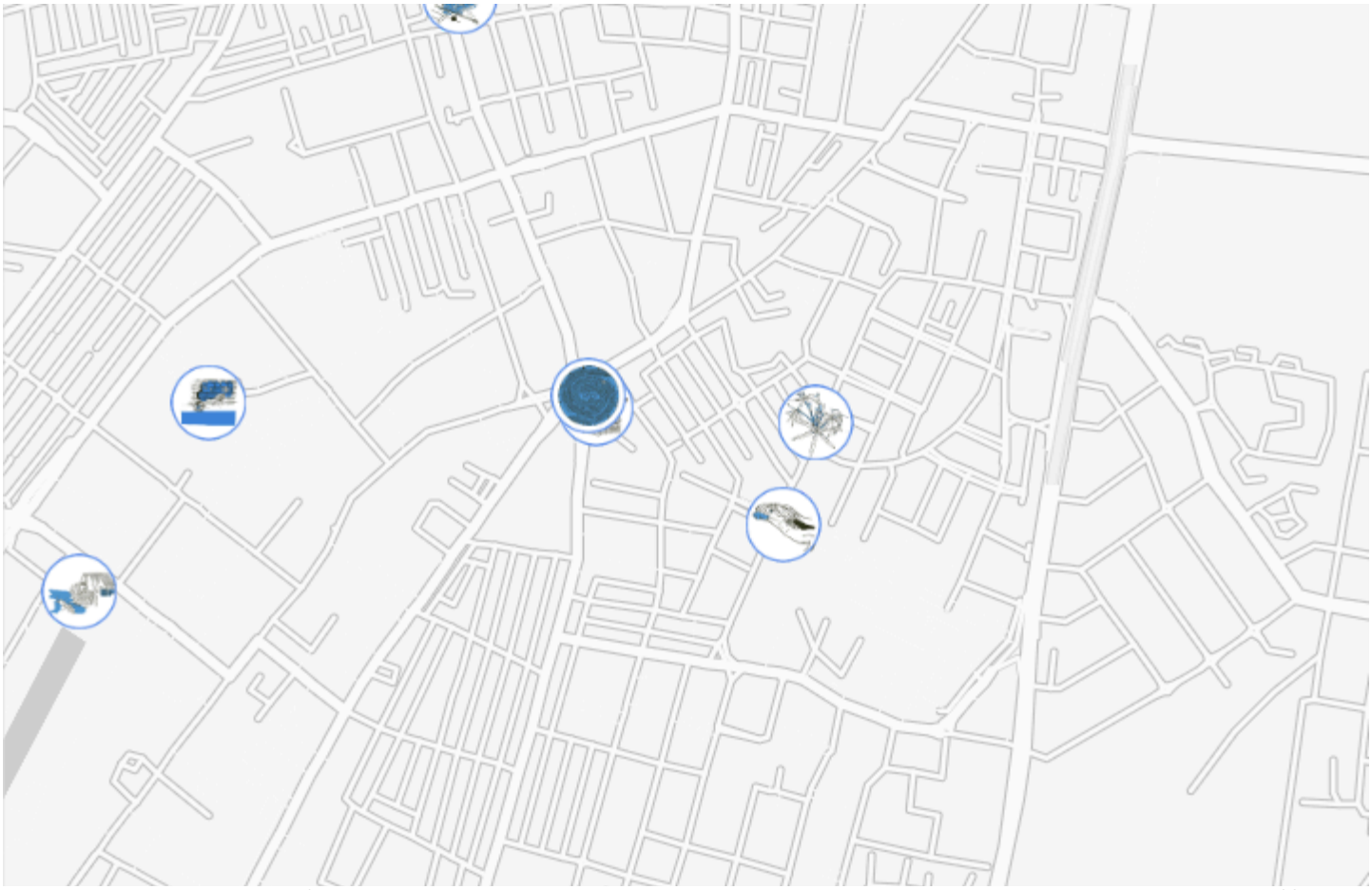
In the 1970s, many industries started to leave Green Square.

Because of its proximity to the city and transport corridors, Green Square became an area of urban renewal, transformed again into a blank slate of opportunity.

In *Histories of Green Square,* Grace Karskens points out the moment this occurred: ‘In a recent public lecture, "developer extraordinaire" Phillip Bartlett, described Green Square as "the void, the vacuum, and where there’s a vacuum something will actually happen"' (p.10).

Water, now out of sight and safely channelled in rain gardens and the stormwater drains, resurfaces in public artworks, and fountains, referencing the area's past histories of ***creeks, wetlands and even dugongs.***

Where to next?



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Woolwash Park

Wetlands and mills

Green Square is built on a system of sand dunes and wetlands. These were formed when windblown sand was deposited in the natural depression of the Botany Basin.

Fresh water flowed in rivers, creeks, ephemeral ponds and swamps from the Paddington ridge to the Cooks River and Botany Bay.

It supported forests of casuarinas, banksias, swamp mahogany, paperbarks and a dense scrub, sustaining humans and other animals for millennia.

Woolwash Park recreates the wetlands that nourished life in this area. A pond, and, when it rains, the mud bank on one side, are home to sedges and swamp lilies.

Garrigarrang Sea, beyond the breaking waves

The Boonagh (D'harawal eora), or Gurrundurrung (common Sydney language), also known as the paperbark, or *Melaleuca quinquenervia*, are native to the area.

When they bloom, their flowers smell like honey and mix with the earthy scent of their bark. Lorikeets love them.

Shannon Foster and Jo Kinniburgh from Bangawarra write:

‘The paperbark has whitish papery bark that looks like many fine sheets of tissue paper stuck together. Trees from the *Melaleuca* family have aromatic oils in their leaves, which in some cases are used commercially.'

'Paperbark is used for many different purposes including to wrap newborns, as a cover for cuts and sores. The powdery dust found between the layers of the bark is a highly effective antiseptic that helps wounds heal.'

This fragment of wetlands, reclaimed as part of Green Square's urban renewal, shows a shift towards the understanding and recognition of Aboriginal knowledges and the importance of urban ecologies in city planning.

Creating diverse and resilient ecosystems, such as urban wetlands or revegetation of the Eastern Suburbs Banksia Scrub in places like ***Gunyama Park***, develops liveable and lovable cities for humans and other inhabitants.

Nadyung'kamira Waterhole

This was not always the case. Early settlers associated swamps with disease and saw them as wastelands rather than wetlands.

Writer Tom Lee reminds us that wetlands were not accessible to European ideas of inhabitable landscape.

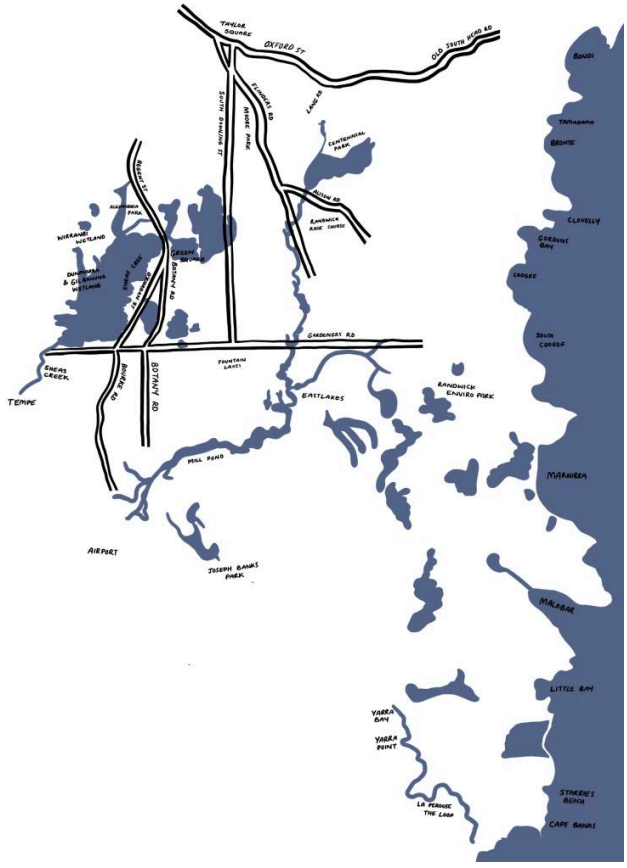
'Luxuriant swamplands such as these display a kind of vegetative and animal abundance that European settlers regarded with mixed feelings. Their life-filled quality did not seem readily adaptable to human needs and desires. Accounts from the early days of settlement testify to this ambivalence.'

But there were exceptions.

Thomas Woore (1804–1878), a naval officer, surveyor and pastoralist, first arrived in Sydney in 1829 and set out to find the place in Botany Bay where French naval officer and explorer La Perouse had landed in 1788.

He described an attempted first trip from Sydney Cove to Botany Bay. ‘There was then only one path between those places, which wound about over the sandhills’, he wrote.

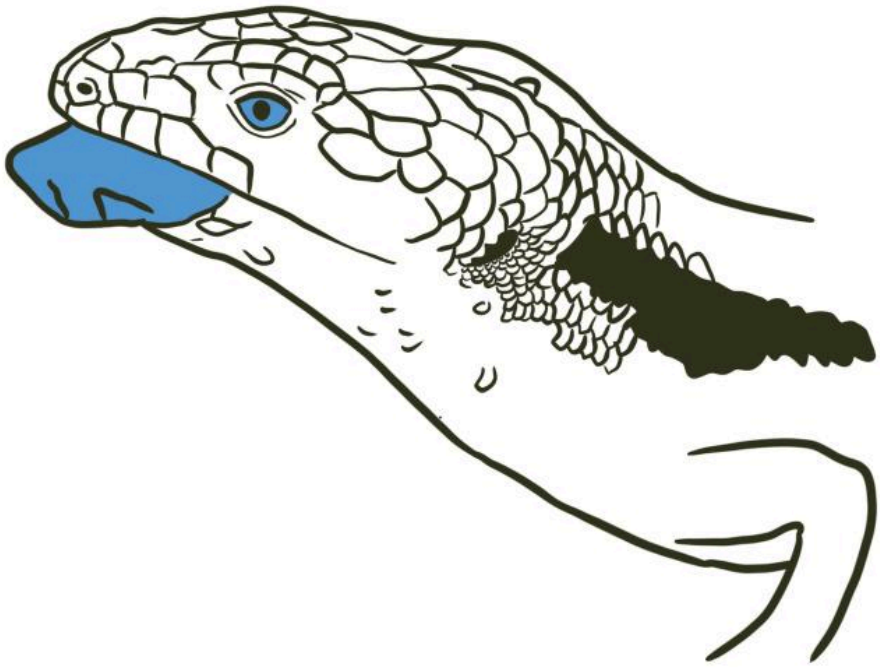
Keeping the wetlands on the left, Woore ventured down the path but could not reach Botany Bay.



He wrote again on his subsequent visits in 1833 and 1834:

'We were disappointed in this, not being able to cross a stream that ran out of the swamps into the bay, although we were on horseback. This, I apprehend, was where the present pumping works now are. It had been somewhat swollen by late rain, but there was evidence of a copious stream at all times.

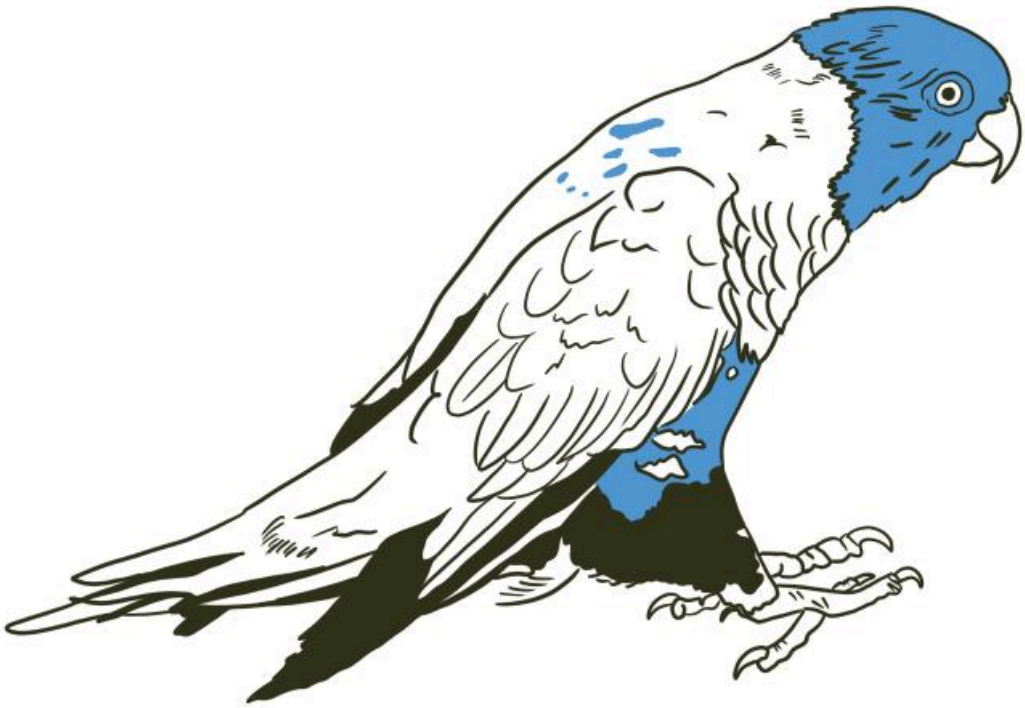
'Much stunted timber and some large trees were at that time growing on the sand slopes in sheltered hollows, and the whole was covered with a thick coat of brushwood, that effectually prevented the sun's rays and hot winds from penetrating to the surface.'



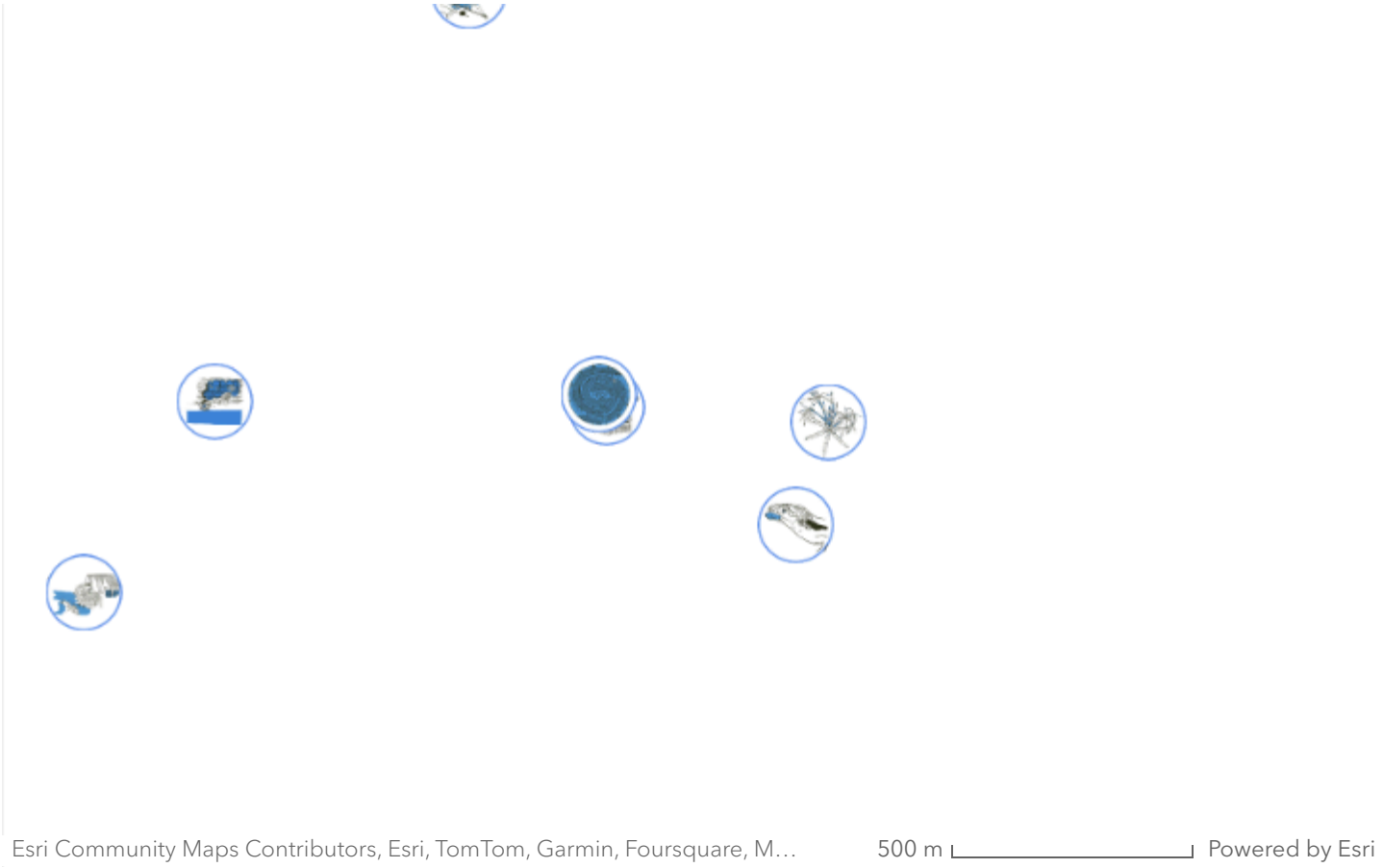
'I have now many specimens of *Utricularia* and other plants of a similar nature we collected there, that can only exist in quagmires, and a sketch of the Waterloo Mills, I then made, which shows the building standing on the verge of an extensive marsh.'

Woore's testimony is part of a report he made to Legislative Assembly in 1869 on Sydney's water supply, and the environmental degradation of the wetlands – 'the wanton waste' that in 40 years had transformed a botanical paradise of aquatic plants into barren sand hills.

Waterloo Mills, the first establishment on the wetlands, was built as a wheat mill in 1820. By 1827, the mill had become a wool processing establishment: the water from the wetlands became the primary resource for woolwashing. Woolwash Park which lives on in Green Square today, alludes to this history, as does ***The Drying Green***.



Where to next?



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