Western Treatment Plant

Flushed with Success - History of the Metropolitan Farm and Treatment Works

Paul Balassone
Austen Graham

30 November 2020

VICTORIA State Government

wyndhamcity city. coast. country

Melbourne Water
Enhancing Life and Liveability

Outline

CONTEXT

1. History
2. Operations

Cultural Heritage Management

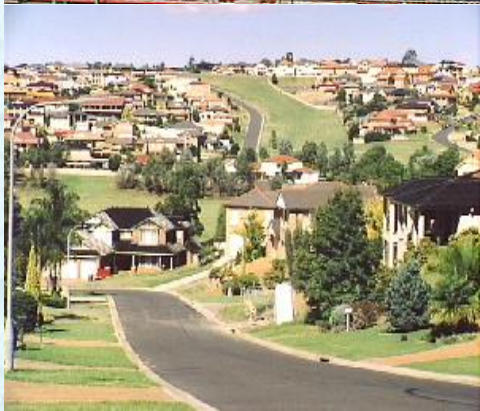
3. Team Functions
4. Heritage Features

Western Treatment Plant – Operational Context

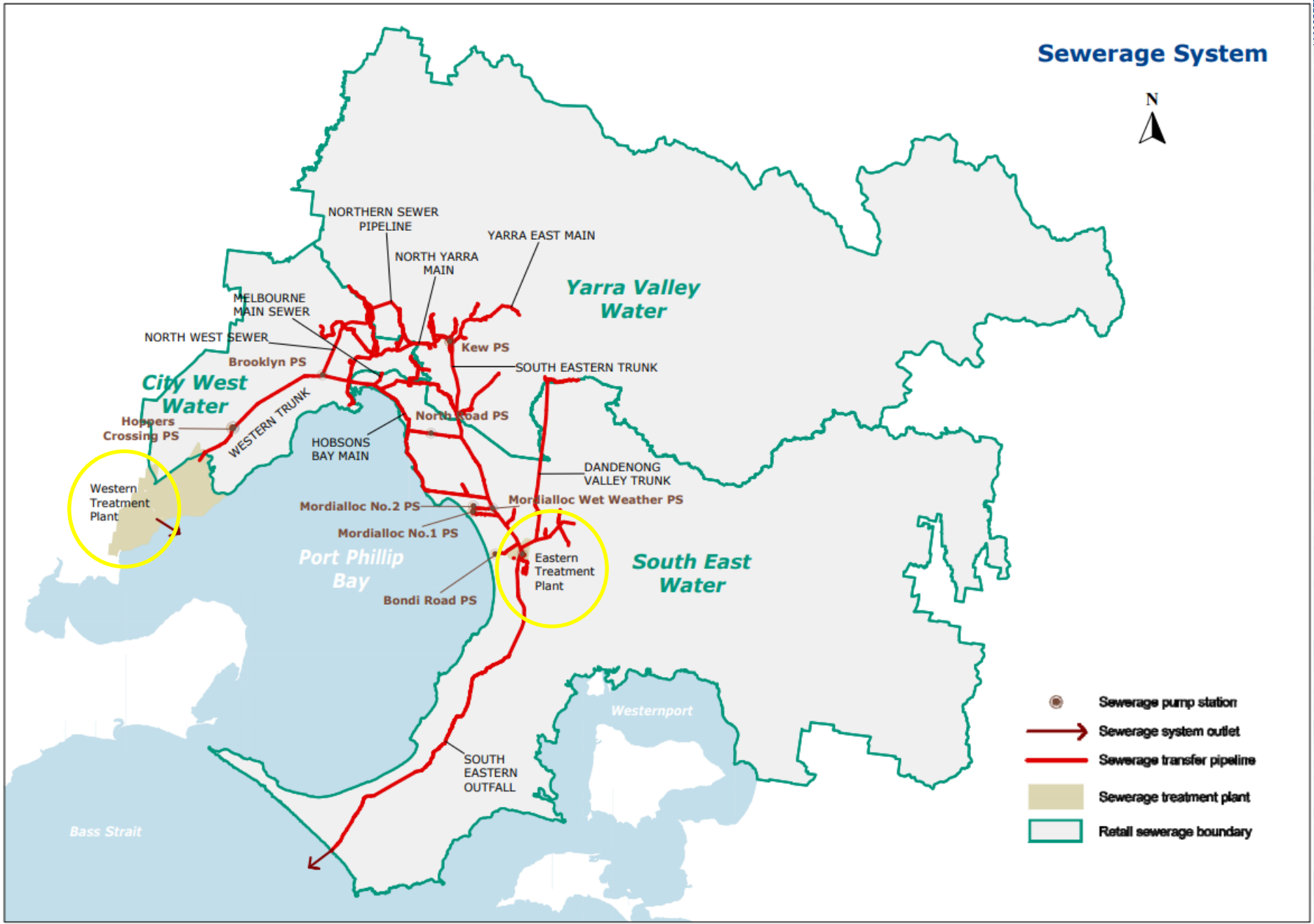
- Melbourne Water's Western Treatment Plant (WTP) is a vast site covering some 11,000 hectares which includes sophisticated plant and machinery to treat sewage and supply recycled water.

- Operations
  - Sewage Treatment & Water Recycling
  - Livestock and Agriculture
  - Conservation

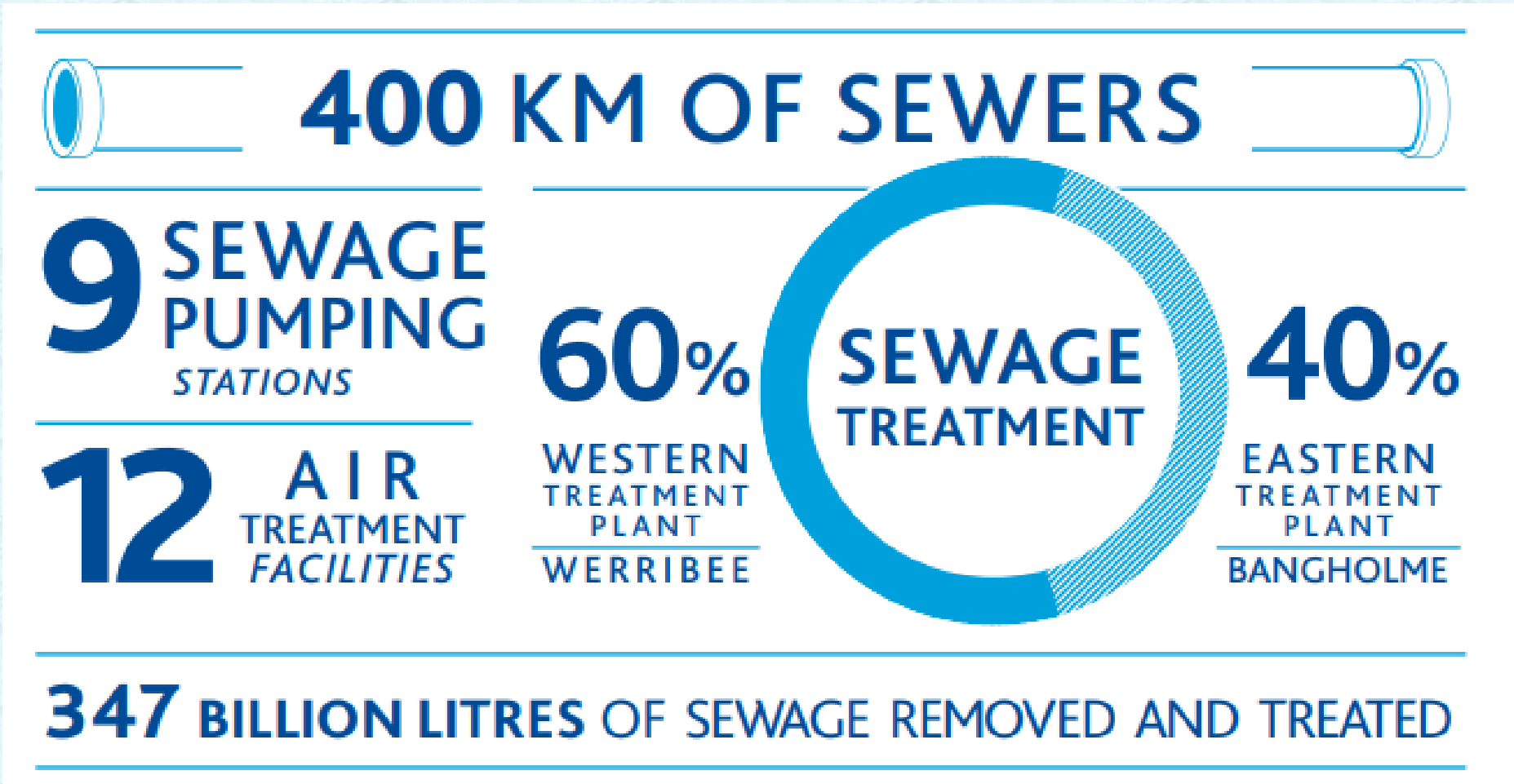
- Some Statistics
  - Treats 500,000,000 Litres per Day
  - Serves 2,000,000 Households
  - 25-30 Days of treatment

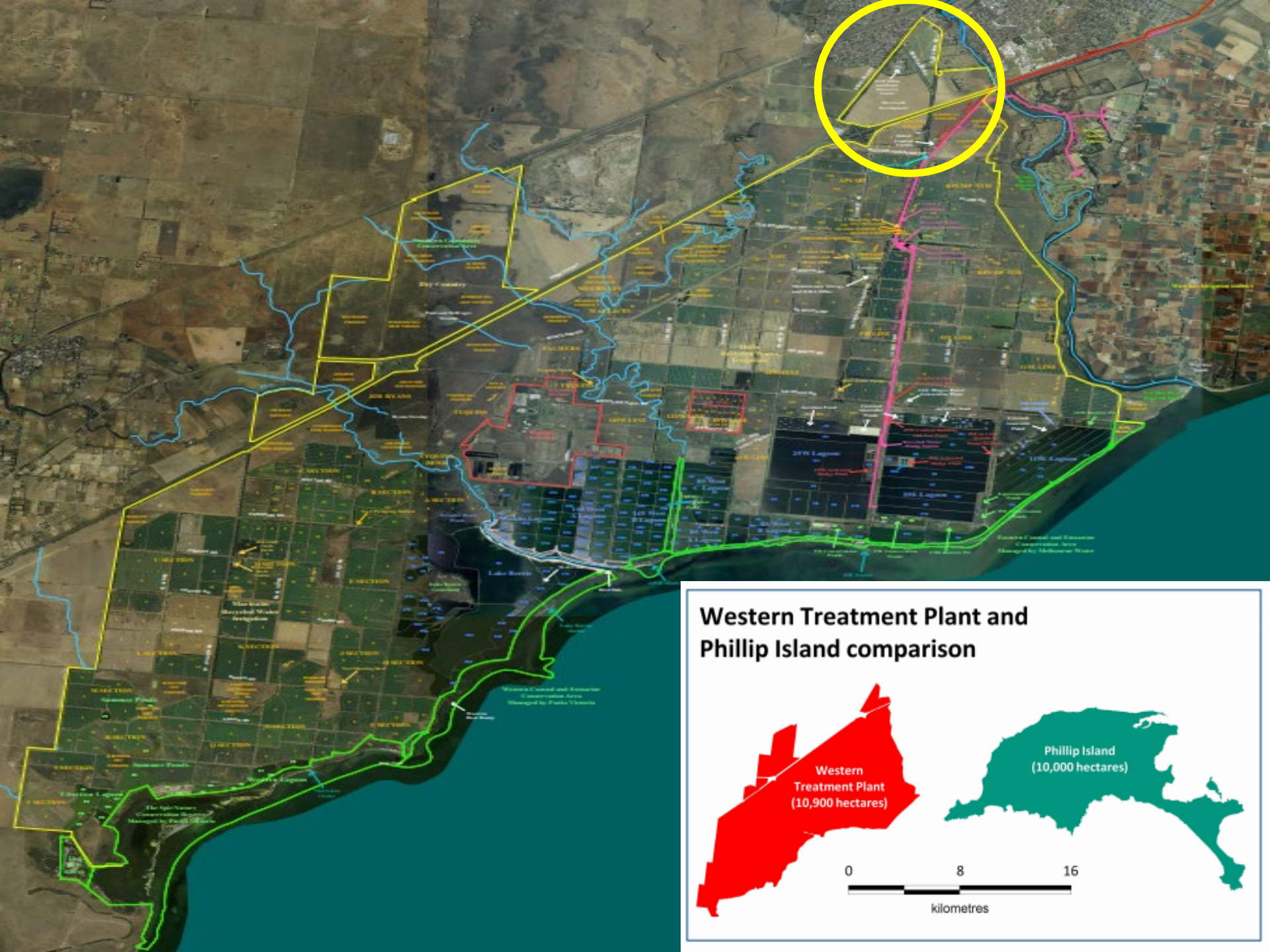


Operational Context



Operational Context

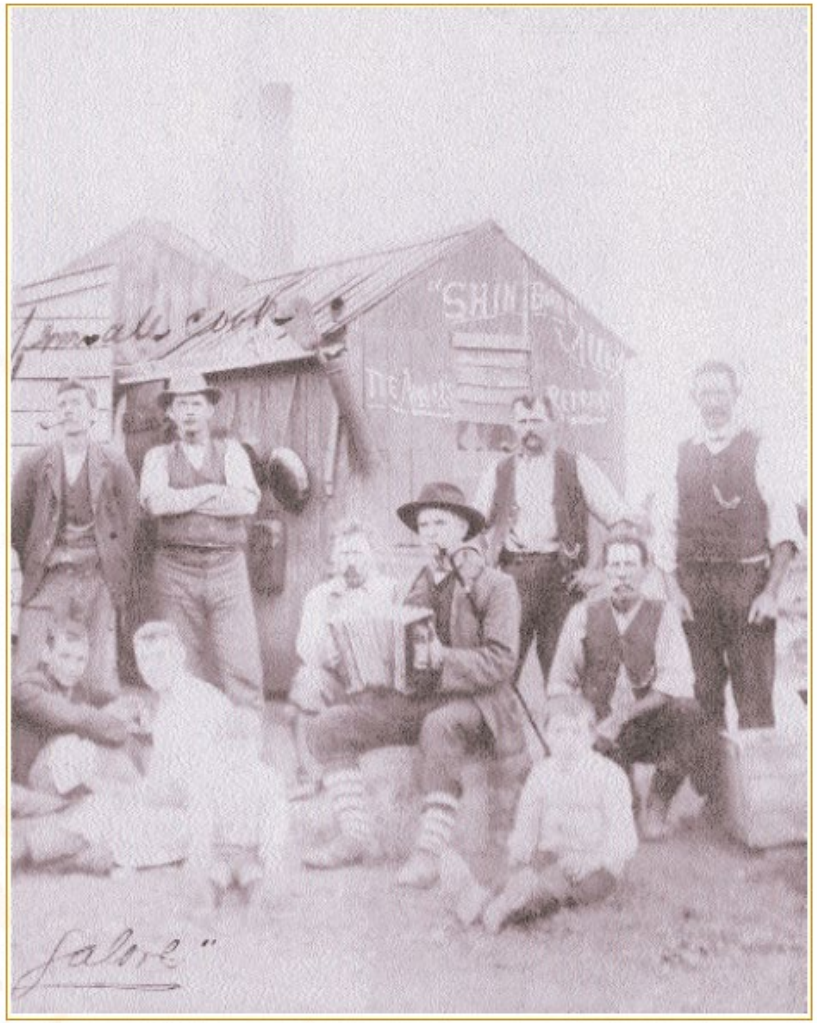



Western Treatment Plant and
Phillip Island comparison
Western
Treatment Plant
(10,900 hectares)
Phillip Island
(10,000 hectares)
0
8
16
kilometres

Historical Context

Melbourne Water
Enhancing Life and Liveability

Werribee Farm: a history, 1892–2000



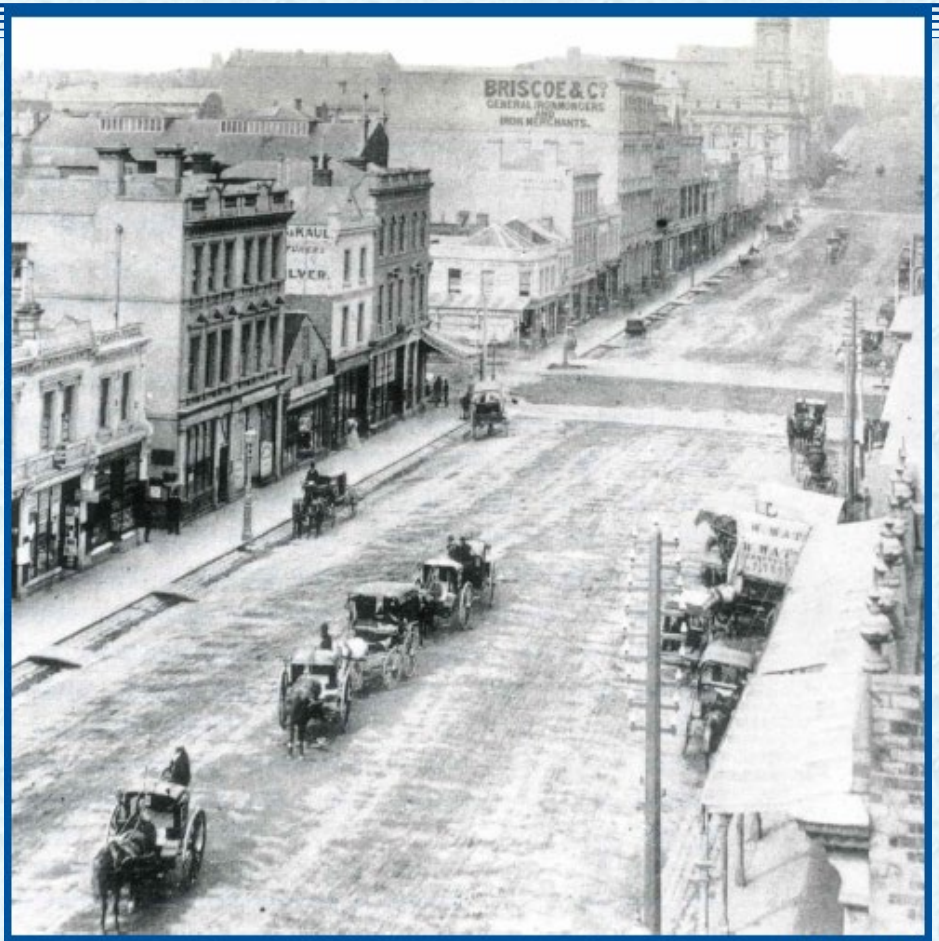
Marvellous Smellbourne: Affluent to Effluent

Street

A BAD SMELL.

"What a bad smell!" said Carey to his fellow-workman, as they came up the right-of-way on their road home after the day's work was done.

The Birth of the Sewerage System



Collins Street

Most waste water from houses and businesses would simply drain into street channels formed at either side of most streets, which were usually lined with bluestone pitchers.

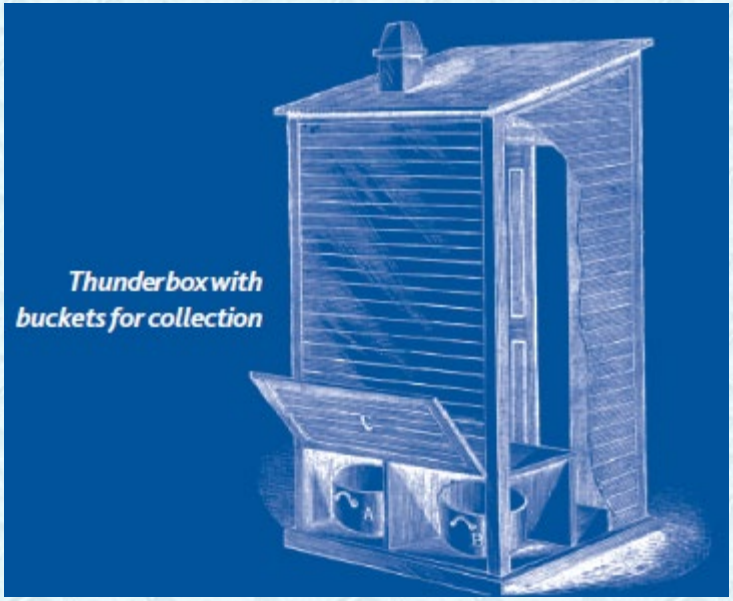
Usually, bridges or gratings would span the drains to allow pedestrians to cross them safely.

Most street channels never went underground. They discharged instead into nearby watercourses and in turn, into the Yarra. The natural watercourses became open sewers.

Early systems

Pit Toilets

Seat over a hole dug in the ground! The most important part of building a pit toilet was to make sure that you had a lid to keep the smells in and the flies out. When the hole was full, all you had to do was dig another one – the deeper the better!



Thunderboxes

Before the 1890s, a toilet was a bucket or pan in a wooden shed. This is commonly known as a pan closet toilet or a thunderbox

Because the wastes stayed in a pan for up to a week, thunderboxes were very smelly. They were built as far from the house as possible and usually backed on to a lane.

Early systems

Thunderboxes were emptied about once a week by a nightman (so called because he collected the pans at night).

The waste, called nightsoil was carted to an area outside Melbourne where it was often used as fertiliser by market gardeners.

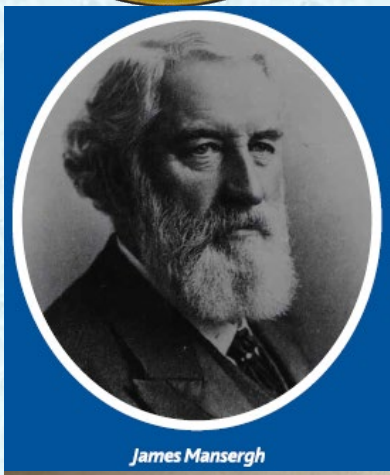
Source: Wikipedia

History – The Birth of the Sewerage System

1880s

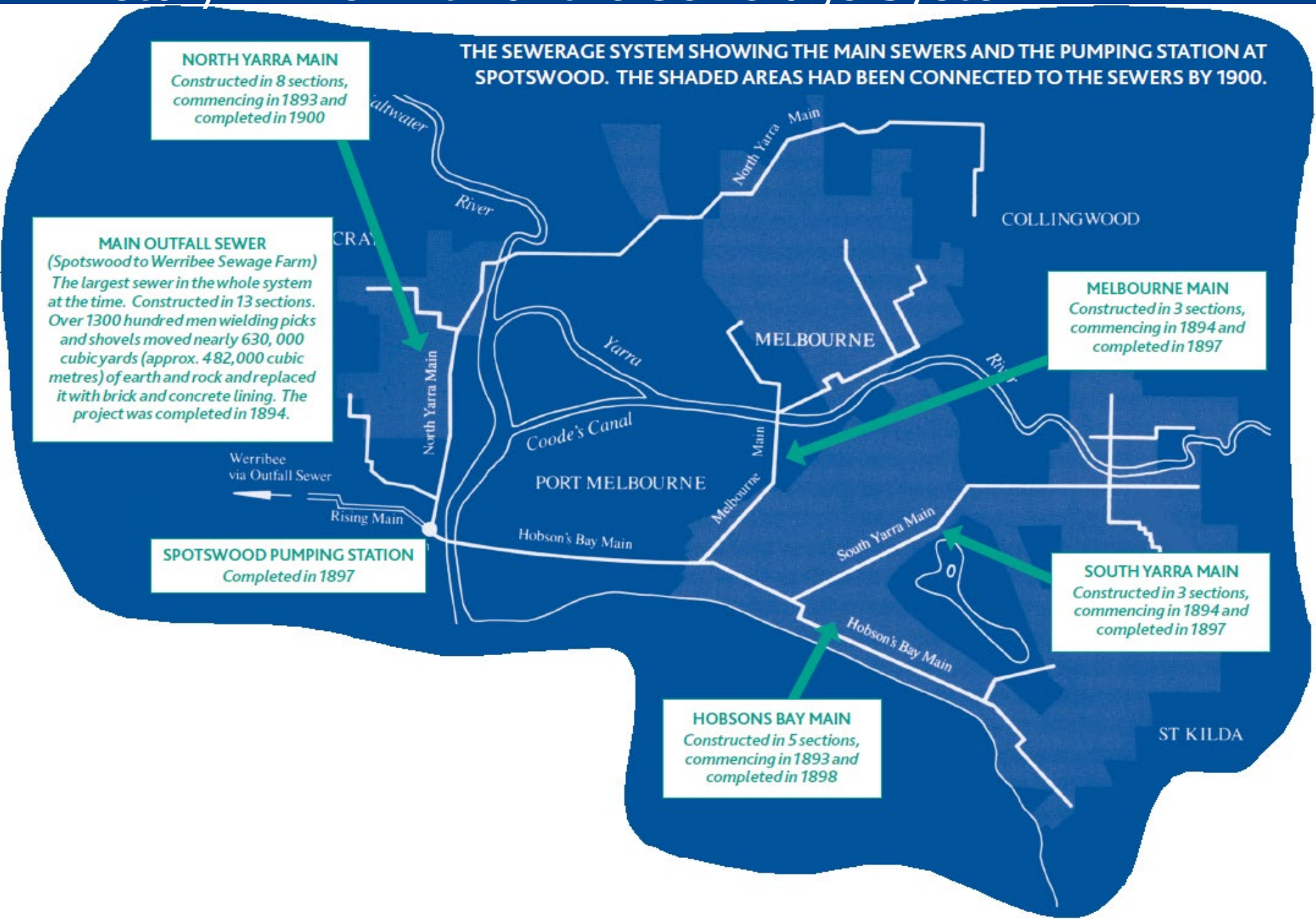
- Cholera outbreak ('Smellbourne')
- Royal Commission into Melbourne's Public Health (1888)
- Melbourne and Metropolitan Board of Works (MMBW) established (1891)

- English consultant James Mansergh engaged – ably assisted by William Thwaites



James Mansergh

History – The Birth of the Sewerage System



History – The Birth of the Sewerage System

1892

9th May Lord Hopetoun, Governor of Victoria turns 1st sod in Main Outfall Sewer, Werribee.

Lord Hopetoun turns the first sod on the Main Outfall Sewer, May 1892

Tunnel shield in compressed air under Port Melbourne. Hobson's Bay Main - 1893

1. Reticulation system
2. Spotswood Pumping Station
3. Main Outfall Sewer
4. Western Treatment Plant

1897

Spotswood Pumping Station Completed.

Spotswood Pumping Station

History – Comparative Analysis

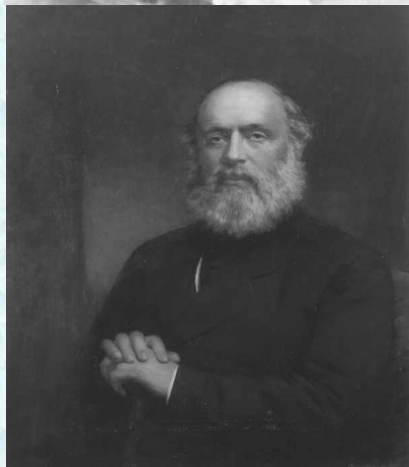
- In **1843**, Hamburg was perhaps the first large town to construct such a complete sewer system, which was flushed weekly with river water;
- Paris and London, in the **1850s** and **1860s**;
- Sydney began building sewers in the **1860s** with network expansion in the **1880s**;
- Adelaide began in **1879**;
- Brisbane - first connections until **1923**;

ALL ENGLAND ELEVEN HOTEL

All England Eleven Hotel (which formerly stood at the corner of Rouse and Princes Streets, Port Melbourne) was the first property to be connected on 17th August 1897.

History – The Birth of the Western Treatment Plant

- Early times
  - Wadawurrung People
  - Brothers John and Edward Wedge(1836) and James Simpson
  - Chirnside Bros. (Andrew and Thomas) Scottish pastoralists (1850s) – by the 1880s owned 81,000 acres (32,400Ha)



History – The Birth of the Western Treatment Plant

1891

Chirnside family sold 8,857 acres to the Board for £157, 772.

Of the land available:

7,227 acres for irrigational farming;
367 acres for tree plantations;
915 acres for grazing;
230 acres for roads;
102 acres for township
16 acres for a Board of Works Reserve

1912 - 18

An additional 2,880 acres was purchased.

1920s

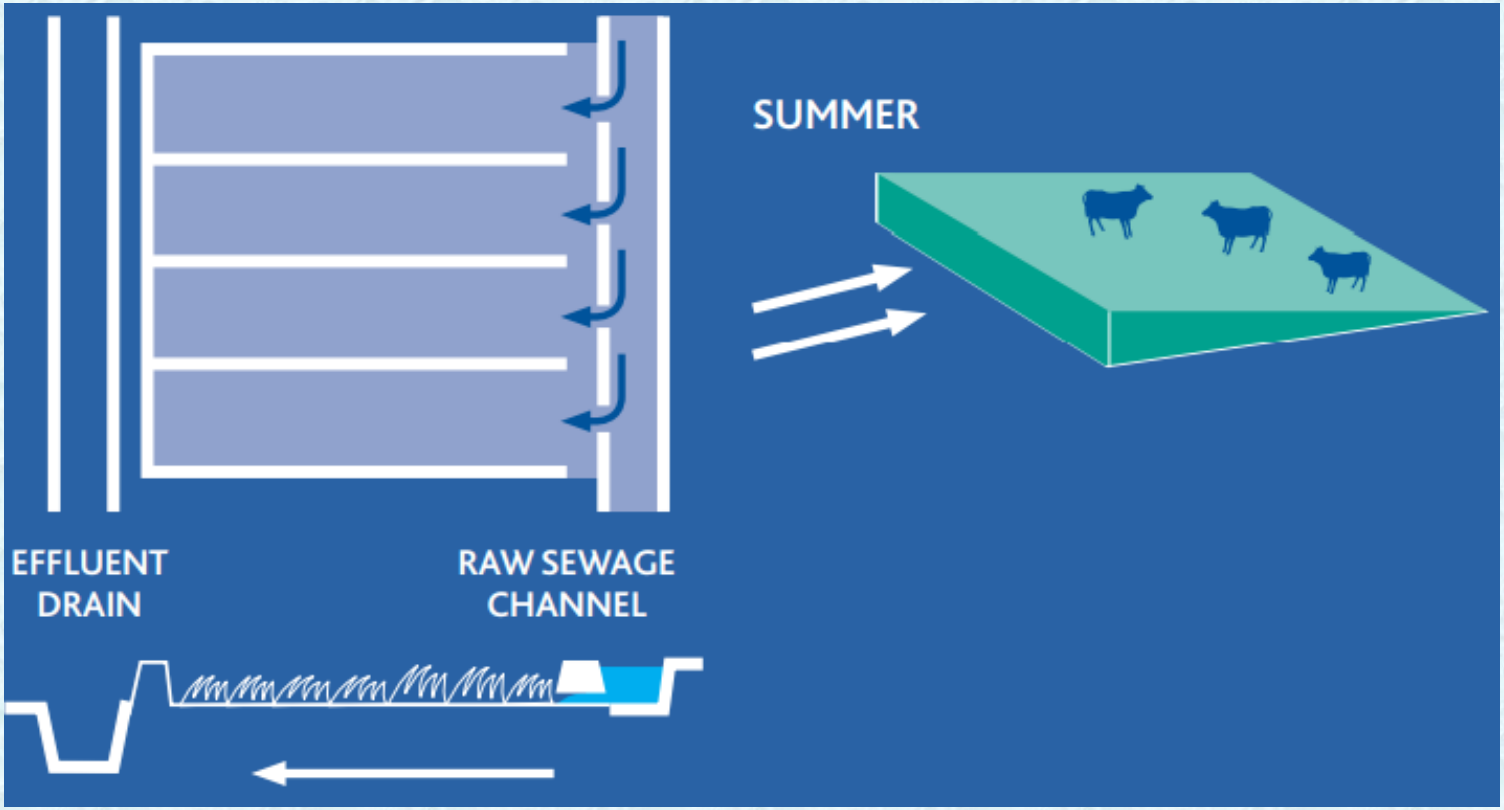
An additional 10,980 acres was purchased.

The establishment of a farming operation (sheep and cattle grazing) was a by-product of the farm's primary role to process Melbourne's sewage as cheaply as possible.

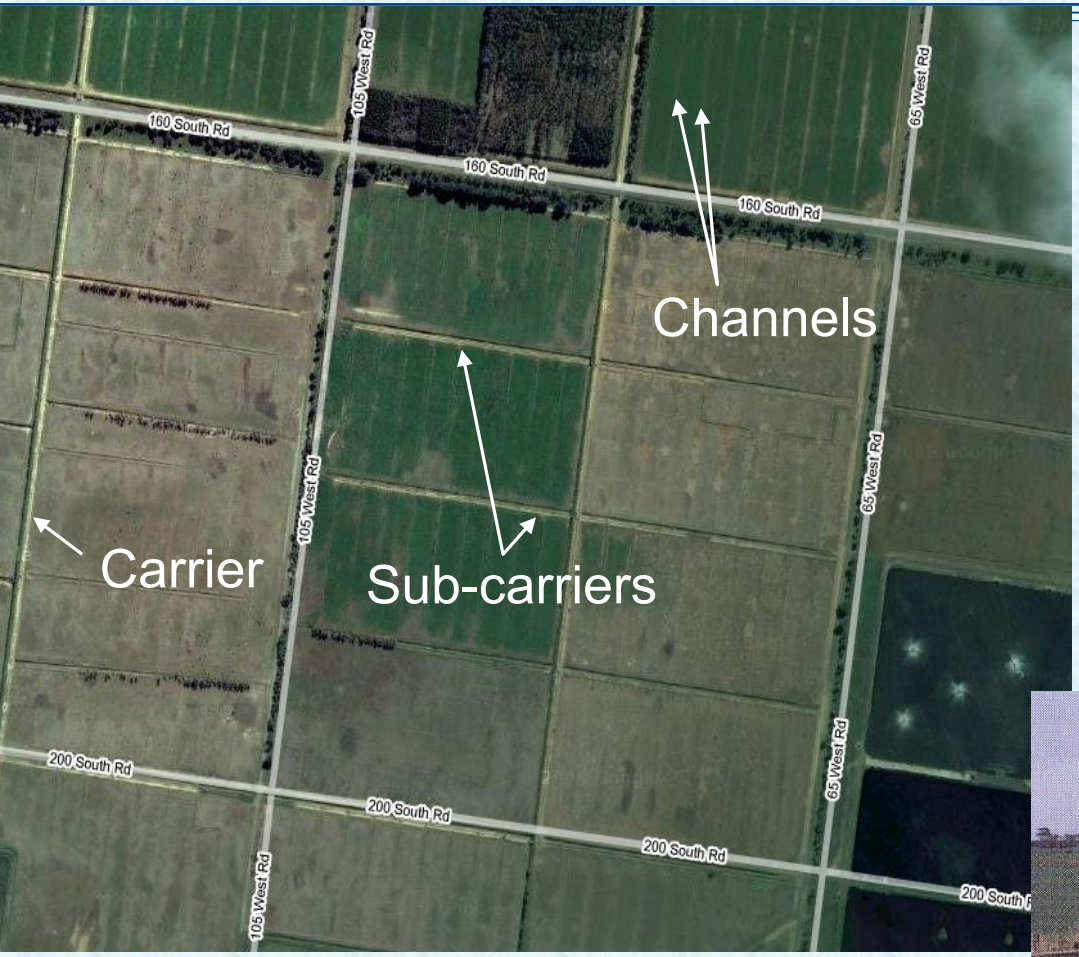
Early Treatment – Land Filtration

Land filtration involved a three week cycle (Summer):

- 1 -2 days to flood the paddocks to a depth of 10cm;
- 5 days for the paddocks to dry out and sewage to seep through the soil or evaporate; then
- 2 weeks for sheep and cattle to graze on the land before it was flooded again.



Transforming the landscape

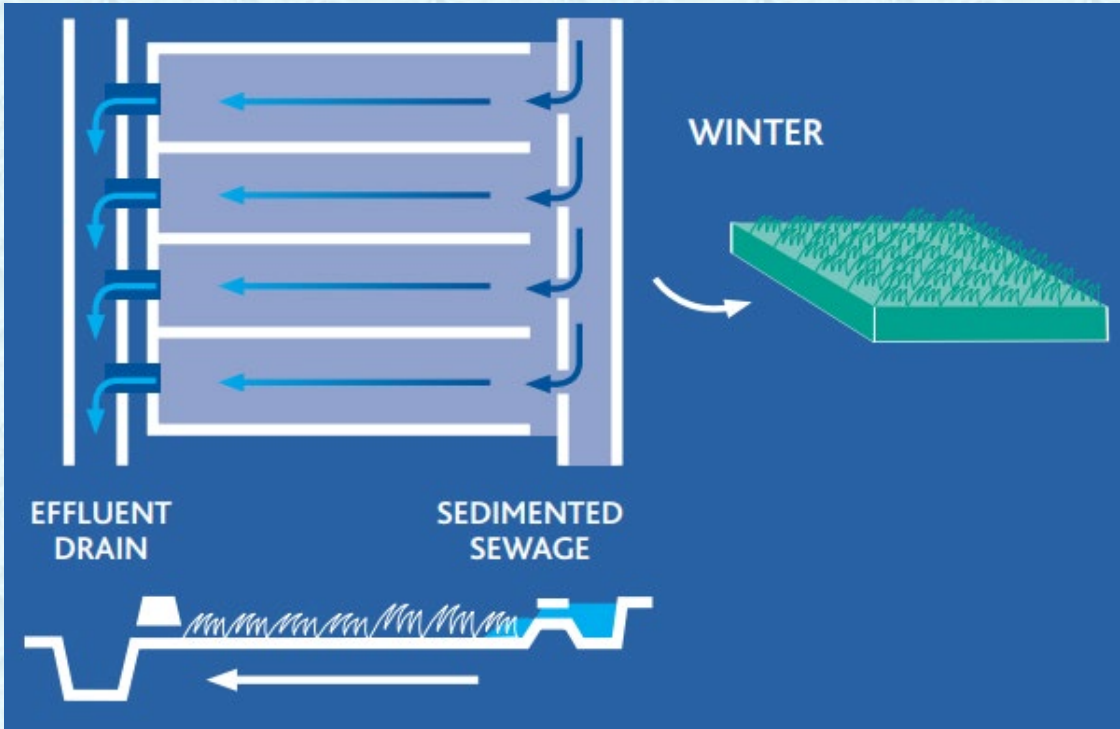


Grid layout of paddocks, channels, carriers and sub-carriers

View showing the cast iron gates at the juncture between carriers

Early Treatment – Grass Filtration

- 1926 Grass Filtration Grass Filtration introduced.
- Similar to Land Filtration although best suited for the winter months between May and September when irrigation of pastures.
- Sewage would be continuously passed at a slow rate over grassed areas planted with Italian Rye Grass. Suspended matter was filtered out and the pollutants removed by a biologically active film building on the grass.
- The purified effluent would be collected in earthen drains at the end of the bays.

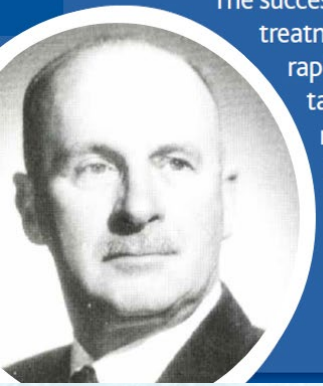


Modern Treatment – Lagooning

1936

Lagooning further refined with the use of the natural lagoon west of Little River – named Lake Borrie after the MMBW's Engineer of Sewerage.

The success of Lagoon treatment led to its rapid development, taking over as the main treatment method by the 1950s.



E. F. Borrie

1950s

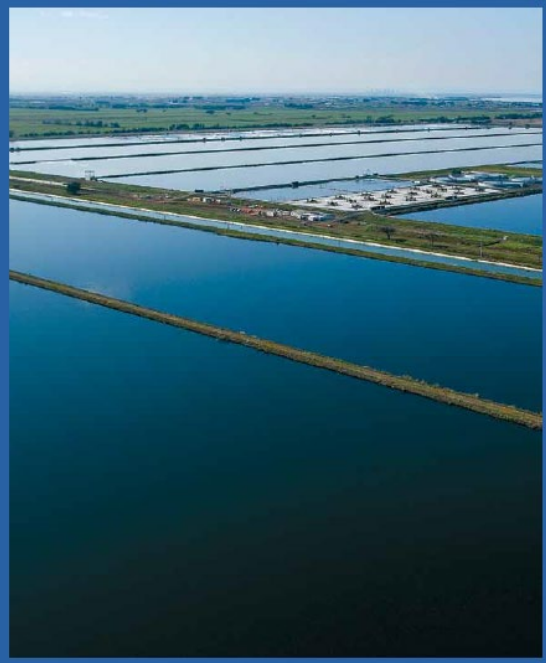
The system of Lagooning would continue to expand until the 1980s to become the symmetrical expanse of water, channels and roads of today.

1980s

A series of enormous ponds covering 3,700 acres (approx. 1,500 hectares) would take over from Land and Grass Filtration as the sewage treatment process.

Sewage is directed into a deep lagoon where solids settle and then passes slowly through a series of ponds to be progressively purified as the finer suspended solids settle and micro-organisms digest the organic material.

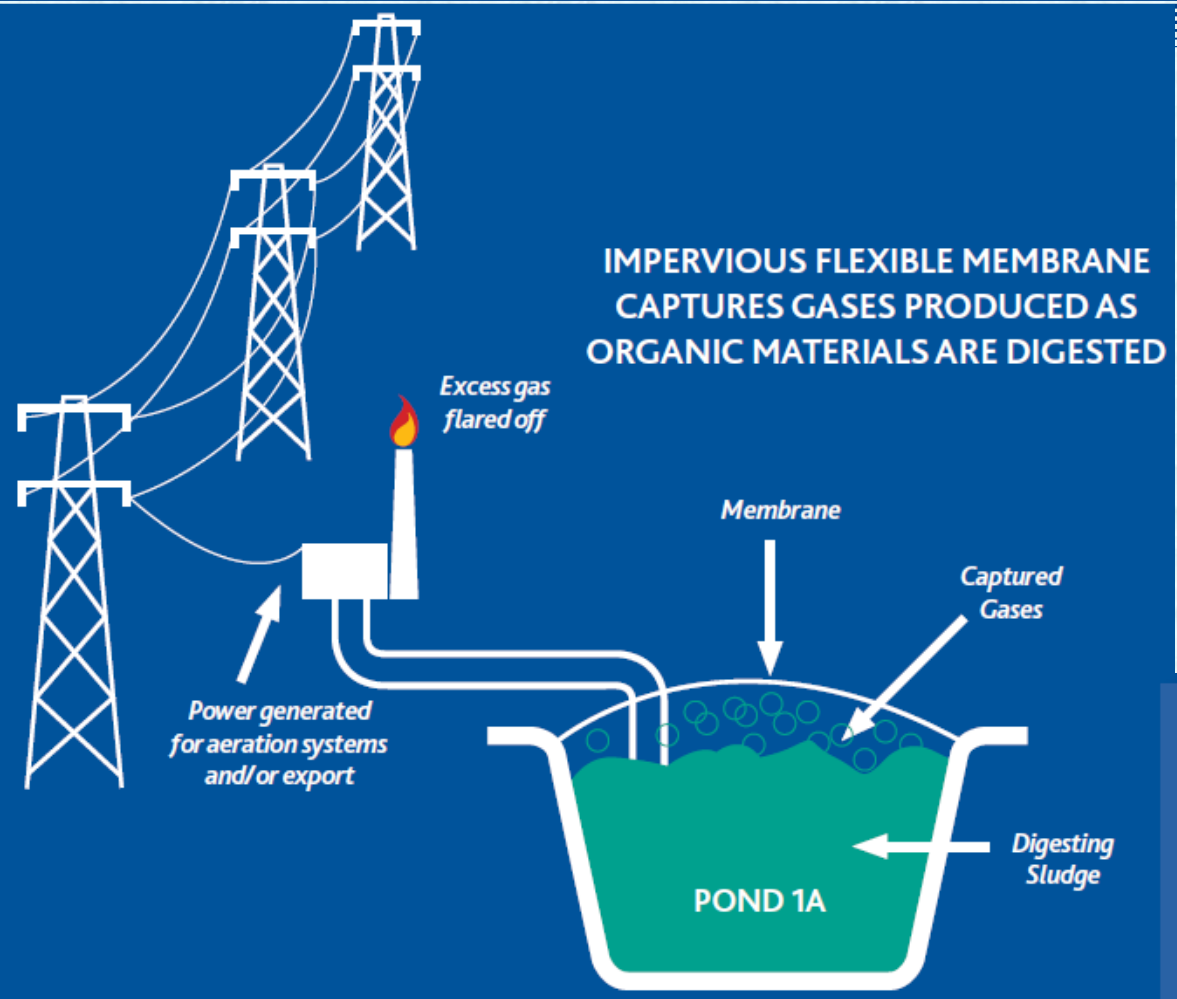
Sunlight oxidises and evaporates the water before the purified effluent reached port Phillip Bay.



2004

Melbourne Water completes upgrade of treatment process. Now fully reliant on modern lagoons - a shift away from old lagoons, grass and land filtration.

Modern Era – Byproducts



2000s

Recycled water delivery built as part of the upgrade uses the final effluent discharged from the modern lagoon system within and outside the Plant. Recycled water irrigates large sections of paddocks previously used for Land and Grass Filtration, and other sections of the plant not previously used for treatment operations but now valued as conservation areas.


160 S Rd
160 S Rd
Metropolita
© Google

Early Operations – Resident Workforce

1895

16 cottages (each with 20 acres) had been built for permanent staff and let at 10 shillings per week.

Workers Cottages

- 1915 the Farm's permanent workforce had increased to 171
- Mechanisation also reduced the workforce from its peak of 508 in 1951 to 347 in 1960

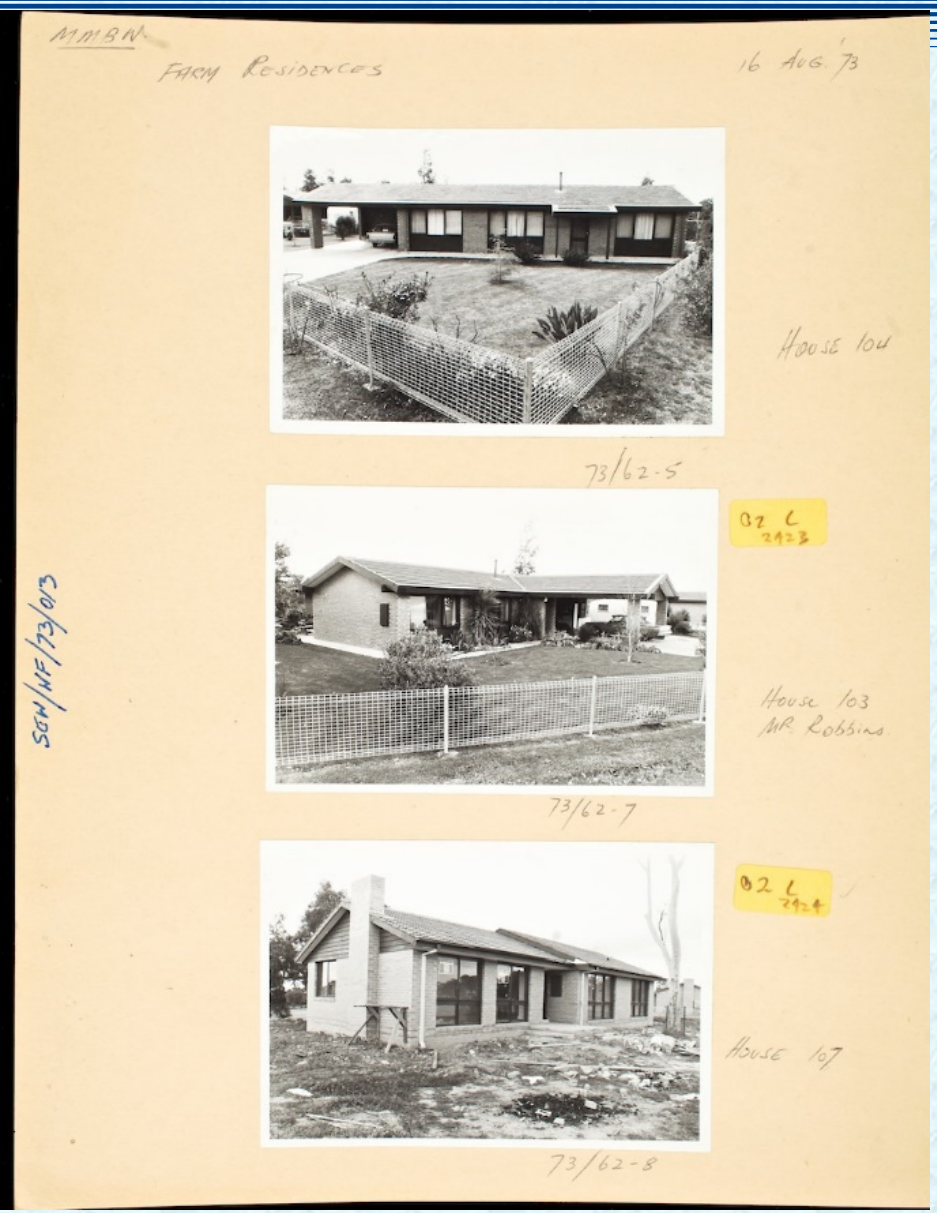
Early 1930s

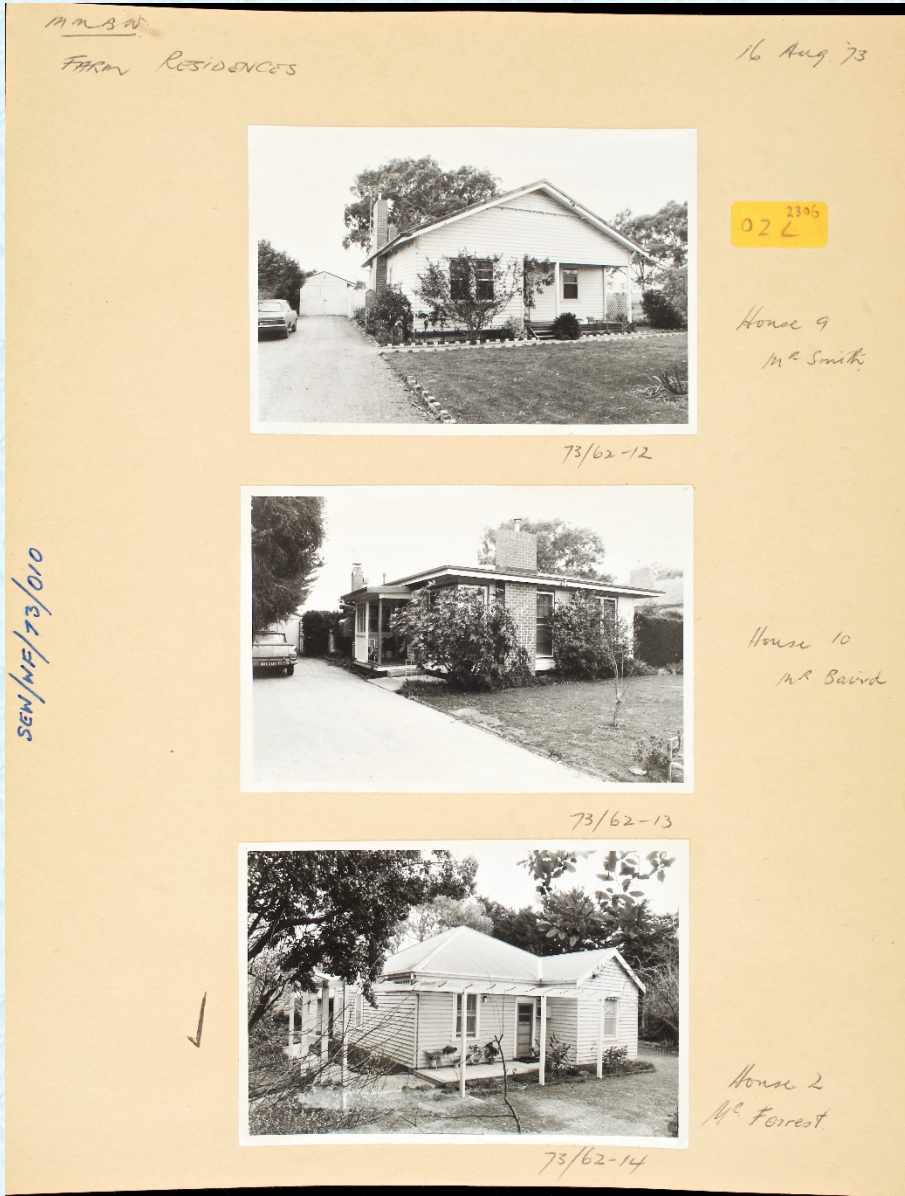
Expanding operations led to the doubling of the number of employees to 441

- Employee numbers remained between about 320 and 350 until late 1980s

Managers Cottage

Early Operations – Residences





Early Operations – School

The first of four state schools on the Farm opened at Cocoroc in 1895.

1929

1970

- Cocoroc South (1906)
- Cororoc West (1906)
- Murtcaim (1939)

Community Life - Sport

Circa 1930

1954

By the 1940s the main town of Cocoroc had its own swimming pool, sports pavilion, oval with goal posts for football and a cricket pitch, park, tennis court, church, and post office.

Re-birth of the Western Treatment Plant

The faraway land of the house and two cows

@MetropolitanSewerageFarm · Writer

Send Message

Home About Photos Events More

Founding members of Friends of the Metropolitan Sewerage Farm (from left) Monika Schott, David Sadler, Pam Thompson, John O'Connor and Diane Rampertshammer. SCOTT MCNAUGHTON

Generations of the same families worked on the Farm, many for their whole working lives, and such families are nearly as old as the Farm itself *(Penrose, Helen 2000)*

Biodiversity

- Wildlife Sanctuary (1923)
- 270+ bird species (Kakadu 280)
- World renowned wetland
- Migratory species
- International agreements (RAMSAR)
- Significant reptiles, amphibians and mammals
- Wide range of habitats

Agriculture

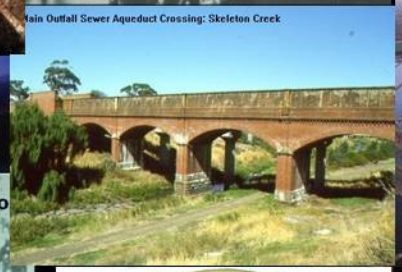
- Cropping
- Cattle
- Sheep
- Outsourcing management

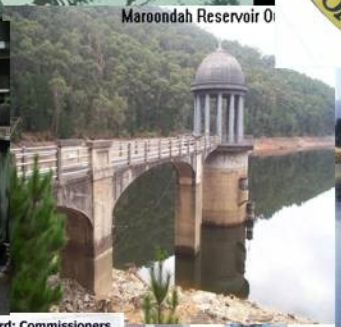
Defence Era (1940)

Defence Pillbox

Hangar

CULTURAL HERITAGE MANAGEMENT

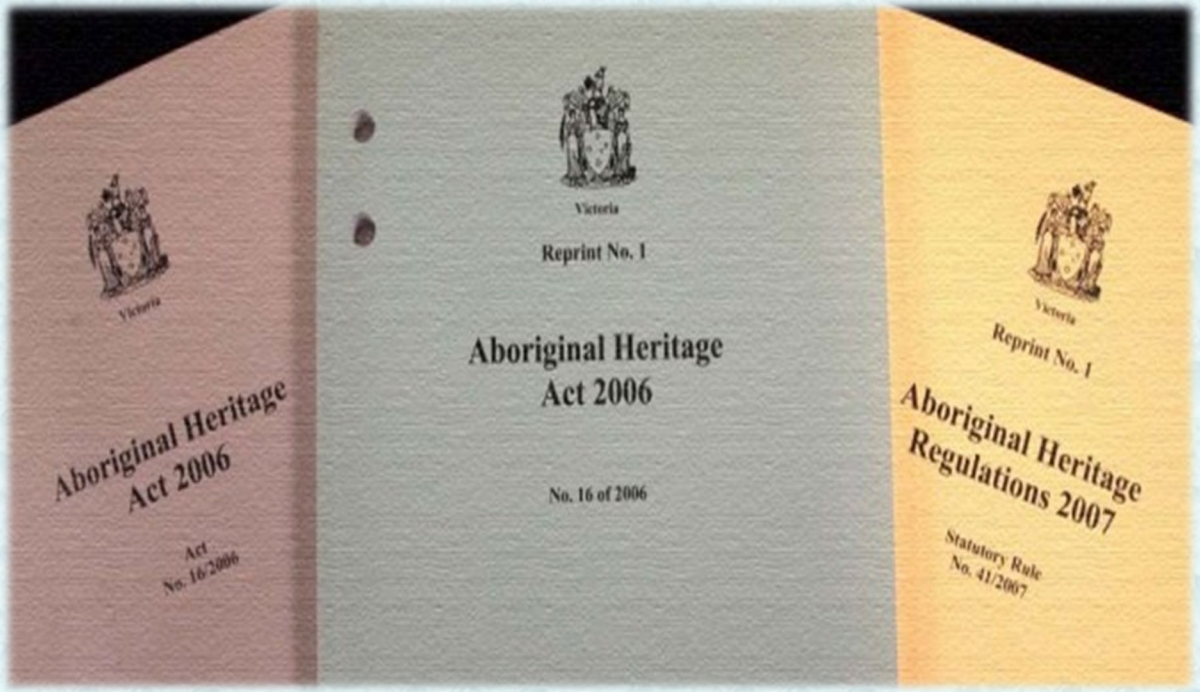




Aboriginal Cultural Heritage Management

The Heritage Services Team has the privilege of helping manage hundreds of Aboriginal cultural heritage places across Melbourne Waters vast service area.

Melbourne Water not only have a social obligation to care for Aboriginal cultural heritage, but a legislative obligation also.



Operational Landscape – Traditional Owner Groups

Registered Aboriginal Parties and Aboriginal Victoria

Wathaurung

Wurundjeri

Gunaikurnai

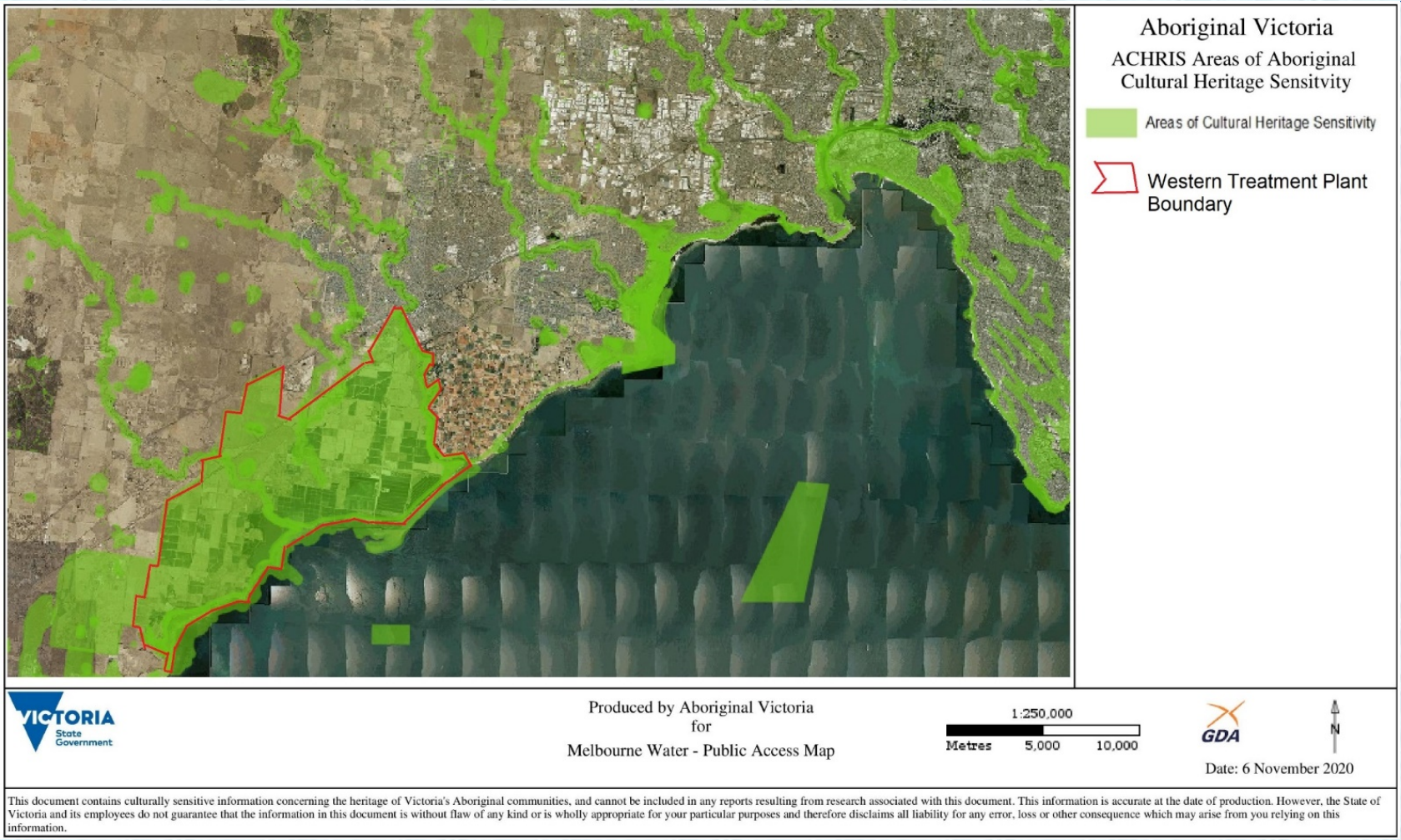
Taungurung

Dja Dja Wurrung

Bunurong

Non RAP Areas

Areas of Aboriginal Cultural Heritage Sensitivity



Areas of Aboriginal cultural heritage sensitivity (green) are listed areas that have existing Aboriginal cultural heritage or have a likelihood of cultural heritage.

These areas trigger further heritage assessment.

Aboriginal Places

Silcrete flake;
Maribyrnong River, Braybrook

There are many different Aboriginal place types across the Melbourne Water service area, including:

- stone artefacts, scarred trees, ceremonial and meeting places and even burial grounds.

Quartzite flake;
Maribyrnong River, Keilor

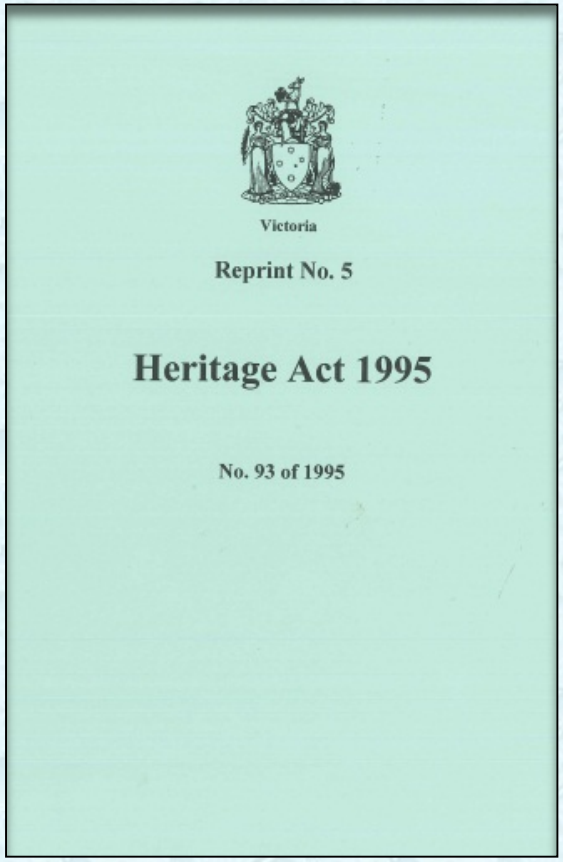
Quartzite core;
Werribee River, Eynesbury

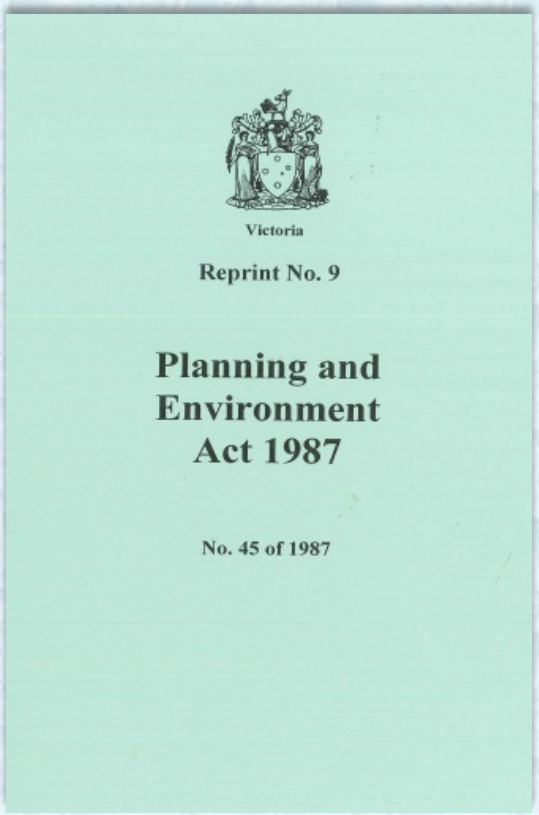
Silcrete flake;
Werribee River, Eynesbury

Historic Cultural Heritage Management

Melbourne Water not only have a social obligation to protect cultural heritage resources in our care, but a legislative obligation also.

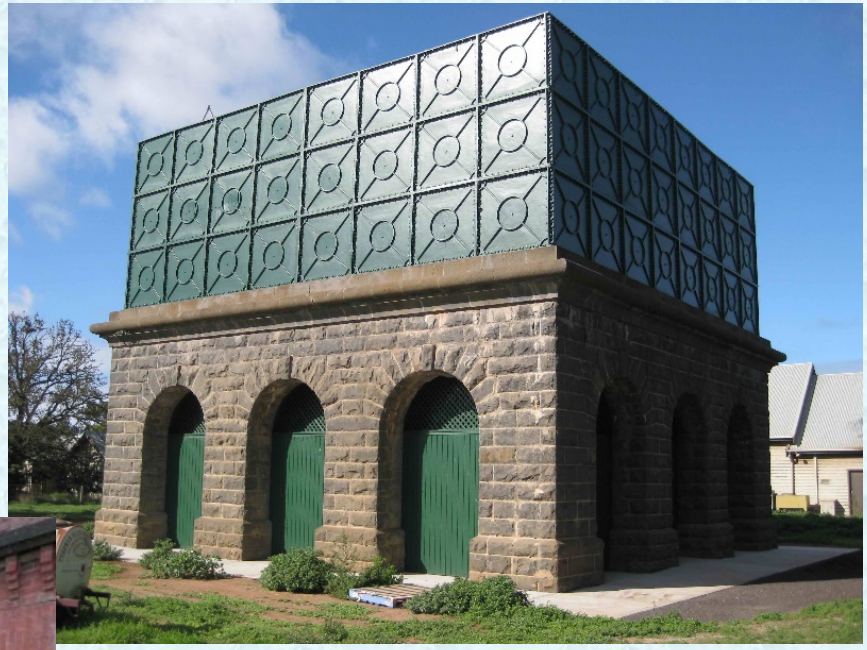
Environmental Stewardship





Historic Heritage – Assets (Sewerage)

Elevated Water Tank

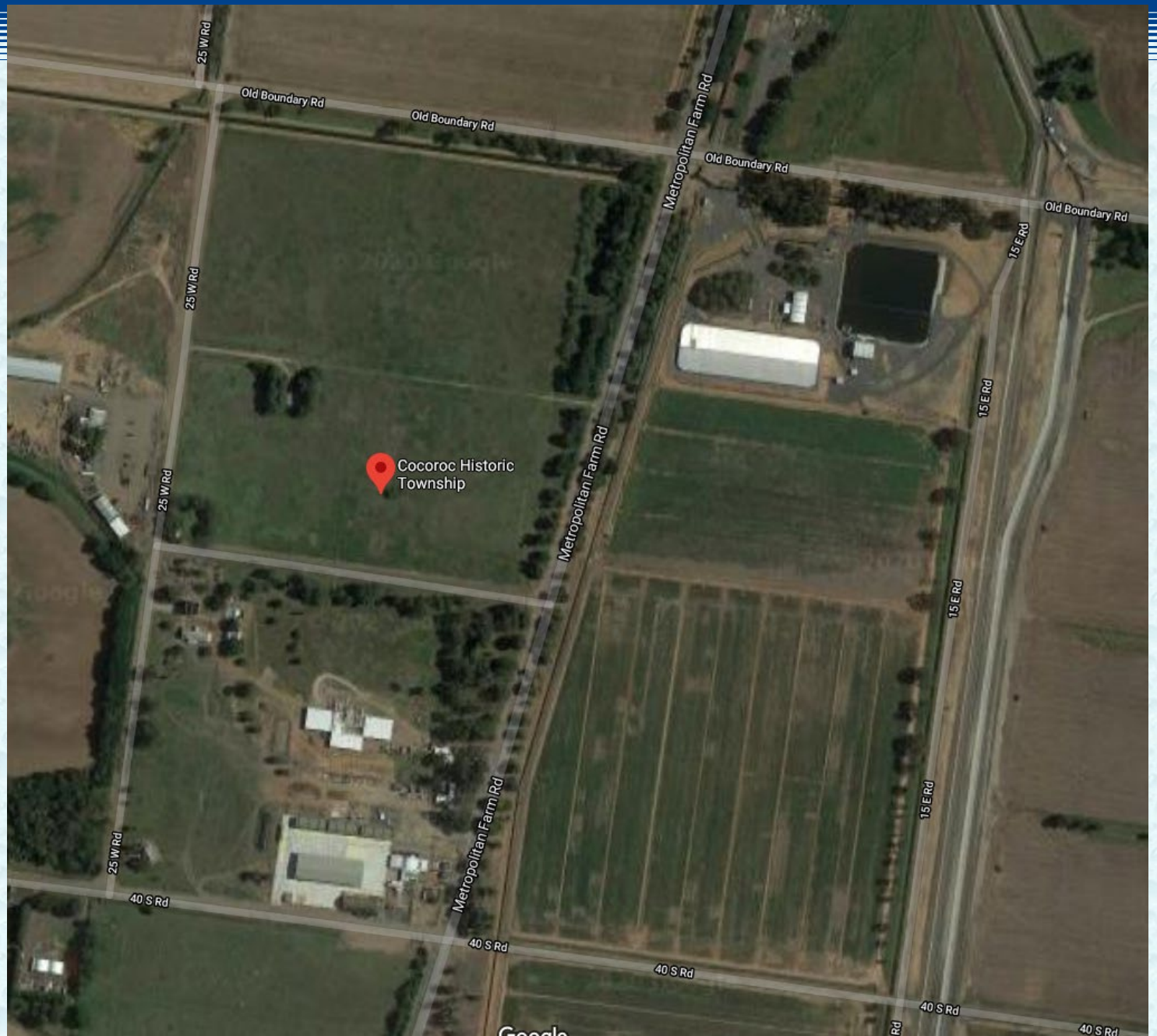


- Built 1854 (East Melbourne)
- Relocated to WTP in 1894
- Restored 2009
- Victorian Heritage Register: H1416

- Built 1892-1894
- Victorian Heritage Register: H1932

Main Outfall Sewer

Western Treatment Plant Current nomination – in progress



Questions?