

Fact sheet: Fishermans Bend Groundwater Studies 2015-2017



Environment
Protection
Authority Victoria

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Fact sheet

Fishermans Bend is Australia's largest urban renewal project, covering about 485 hectares in central Melbourne, south of the Yarra River and CBD. The district will consist of five precincts across two municipalities – the cities of Melbourne and Port Phillip – and connect Melbourne's CBD to Port Phillip Bay. It is expected that by 2050 it will be home to about 80,000 residents and provide employment for up to 80,000 people.

Environment Protection Authority Victoria (EPA) has overseen groundwater studies across all five precincts in Fishermans Bend.

Environmental context

Fishermans Bend was home to many industries in the past, which operated according to the standards of the time. Waste was also used to fill in former swamps to create flat ground. Historical practices such as these present challenges when planning to develop land for residential and sensitive uses because land and groundwater may be contaminated.

To help understand what needs to be addressed with any redevelopment of these areas, groundwater at Fishermans Bend was sampled across the entire area for contaminants. Groundwater was investigated in more detail than soil, as groundwater moves

between properties and is therefore more difficult to understand. Environmental audits will still be required in Fishermans Bend for redevelopment for residential or other sensitive uses.



What is groundwater?

Groundwater is water that collects or flows beneath the soil surface, filling the porous spaces in soil, sand, clay and rocks. Depending on the quality of groundwater, it can be used as drinking water, for irrigation of crops (including domestic gardens) and parks, livestock water supply, industrial purposes, recreational purposes (such as filling swimming pools), and other uses. These uses are referred to as beneficial uses. The lower the groundwater salinity level, the more beneficial uses must be protected.

For further information on groundwater, refer to:

epa.vic.gov.au/your-environment/land-and-groundwater/groundwater-pollution

Why was groundwater assessed?

Groundwater conditions were assessed to:

- identify protected groundwater uses
- identify potential regional groundwater contamination risks that may constrain development
- provide regional groundwater data for consideration by EPA when regulating the area, the environmental audit system or clean-up processes.

These studies will allow EPA and planning authorities to advise developers on aspects of groundwater management that may require their attention.

Further information and updates

Further information and full reports can be downloaded from the project website:
epa.vic.gov.au/fishermansbend

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What was done?

Regional groundwater studies commenced in 2015 and involved:

Desktop Studies:

Review of historical reports and information to identify potential contaminants, areas of contamination, and to help decide locations for groundwater monitoring wells.

Groundwater Quality Assessments:

Four groundwater sampling events were undertaken across Fishermans Bend between 2015 and 2017, from a total of 79 wells. Each well was sampled 2-3 times across the 4 sampling events. Samples were analysed for a variety of potential contaminants of concern, including salts, metals, petroleum hydrocarbons, per- and polyfluorinated alkyl substances (known as PFAS), and volatile organic compounds.

Where were the groundwater samples taken?

The complete well network consists of 79 wells, which includes 16 pre-existing wells and 63 new wells installed as part of this project. Five (5) of the 63 newly installed wells were installed on private land, which involved consultation with land owners prior to works. Owners of pre-existing wells were also consulted prior to sampling. All remaining wells were installed on public land.

Groundwater samples were collected across the area using a probability-based square grid sampling design, as it is unbiased and can be used to define groundwater quality trends over time. The aim was to establish an even spread of wells across the area. Some locations needed to be adjusted because of underground services and/or safety concerns (e.g. proximity to major roads or underground services). Each grid was 250x250m and 1 well was sampled every 6 hectares (on average).

What were the findings?

Groundwater contamination has been identified beneath Fishermans Bend which may trigger further assessment during future development. The main contaminants found on a regional scale include: Metals (Aluminium, Arsenic, Total Chromium, Iron, Lead, Manganese, Nickel); Ammonia; Nitrate; Chloride; Fluoride, Sodium; Sulfate; Total Recoverable Hydrocarbons (TRH); and PFAS.

Other major findings:

- The groundwater in Fishermans Bend is shallow, with a depth of approximately 1 – 3.5 meters below ground level. The salinity levels are between 124 and 30,300 mg/L. That groundwater was sampled at the lower end of this salinity range means drinking water is a protected beneficial use; however other contaminants may preclude this use.
- Some contaminant levels were elevated above drinking water and recreational guidelines. EPA will consider these further, with the aim of identifying a groundwater quality restricted use zone where groundwater is polluted.
- Volatile organic compounds were identified in a small number of groundwater bores, indicating localised impacts.
- There were no obvious groundwater contaminants that would constrain buildings and structures on a regional scale, however, localised impacts do exist in parts of Fishermans Bend and will need to be considered by developers.
- Groundwater flows to the Yarra River and Hobsons Bay. The groundwater may impact those surface waters.

How does this affect residents and workers in the area?

Due to the availability of reticulated (tap) water, groundwater is not necessary for domestic use in the area.

- Groundwater should not be used for drinking water or watering gardens. It should not be used to fill swimming pools.
- Groundwater should always be tested before use to ensure it is suitable for the intended use.
- If a land holder wishes to develop a property for residential or another sensitive use, the Capital City Zone planning scheme requires that an environmental audit is conducted to ensure that the land is suitable.

To further reduce possible exposure, we suggest that residents and workers:

- Do not swim in the Yarra River; in accordance with Parks Victoria regulations, swimming is not permitted in the Yarra River downstream from the Gipps Street Bridge. Boating and fishing are permitted.

Next steps

The results of this investigation will be used by EPA to identify a groundwater quality restricted use zone, which indicates an area of polluted groundwater unsuitable for some uses.

The results have also been considered by the Fishermans Bend Taskforce in developing the Fishermans Bend Framework.

As individual sites are developed, the Capital City Zone planning scheme means that those developed for sensitive uses will undergo environmental audits in accordance with the *Environment Protection Act 1970* requirements, and be cleaned up as necessary.