

randwick environmental park



local geology

The soils of Sydney were formed about 230 million years ago, during the Triassic period, when Australia was part of the Gondwana supercontinent. Rivers eroded inland mountains and deposited sediment up to 50 m deep in what is now known as the Sydney basin. Over time, the weight and pressure of these layers of sediment cemented the sandy particles into sandstone and the finer silts and clays to mudstone and shale. These sedimentary layers are divided into three types, the older Narrabeen Group sandstones and shales, the sandy middle beds of the Hawkesbury Sandstone, and the uppermost and youngest strata of compressed silt and clay, the Wianamatta Shale.

In the eastern suburbs of Sydney the Wianamatta Shale has been completely eroded away. The underlying sandstones have also been significantly eroded, creating the sands most obviously seen in local beaches. These old sands have been shaped by the wind in great undulating sheets forming sand-hills across much of the eastern suburbs. (Department of Mineral Resources, 1983).

Outcroppings of sandstone occur on the coast where more recent coastal winds have blown the sands away, or where the sea has eroded further into the sandstone. Freshwater swamps filled the low-lying areas between the older sand-dunes. A series of swamps formed on the western edge of the eastern suburbs sand sheet creating the Botany Wetlands.

Over time, plants and animals decayed, and rain washed minerals through the sand, developing layers. The surface layer, being predominantly organic, appears dark grey or black. The middle layer is light grey or white sand, as it is free of organic material and coloured minerals. Below this the layer is orange to dark brown 'coffee rock', a soft, sandy 'stone' coloured by leached minerals such as iron. The sands are naturally porous and consequently highly leached and deprived of nutrients.

Coastal vegetation



Eastern Suburbs Banksia Scrub soil



A typical eroded soil profile of the eastern suburbs



Aerial photo 1961

topography and soils

Randwick Environmental Park is generally flat, rising to 52 metres above sea level just east of the picnic area. The sites lowest point is 28 metres above sea level at the base of the wetland.

In Randwick Environmental Park the older, wind-blown, or **aeolian**, sand dunes cover much of the park. Outcroppings of Hawkesbury Sandstone are present to the east of the picnic area and on the eastern side of the wetland.

A naturally low-lying sedge-land (as it was mapped in the late 1800s) occurred in the vicinity of the southern half of the current wetland.

From 1930 to 1961 the wetland was excavated a couple of metres and extended to the north to form an 'L' shape. Sometime between 1961 and 1975 playing fields were created east and north of the wetland. The northern playing field is now houses, the eastern playing field is now the picnic area.

Disturbance of the original soil profile has occurred across the site over the last 100 years. This is evident by the colour of the upper-most soil horizon, and by examining aerial photographs from the 1930s onward. Most of the disturbance was superficial and confined to the surface layer, allowing the native plants to regenerate from seed stored in the soil.

site hydrology

The wetland is an 'ephemeral' wetland, meaning it is only temporarily inundated with water. In fact the wetland is dry up to 85% of the time. Constant seepage of the wetland occurs through the sandy substrate, percolating into the water table draining to the south-west and replenishing the Botany aquifer.

Prior to human intervention, surface water from the surrounding northern and eastern slopes, would have drained into a swampy sedge-land. Today, water flows into the wetland from four stormwater lines .

These pipes are located under the eastern and southern viewing platforms, at the crook of the 'L' and into the creek in the south eastern corner near Henning Street.

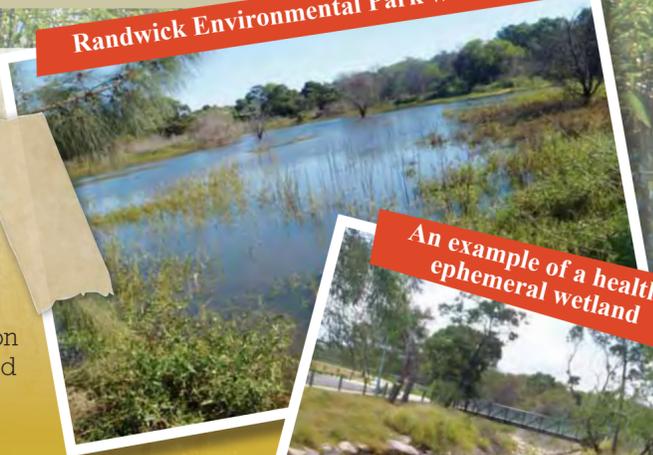
Each outlet includes a gross pollutant trap: a cleanable trap that collects litter, silt and green waste.

The Henning Street outlet includes a man-made creek with a rock-lined **riparian** zone, and vegetation on each bank, slowing the water and preventing soil erosion.

Notice the change in appearance of the vegetation at each outlet - heavier weed infestations are a result of the nutrients dissolved in stormwater.

A large overflow grate is visible at the southern end of the wetland. This drains excess water when the level of the wetland reaches 32.5 m above sea level to the major stormwater outlet at Lurline Bay.

Randwick Environmental Park wetland 2011



An example of a healthy ephemeral wetland

