

# Point Fraser Wetland in Perth

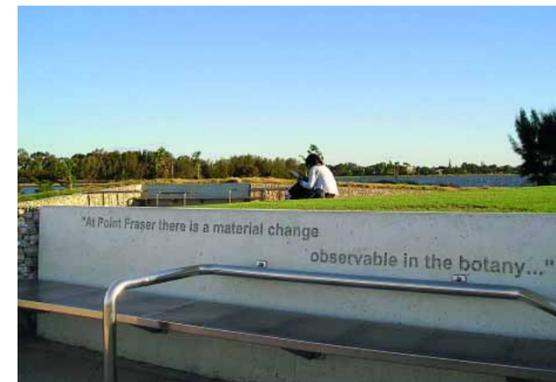
An inner-city wetland site in Perth, Western Australia, is designed within its urban context, purifying water and providing recreational use at the same time. The wetland is an example of an ecological approach to urban development.



A series of folds, acting as transpiration swales, gives form to the Point Fraser Wetland. Endemic reeds and sedges are mass-planted throughout the bio-filter that cleans dirty stormwater runoff before discharge into the Swan River.



The masterplan shows the stormwater pipe (north-west), the car parks that double as swales (north-east) and the interpretation centre and café that link the site together (south).



In much the same way as Sydney is defined by Sydney Harbour, Perth is defined by the Swan River. The river influences the movement, recreation, cultural events, and spirit of the people. One would think the river would be looked after but, cleared, flattened, and reshaped, Perth's riverside is mainly artificial in appearance and atmosphere. Massive grass parks stretch all the way to the water's edge where two-metre high limestone walls prevent wave erosion. Palms dot median strips and petunias provide colour.

Commissioned by the City of Perth, Syrinx Environmental designed the Point Fraser Wetland, a 5.8 hectare site on the east end of the foreshore. The main objective of the wetland is to improve the quality of urban stormwater before discharge into the river. The second aim was to create a protective habitat for birds and frogs and provide playgrounds, car parks, and picnic areas for the public. The brief required a practical and innovative synthesis of water management and landscape design. To achieve such a synthesis, Syrinx Environmental employed the expertise of scientists, engineers, architects, and horticulturists.

The project, begun in 2002 and completed in 2006, was divided into two phases. Phase one included the creation of a bio-filter comprised of native reeds, sedges, shrubs, and trees. As dirty stormwater moves through the wetland, pollutants are absorbed on the bio-film surfaces of the plants. This carefully constructed bio-filter is separated into three zones: the Permanent Pond, the Ephemeral Zone, and the Tidal Zone.

The Permanent Pond includes a bubble-up pit and dense plantings that reduce water velocity and stimulate chemical sedimentation. Varied vegetation clears pollutants in the Ephemeral Zone; and the Tidal

POINT FRASER WETLAND, PERTH, AUSTRALIA

Client: City of Perth

Landscape architects: Syrinx Environmental

Area: 5.8 hectares

Costs: 3 million Australian dollars (phase 1),  
7 million Australian dollars (phase 2)

Completion: March 2004 (phase 1), June 2006 (phase 2)



Boardwalks lead out over the bio-filter; a natural filtration system that significantly reduces nitrogen, phosphorus and sediment levels by moving polluted water through a series of highly engineered ponds planted with reeds and sedges. Man-made beaches for anchoring boats and canoes, are slotted between the swales.



Zone aerates out-flowing water. Water entering the river after passing through the bio-filter is now at least 25 per cent less in nitrogen, 45 per cent less in phosphorous, and records a 75 per cent sediment reduction. Water exiting the bio-filter is now cleaner than the surrounding river water.

Phase one is experienced on a path of winding raised wooden boardwalks that dissect the landscape giving the impression that visitors are moving up and down through the layers of vegetation, water, and soil. A series of interpretive signs runs along the boardwalk acknowledging the environmental, historical and indigenous Australian contexts, including the story of the local Nyungar people – the original inhabitants of the land – who believe the river hosts sacred sites and dreaming stories.

Phase two saw the construction of transpiration swales. The swales, formed like folded paper, divert water away from the city in the event of a flood. The largest swale doubles as a car park. Smaller swales become multi-purpose design opportunities such as lines of sight, seats, play equipment and planting boxes. When there's no water, the mounds appear to be classic landscape surfaces. Gabion walls retain the edges of the folds to allow for passive filtration as water moves in and out of the park. Log-brush barriers and brushmattressing were laid to stabilise the foreshore edge before planting could occur. Reeds replace hard edged limestone surfaces. Breaking up the reeds, small sand beaches encourage anchorage of boats, canoes and jet-skis. The river is the water feature; there is no need for fountains.

Walking through the wetland, you feel like you are going back in time; as if temporal and ecological palimpsests are revealed simultaneously. However, the design is not nostalgic; smells of reeds and mud lift up between the boardwalks but buildings loom over the site and you are not meant to forget they are there. The folds of the swale complement the scale of the city instead of blocking it out.

By applying contemporary ecological urban design principles to an inner city wetland, Point Fraser formidably suggests that urban developments do not have to be steel, glass and concrete; urban development can be ecological too.