

Fiona Stanley Hospital

Land use / development type	Scale
Hospital	Precinct
Stormwater controls	Scale
Landscaped flood storage areas	Precinct (>20,000m ³)
Underground Infiltration tanks	Precinct
Roof gardens	Precinct (18600m ²)
Efficient use of water	Scale
Waterwise landscaping	Across the site
Water reuse	Scale
Rainwater and RO waste reuse for toilet flushing	860 toilet suites
Irrigation of landscape	6000 kL reservoir
Site conditions	
Soils	Sand
Local government	Location
City of Melville	Murdoch Drive

The construction of the Fiona Stanley Hospital has incorporated water sensitive urban design principles at a precinct scale to deliver a fully integrated landscape and water management strategy that enhances the connection between people and the natural environment. It successfully demonstrates that demand for scheme and groundwater can be minimised through using natural systems, recycling and efficiency.

The total site area is 32 hectares. This includes 18,600m² of two tier roof gardens, 16,500m² of public open space and 5 ha of bushland, landscaped parks and gardens.

The landscape design provides open spaces for conservation and protection of the environment, passive recreation, amenity and integrated stormwater management. The landscape strategy retains existing vegetated areas and topography and

provides a habitat for the Carnaby's Black Cockatoo as well as other fauna.

By maintaining the topography of the site, the strategy is able to utilise the existing hydrology and natural systems, infiltrating stormwater from major events into low points, Lake Park and the bushland, and recharging the groundwater resources in the superficial aquifer. On site infiltration is further facilitated via underground concrete infiltration tanks. The design permits construction over the tanks.

Roof gardens assist with:

- the reduction of stormwater run-off and peak flows;
- filtration of the stormwater through the soil profile before entering the stormwater network;
- retention of rainfall within the engineered soil profile for use by plants, reducing irrigation demand.

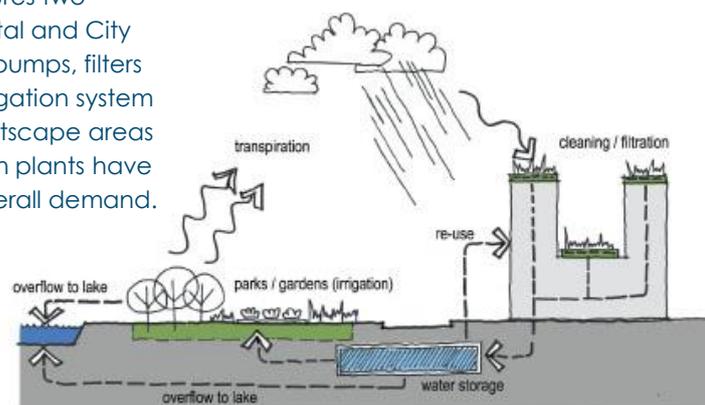
The roof gardens also improve air quality, reduce noise pollution and provide habitat for birds and insects.

Other water sensitive urban design measures include the use of rainwater and wastewater from the central building's Reverse Osmosis (RO) water plant in the hospital for toilet flushing; the use of water efficient fixtures; and native planting.

The irrigation design features two water mains for the hospital and City of Melville with separate pumps, filters and control gear. The irrigation system to roof gardens and streetscape areas can be switched off when plants have established to reduce overall demand.

Key Project Features

- 100yr 72hr average recurrence rainfall (ARI) stormwater managed on site via infiltration, reuse and evapotranspiration
- Pollution control (debris and hydrocarbon capture via gross pollutant traps) installed to capture the first flush from impervious areas
- Stormwater captured and stored on site for irrigation purposes
- 10% of scheme water use is recovered and combined with RO wastewater for toilet flushing
- Reduced scheme water consumption and flow to sewers
- Retention of vegetation, landscape and optimisation of urban form
- Integration of stormwater management in to landscape and bushland conservation areas, allowing for infiltration and recharge of the superficial aquifer.



Issues

No drainage connections were available to accommodate stormwater removal offsite so the system has therefore been designed to manage stormwater onsite up to the 1% annual exceedance probability (AEP) event.

Topography separated the precinct into three distinct catchment low points. The proposed main hospital building footprint was located on site's lowest point which created a number of challenges for stormwater management.

Due to large impervious areas for the buildings and car parks, stormwater management needed to be carefully designed in accordance with WSUD principles to manage the 'small events' in conjunction with the requirement to also manage major flood events on site.

Pollution control devices (gross pollutant traps) were installed to capture the first flush impacts, including debris and hydrocarbons, from impervious areas during construction. After capture of the small event flows, stormwater bypasses into underground infiltration tanks and landscaped basins



Image courtesy of Brookfield Multiplex

Outcomes

The fully integrated stormwater management system delivers the objectives of a contemporary health campus by enhancing the connection between people and the natural environment.

Irrigation and water for hospital purposes is continually monitored for quality. Recycling 10% of maximum estimated daily potable water use will save approximately 40ML per year.

Careful design and planning ensured that the development could make the best use of existing natural systems and maintain the original site hydrology.

The strategy protects the existing ecological habitat and creates additional green spaces and habitat which assist in the management of urban heat island effects.



Image courtesy of Brookfield Multiplex

Contact details for further information

Brookfield Multiplex (08) 9483 0899
Fiona Stanley Hospital 1800 659 475

This project is supported by
the Swan River Trust,
through funding from the
Australian Government.



Australian Government

