

Precast concrete helps shape Perth's second desalination plant

Perth's water shortage problems have been alleviated by the construction of a second salt water desalination plant by the WA Government at Binningup. The plant is 100% powered by renewable energy, uses reverse osmosis technology, and will deliver 100 billion litres of water per year to drought-prone Perth and nearby Bunbury.

The \$955 million project is the largest integration project ever undertaken by the WA Water Corporation, and includes 13 large plant process buildings, an administration and control centre, ocean inlet and outlet pipelines, and major works to connect the new supply into the existing system.

A disused limestone quarry was the site chosen to help reduce environmental impact. Tunnelling methods were employed to construct the precast sub-sea pipelines; with minimal impact on sand dunes and to avoid closure of the beach.

Project Owner

Southern Seawater Joint Venture

Architect and Project Superintendent

Parry and Rosenthal

Service Engineer

Worley Parsons

Builders

AJ Lucas

Precast Manufacturer

PERMAcast

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Precast concrete was the natural choice for the building facades because of its durability in the extreme coastal environment, great acoustic properties, cost effectiveness and speed of erection. The planning and arrangement of buildings, the use of precast walls, and an 8m high vegetated berm help reduce the noise generated by the pumps used in the facility.



In 2010 Permacast was awarded the main contract to manufacture, supply, install, grout and seal 1035 precast façade panels for the thirteen process buildings. All panels have a design life of 100 years and were made with an S50 low heat concrete mix to meet durability requirements. Such a concrete mix produces a slow gain in early strength. Underground electrical tunnels were also required which involved the design and manufacture of 60 large inverted box culverts and 100 precast covers from steel moulds designed specifically for this purpose. To meet the tight construction program for stage one and two of the project, 31,000m² of precast panels were produced (200m² per day), and 2600 tonnes of box culverts, making this one of the largest precast contracts to be awarded to a local WA firm.

AJ Lucas, as part of the Southern Seawater Alliance, was awarded the contract to design, construct and operate the desalination plant, including ongoing maintenance of the facility for the next 25 years. Lucas drew on their trenchless technology expertise to install the intake pipelines, and the facility came online 3 months ahead of schedule and within budget.