

delivering a safe
and reliable desalination
water supply to Victoria

Melbourne

Victorian
desalination
project ^(VDP)

ready for the resource revolution



SUEZ

Victorian desalination plant

The Victorian Desalination Plant, based near Wonthaggi, Australia, is able to provide a source of drinking water independent of rainfall for Melbourne and some regional communities.

It is capable of supplying up to 450,000 m³ of drinking water per day.

The AquaSure consortium, which brings together leaders in the field of infrastructure, design, construction, finance, including SUEZ & Thiess, has been contracted by the Victorian Government to finance, design, build, operate and maintain the Victorian Desalination Plant for the 30-year project term.

This AUD 3.5 billion Victorian Desalination Project is a Public Private Partnership (PPP) which has delivered the biggest desalination plant in Australia and one of the biggest reverse osmosis plant in the world.



near Wonthaggi,
Australia
450,000 m³ / day

5 projects in one

The Victorian Desalination Project is five major projects in one – marine works, inlet and outlet tunnels, desalination process plant, transfer pipeline, and underground power line.

Construction spanning five different project areas and multiple work sites involved at peak time up to 4,500 people on site.

100

per cent offset
of electricity by renewable
energy certificates

- Tunnels for intake (1.2 km long) and outlet (1.5 km long)
- A RO desalination plant producing 450,000 m³/day, expandable to 600,000 m³/day
- High quality desalinated water to complement Victoria's world class strands
- 84 km water transfer pipeline
- 87 km underground high voltage power cable
- 7 water delivery plants to Melbourne and some regional areas.
- About 300 km of fibre optic cables to monitor the pipeline, power cable and the desalination plant, as well as to provide the community with high speed broadband capability through future connection programs.

35.000

tonnes of equipment
shipped to Wonthaggi from
Australia and the rest of the
world



More than

25.000

people
involved, including suppliers
from some 20 countries
(Australia, France, Germany,
Japan, China, India, Italy and
Qatar...)

▼
**a rainfall
independent**
source of water

▼
**an exceptional
contract**
in terms of both size and financial
make-up



virtual site tour of the plant



1

Administrative and utilities complex

The administration building accommodates operation and maintenance staff, the operational control centre, which is the heart of the desalination plant, and a research and development laboratory, monitoring quality and process optimisation.

2

Sea Water Lift Pumping Station

(SWLPS) transfers seawater from the underground tunnels to the desalination treatment line. It also returns seawater concentrate to the outlet at the end of the process.

- 12 pumps, each capable of moving up to 1m³/second.

3

Pre-treatment

The pre-treatment process is one of the key elements contributing to the performance and to the efficiency of the reverse osmosis facility.

This area contains a number of screening facilities to sort both large and fine particles from raw seawater (such as sand and sediment), before it is desalinated.

- 3 large drum screens to remove seaweed and other large suspended solids.
- 72 Dual Media Pressure Filters (DMPF) to filter smaller particles.

4

RO building or desalination process

Reverse Osmosis (RO) is a desalination process that uses membrane technology.

Filtered seawater passes through two stages of reverse osmosis, where it is pushed through membranes under high pressure to separate salt and water molecules.

In the end, pure water is left on one side, and seawater concentrate (brine) on the other.

- 3 streams, with 51 reverse osmosis racks;
- Seawater pushed through 55,000 membranes to separate salt from water.

5

Potabilisation line

This is the stage where desalinated water is re-mineralised to meet high quality drinking water standards after the pre-treatment and desalination processes. This area comprises 14 buildings including the lime buildings, RO chemicals, treated water storage ponds, sludge and solids treatment buildings.

6

Transfer pump station

- The water transfer pipeline is able to carry up to 200 million m³ of water annually to Cardinia reservoir.
- The drinking water is stored before it is distributed into the Melbourne and regional water network.
- Water outlet, through which the seawater concentrate, is safely returned to the ocean through diffuser structures.
- Ocean currents dilute the concentrate within seconds.

- 1/ Green Roof
- 2/ Treated water storage ponds
- 3/ Pre-treatment
- 4/ Dual Media Pressure Filters
- 5/ Reverse Osmosis Building



operations & maintenance

Members of the O&M team have been involved in the project since the beginning, providing specific input with respect to design, development and construction activities.

They are responsible for the operation of the plant, ensuring water quality compliance and environmental monitoring and compliance.

operations and maintenance period till

2039

full asset management including process equipment and civil infrastructure

maintenance of the ecological reserve and the transfer pipeline

more than **50.000** components to maintain

More than **52** people to operate and maintain the infrastructures



environmentally sensitive, energy efficient development

The project partners & SUEZ have pledged to deliver the most technically advanced, environmentally friendly and energy efficient desalination facility. This project has been put through the highest levels of environmental assessment available under Commonwealth and State laws.



The plant is totally integrated into its surroundings and preserves the natural environment by creating an ecological space, thus reducing the environmental impact. The plant is almost invisible from any public viewing point.

- **Limited carbon footprint**
by offsetting operational power with renewable energy certificates
- **State of the art architecture**
and landscaping
- Australia's largest living green roof of **26.000 square meters, with 100.000** indigenous plants
- Construction of a **225 ha ecological reserve** around the plant, which is one of the largest ecological restoration projects ever undertaken in Victoria



dialogue at the heart of the activity

At the local and institutional level, and with our employees, ongoing dialogue is essential to success.

Engagement with the local community has been undertaken since day one by a team dedicated to community liaison.

This strong engagement will continue under the O&M stage.



The Community Relations team in Wonthaggi had a strong presence in the local community, working to connect people with fact-based information. Throughout construction, the team distributed information to the community and stakeholders, delivered presentations to groups and hosted regular site tours. A Community Information Centre in the township of Wonthaggi operated throughout the construction period.

- **Up to 15,000** visitors went to the Community Information Centre during the 3-year construction phase.
- **A mobile facility** which attended community events and local shows.
- Many interactions with **125 landowners** directly concerned with the project.

safety objective: core element, zero harm policy

As industrial leaders, Degremont and Thiess make health and safety of employees, contractors and community their highest priority.

Safety is a core element in all their business segment processes and an integral part of their management system. Many discussions and campaigns were undertaken to improve health and safety performances.

- **More than 18 million hours** worked with no serious injuries.
- **More than 3,000 hours** of safety training completed each month.
- **Project inductions conducted on site**, with three sessions run every week.

contacts

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ready for the resource revolution

