


case study
Water

prospect water filtration plant





supplying reliable
drinking water to **85%**
of **Sydney's population**

**TYPE OF
CONTRACT**

**Build and
Operate**

CAPACITY

3,000 MLD

**CONTRACT
DURATION**

**D&B: 1993 - 1996
O&M: 1996 - 2021**

**ESTIMATED
POPULATION
SERVED:**

4 Million

prospect
**water filtration
plant**

NSW

Prospect





providing up to 3,000 million litres
of **reliable drinking water** to homes
and businesses in Sydney everyday

a 23 year partnership delivering drinking water to 85% of the Sydney population

In 1967, the growth of Sydney, coupled with drought, brought into sharp focus the need for a more secure water supply for residents in Sydney. Since then, the water utility in Sydney has been evolving to supply drinking water for the fast growing population as well as secure water resources for the future.

The construction of Prospect Water Filtration Plant in the 90s was a part of this evolution to meet the increasing demand for reliable water supply in Sydney. In 1993, SUEZ, as part of the Prospect Water Partnership, which also comprised at that time Lend Lease Water Services and P&O (Prospect), was awarded the contract to design, build, operate and maintain the plant for 25 years. Since the opening on the 11th September 1996, the Prospect Water Filtration Plant has been providing consistently safe and reliable drinking water that complies with Australian Drinking Water Guidelines.

Today, operated by SUEZ, the plant is the largest water filtration plant in Sydney and supplies reliable drinking water to 85% of Sydney's population, or approximately 4 million residents.

putting operational reliability in everyday practice

SUEZ understands that operational reliability and continuity are critical when providing drinking water services to a large population; therefore robust operation and maintenance practices have been our main focus from the first day of the project.

A highly automated and advanced process management system was put in place to manage the treatment process and to control the finished water quality.

Ongoing technical training programs are conducted for staff along with reviewing skills regularly to ensure they are equipped with up-to-date technical skills and know-how.

Thanks to the system improvements and the investment in developing human resources, the treated water quality has been delivered consistently within our client's contractual requirements since commissioning.

an innovative design for efficient operation

The plant hydraulics were a challenge from the first day of the design stage. The plant location and layout only allowed 5.2m of head for gravity flow throughout the plant. To solve the problem, passive control systems were incorporated in the plant, which enabled +/- 2% of accuracy in flow split to each filter.

Innovation in chemical mixing was adopted to optimise the performance against the sheer size of the contact channels. A new scale of hydraulic flash mixing was employed to ensure minimum chemical consumption, as well as rapid and even dispersion for efficiency of the chemical mixing systems.

At Prospect Water Filtration Plant, filters are designed to enable solids to be removed directly on the filters without requiring a sedimentation stage. This innovative design allows 50% less backwash water used during the filtration process. The filtration rate of 24m/h is double that of conventional filters. Today, as a result of its innovative design, the plant has been operating efficiently to constantly provide reliable drinking water to residents in Sydney.

working with Sydney Water to deliver sustainable results

Overcoming the site limitations, SUEZ and its partner delivered a very compact and cost-effective engineering design. This resulted in cost savings of approximately \$40 million during the design and build stage.

Thanks to the reliable design and construction, the commissioning process, based on a 30 day operating trial, was completed without a single failed day and was described by Sydney Water as exemplary.

As part of the environmentally friendly design, Prospect uses gravity flow through the plant, therefore requiring less electricity consumption. Sludge produced from the process is dried and mixed with compost to replenish soil.

Wastewater is recycled where possible throughout the treatment process to reduce discharge to the environment. The wastewater from the backwashing of filters is treated and returned to the beginning of the treatment process. Alongside, sample water for plant monitoring is also recycled on site.

SYDNEY WATER - TESTIMONIAL

SUEZ has operated the Prospect Water Filtration Plant which provides Sydney with up to 85% of its drinking water supply for 19 years with excellent performance.

Through collaboration with Sydney Water, the partnership works together to continually improve the efficiency and effectiveness of plant operation and reliability. A testament to this is the quality of the plant's drinking water, strong safety culture and relatively low energy costs.



TECHNICAL INFORMATION

	RAW WATER CRITERIA	TREATED WATER OBJECTIVES	TREATED WATER CRITERIA
Capacity		1,500 - 3,000 MLD	
Filtration rate		up to 24 m/h	
Turbidity (NTU)	max 25	<0.1	<0.5
True Colour (HU)	max 50	<5	<10
Alkalinity (mg/l as CaCO ₃)	21 - 45		
pH	6.27 - 7.87	7.5 - 7.9	7.45 - 7.95
Chlorine Residual (mg/l)		1.7	1.5 - 1.9
Chlorine: Ammonia		4:1	3.7:1 - 4.3:1
Algae (ASU/ml)	500 - 1000	Compliance with Guidelines	Compliance with Guidelines



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