



5-STAR WATER UTILITY WITH PRECAST

As Melbourne's largest retail water utility, Yarra Valley Water provides essential water and sanitation services to more than 1.8 million people. The utility company provides these facilities to approximately 30 per cent of Victoria's population, servicing an area stretching from the inner eastern and northern suburbs of Melbourne through to the Yarra Valley.

When embarking on an expansion of its headquarters in Mitcham, Melbourne, the focus was on minimising environmental impact while also ensuring expansive column-free internal spaces. To achieve this brief, sophisticated simulation tools and modelling were used. Precast concrete walls, floors, beams, columns, lift cores, and stair units became the favoured option and National Precast member, Hollow Core Concrete was contracted for the precast manufacture.

Precaster
Hollow Core Concrete

Client
Yarra Valley Water

Designer
GHD

www.nationalprecast.com.au

THERMALLY-EFFICIENT DESIGN WITH PRECAST CONCRETE

Hollow Core Concrete's Managing Director, Peter Healy, says the off-site manufactured precast concrete elements were integral to attaining the building's thermally-efficient design and its wide, open spaces.

"The precast façade enabled a high-performance building envelope that was combined with TermoDeck® – an innovative ventilation system that uses long-spanning hollow-core flooring," Mr Healy explained.

"The spans were greater than what would have been achievable using in-situ concrete flooring."

TERMODECK® TO MANAGE TEMPERATURE AND AIR FLOW

TermoDeck® is an energy efficient heating, cooling, and ventilation system that uses the high thermal mass of structural hollow-core flooring slabs to manage the surface temperatures and flows of air within a space. Here, the temperature and energy retained in the building structure is actively controlled. By fan assisting air distribution, TermoDeck® is



an effective way of maintaining comfortable and stable temperatures and ultimately results in lower overall energy consumption and reduced peak heating and cooling loads—all while maintaining comfort conditions.

Integrating mechanical systems into the fabric of the building not only helped to attain the thermal criteria, but it also provided an integral heating, ventilation, and air conditioning (HVAC) solution. Reducing the ductwork by half, the building's design allows the hollow-core slabs to simultaneously act as air-distribution paths and control the exposed ceiling surface temperatures.

In addition to acting as an air-distribution path for the mechanical systems, the exposed hollow-core concrete slabs also form part of the radiant temperature control mechanism for all spaces; it actively manages the cooling and heating loads.

EXPOSED FINISH

The exposed hollow-core flooring adopted a Class 2 finish to the underside of the planks, and according to Mr Healy, using this type of flooring resulted in a neat ceiling surface.

“Using hollow-core enabled electrical and data cabling to be concealed. It also helped with acoustics, allowing for the installation of acoustic attenuation to manage reverberation rates in the open-plan office layout,” he detailed.

DATA MEASURING ENERGY SAVINGS

While Yarra valley Water originally targeted a 4-star NABERS Energy performance, the brief evolved into delivering an energy-efficient 5-star Green Star Office V3 outcome.

Mr Healy says that the client is satisfied with the end result and that data is being collected to confirm the energy savings.

The project's designer, GHD, predicts that the building should realise its designed energy consumption of 80.8kWh per square metre per year, along with carbon emissions of 58KG per square metre per year—a figure almost 61 per cent less than Australian best practice. When a full year's data has been collected, GHD will look at opportunities to further improve energy performance.

Visit hollowcore.com.au
for more information and advice on your next project.