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The Building Commission and Plumbing Industry Commission (BC/PIC) workspace. Pic: Angelo Marcina

Delivering the goods

The refurbishment of the Goods Shed North, a heritage structure in Melbourne's Docklands, is a stunning example of adaptive reuse, resulting in a space that is as comfortable for those who work there as it compelling to observe. It boasts a suite of ESD features, too, including chilled beams, displacement ventilation and trigeneration, writes **Matt Dillon**.

When Melburnians consider the part of their city known as Docklands, it's fair to say most would give little thought to its previous life as a hub for incoming and outgoing articles of trade. The part of town west of the city has experienced dramatic change in recent years, and is now a residential and commercial precinct.

Constructed in 1889, the Victorian Railways No 2 Goods Shed is a reminder of the area's past, having originally stood in the middle of the Melbourne Goods Yards. It was derelict for more than 30 years and then became redundant in the 1980s. Later it was cut into two by the Collins St extension, which created the North and South sides. Now following its refurbishment, the Goods Shed North has become a working aspect of the Docklands' present.

The Goods Shed North (the southern half of the original heritage building remains intact, but unrenovated) is home to VicUrban, the state government's sustainable urban development agency, as well the Building Commission and the Plumbing Industry Commission.

The tenants, together with developer Equiset and the consultants team (which included ESD consultants Norman Disney & Young, as well as BVN, the interiors architect, and Elenberg Fraser, the base building architect), worked to deliver a new benchmark for adaptive reuse; they wanted a space that was sustainable and state-of-the-art.

Of course, because it was heritage listed, the building envelope had to be kept in tact. Oh, and one more thing: the building had to be designed for yet

another future use in mind. In 10 to 15 years it is slated to be a retail space.

The result? The state's first 5 Star Green Star heritage-listed building.

NO EXPECTATIONS, SUPERIOR RESULTS

Did Equiset know what it was in for?

"Unless you've done that sort of thing before, you don't have expectations, you just shake your head and ask, 'How the hell are we going to manage this?' A lot of issues come up, but you work to get the right solution," says Equiset director of construction Ian Skinner, who was project manager for the job.

Some of the early hurdles included the removal of contaminated material and

COVER FEATURE



The VicUrban reception, featuring original slate roofing hung as a feature wall, and exposed 120-year-old brickwork. Pic: Angelo Marcina



The Chilled beams are a valuable piece of engineering kit, but also make building occupants think about the space they inhabit. Pic: Angelo Marcina

the requirement that the whole shed be lowered 300mm in order to accommodate a mezzanine level. Sections had to be dismantled, brick by 120-year-old brick, and then reconstructed in exactly the same way in order to preserve the heritage structure. About 4000 glass windows were painstakingly replaced.

“The ESD initiatives underpin the project. You’re not taking anything away from the project. There’s no sense that you’ve compromised at any point to achieve that outcome.”

Jon Purcell, Equiset’s development director, says the building industry still hasn’t entirely got its collective head around delivering As Built Green Star buildings.

“There is a strong precedent for buildings getting 5 Star Design ratings,” Purcell says. “The precedent for buildings getting the As Built rating is not as strong.”

Skinner agrees, and says one of the more formidable challenges was simply getting everybody to understand what the project was trying to achieve.

“We were just at a stage where the industry was starting to understand what Green Star was,” Skinner says. “They were just starting to understand what ESD was. They were just starting to understand Green Star points and how to achieve them. There was a big learning curve just with ESD and Green Star issues. Forget that we were building in a shed.”

A TRENCH TO SOMEWHERE

The building boasts a raft of sustainable HVAC elements.

An underfloor services trench that forms the new spine to the building houses key services for distribution throughout the shed. The trench is used as an underfloor displacement system, providing the building’s heating and cooling. The aim is to allow a portion of the internal heat gain to drift up and out of the building using the central pitched roof.

Active chilled beams located mainly on the mezzanine level provide cooling and ventilation; hydronic heating via skirting heaters provides additional heating.

The roof plant and equipment room house a tri-generation system; four micro-turbines coupled to an absorption chiller produce electricity, heating and cooling.



Multifunction project spaces ensure greater staff interaction and connectivity. Pic: Angelo Marcina



The VicUrban workplace is registered for a Green Star Office Interiors v1.1 rating and targeting a 6 Star Green Star rating. Pic: Peter Clarke

Because of the Good Shed's unusual long and thin shape, and particular demands from its tenants, some bespoke HVAC solutions were required.

“If you can't speak to the architect in visual language you've potentially got a problem. You have to be able to speak to everybody in their language, or at least meet in the middle.”

For instance the chilled beams are serviced by a collection of smaller plant rooms located at the rear of tea rooms located along the length of the building.

Purcell says the reason for this was because the existing building envelope was already in place, floor service-zone depths limited the ability for long, larger duct runs.



The base building has achieved a 5 Star Green Star As Designed rating. Pic: Peter Clarke

“We couldn’t run long lengths of duct, because the longer the lengths of duct, the bigger it has to be,” he explains. “We didn’t have the space for it, and we didn’t want these massive ducts in the ceilings. That led us towards having more intermittent, smaller plant areas distributed throughout the building.”

SHEDDING ILLUSIONS ABOUT ESD

Fin Robertson, M.AIRAH, is ESD manager for the Melbourne office of Norman, Disney & Young, which handled ESD and mechanical services for the Goods Shed North.

“From our point of view, you have to look at what you’re trying to achieve, not just in the design, but in the overall strategy as well,” Robertson says about the choices behind the project’s ESD and mechanical services elements, which to a large extent were dictated by the heritage nature of the building.

“In Goods Shed North, everything in there is done for a very solid engineering reason. Take for example the tri-gen system. That’s worked. It wasn’t easy to implement because at the time it went to design it was absolute cutting-edge.

“We haven’t had any issues in where we imagined it being. We are right on track in terms of its potential and where we’re headed.”

Purcell says that for a technology such as tri-generation, feeding energy back into the grid in Melbourne remains an issue.

He says while the knowhow exists to make it work on the building side, the regulatory framework to facilitate trigeneration is not yet in place.

“That’s another area where it’s a continual learning process for the industry,” he says. “There will be a day where it will happen, and it’s being pushed, it’s at the forefront of happening. It’s just a matter of working through the issues to make it happen.”

Robertson says the beauty of the Good Shed North is that the building is not in thrall to its ESD elements, which do not compromise the comfort of the space, nor its aesthetics. It is a building designed for its occupants, which may sound like an obvious objective to have, but one that’s not always achieved.

“It’s a place where people really will want to be,” Robertson says. “The ESD initiatives underpin the project. You’re

not taking anything away from the project. There’s no sense that you’ve compromised at any point to achieve that outcome.”

As interiors architect Ninotschka Titchkosky from BVN puts it, the authenticity of the Goods Shed creates a unique feeling, one that could never be captured in an entirely new workplace building.

Robertson says that one of the keys to achieving a space that manages to be visually alluring, comfortable and high-performing was having an integrated approach to design.

“There’s nothing wrong with saying aesthetics is an important part of that space, and we haven’t compromised it,” he says. “Everyone at the design table was aware of it. It wasn’t like a taboo thing.

“You can see it across the board . . . that you can’t work in isolation any more. That integration is no longer a ‘nice to have’ differentiator, it’s a requirement.

“If you can’t speak to the architect in visual language you’ve potentially got a problem. You have to be able to speak to everybody in their language, or at least meet in the middle.”



More than 2,400 indoor plants in the Goods Shed North help filter air contaminants. Pic: Peter Clarke

You know a project is going well, Purcell says, when design team members become engaged in aspects of design that traditionally aren't their area.

"So when the architect really starts getting involved in that discussion, and wants to know more about the chilled beam arrangement – should we be active or should we be passive? – as it did on this project – you know you've got a project that's going to work," he says.

Robertson says part of the intent of the HVAC design for Good Shed North was to have the equipment on display.

"It was very much an idea to have things on show, and chilled beams are all about that," he says. "They do an amazing job as an engineering bit of kit if you like, but they're very visual, and that's part of it: making people think about the space they're in. Hopefully that will have a flow-on effect to their behaviour, which is 50 per cent of the game."

THE BIGGER PICTURE

Can anyone really predict the future with any accuracy? With the Goods Shed North, the design team and tenants know that in about 15 years, when the area's population justifies it, the building will

become a retail space. Its adaptive reuse will continue.

The building's HVAC and ESD design incorporates a level of future proofing.

"The important thing in that situation is to future-proof the building," Robertson says. "We don't know what's going to happen in a few years' time when the use of the building changes . . . so let's think about that now. It's felt in the past that that's a luxury, but it's going to become a requirement, not to shut down our opportunities just because of the timeframe of this project, or the various constraints we currently face. Let's not shut down the opportunities, just because we can't take them today." ■

This article originally appeared in the June 2010 issue of Ecolibrium. It is reprinted with permission.

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The Goods Shed North at a glance

The professionals

Architect (Base building): Elenberg Fraser

Architect (interiors): BVN

Builder: Equiset

ESD, mechanical and electrical consultants: Norman, Disney & Young

Independent commissioning agent: Norman, Disney & Young (Mplus group)

Mechanical contractor: Entire

Owner: Equiset

Tenants: VicUrban, Building Commission and the Plumbing Industry Commission.

The equipment:

Absorption chiller: Broad 220kW, single-stage hot water

Air handling units: Temperzone, CV single-zone for both displacement and primary air

systems. Dehumidifying FCUs at entryways.

BMS: Alerton

Chilled beams, active: Trox

CO₂ sensors/controls: Alerton

Electric chillers: Trane, 2 x 550kW, water-cooled, with 2 x fibreglass cross-flow Aquacool cooling towers

Fans: Fans Direct

Gas-fired boiler: Raypak, 2 x 430kW

Heat exchangers: Alfa Laval

Pumps: Southern Cross, end suction

Swirl diffusers: Trox floor diffusers (adjustable)

Trigeneration: Capstone microturbines, 4 x 65kW with air-cooled radiator for heat rejection. Heat recovery loop serving absorption chiller, heating water and DHW loop, with radiator to reject balance of waste heat.

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