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It's a small world

Australia's first 5-star Green Star commercial strata office building gives small businesses the opportunity to enjoy the benefits of sustainable, energy-efficient office accommodation that until now have remained the domain of the top end of town. **Sean McGowan** reports.

Building on the success of the Stable Group's first strata title commercial office building in Sydney's Brookvale, the award-winning development company has teamed with Lendlease to create Lifestyle Working Collins in Melbourne's evolving Docklands.

As Australia's first 5-star Green Star commercial strata office building, Lifestyle Working Collins has enhanced Victoria Harbour's reputation as one of the most sustainable precincts in the country.

Designed to provide small businesses with affordable access to sustainable,

energy-efficient office accommodation within Melbourne's CBD, the four-level building features a covered, naturally ventilated central atrium around which over 130 strata-title office suites of varying size are arranged.

Each office level is connected by bridges and stairways to promote a sense of community, and feature shared meeting rooms with views over parklands that connect to the rear of the building.

But it is the innovative design of the building services at Lifestyle Working Collins that paint it as the changing face of sustainable workplaces.

STRATA CONTROL

As part of Lendlease's design team, global engineering and infrastructure advisory company Aurecon was engaged as the building services engineer. Its brief reflected on the limited opportunity small businesses normally have to influence their indoor environment quality (IEQ).

The design of Lifestyle Working Collins would focus strongly on occupant comfort and control, with energy and water efficiency key client requirements.

"In many ways the brief expanded on the previously successful formula of the Stable Group's similar development in Sydney," says Aurecon technical director, built environment, Jeffrey Robinson, Affil.AIRAH.

"The client and design team wanted to be able to provide each individual tenant in the building with the ability to control the comfort, and energy consumption, of their suite."

Individual metering gives tenants an incentive to proactively monitor their energy consumption and engage with the building

To achieve these objectives, a mixed-mode system provides energy-efficient cooling, heating and ventilation to the building's office suites via a VRV (variable refrigerant volume) air conditioning system.

Every suite is served by bulkhead-mounted fan-coil units (FCUs) featuring exposed oval ductwork.

"VRV provided an energy-efficient way of heating and cooling the individual suites," Robinson says. "The system provides individual control to each suite, as well as the ability to meter and control the energy used by each suite."

These are served by a centralised HVAC plant on the mezzanine floor above Level 4, which reduces maintenance access and noise within the occupied areas. Here, the central outdoor units are divided into banks to reduce the total refrigerant volume in each system.

"Ensuring maximum system refrigerant volumes were not exceeded for the relatively small office suites they were serving was a challenge," adds Robinson. "This required careful calculation and breaking up of the central plant into smaller, individual systems to minimise the total refrigerant volume."

The building's unique architecture and passive design features – including external shading of the façade and exposed thermal mass – has reduced the cooling load for the office suites. Each suite is also designed to be cross-ventilated via openable windows in the building's façade and manually adjustable, high-level louvres in the walls that open to the central atrium walkways.

Base building energy use is also reduced by a natural ventilation design across all common areas, including the central atrium – with the exception of the meeting rooms, which feature the same mixed-mode design as the office suites.

A solar array and mixed-mode AC have helped Lifestyle Working Collins earn a 5-star Green Star Design rating.



INDIVIDUAL METERING

Given the strata title nature of the building's office suites, individual metering was required on all mechanical and electrical systems serving the office suites.

The selected HVAC design also had to be capable of individually proportioning the running costs of the central plant, due to the varied usage patterns of the occupants.

"Individual metering gives tenants an incentive to proactively monitor their

energy consumption and engage with the building, such as utilising natural ventilation when conditions allow," says Aurecon's Robinson.

The design sees electrical meters installed for each individual office suite, while the VRV system is metered separately via a main controller, which records run hours and the refrigerant valve position.

These inputs compute the effective HVAC effect, and this is then proportioned to the electrical energy meters supplying the central plant.



Individual tenants are happy with their suites' comfort control.

It is the innovative design of the building services at Lifestyle Working Collins that paint it as the changing face of sustainable workplaces

It has been split into two separate solar systems – a 36kWp system, which serves a significant proportion of the base building load during daytime operation, and a 96kWp system divided into 64 “solar lots”.

Each 1.5kWp “solar lot” is made up of six 250W solar PV panels, which sit on a separately owned strata title and are available for purchase by suite owners and tenants as individual strata titles.

They can be connected directly to an office suite’s electrical meter to reduce the tenant’s electricity bills. The panels provides an opportunity for small business to tap into renewable energy normally restricted by building ownership or availability of roof space.

“The developer wanted as many owners and tenants as the roof area permitted, to have the ability to benefit from renewable energy supplied directly to their individual office suites,” says Robinson.

STRATA SOLAR

Supporting the individual control and metering of building services offered to tenants and suite owners is an innovative rooftop solar photovoltaic (PV) array installed on the building’s expansive rooftop.

The array is made up of 528 solar PV panels with a total capacity of 132kW.

LESSONS FROM THE CONSULTANT

Aurecon technical director, built environment, Jeff Robinson, Affil.AIRAH, offers the following lessons from the Lifestyle Working Collins project, and the business community that calls the building home:

1. Large-scale, mixed-mode air conditioning can be provided in commercial buildings in Australia.
2. People value the ability to control their comfort and to have low energy bills and low carbon emissions.
3. It is not essential to condition the common area of the building.
4. It is possible to provide renewable energy to individual tenants.
5. Lifestyle Working Collins makes efficient use of space for the tenants because common facilities such as meeting rooms and the electric scooters are shared by tenants, and can be booked via a building app on their phones.
6. The tenants in the building have created their own community and provide services to each other.

Each office level is connected by bridges and stairways to promote a sense of community

The innovative mixed-mode HVAC system and solar array are among a host of other sustainable building features that has seen Lifestyle Working Collins achieve a 5-star Green Star – Office Design v3 rating.

Other features include the non-provision of onsite carparking (scoring the project full points under the Green Star “Provision of Carparking” credit), and the use of low or zero-VOC (volatile organic compound) fittings and fixtures.

The developer has also provided electric scooters that are charged off the rooftop PVs. As with the common area meeting

PROJECT AT A GLANCE

The personnel

- **Architect:** Nettleton Tribe
- **Building services engineer:** Aurecon
- **Building surveyor:** McKenzie Group
- **Construction/project manager:** Lendlease PMC
- **Developer:** Lendlease in consultation with the Stable Group
- **ESD consultant:** NDY
- **Mechanical services contractor:** Parmac
- **Structural Engineer:** WSP Structures

The equipment

- **BMS:** Reliable Controls
- **Fans:** Pacific HVAC (formerly Fans Direct)
- **FCUs:** Toshiba
- **Solar PV:** Fronius IG Plus Inverters
- **VRV:** Toshiba

(Source: Aurecon)



rooms, these can be booked by building occupants via a building app created for the project.

Importantly, a reduction in potable water consumption was also prioritised in the design brief.

The building is estimated to collect 1.3 million litres of rainwater annually. This is stored in a 45,000L onsite rainwater tank to be used for toilet flushing and landscape irrigation. Water-efficient toilets, taps and fittings, as well as an innovative waterless urinal system that is based on vegetable oil

also contribute significantly to reducing potable water use.

Four years after its completion, Robinson says the building and its services have performed “very well”.

“The individual tenants are happy with the comfort control of their suites,” he says, “and their low energy bills.”

With Australia often referred to as “a nation of small businesses”, it would seem the Lifestyle Working concept represents a significant step forward for a sector that has been left behind in the race to sustainability in the workplace. ■