

EXPERIENCE  
WORLD CLASS  
SUSTAINABILITY  
HIGHLIGHTS





Reinvigorated precinct

International Convention Centre Sydney (ICC Sydney) has been delivered by the NSW Government in partnership with Darling Harbour Live, comprising Lendlease, HOSTPLUS, First State Super, Capella Capital, ASM Global and Spotless, as part of Darling Harbour's most exciting renewal in 25 years.

## ABOUT ICC SYDNEY

Australia's first fully-integrated convention, exhibition and entertainment venue, ICC Sydney features a striking contemporary design, leading technology and world-class meeting and exhibition spaces.

ICC Sydney has been specifically designed to respond to future demands of the meetings industry with the capability and flexibility to meet a comprehensive range of event requirements.

## A GLOBAL INNOVATION HUB

The venue's fully integrated technology creates a connective hub for the world's brightest minds to meet, connect, inspire and engage.

It features a robust fibre backbone to support the rapidly changing audio visual and technical requirements of meetings and presentations over the coming decade.

ICC Sydney sits on the Sydney Harbour foreshore within its own dynamic dining, leisure and residential precinct, surrounded by finance, technology, innovation and learning hubs. It is the jewel in a 20-hectare transformation of Darling Harbour by the NSW Government.

ICC Sydney was designed and built by Lendlease and is managed by world renowned ASM Global.



Revitalised public domain



Moriarty Walk



Open air event deck



Darling Harbour Theatre

## KEY BUILDING FEATURES

ICC Sydney was delivered using an integrated design and construction method. The State Government, builder, designer and operator were actively involved, from brief through to construction.

This integrated and highly collaborative process has resulted in the delivery of the ultimate a fit-for-purpose facility, in record time.

ICC Sydney boasts over **240,000sqm** of total gross floor area, spread across three connected buildings: Convention Centre, Exhibition Centre and ICC Sydney Theatre. The unique configuration allows three major conventions to run simultaneously.

Australia's largest ballroom with a capacity of 2,000 in banquet mode or 3,500 in cocktail mode

# 1,000

delegate tiered plenary theatre

# 8,000

seat premier entertainment theatre

# 800

delegate flat floor plenary area



Convention Centre Grand Ballroom

# 2,500

delegate tiered plenary theatre

Total exhibition capacity of 35,000 square metres, including 2,400 square metres of multipurpose space

# 8,000

sqm of meeting space including the plenary theatres and exhibition halls

An external event deck of 5,000sqm, including a bar and lounge with spectacular city views



Solar array



Rainwater harvesting under landscaping



Construction waste recycling

## KEY SUSTAINABILITY ELEMENTS

### COMMUNITY FUNDED PHOTOVOLTAIC ARRAY

ICC Sydney hosts a **520kW** photovoltaic (PV) array owned by the community fund Sydney Renewable Solar. The PV array produces **545MWhr/year** which is enough energy to power 100 homes.

It also powers approximately 5% of the baseline energy for ICC Sydney. Sydney Renewable Solar is a community fund that allows locals to invest in renewable energy. The PV array is the largest array in an Australian CBD.

### ENERGY, WATER & WASTE

The inclusion of highly efficient energy, water and waste facilities was a key consideration in the design of ICC Sydney, which aims to be one of the most sustainable facilities in the country.

Design targets include: 20% less greenhouse gas emission compared to Building Code of Australia (BCA) minimum requirements; 25% reduction in energy costs compared to ASHRAE 90.1-2007; 14% reduction in total potable water requirements (including cooling tower and domestic water demand); and 90% construction waste diversion - plus 75% operational waste diversion.

A number of initiatives contributed to achieving these targets which are outlined on the following pages.

### RAINWATER

ICC Sydney provides 100% of irrigation demands and 63% of toilet flushing demands from harvested rainwater collected from the exhibition roof. The water is stored in a 200 kilolitre tank.

The use of rainwater is complemented by water efficient fixtures and fittings, and the need for irrigation is minimised through the use of Australian native drought tolerant plants throughout landscaping.

### WASTE MANAGEMENT

During the construction of ICC Sydney, 91% of construction waste was diverted from landfill by recycling both on and offsite. 25% of the demolition waste was recycled on site through the use of mobile concrete crushers, with the resulting materials reused as road base.

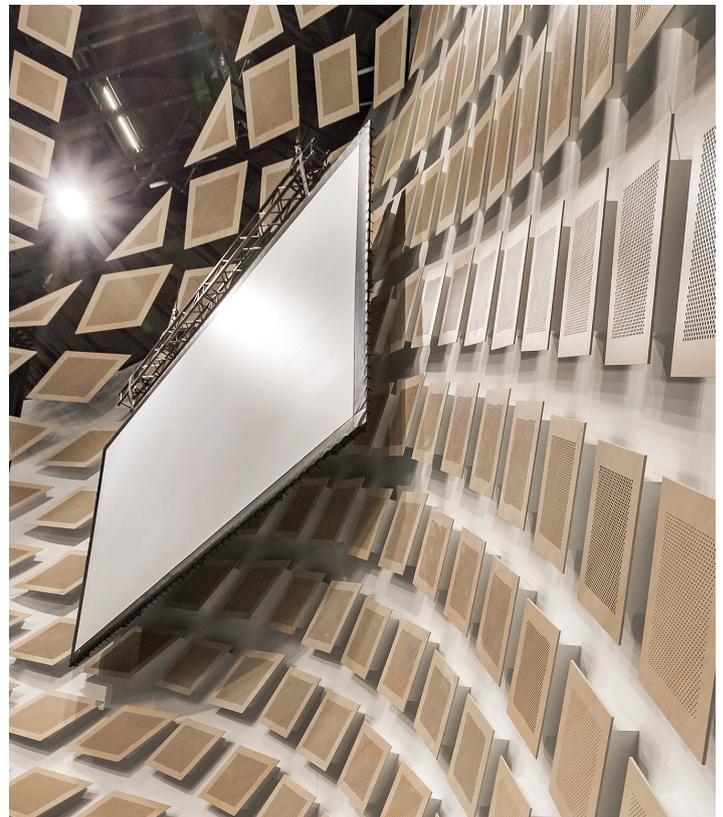
ICC Sydney targets 75% operational waste diversion from landfill, with large back of house areas designated for waste separation.

### INDOOR ENVIRONMENT QUALITY

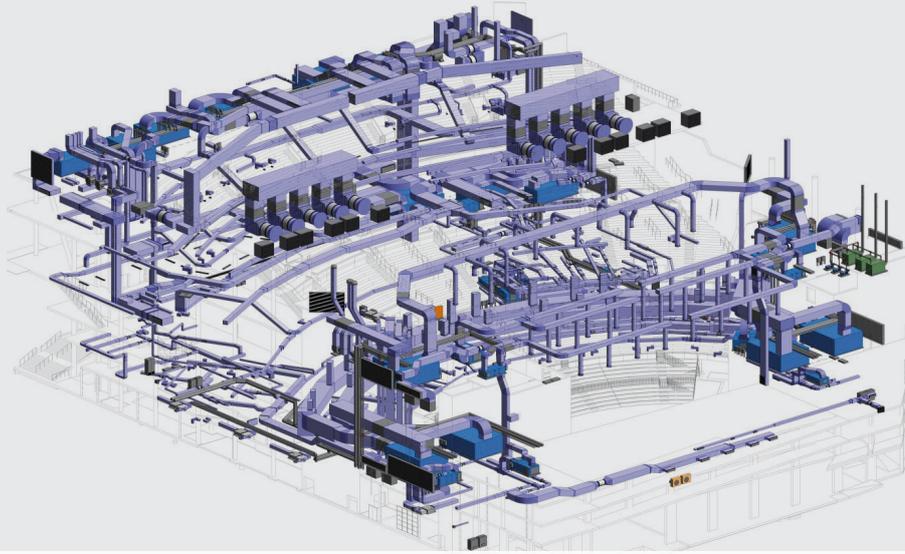
The facility's indoor environment quality is enhanced by continually monitoring CO2 levels, drawing on outdoor air supply as required. All air in the Theatre building is delivered by a displacement ventilation system which provides fresh air at the occupant level ensuring well-being and comfort even when functioning at its capacity of **9,000 people**.

Each building utilises innovative window glazing to promote views and allow natural light in the pre-function areas. In order to mitigate unwanted solar gain during summer, Computational Fluid Dynamics have been used to model the seasonal internal temperature changes and determine the appropriate glazing specification and location of external shading.

Automatic lighting controls complement natural light levels throughout the day as required.



Darling Harbour Theatre - acoustic panels



ICC Sydney Theatre Displacement Ventilation System. Image provided by AECOM.

## CENTRAL ENERGY PLANT

With distinctly different operating profiles for the Theatre, Exhibition Centre and Convention Centre, the design team worked closely with the operator to develop a facilities-wide Central Energy Plant (CEP) to serve each of the three buildings.

The single large CEP, in lieu of three individual plants, achieves significant material and embodied energy savings, providing an efficient system for heating and chilling water to serve the Theatre, Exhibition Centre and Convention Centre.

The CEP meets the demand of the diversified operational populations and profiles of the three buildings, and any capacity that is not being used during each buildings' peak periods feeds to the other buildings. For example, during the daytime the Theatre capacity feeds the Convention building, and vice versa at night time.

In addition to the embodied energy and building space savings, the plant operates for most of its annual hours at low to medium capacities, enabling the individual chillers to operate closer to optimal levels - resulting in significant energy savings. The adoption of a series counter-flow chiller / condenser water strategy enables the central plant to high achieve coefficients of performance.

Operation of the CEP is linked to the Building Management System (BMS) which operates on an integrated communications backbone with the security, audio visual, vertical transportation (lifts) and event management systems.

This interfacing enables each space to be effectively conditioned based on the planned daily occupant needs and equipment use.

The CEP, in conjunction with LED lighting technology and high performing glazing and insulation, provides a 20% reduction in overall energy demand and greenhouse gas emission when compared to the Building Code of Australia's (BCA) mandatory design and operation performance requirements.

Reduced plant space, improved building management and reduced maintenance are all added benefits of the CEP.

## CONNECTIONS AND ENVIRONMENT

One of the key aspects of the design for ICC Sydney was increased connections; connections geographically, both north to south and east to west; public places to connect people; and also connect people back to the environment.

The Boulevard plays an essential part of connecting the precinct between Haymarket and Darling Harbour.

The design of the Boulevard mimics a river with the east and west connections of Moriarty Walk and Iron Wharf Place like tributaries flowing into it. The tiered landscape from the ICC Sydney Exhibition Centre has been designed to reflect a natural valley, providing greater sunlight and public amenity to the revitalised Tumbalong Park.

With increased landscaping and new water play areas, Tumbalong Park is providing more family friendly recreational amenities for visitors in the city.



Tumbalong Park



Exhibition Centre

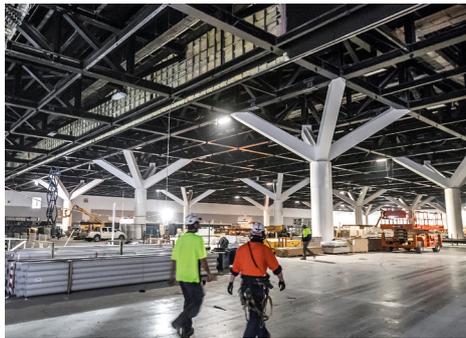
**KEY CONSTRUCTION FACTS**

# RAISING THE ROOF

ICC Sydney Exhibition Centre roof was raised in two separate lifts; the first third, and then the two final thirds

The roof of the exhibition building was constructed at low level before being raised using a method known as strand jacking

Each of the 32 hydraulic strand jacks had a 200 tonne capacity and were controlled via a monitoring station situated outside of the lifting zone



Exhibition Centre lower halls

# USE OF STEEL

Over 12,000 tonnes of steel was used in the Exhibition Centre alone. 96% of steel is made from recycled content

Across the whole facility, there is more than 16,500 tonnes of primary structural steel used - making it the largest structural steel building project in Sydney

Steel was used as a design feature, as well as the primary load bearing structure at ICC Sydney



## SUMMARY OF SUSTAINABLE INITIATIVES

ICC Sydney is part of the first precinct in the world to be awarded the highest accolade of 6 stars under the Green Building of Australia's Green Star Communities certification.

ICC Sydney is targeting the internationally renowned US Green Building Council LEED (Leadership in Energy and Environmental Design) Green Building Gold certification.

- 1 ICC Sydney is a brownfield development, on the previous Sydney Convention and Exhibition Centre site, resulting in the reuse of more than 100,000 cubic metres of concrete.
- 2 Highly efficient Central Energy Plant (CEP).
- 3 Building Management System (BMS) with integrated energy management and interfacing to security, audio visual, vertical transport and event management controls.
- 4 Displacement Ventilation to theatres and plenary spaces.
- 5 20% overall energy demand and GHG emission reduction compared to BCA Deemed to Satisfy (Dts) provisions.
- 6 A **520kW** community funded photovoltaic array, providing 5% of the facilities energy. This is enough power for 100 homes.
- 7 90% of total construction waste was recycled. 25% demolition waste was recycled onsite.
- 8 Increased building insulation and external shading devices to limit unwanted thermal transfer.
- 9 ICC Sydney provides 30% more public space, and greater precinct connectivity with green folding landscape connecting the Exhibition building with Tumbalong Park.
- 10 Australia's largest electric car charging station with provision for charging 25 electric cars.
- 11 Added pedestrian links to trams, trains and buses, as well as new cyclist facilities via the Boulevard, Moriarty Walk and Iron Wharf Place.
- 12 Solar hot water supply to kitchens - including the main kitchen which is the largest in the southern hemisphere.
- 13 Extensive high performance window glazing to enhance views and natural lighting.
- 14 200 kilolitre rain water tank utilised for irrigation and toilet flushing.



A NSW Government project, ICC Sydney was delivered in partnership with Darling Harbour Live, comprising Lendlease, Hostplus, First State Super, Capella Capital, ASM Global and Spotless FM.

Phone +61 2 9215 7100 // [iccsydney.com](http://iccsydney.com)



@ICCSyd // #ICCSydney