“The Jury commends the simplicity and transparency of the design that conveys an admirable decision to build less and re-use more. The design cleverly re-used the existing glasshouse and thereby preserved an important legacy of the botanical gardens. The gentle harmony between old and new is most welcome”.

Jury Comments
Good Design Awards 2017
Introduction

As a design competition winner, PTW Architects worked closely with Cockram Construction and landscape architects, McGregor Coxall to design a highly flexible horticultural exhibition building. Using in-part existing elements of the former Arc Greenhouse (originally designed in 1987 by Australian Architect, Ancher Mortlock and Woolley and built by Reed Constructions), The Calyx is an extraordinary building of national heritage significance located within the Royal Botanic Garden, Sydney.

Adopting a sensitive and understated architectural approach, The Calyx is designed to accommodate a range of horticultural exhibitions, envisaged to change every six to nine months. Coined a ‘jewel in the Garden’ for its unique and elevated position within Australia’s oldest botanic garden, The Calyx is an iconic but serene addition to the Garden.

The circular component of the project, which spatially defines the entry, is made from a series of steel frames that open out in a radial shape towards the sky, much like the face of an open bloom.

The design sets out to use a language you would expect in a garden - arbour, greenhouse, flowerbeds and garden sheds but in a way that recognises its context in Sydney’s front garden with significant neighbours.
As a ‘jewel in the Garden’, this distinctly shaped building has the capacity to adapt to ever-changing requirements and contribute to Sydney’s life and vitality.

Our vision for this project was to make:
— a ‘jewel in the Garden’;
— a structure sensitive to its historic setting;
— a sustainable and flexible building for horticultural display;
— a place that is highly adaptable and responsive;
— an asset to the Royal Botanic Gardens & Centennial Parklands
— a ‘must see’ venue for current and future generations.

This flexible building for horticultural display, cultural and educational uses, was designed to form part of the Royal Botanic Garden’s 200th birthday celebrations.
Arc Glasshouse
The Arbour (frame) and Podium
The 'Iris'
The Foyer - Reception
Horticultural Display
The architectonic form of The Calyx is defined by seven distinct elements:

1. **THE ARBOUR (FRAME)**
   A delicate arbour of painted steel portal frames spatially frame an entry space; the central portion - the 'Iris' garden - becomes a flexible external horticultural display or venue space.

2. **MULTI-PURPOSE SPACES**
   A sequence of interconnected flexible spaces for horticultural displays and/or cultural events.

3. **THE FOYER - RECEPTION**
   Overlooking the 'Iris' garden, this linear space warmly welcomes each visitor.

4. **SUPPORT**
   With direct access to the loading and unloading area, this sequence of support spaces includes public toilets, kitchen and storage.

5. **THE 'ARC'**
   The existing Arc Glasshouse was refurbished as a new flat floor flexible space for horticultural displays with design performance glazing.

6. **THE 'IRIS'**
   Within the centre of the Arbour is a flexible garden space.

7. **THE PODIUM**
   A new plinth, elevated above the adjacent lawn, is set against a backdrop of the existing Arc and adjacent trees gently elevating The Calyx to overlook the lawn.
Innovation

Working together to fulfil the Garden’s mission for science and education, innovation is achieved through an understated yet flexible sequence of spaces that can be used for horticultural, educational or cultural purposes as well as event and lecture spaces. The arrangement of spaces within the floor plan recognises this potential. Retractable walls allow a changeable building section and flexibility of space. The design of lighting and the mechanical plant services were also a fundamental component of the project.
PTW worked closely with specialist façade engineers, sub-contractors and the client group to design and coordinate a glazed building system that combines operable and fixed elements, provides visual permeability and performance elements to suit complex interfaces in new and refurbished zones. Working closely with specialist engineering and services consultants, Jacobs, PTW Architects actively participated in the evolution, negotiation and delivery of a hybrid system that takes advantage of natural buoyancy ‘chimney’ effects, shading and mechanical intervention for a variety of environmental conditions. An opportunity for natural ventilation within the greenhouse is realised by low-level supply air to the occupied zones, while operable louvres and windows located at the high level exhaust the heated air.

The environmental performance of The Calyx is designed for the display of a variety of horticultural exhibits with the opportunity to cater for human activities.

Sustainability
Located at the southern end of the Lower Palace Garden, the redevelopment of the site provides a new way of displaying plants. The Calyx, was part of a major refurbishment of the Ken Woolley designed Arc Glasshouse, completed in 1987. The associated Pyramid Glasshouse, a well-known enclosure that opened in 1972, was demolished to make way for the new facility.

The design of The Calyx builds on the geometry established by the Arc Glasshouse to create an integrated space with indoor and outdoor areas for horticultural exhibitions. The flexibility of this redevelopment supports imaginative horticultural displays and cultural events within Australia’s oldest botanic gardens - the Royal Botanic Garden, Sydney - a most beautiful garden of national historic significance.

Recognising the value of its location to the people of Sydney, this redevelopment addresses formal as well as functional requirements. It is envisaged that this understated yet memorable project will become a significant landmark in Sydney.
Sweet Addiction: The botanic story of chocolate exhibition

Multi-purpose spaces

The Arbour (frame with support space)

The Arbour (from above)

Australia’s largest living interior green wall
The Architect shall not be liable for any loss or claims whatsoever arising from or in respect of any errors existing or resulting from data howsoever transferred from the computer system of the Architect to systems of the Client or other Consultants. The recipient of the data shall be responsible for checking accuracy and completeness of data received. Any use of the electronic data in part or whole shall be at the user's risk.

Do not scale from drawings. Verify all dimensions on site before commencing work. Copying or reproduction of this drawing is strictly prohibited without the consent of Peddle Thorp & Walker P/L. The CAD files and their contents are solely representations of the Project information and cannot be relied upon beyond the representation shown on the PDF versions of the drawings as provided by the Architect.

Project Team:
- Project Manager
- Contractor
- Architect
- Landscape Architect
- Structural & Civil Engineers
- Hydraulics Engineer
- Mechanical Engineer
- Electrical Engineer
- Accessibility Consultant
- Heritage Consultant

Builder: 328.04.16

C:\Revit_Local\214023_Biome_Central_jshipp@ptw.com.au.rvt

3D VIEWS

BIOME
4 MACQUARIE STREET. SYDNEY NSW 2000

Royal Botanic Gardens & Domain Trust

214023

No: Amendment By Date

3 AS RECORD SET JS 28.04.16

2 GA DOCUMNET UPDATE POST SHOP DRAWING REVIEWS JS 25.02.16

1 ISSUED FOR CONSTRUCTION JS 26.06.15

site plan Axonometric
Floor Plan

1. Loading Area
2. Display Space 1 (with Green Wall)
3. Display Space 2
4. Educational Multi-purpose Space
5. Reception
6. Storage
7. Electrical / AV Room
8. Warm-up Kitchen
9. Female WC
10. Cleaners Room
11. Accessible Unisex
12. Male WC
13. Iris
14. Arbour
15. Plant Room

Roof Plan
Project Recognition

“A world-class horticultural exhibition space with the biggest wall of live plants in the Southern Hemisphere.”

Nicola Heath
Broadsheet

“The Calyx is a fusion of art, theatre and flora with themed exhibitions that address conservation and environmental issues in an imaginative, accessible way yet to be seen in Australia.”

Jimmy Turner
Director of Horticulture Management
Royal Botanic Garden, Sydney

“Sydney’s got a brand new piece of architecture right in the middle of the gardens.”

Jasmine Crittenden
Concrete Playground