



## **Federation Square – Design and Architecture**

Federation Square was one of the most complex and ambitious construction projects ever undertaken in Australia.

The selection of architects for Federation Square was based on an international, two-stage design competition, which demanded the design of a new civic square capable of accommodating up to 15,000 people in an open-air amphitheatre.

The competition attracted 177 entries, with 41 of these from overseas, including: 18 from the UK and 6 from the USA.

Lab architecture studio, based in London at the time, produced one of the five plans shortlisted at the end of the first stage and, in order to proceed further with the competition, formed a partnership with Bates Smart, one of Melbourne's most prominent architecture firms.

In July 1997 Lab architecture studio and Bates Smart were awarded the design contract for Federation Square. Lab architecture relocated their office to Melbourne and undertook the complex task of designing Melbourne's major civic and cultural precinct.

Construction of Federation Square began in 1998. The \$450 million investment was supported by the Victorian State Government, City of Melbourne, the Commonwealth Government and the private sector through private tenancy fit-outs and major sponsorship alliances.

Federation Square opened on 26 October 2002. Federation Square is the size of a city block – 38,000 square metres (3.8 hectares).

### **The Building of the Deck**

The construction of the deck beneath Federation Square is the largest expanse of railway decking ever built in Australia. It took twelve months to complete, with structural work only possible during breaks in the train timetable in the early hours of the morning.

The deck is supported by over 3,000 tonnes of steel beams, 1.4 kilometres of concrete 'crash walls' and over 4,000 vibration-absorbing spring coils and rubber padding. It is designed to support some of the most sensitive uses imaginable - galleries, cinemas, and radio and television studios – and it needed to isolate them from vibration and noise.



## The Fractal Façade

The building façade system utilises new understandings of surface geometries to allow for the individual buildings within Federation Square to be differentiated from each other, whilst maintaining an overall coherence.

Three cladding materials: sandstone, zinc (perforated and solid) and glass have been used within a triangular pinwheel grid. This modular system uses five single triangles (all of the same size and proportion) to make up a larger triangular 'panel'. Following the same geometrical logic, five panels are joined together to create a larger triangular 'mega panel', which is then mounted onto the structural frame to form the visible façade.

Through the varying proportions of façade materials within this triangular grid and their combinations within a changing set of patterns or figurations, unique surface qualities have been developed not only for each building, but also for the different orientations of each façade.

## The Square

The Square is the civic and spatial key for the entire precinct, establishing connections with the diverse context of the city and the surrounding urban and riverside landscape. The design allows for a vast array of uses, from large public gatherings of up to 15,000 people to intimate meetings and events.

The Square joins seamlessly to the surrounding streetscape at Swanston Street, then rises up one level towards the east, providing entry at an upper level to several of the buildings of Federation Square. To distinguish it from the city's existing pavement, the Square is surfaced in approximately 500,000 cobblestones of variegated coloured Kimberley sandstone from Mt Jowlaenga, Western Australia. Mt Jowlaenga is the country of traditional owners from the Kimberley, who have a strong and living connection with their land and its resources.

The sandstone paving has been laid in a patterned design. Writer and artist, Paul Carter, linked this design to a separate artwork called *Nearamnew*, set within the surface. Consisting of a series of overlapping stone tablets inlaid with layers of typographically scaled and interwoven texts, the artwork reflects different and often conflicting subjects and stories reflected through the history of the site.

## The Ian Potter Centre - NGV Australia

The Ian Potter Centre: NGV Australia is the world's first major gallery dedicated exclusively to Australian art. It is a spectacular showcase comprising over 20 galleries housed within a landmark architectural complex, with 7,250m<sup>2</sup> of gallery space.



The main collections are curatorially organised in a regulated, chronological sequence. Nonetheless, the building's design allows visitors to inscribe their own experiences of the collection through shifting gallery view lines and cross connections. This design strategy gives visitors a rich, inviting engagement with the outstanding collection of artworks.

The simple overlapping (or dual filament) composition of the galleries allows both a direct route through the building's figure-eight layout or by the optional, diverse pathways. The focus, however, always returns to the central area of the public foyers. Circulation by lift, escalator and stairs is joined at each level in the central foyers, which are formed by the intersection of the 'Crossbar' building with the NGV building. Here vertical movement becomes part of the building's internal drama, providing a continuous outlook to other aspects of the site and across Melbourne.

The two overlapping gallery filaments are the main exhibition spaces. Between these filaments are the intrafilament spaces. These spaces are enclosed, calmer and darker in the north half of the building, while opening onto the landscape, with views across the Yarra to the south. In the northern section, the spaces are focused upwards, to the skylights and the vertical volume between the gallery spaces. For the southern intrafilament space, a continuously folded glass wall lines all the bridging levels. These intra-filament spaces are an important spatial reference, assisting in providing orientation within the building, as well as opportunity for relaxation.

### **Deakin Edge**

Through its glass 'skin' this modern amphitheatre offers views of the Yarra River, Alexandra Gardens, Melbourne Cricket Ground and the Victorian Arts Centre. Located at the river end of The Atrium, the Deakin Edge has a seating capacity of up to 450 people.

### **Alfred Deakin Building (SBS and ACMI)**

The Alfred Deakin Building is home to the Australian Centre for the Moving Image (ACMI) and the Melbourne operations of SBS, Australia's multicultural radio and television broadcaster.

The various facilities and services provided at the Alfred Deakin Building are assigned into the two different buildings. One building is more enclosed – a virtually windowless structure that contains two cinemas, a function room, retail space and cafe. The other is a more open building containing ACMI's gallery spaces and the studios for SBS.

Two different arcades have been used to provide public circulation within the building, as well as linkage and connection to the rest of Federation Square. The central arcade joins the two main buildings and forms the main foyer and circulation space that vertically connects all of the functional components. The east arcade serves as a public connection to the Square, as



well as providing an animation of the building through the temporal ebb and flow of people leaving the cinemas after each session.

ACMI also has a unique exhibition space located below the street level, running parallel to the trains travelling beneath Federation Square. This vast space forms one of the few galleries in the world, dedicated and designed for the display and development of media screen works.

### **Yarra Building**

This building provides an enclosure for the plaza at its southern edge. It links the Square and the deck level facilities to the riverside terrace and the historic vaults along the Yarra River with a variety of levels and adjacent stairways. These links add to the permeability of the site as a whole, providing a connection from the river back to the Square and to Flinders Street.

The open and opaque qualities of the façade systems used for the office and cinema components of the Alfred Deakin Building continue across the Square and are combined on the Yarra building. The façade opens with terraces towards the river and with viewing edges towards the activities of the plaza.

### **St Paul's Court / Melbourne Visitor Centre**

Through the design of St Paul's Court, St Paul's Cathedral is integrated with Federation Square. The Cathedral's spatial connection to the site, formed by the north-west arms of the Square and the two "shards" framing the cathedral's south facade, allows it to become a central focus, encouraging previously unseen cathedral vistas. Acting as a signpost for the site, tourist information services for Melbourne have been consolidated within the Melbourne Visitor Centre located on the north-west corner of Federation Square.

### **Transport**

Transport has a dual role in design terms. It creates a distinctive southern entry marker to both Federation Square and central Melbourne, with functional roles for the Square by providing the south-western enclosure, support to the large outdoor LED screen and wind protection for the terraces.

The two components of the building are a crystalline volume, formed by the perforated screen façade, embedded into a zinc clad 'shard'. The aluminium screen creates a virtual form through shadows by day and by emitting light at night. The perforations and openings formed in the façade create a differentiation around its elevations, providing shade, weather protection and focusing the internal views. The use of the perforated screen visually links this building with other elements of Federation Square.



## The Labyrinth

One of the most fascinating aspects of Federation Square is completely hidden: the Labyrinth. So called because of its maze of zig-zag surface corrugated concrete walls, the Labyrinth is a unique passive cooling system designed to cool The Atrium, Deakin Edge and some public areas during summer and to supplement heating during winter. Almost 40 x 40 metres and 1.4 km in length, the Labyrinth is located beneath the Square but above the actual deck over the railway.

Utilising the specific climatic qualities of Melbourne, cool air is pumped through the Labyrinth's cells at night, cooling the concrete walls. By day, air is gently pumped through the cells, the air cooled in turn by the concrete walls. In winter the Labyrinth's thermal mass maintains an inherent warming potential that can be supplemented as required.

The system directs air to The Atrium, dispersed by use of a low-velocity displacement system at floor level. In peak summer conditions, the Labyrinth is capable of delivering air to The Atrium at up to 12°C below the external temperature. This system uses one tenth of the energy used by conventional air conditioning and drastically reduces carbon emissions.