

DESIGN IN TRAINING

The Chatswood Transport Precinct Project is one of the largest infrastructure and urban development schemes to be undertaken in NSW in the past decade. **Edwina Ikin** reports on some of the unique challenges the architects faced while designing the project.

'Whale ribs' and 'banana sticks' are not objects normally associated with modern-day engineering feats. The affectionately named design elements are two of the many features incorporated into the Chatswood Transport Precinct Project and they reflect the marriage of cutting-edge engineering with shrewd design, both necessary to meet the demands of this complex development.

A component of the Epping to Chatswood Rail Line project, the Chatswood Transport Interchange (CTI) is at the heart of the development. The interchange is a \$360 million transport and retail facility, which will upgrade rail facilities, link rail and bus services, and improve access to and from the station. It is part of an expansive development, more than 320m in length and 85m at its widest point. Three high-rise residential towers will also be constructed above the Chatswood railway station, parking for 500 cars will be added below it and

the Gardens of Remembrance will be re-invigorated as a welcoming public space.

While requesting a world-class transport interchange, the design brief demanded significantly improved connectivity and accessibility through the heart of Chatswood to the surrounding residential, commercial and retail areas, and a contemporary aesthetic. All design work has been undertaken by COXDesignInc, a partnership between architects DesignInc Sydney and Cox Richardson Architects.

"One of our main design objectives has been to drastically improve circulation around the interchange and the precinct as a whole – for commuters, pedestrians, and traffic in the area" says Tony Quan, director at DesignInc. "We have tried to open up a visual link right through the precinct, and if we have to have direction signs all around the place, then we haven't done our job properly," he says. "The space should feel open, light and safe. The design as a whole aims to reflect

the dynamism of the Chatswood area and community."

Already completed is the rail segment and concourse below the new platforms, connecting the new outdoor bus interchange via a glazed pedestrian street. It was a major challenge for COXDesignInc to fit all the required features of the project with a multitude of built form, fibre optic cables and tens of thousands of people. "A new rail and bus station required starting from scratch, but the continuous operation of both couldn't be compromised during the rebuild – neither could the safety of commuters who pass through the space every day," says Quan. "A separate, temporary rail station was the only solution."

An interim station was built on the site's north-east in January 2005, enabling the existing station and interchange site to be cleared in preparation for construction of the new transport interchange. To accommodate the new Chatswood to Epping line, an



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"THE LOCATION OF THE THREE TOWERS ABOVE THE INTERCHANGE WILL DEFINE THE GATEWAY TO CHATSWOOD..."
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additional two tracks were required (making four in total), as well as an extra platform.

Unexpected discrepancies between area plans and actual building footprints threw up some surprises, which could be worked around with most projects, however the options for the placement of the new rail line were limited. "The Interchange shopping centre, food court and Buddhist Centre constrain the site to the east and the Telstra Exchange constrains it to the west, while Chatswood Central hampers the north-west portion of the site. The Mirvac development to the north of the site also restricts the vertical and horizontal alignments of the tracks," explains Quan.

Platforms narrower than standard were adopted to ensure that the development stayed within the perimeters of Railcorp land. New rail bridges were constructed at both ends of Chatswood station to accommodate the new rail line, and the level of the Albert Avenue rail bridge was raised to increase clearance space. The new tracks fitted in with only centimetres to spare in some areas.

With large buildings alongside the boundaries, retail space planned adjacent to the rail line and residential towers intended for above the station, another issue was vibration from the trains. "To absorb transfer of vibration at the source, the rails are fixed to floating slabs using 'clone eggs'. The floating slabs in turn sit on a 1m thick concrete slab, which is the railway viaduct through the building," says Quan. "It's new technology at its best."

To ensure the rail station component of the interchange was also true to the design brief, it was necessary for every inch of the station to meet strict contemporary aesthetic imperatives set down at the outset. This is where the whale bones and banana sticks come in to play.

The 'ribs' (shaped like a whale's rib cage) are the support structure designed to hold the train's overhead high voltage cables, while also visually defining the rail corridor through the site for commuters. Similar in profile are the banana columns. Constructed of reinforced concrete, they will run along the station's pedestrian street, supporting the food court above. Located alongside railway tracks, they are designed to

Top right: The Chatswood Transport Interchange is a triumph of design over complexity.
Right: Tony Quan
Far right: In an already built-up area, the towers needed to be striking, says Quan.



Buildings incorporating transport, commercial and residential components always require:

- Well proportioned public space – barrier free and seamless
- Good natural ventilation and lighting
- A high level of visibility through the public areas which offers directional clarity and lessens dependence on signage
- Prominent, separate address points linking each component
- And design providing a memorable sense of place and journey.

withstand a considerable horizontal impact load, thus complying with RailCorp's engineering standards.

"The edge of the railway corridor has been designed to be cantilevered out from the centre line of the outer-most track. The ribs and columns are shaped back towards the track, further emphasising the lightness of the railway line. This increases the public open space at ground level as well as towards the sky," says Quan.

It is not just the people using the interchange area who will benefit from increased light and open space being brought to the area. The wellbeing of the established roses that grow within the adjoining Gardens of Remembrance has been a key consideration for the architects, along with the cultural significance of the space itself.

"The backdrop of the station will be treated to embrace the gardens rather than overshadow them, while improving acoustic screening," says Quan. "The perimeter of the rail corridor is clad with metal and glazing in key areas, supported by an expressed steel rib structure. The cladding provides an acoustic barrier to the railway edge, protecting the gardens as a quiet place of reflection."

The residential towers (housing 509 units)



as well as the railway line have been designed to allow a small improvement in sunlight access to the roses within the Gardens of Remembrance during the rose growing season. The gaps between the towers have been carefully calculated to allow improved sunlight access to the public spaces of the Bus Interchange, Chatswood Mall and Victoria Avenue West throughout the day as well.

"In an already built-up area, the towers needed to be striking, and the plans we have created are for buildings of slender proportion with small floor plates and strong sculpted form," says Quan. "The location of the three towers above the interchange will define the gateway to Chatswood, while the towers, symbolising the crossroads of the interchange will complete and enhance the city skyline."

The CTI project is coming in on time and on budget whilst staying true to design imperatives. The challenges engendered by the site and its demands have contributed to the distinct look and feel of the space. With its open spaces, public art and 10,000sqm of retail space, the Chatswood Transport Interchange is a triumph of design over complexity. ☺