

This case study was written at the time when OneSteel was part of BHP. In that context, in some instances within this case study, reference may be made to BHP.

Recently, the South Australian cities of Hindmarsh, Woodville and Henley & Grange amalgamated to form the City of Charles Sturt. The City and civic centre are aptly named after Captain Charles Sturt, one of Australia's great explorers, who had lived in Grange and held prominent positions in Government.

# Steel blends old with new

## CITY OF CHARLES STURT CIVIC CENTRE

The Charles Sturt Civic Centre is home to the City Council which services a regional population of 104,000, 13 km of coastline, 300 hectares of parklands and Adelaide's most diverse multi-cultural community. Woods Bagot Architects have given splendid architectural expression to the Council complex by adding a new 3,000 m<sup>2</sup> two storey administration block and 1,000 m<sup>2</sup> library.

### Aesthetic expression through steel

Alongside the conservative Heritage-listed Town Hall within the same complex, the new building is modern, friendly, and functional.

Impressive in design and appearance, it also demonstrates the prominent use of steel in combination with other materials.

Architects Woods Bagot have been awarded the inaugural Australian Institute of Steel Construction South Australian Architectural Steel Design Award for Buildings in recognition of the project's use of steel as an architectural and structural building material. The award was presented at the Royal Australian Institute of Architects South Australian Chapter Annual Awards Presentation along with several RAIA awards for the project.

The new complex is a deliberate attempt to reverse the conservative association of civic buildings, and features steel sections and plates used structurally, in addition to providing an aesthetic

statement. The use of steel framing and glass in its structure has created a transparent building, contrasting with the solid presence of the Town Hall. Its facilities, exhibits and services are visible from the exterior to attract the City's community, thereby realising the building concept of 'visible democracy'.

Movement through the complex is by way of a main internal 'street' defined by a curved wall linking the main road at the front and the car park at the rear. The 'street' is a covered way with a steel roof structure connecting the old and new buildings, supporting a rich texture of timber ceiling panels.

The steel structure is strongly expressed



Internal 'street' separating old and new buildings.



in a grid of 3.9 m giving a square format, both horizontally and vertically to the facade treatment. The exposed steel framing allows for different infill panels to be used, primarily aluminium framed glazing, interspaced with solid infill panels of compressed fibre cement sheets. They modularise the exterior appearance in addition to suiting the function of the internal spaces.

Structural steel framing is also extensively exposed internally, articulating the internal spaces while giving them an external feel. The theme is continued in the stairs which are made of heavy steel sections, with steel handrails.

Due to the 45° orientation of the building and site to north, sun protection to the glazed facades is provided by roof overhangs and large vertical steel plate blades. These elements provide strong visual definition to the building modules.



Other areas within the building show off exposed painted steel columns and beams, framing infill panels of glazing or other solid material.

## Light weight composite structure saves cost

The new building consists of a steel framed structure with long span composite beams used in the first floor level. Columns were typically CHS and bracing to the structure was achieved using a combination of:

- welded steel portal frames exposed internally and externally
- concealed steel cross bracing, and
- a reinforced concrete lift shaft.

Structural steel was selected for the primary building framework in order to fast-track the construction program by maximising off-site fabrication. Long span composite beams were specified at centres which avoided propping of the steel decking, further reducing the program time and construction costs. Composite design was carried out using the draft edition of the recently introduced Code AS2327.1-1996 Composite Structures.

The steel structure's light weight relative to a concrete frame was important because of the poor load-bearing capacity of the soil. Shallow spread footings could be used to save costs and additionally, the structure's inherent light weight had the advantage of reduced earthquake loadings.

The structure also has a light-weight appearance due to its long spans, portal action and concealed bracing. In many cases the columns stand proud of the brick walls by some 500 mm, giving a strong sense of structural

integrity yet maintaining a light weight appearance.

The construction timeframe was tight but was able to be achieved because of steel's speed of assembly.

## Fire protection

It was a requirement of the client that the building have sprinklers throughout. Passive fire protection however, was not required for this building under the Building Code of Australia.

## Surface protection

Red oxide zinc phosphate primer was used internally on a Class 1 surface preparation. Some external surfaces were galvanised while others were coated with inorganic zinc silicate. All exposed steelwork was finished in Solver Line 105 100% Protection Roof and Structural paint.

## Project participants

Client:	City of Charles Sturt.
Builder:	Baulderstone Hornibrook
Architect:	Woods Bagot
Structural Engineer:	Wallbridge and Gilbert
Quantity Surveyor:	Rider Hunt
Fabricator:	K D Engineering



Significant time savings were achieved by the use of steel in the structure.