

# 'STEEL' Building Value

The Merits of Structural  
Steelwork for  
Your Building Solution

## ASI Head Office

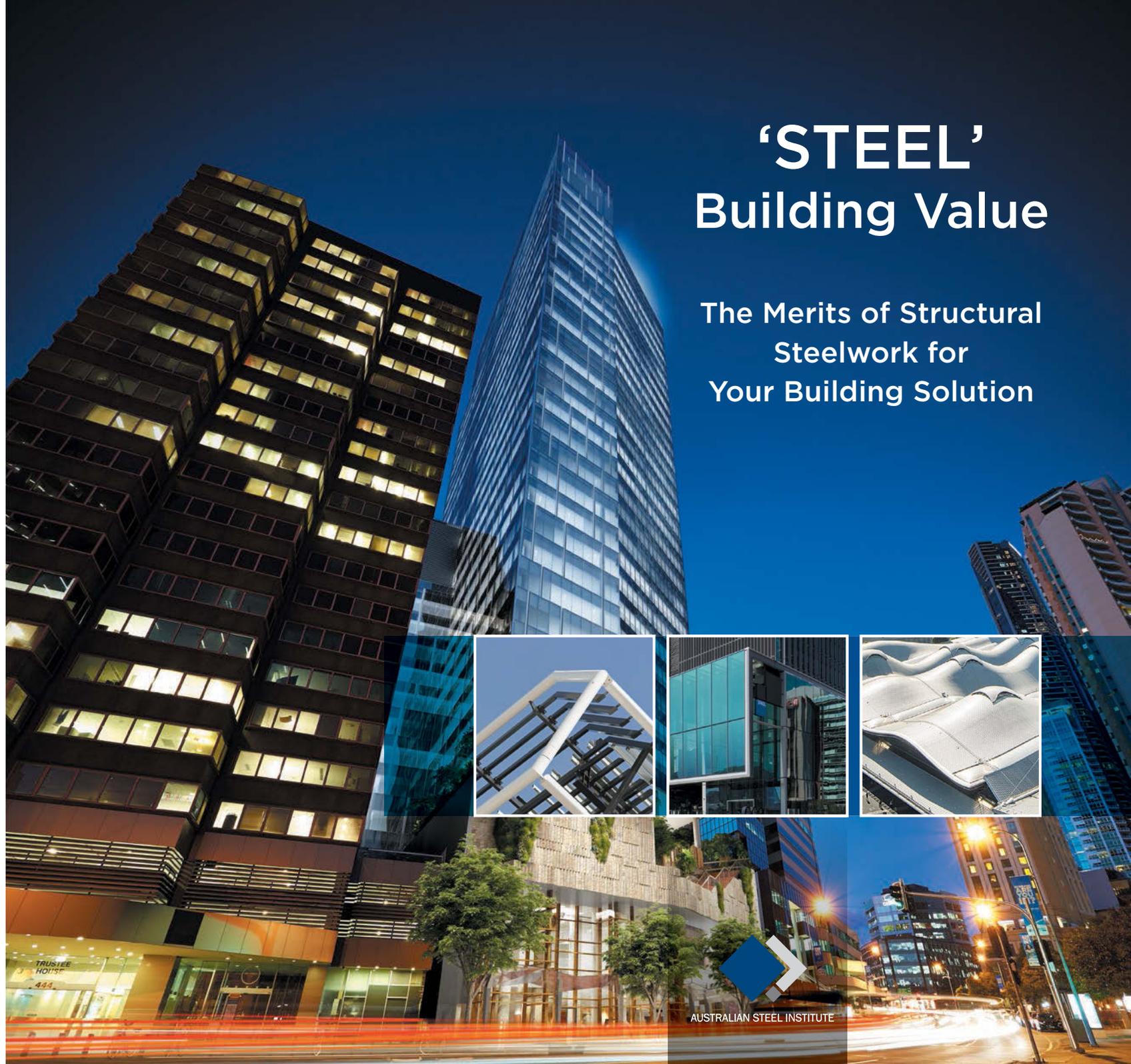
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AUSTRALIAN STEEL INSTITUTE



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This Guide has been prepared by the Australian Steel Institute for Developers, Builders, Architects, Consulting Engineers and Building Surveyors to demonstrate that the choice of structural steel can provide an economical, safe, fast and sustainable solution.

## Steel: the proven performer

This guide addresses the performance of steel for these important factors:

1. Value for money
2. Reduced risk – safety, quality and reliability
3. Speed of construction
4. Architectural flexibility and exposed steelwork
5. Sustainability and future proofing
6. Lightweight structures and solutions for complex building
7. Reduced waste and transport

# 1 Value for money

- Increased fabrication productivity through computer modelling and beamline machines has improved fabrication throughput and reduced cost
- Significantly increased speed of construction assists with:
  - Lower cost of preliminaries
  - Holding costs
  - Earlier tenancy
  - Construction risk



## Savings throughout the project:



- Better site utilisation – smaller site footprint
- Smaller columns and longer spans – maximising floor area
- Lower foundation costs
- Greater long-term flexibility in accommodating future changes to the building

## Web links:



Brookfield Place, Perth  
480 Queen Street, Brisbane  
The Star Events Centre, Sydney



“The site was spatially constrained with an existing structure that had minimal redundancy in its load carrying capacity. Structural steel was the only viable solution that satisfied all of the design criteria whilst also achieving an extremely cost efficient outcome when compared to a concrete structure.”

– Richard Hodgett  
Engineering Manager,  
Multiplex

## 2 Reduced risk – safety, quality and reliability

- Demonstrably reduced risk of managing safety onsite due to significantly less people (70 percent labour reduction is possible)
- Off-site fabrication in controlled factory conditions results in reduced risk of weather delay and better quality control
- World class fabrication using the latest computer controlled beamline equipment
- Skilled and permanent workforce
- Steel is a homogeneous material with plastic behaviour able to provide structural certainty in extreme situations such as earthquakes, explosion and climate events
- Ability through product certification to identify compliant mill steel source
- Availability of independently certified fabricators nationally ensure compliance to recognised standards

### Savings throughout the project:



Savings in the process can be generated by:

- Reduced management and preliminary cost
- Reduced holding costs
- Reduced insurance risk

### Web links:



The Cloisters on Hay Street, Perth  
ATO building, Melbourne  
Monash Green Chemical Futures building, Melbourne  
NSSCS certified fabricators

“The lightweight steel solution allowed for an additional two floor levels to be supported on the existing 1970s foundations, maximising returns. The lean design philosophy combined with digital design maximised automated fabrication which significantly reduced time and costs while increasing safety, quality and reliability.”

– James Taylor  
Senior Structural Engineer,  
Aurecon



# 3 Speed of construction – prefabrication off-site

- The steel frame is designed and manufactured from computer models linked directly to beamline machines ensuring accuracy and speed
- Fast onsite erection allows following trades to access the floors more quickly
- Steel's lightweight properties can reduce foundation needs, reducing cost and time
- Connection designs can be optimised for speed of construction and cost



Tea Tree Car Park, Adelaide

## Savings throughout the project:



Savings in the process can be generated by:

- Earlier tenancy
- Less holding costs
- Lower cost of preliminaries
- Opportunity costs – freeing management staff for next project

## Web links:



- 1 William Street, Brisbane
- 80 Arthur Street, Sydney
- Tea Tree Car Park, Adelaide



“You can never find out the advantages and disadvantages of a material by listening to other people; you have to try it for yourself. Steel appealed to me because it’s quicker than building with concrete.”

– Harry Triguboff  
Managing Director, Meriton

80 Arthur Street, North Sydney

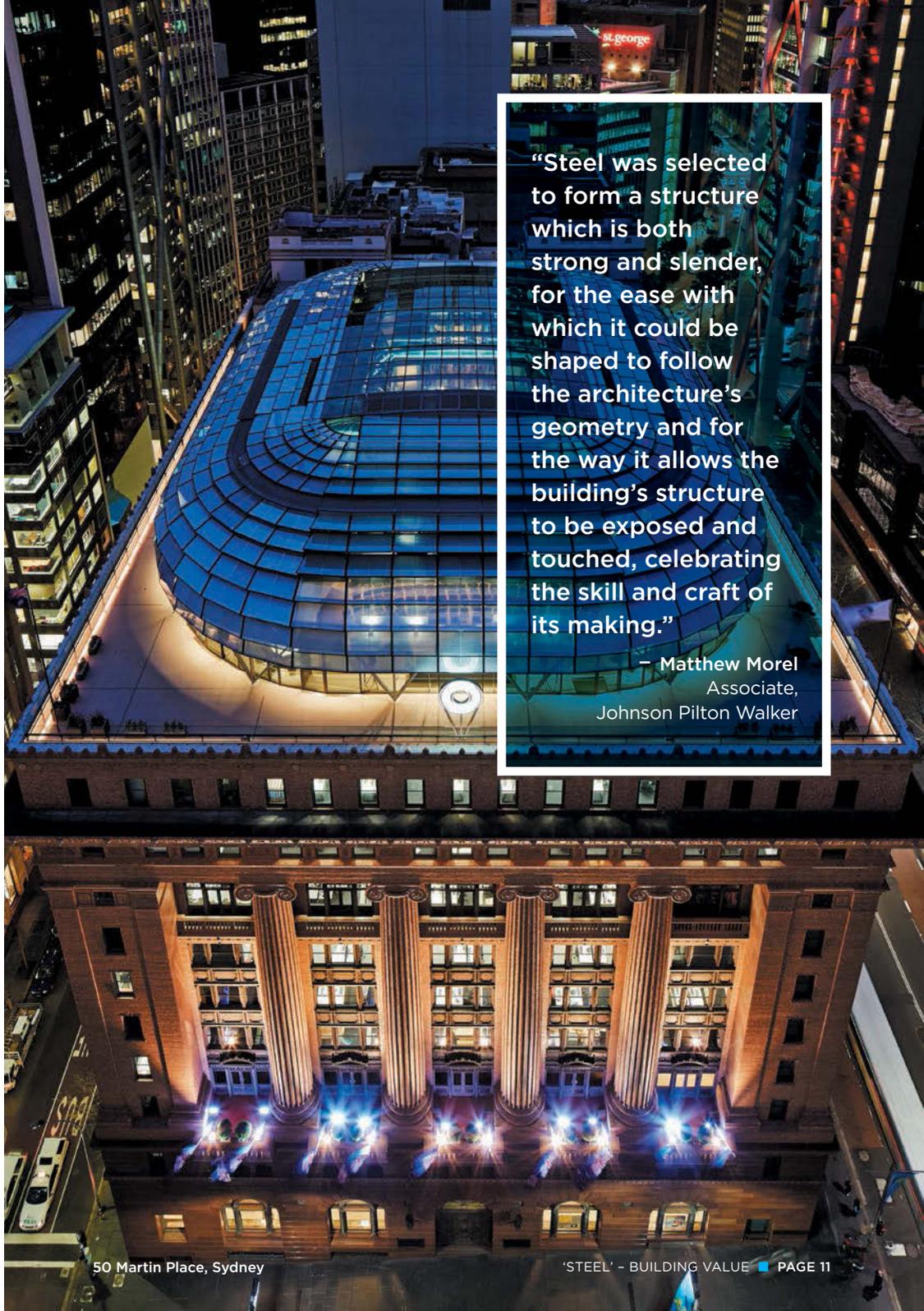
# 4 Architectural flexibility and exposed steelwork

- Economical use of space and increased floor area due to high strength beams and columns
- Easy adaption after construction to extend or change the building
- New connections and additions can be added through bolting or welding
- Award winning architectural exposed structural steelwork (AESS) designs
- Opportunity for architectural expression and an iconic structure - clean lines, slenderness, attractive and economical

## Web links:



Adelaide Convention Centre  
Burnside Village shopping centre, Adelaide  
50 Martin Place, Sydney  
Architecturally Exposed Structural Steelwork



“Steel was selected to form a structure which is both strong and slender, for the ease with which it could be shaped to follow the architecture’s geometry and for the way it allows the building’s structure to be exposed and touched, celebrating the skill and craft of its making.”

— Matthew Morel  
Associate,  
Johnson Pilton Walker

# 5 Sustainability and Future Proofing

- Steel framing can easily and economically deliver Green Star (or IS) points by;
  - Steel fabrication via members of the ASI Environmental Sustainability Charter (ESC)
  - The use of higher strength steels
  - Using steel that has an Environmental Product Declaration (EPD)
- Steel buildings can be modified and extended both horizontally and vertically, with minimal interruption to existing tenancies

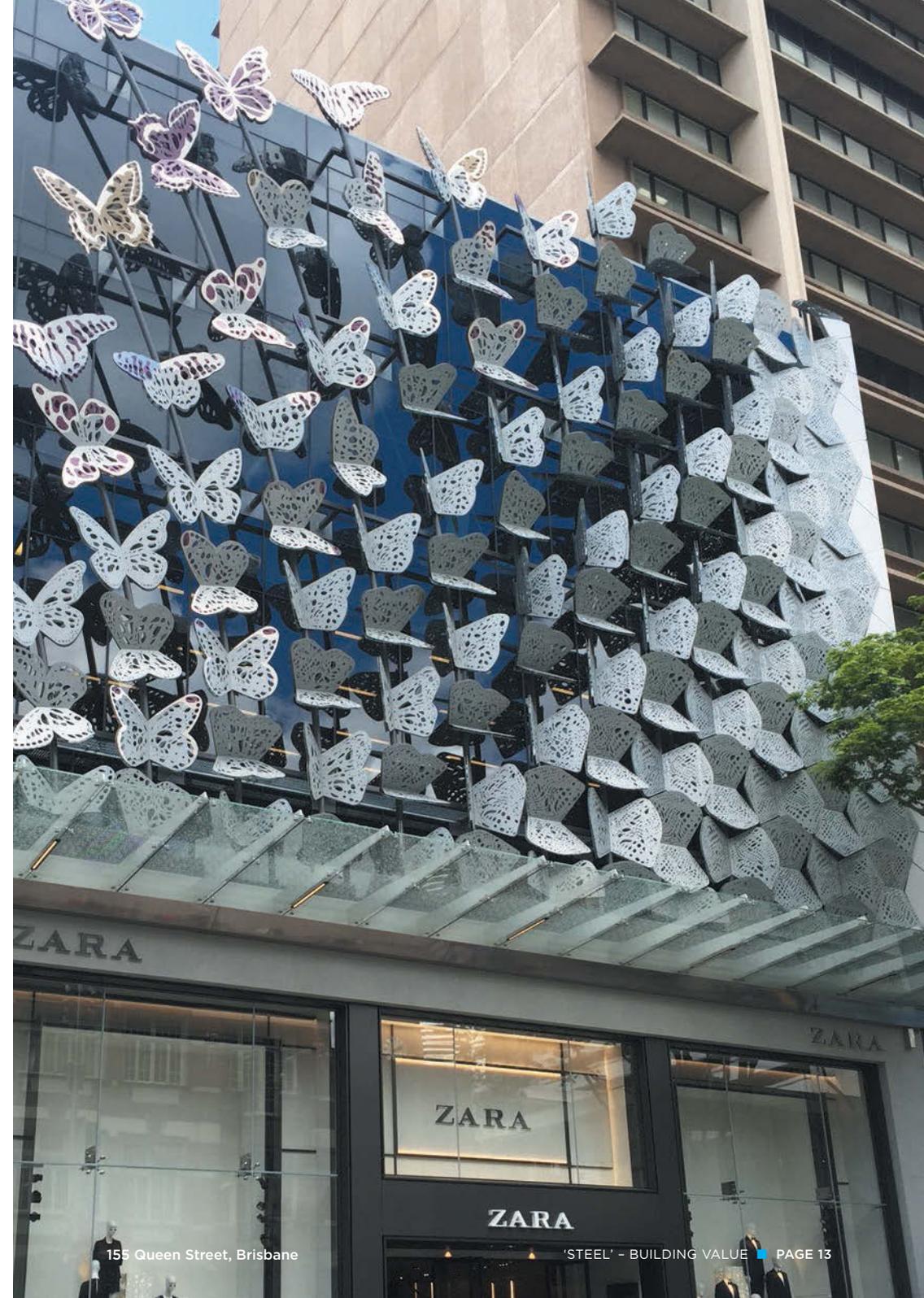
Web links:



155 Queen Street, Brisbane  
5 Martin Place, Sydney  
20 Martin Place, Sydney  
Sustainable Steel  
ASI Environmental Sustainability Charter



5 Martin Place, Sydney



ZARA

ZARA

ZARA

155 Queen Street, Brisbane

# 6 Lightweight structures and solutions for complex buildings

- Steel structures are considerably lighter than comparable concrete framed buildings
- Steel offers solutions in tight building situations where there is little laydown area
- Steel has solutions for out of balance buildings
- Steel provides solutions where foundations and building weight are issues, e.g. in the CBD over road or railway tunnels
- Steel is the best solution for working over existing assets, such as retail and office space, railway lines and bridges, where the existing facility is still operational

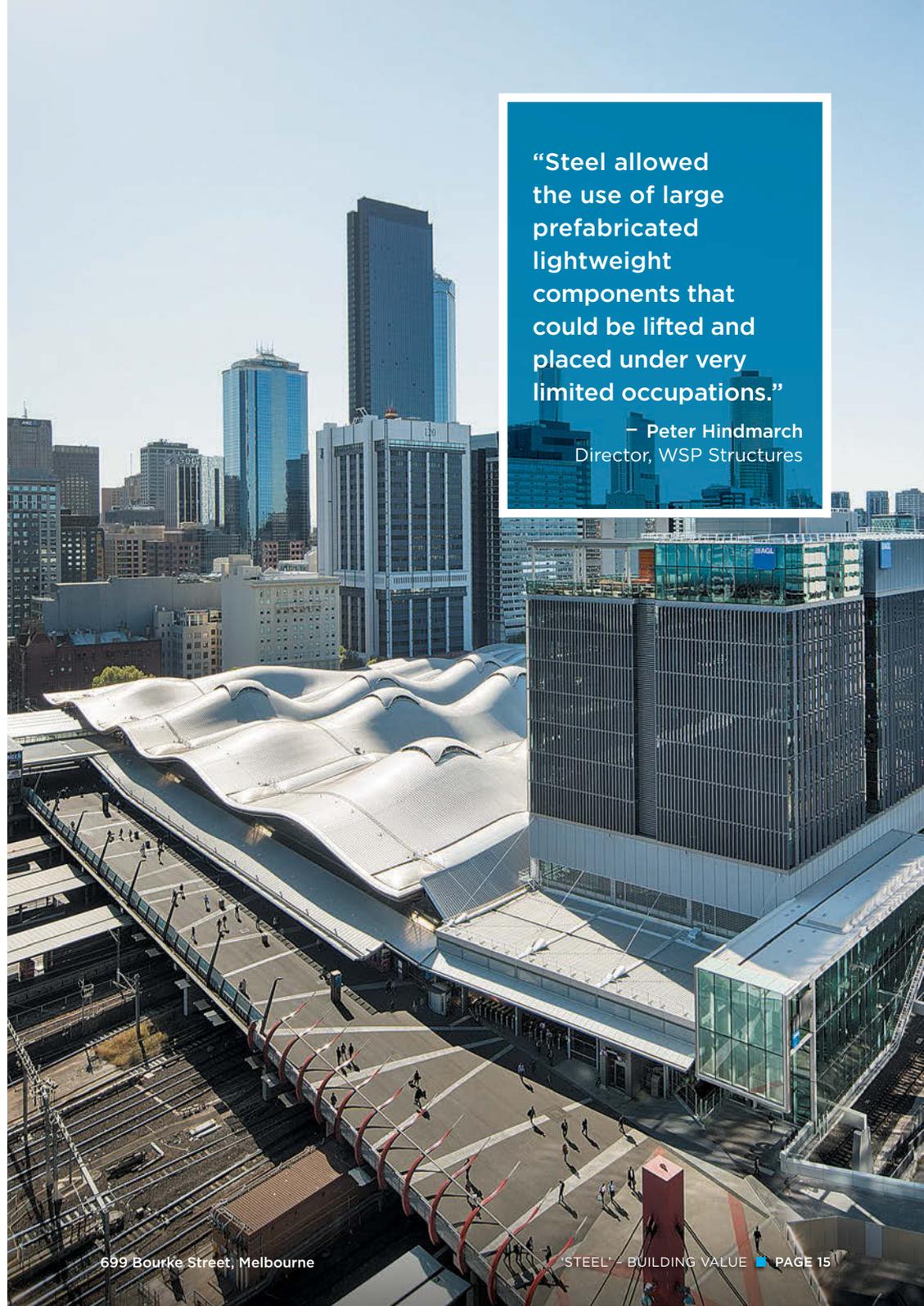
Web links:



699 Bourke Street, Melbourne  
Adelaide Oval  
500 Hay Street, Perth



Adelaide Oval



“Steel allowed the use of large prefabricated lightweight components that could be lifted and placed under very limited occupations.”  
– Peter Hindmarch  
Director, WSP Structures

# 7 Reduced waste and transport

- Composite structural steel framing significantly reduces the number of truck movements through significantly less concrete, and minimal or no back propping or formwork requirements
- Prominent builders have reported truck movements reduced by up to 75 percent and significant savings in waste removal for their steel buildings
- Pre-fabricated steel assemblies can be programmed to arrive onsite as required for the erection sequence
- Pre-fabricated assemblies can be located on set down areas on the partially constructed building



## Savings throughout the project:

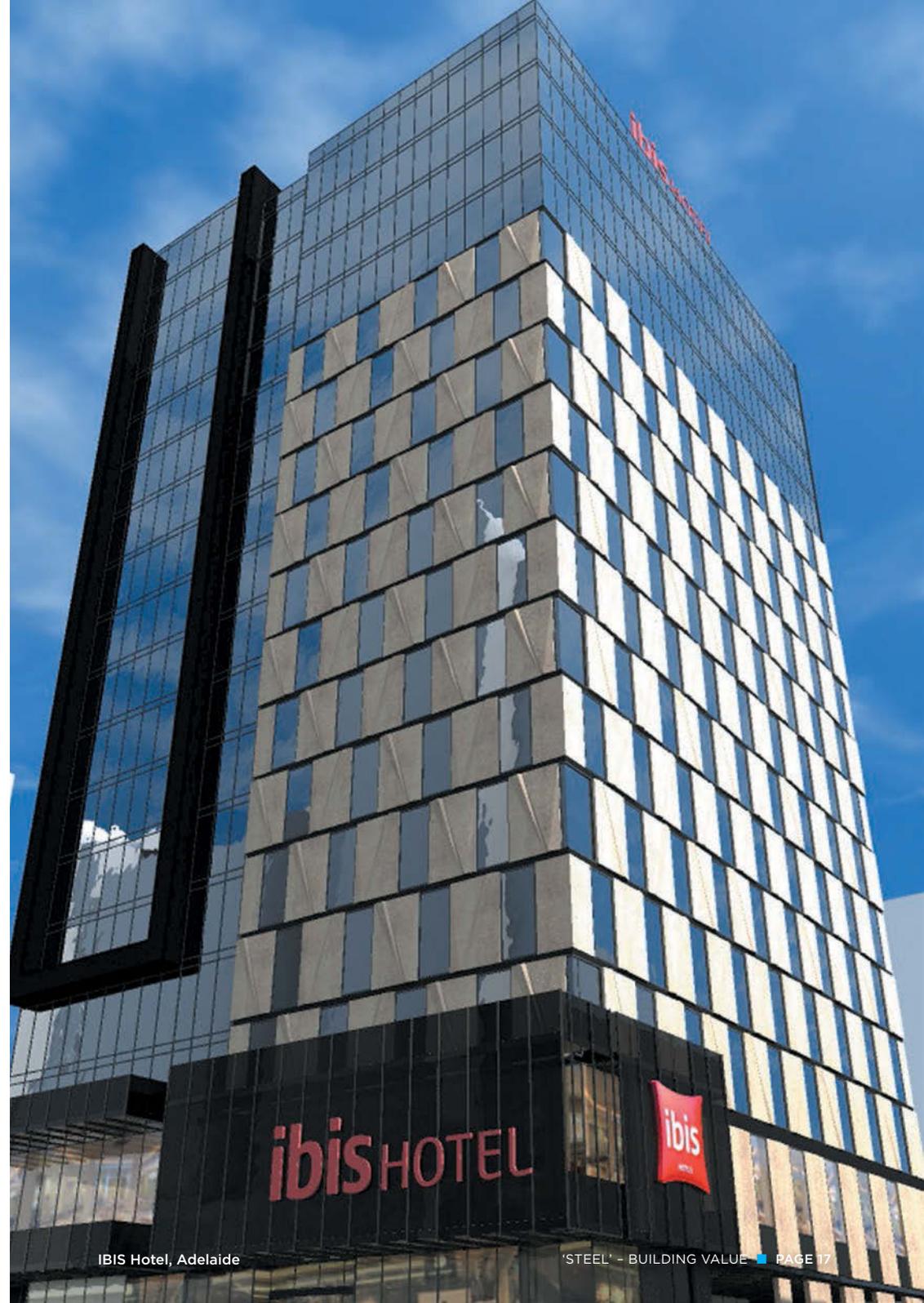


Savings through less waste removal and significantly less truck movements can be significant.

## Web links:



IBIS Hotel, Adelaide  
Perth Stadium  
Chadstone Shopping Centre, Melbourne



## A structure that reflects client needs

Steel has the ability to offer a 'Total Solution' including decking systems, walling systems, structural framing solutions and exposed structural steelwork.

Steel can exhibit great architectural beauty, efficient solutions in design and outcomes in speed and safety in construction that support a total cost competitive solution.

Steel solutions represent the predominant construction mode for multilevel construction in many developed nations.

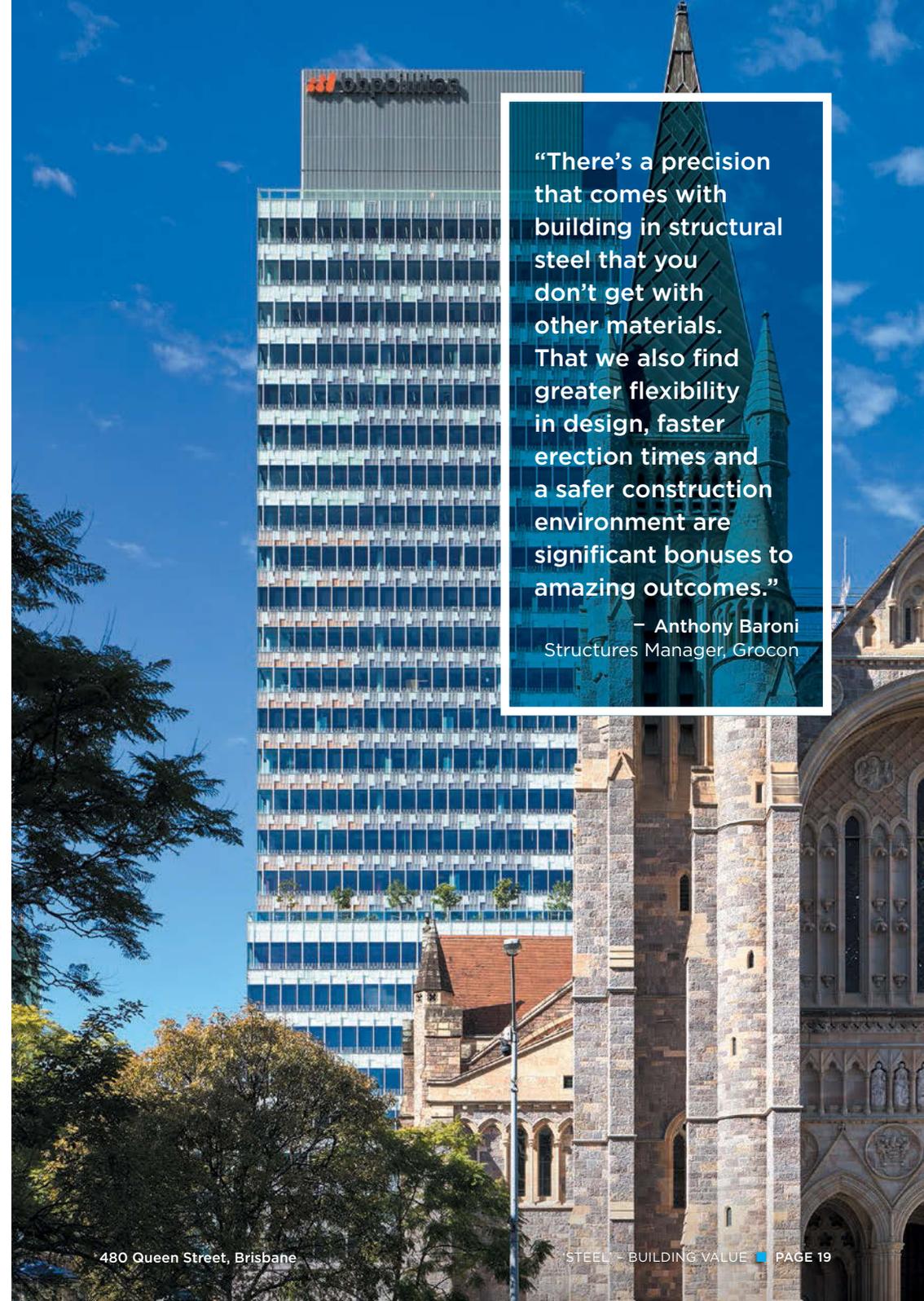
## Key links to Australian steel industry:



Directory of experienced steel framed building fabricators

BlueScope - façades, roofing, decking

OneSteel - structural steel beams, columns



**“There’s a precision that comes with building in structural steel that you don’t get with other materials. That we also find greater flexibility in design, faster erection times and a safer construction environment are significant bonuses to amazing outcomes.”**

**– Anthony Baroni**  
Structures Manager, Grocon