Capabilities of the Australian steel industry to supply major projects in Australia

compiled by

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on behalf of the Australian Steel Institute

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Disclaimer – This document is provided as general information ONLY and not intended as specific recommendations or advice.

1 - Introduction

This document has been prepared by the Australian Steel Institute (ASI) on behalf of its members and the greater steel industry in general.

It is a summary of the structure, capabilities and capacities of the Australian 'steel value chain' and provides a background into the business environment in which the industry operates. While the document may be of use to many people who use steel in Australia, its main purpose is to provide an overview of the industry and highlight the advantages of using Australian steel supply, fabrication and services for major projects in Australia.

This document describes the structure and capability of the Australian steel industry and provides information on the capacity of the Australian steel manufacturers and the fabrication sector as a reference document for major project proponents and their Front-End Engineering Design (FEED) and Engineering, Procurement, Construction Management (EPCM) contractors.

The competitive advantages of using the Australian steel industry are outlined and a summary of the major industry sectors is provided as they relate to major projects. The applicable compliance requirements and standards applicable to construction in Australia is also explained.

ASI is of the view that early engagement with project teams will maximise the potential benefits that will flow to each project and local industry. The Industry is keen to work with project proponents and their downstream FEED/EPCM contractors from the outset to achieve optimum project outcomes and help ensure that local industry is provided with full, fair and reasonable opportunity to supply major projects within Australia.

2 - Background – the Australian steel sector

The Australian steel industry consists of two main producers – BlueScope Steel Ltd and OneSteel Ltd, supported by over 200 steel distribution outlets throughout the country and numerous fabrication and engineering companies.

According to the Australian Bureau of Statistics, the entire Australian steel industry chain, from basic iron and steel production though to downstream users such as fabricators, employed over 91,000 Australians and generated almost $29 billion in turnover in 2005-06[1].

The value of iron and steel exports was $1.6 billion for the same period (see figure 1). Steel production is performed by BlueScope Steel and OneSteel and concentrated in NSW, Victoria and South Australia (see figure 2), for more detail on steel manufacturing see Section 5A.

Both steel companies have a combined production capacity of over nine million tonnes annually, compared to domestic consumption some seven million tonnes (these figures do not include imports or exports of finished or semi-finished steel products). It should be noted that not all grades of steel are produced in Australia (eg. Australia no longer produces stainless steel). The bulk of steel use is in the construction sector (figure 3).

Australian industry competes in a global market that has both significant capacity and widespread market access issues. According to the World Steel Organisation Australia ranked twenty second out of the World's top 80 steel producers at 7.6 million tonnes for 2008[2]. The top three national producers were China (500 million tonnes), Japan (118 million tonnes) and the USA (91 million tonnes). BlueScope Steel was ranked the forty fifth largest producer in the world in 2008 with production of 6.5 million tonnes, while OneSteel produced 2.5 million tonnes. The largest producer was Arcelor Mittal, with output of 101 million tonnes.

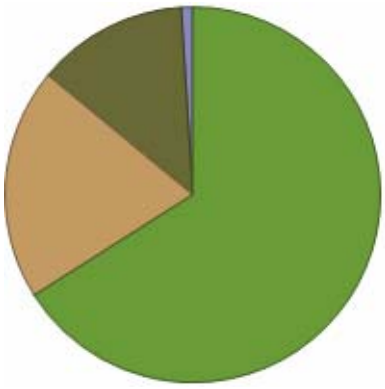
1 These are the most recent figures from ABS *"Manufacturing Industry Australia 2005-2006*" Cat No. 8221.0
2 World Steel Organistation *World Steel in Figures 2009* pp 8-9

Figure 1: Australian Iron and Steel Annual Production and Value 2003 – 2008

	2003-04	2004-05	2005-06	2006-07	2007-08
Production, Iron and Steel (Mt)	9.4	7.4	7.9	8.0	8.27
Volume of Exports, Iron and Steel (Mt)	3.8	2.3	2.4	2.7	2.8
Volume of Imports of Iron and Steel	1.6	2.1	2.2	2.3	1.9
Value of Exports, Iron and Steel ($m)	2,004	2,031	1,674	1,756	1,786

Source: Compiled from ABARE Australian Mineral Statistics quarterly various issues.

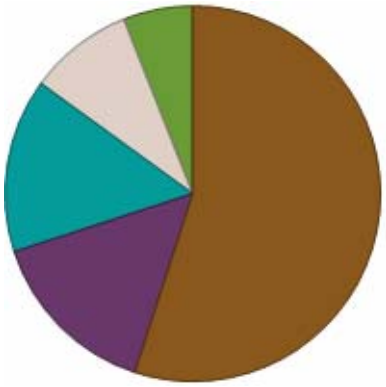
Figure 2: Iron and Steel Products Industry Output by State



Region	Percentage
NSW	66.0
SA	20.0
VIC	13.0
TAS	1.0
ACT	0.0
NT	0.0
QLD	0.0
WA	0.0

Source: IBIS Industry report C2711 *Iron and Steel Manufacturing in Australia* June 30 2009

Figure 3: Major Market Segments



Market Segment	Share
Construction industry	55.0%
Vehicles and machinery industries	15.0%
Mining and rail manufacture	15.0%
Export	9.0%
Rural and other	6.0%

Source: IBIS Industry report C2711 *Iron and Steel Manufacturing in Australia* June 30 2009

3 - About the Australian Steel Institute

The Australian Steel Institute (ASI) is a ‘not for profit’ organisation and is the peak industry body in Australia representing the nation’s steel and associated industries. Its mission is to ‘assist in the profitable growth of the complete Australian steel value chain’.

The ASI’s membership includes all sectors of the steel industry including manufacturers of steel and steel products, distributors, processors, fabricators, designers, detailers, galvanisers and paint companies, suppliers of services and consumables, constructors and educators.

The ASI provides industry and professional development by conducting regular technical seminars, publishing technical manuals available through its own bookshop and online, and operates the largest steel library in this part of the world. It delivers guest lectures at universities and hosts a range of national and state-based committees providing cross-industry representation.

Governance and policy is set by a Board of industry leaders from across the spectrum of Australia’s steel industry. ASI core business activities are coordinated and supported by a wide range of state and regional committees and special interest workgroups operating under a charter determined by the Board.

ASI groups cover areas and interests as diverse as health and safety, sustainability, sheds, manufacturing and distribution, fabricators, detailers, pipe and tube, sheet and coil, engineering and construction.

The ASI provides an independent voice for industry representation covering such issues as industry safety, government policy, steel in buildings, maximising local content, sustainability, compliance, codes and regulations.

AUSTRALIAN STEEL INSTITUTE

4- Competitive Advantages of the Australian Steel Industry

Australia has a highly skilled, well-equipped steel supply chain which has evolved over many years. Thousands of firms throughout the country provide steel manufacture, design, detailing, fabrication, surface treatment and construction services. These industry players have a long history of successfully working together to deliver major projects in Australia, providing clients with seamless, efficient, cost-effective steel solutions.

Choosing to partner with the Australian steel supply chain will ensure optimum mitigation of risks associated with the cost, quality, supply surety, compliance and safety of all steelwork used in a project.

Cost Containment

By engaging with the Australian steel supply chain in the early stages of a project, proponents and their partners may derive cost savings that can be built into a project at the initial concept design stage. Quick response and the capacity of the industry to get a project started can lead to significant cost reductions.

The need for fixed or predictable pricing for the duration of the project may be accommodated, so lessening exposure to the highly unpredictable price fluctuations of the global steel industry. Pricing in Australian dollars has the added advantage of not being exposed to volatile exchange rates.

The fact that the steel supply chain is *local* can provide multiple, additional cost benefits:

- Through the implementation of a number of practices, contractors (and therefore the project owner) benefit through cash flows being ‘protected’. For example, reducing handling of components, lower onsite inventory levels and pre-production work can free up cash for alternative activities.
- Onsite inspection costs can be significantly reduced where the personnel involved are resident in the region.
- Chances of misinformation and mistakes in interpreting site plans, local regulations and environmental matters can be minimised, providing a significant financial benefit by reducing the need for re-work.
- By meeting certified standards, exacting specifications and having a ’right first time’ culture, Australian suppliers further eliminate the need for costly re-work.

- Inspection costs can be significantly reduced, compared to alternate supply of fabricated steel, which may require many overseas visits.

- There are savings to be made in various administration costs such as bank and other associated costs compared to the imported alternative.

- 'Whole of life' costs, including equipment maintenance and service costs are reduced when local subcontractors are part of the construction team and remain available on completion of the major works. Local companies have the ability to source replacement parts (or parts that may need to be re-engineered to certain specifications) and service a project's ongoing needs.

Supply Surety

Fabricated steelwork is often on the critical path of major projects, with supply and construction schedules usually tight. Delays or site rectification of the steelwork often has serious ramifications for the project as a whole. Working together, the Australian steel supply chain can overcome many obstacles that negatively impact on-time delivery of steel components to a project:

- The likelihood of having to make design changes either at short-notice, or at a late stage in a complex project is high. The ability of locally-based companies to be innovative and respond to changing conditions or variations to the original planning and design work is easily accommodated. Regular face-to-face contact between the fabricator and detailer ensures that when design or site erection schedule changes arise, delays are minimised. Additionally, the industry is serviced by a network of steel distribution centres throughout Australia that stock a depth and range of all steel products thus enabling fabricators to quickly source material to respond quickly and cost-effectively to any changes. Australian steel distributors can also supply processed steel to fabricators to further speed production schedules.

- The high rate of productivity of Australian fabricators, coupled with high integrity quality of workmanship that underpins the industry's 'right first time' culture, ensures on-time, short lead-time, completion of all steelwork.

- Robust and flexible transportation strategies for fabricated steelwork are essential to ensure the overall project schedule is not at risk. Locally fabricated steelwork can take advantage of road, rail or local sea transportation, maximising flexibility and economy in meeting delivery schedules and ensuring that project schedules are met.

- The availability of suitable global shipping vessels and the associated timing of departures with the completion of overseas fabricators work, can also pose a high risk to the construction schedule.

- The ability of the local steel supply chain to, if required, provide phased or 'just-in-time' deliveries that dovetail with a project's construction schedule is superior, when compared to alternative fabricated steel supply options.

Input Quality

Poor quality fabricated steelwork can create multiple risks, not only during construction but also for future plant operations. These risks may be heightened by the remoteness of a particular project's location.

From steel manufacture to coatings application, a broad range of independently developed, administered and audited Australian Standards exist, each tailored to regulate specific processes undertaken by each member of the Australian steel supply chain. Compliance to these Australian Standards is the foundation for building input quality for any project. Additionally, the systems rigour and traceability requirements that adherence to these quality standards demand, can facilitate seamless input to any QA requirements of a project. Specifically, the following practices contribute to input quality by the local steel supply chain:

- The size, scale and breadth of Australian steel manufacturers' capabilities contribute to their ability to successfully deliver quality steel solutions to their customers. The industry is able to produce special steel grades and control quality through the full production chain – from steelmaking to rolling. Regardless of the specific product or grade required, all steel is manufactured in accordance with Australian Standards. These standards address such matters as inherent attributes of the steel itself, product testing, certification procedures and dimensional tolerances. Australian steel manufacturers guarantee the quality of the steel products they manufacture by certifying compliance with these independently established Australian Standards. Additionally, local steel manufacturers hold ISO Quality Management System Accreditation (ISO 9001), third party quality accreditation.

- Domestic steel manufacturers have technical teams with significant experience and expertise in working with other members of the steel supply chain and their clients, to provide input to the design process or optimise existing designs by ensuring the most suitable quality grades of steel are chosen for particular applications, or offer advice on Best Practice for steel processing.

- A highly skilled workforce, trained in the latest steel fabrication techniques and welding processes characterises the Australian fabrication industry. This team, coupled with

- The local steel industry has become accustomed to satisfying the demands of project proponents and their partners for quality records and traceability. Provision of documentation is not limited to that governing traceability and compliance of steelwork. It includes materials for cleats and fitments, bolts and welding consumables as well as welding records, NDT records, and fabrication inspection records. Without such traceability a project may not only be at risk of compromising quality and being unable to meet reporting requirements, but also risk schedule delays associated with achieving compliance.

Safety Secured

The Australian steel supply chain demonstrates a strong commitment to occupational health and safety (OH&S), believing that all injuries, occupational illnesses and incidents are preventable. Steel manufacturers enjoy global-industry-low, benchmark levels for Lost Time Injury Frequency Rates (LTIFR) and Medical Treatment Injury Frequency Rates (MTIFR). This safety performance is underpinned by wide-scale safety improvement plans, driven by executive leadership from the local steel manufacturers. This approach to safety as a cultural norm throughout the Australian steel supply chain means that projects are less likely to be negatively impacted by OH&S incidents.

Track Record

Australia's large mining and processing industries have over many decades spawned a competitive steel construction industry capable of servicing major projects and delivering quality. The track record of the industry is one of continual improvement in all facets of fabricated steel supply to large projects resulting in optimum risk mitigation for project proponents and their partners.

5A - Manufacturing

Australian steel is recognised around the world for its quality and product consistency. The annual capacity of Australian steelmakers is approximately eight million tonnes of which about 1,6 million tonnes is structural steel used for industrial, commercial and residential buildings, bridges, towers and masts, maritime structures, mining and materials handling projects.

There are estimated to be 50,000 tonnes of structural steel stock in the distribution chain at any one time.

Australia is well served by three steel manufacturers who operate an array of modern steelmaking mills across the country**, BlueScope Steel** (which largely produces flat steel product), **OneSteel** (making mostly long steel product) and **Orrcon** (making tubular steel product).

BlueScope Steel

BlueScope Steel Limited is an international steel solutions company with a manufacturing and marketing footprint that spans Australia, New Zealand, Asia and North America. It employs more than 18,000 people and operates 91 manufacturing plants in 17 countries around the world.

Manufacturing Facilities

BlueScope Steel has vertically integrated operations for flat steel products in Australia and New Zealand including steel slab, hot rolled coil, cold rolled coil, steel plate and value-added metallic coated and painted products.

It is also a designer and manufacturer of pre-engineered steel buildings and building solutions products. The company's Coated and Industrial Products Australia division incorporates:

- Port Kembla Steelworks - an integrated steelmaking operation with an annual production capacity of approximately 5.3 million tonnes of crude steel. It is the largest manufacturer and supplier of flat steel in Australia by volume and manufactures slab, hot rolled coil and plate products.
- Two metallic coating and painting facilities located in Springhill (NSW) and Western Port (Victoria).
- Steel painting facilities in Western Sydney (NSW) and Acacia Ridge (Queensland).

- Export trading offices based in North America, Europe, the Middle East and Asia.

Through its focus on cost efficient manufacturing and strong brand recognition for products such as COLORBOND® steel and ZINCALUME® steel, the company enjoys strong market shares in each of the Australian and New Zealand sectors in which it operates, serving customers in the building and construction, engineering construction, manufacturing, automotive and transport, agricultural and mining industries.

Its flat steel product range is produced to exacting standards with products being manufactured to Australian and International Standards providing a known level of quality with full traceability. All manufacturing facilities have quality management systems accredited to ISO 9001:2008. This accreditation is actively maintained and audited, ensuring a mature and fully functional system. BlueScope Steel is committed to the principles of quality assurance, thereby increasing customers' confidence of the project being delivered to the required quality standards.

Customer Service

BlueScope Steel also operates a national network of service centres and steel distribution sites throughout Australia. BlueScope Distribution can fill customers' material needs from its Australian network of more than 50 processing and distribution sites.

Products stocked include steel plate, sheet and coil, reinforcing fabric, bar and building products, merchant bar, structural steel, tubular, engineering steel and aluminum products. It

offers quality processing services which range from simple length-based cutting of bar and tube products to complex multiple precision processing on world standard CNC controlled beam line and plate line installations. Providing customers with metal in the form they need helps reduce customers' costs, lead-times and waste.

For steel-intensive projects, BlueScope Steel collaborates with both BlueScope Distribution and other ASI-affiliated steel distributors as well as steel fabricator customers to provide 'flowed' deliveries of steel to meet project production schedules to reduce project costs by minimising sorting, handling and storage. The need to 'jump-start' projects is also easily accommodated given the ready availability of its standard product range from the Australia-wide steel distributor network or on short lead times from mills for non-standard products.

BlueScope Steel has an experienced technical team that supports projects by providing advice regarding the 'best-fit' steel grade for a particular application from its current product range, advice on international equivalent steel grades that BlueScope Steel can produce, or even working with project proponents to develop new, modified steel grades, tailored to provide optimum application performance.

To simplify the process of ordering steel and doing business with BlueScope Steel, its e-commerce trading hub www.bluescopesteelconnect.com provides online access 24 hours a day, seven days a week. Its *OrderIntegrator* system for single point data entry delivers time savings, productivity enhancements and reduced error potential while giving more control over orders

Safety and the Environment

BlueScope Steel's fundamental belief is that all injuries can be prevented. The company is committed to its goal of Zero Harm for all its employees and contractors, anywhere in the world.

The company's injury levels are at World Best standards with its Lost Time Injury Frequency Rate (LTIFR) remaining below one for the fifth consecutive year to December 2009 Its Medically Treated Injury Frequency Rate (MTIFR) has fallen from 8.3 medically treated injuries per million man-hours worked in 2004 (including contractors) to 4.5 at December 2009.

BlueScope Steel is committed to caring for the environment and choosing to do what is right. It takes action within its businesses and works with partners to continually improve its environmental footprint. The company has adopted comprehensive environmental governance arrangements and management systems to ensure it achieve those goals. In

addition to its compliance obligations, BlueScope Steel has undertaken a range of initiatives to reduce the company's environmental footprint (refer *11-Environmental Sustainability*).

OneSteel

OneSteel was created by combining eight historically diverse, yet related businesses to form a vertically integrated mining, steel manufacturing and steel products distribution company.

Prior to the formation of the OneSteel business in 2000, these businesses were essentially run as independent operations within the steel division of BHP.

OneSteel is currently a vertically integrated business with annual revenues in excess of six billion Australian dollars. The company employs 10,500 people across Australia, New Zealand, Asia, the Pacific and the United States.

OneSteel's high levels of self-sufficiency in key steelmaking inputs make it unique in the world of steel. From mineral extraction and scrap steel recycling to delivering product and service solutions, OneSteel services over 30,000 customers globally from its range of some 40,000 products.

Customer Service

OneSteel services its diverse customer base from 10 specialist manufacturing facilities in Australia fed by four steelmaking facilities with capacity of 2.6million tonnes per annum. Products and services are distributed through a comprehensive network of more than 150 distribution centres in Australia and New Zealand that are close to local markets.

Its products include structurals, rails, rod and bar, reinforcing, wire, tube, pipes, fittings, valves, rail wheels and axles, 'lite' steel beam, grinding media and recycled metals. OneSteel's products are used across industries including construction, manufacturing, housing, resource, mining and agriculture.

The company's capabilities span from simply the supply of product to the management and delivery of complete packaged solutions. The company leverages its in-house product development, engineering support and project management capability to optimise engineering design and manage the sourcing, fabrication and logistics of solutions for its customers in resources, mining and construction industries.

Safety and Sustainability

OneSteel is committed to achieving the highest performance in occupational health and safety with the aim of creating and maintaining a safe and healthy work environment throughout its businesses.

The company believes that sustainable development is about meeting the needs of its current generation without compromising the ability of future generations to meet their own needs. OneSteel recognises the importance of a sustainable approach to its operations across the entire steel value chain, from the extraction of raw materials through to the manufacture of finished steel products and the distribution to customers.

OneSteel's network of operations is underpinned by the strategic theme of Operational Excellence ensuring that it has reliable, sustainable, capable and internationally competitive manufacturing processes which align and strengthen its market offer. For OneSteel operational excellence involves:

- Process capability, maintenance reliability and labour productivity of all operations where manufacturing is a key part of those operations.
- Having skills, competencies and expertise in those areas to ensure it operates manufacturing facilities as cost effectively as possible.
- Cost effective, capable products and processes, particularly focused on reducing variation.

OneSteel has significant experience and expertise in working in partnership with its customers to provide input into the design process or to optimise an existing design for efficient manufacturing, reduced waste, reduced risk and ultimately reduced cost.

The company employs five structural engineers who are based within the Market Mills

business. Each of these engineers has a long history working in OneSteel and the group is intimately involved with the ASI and Australian design standards.

OneSteel personnel have participated on the Australian Standards committee for Australia's main structural steel design standard, AS 4100 Steel Structures. OneSteel also has representatives on the committee for AS 3679.1 Structural Steel Part 1: Hot-Rolled Bars and Sections. The engineering design team have an in-depth understanding of these and other standards associated with structural steel design.

OneSteel is contributing author to a range of standardised steel connections published by the ASI, most recently in May 2009. A significant focus of OneSteel's involvement with these publications was to provide the industry with a range of practical and economical standard connections. Given an objective in design is to utilise the available member strengths to a high degree, the connections were developed to achieve the maximum strengths possible (subject to bolt capabilities), while at the same time minimising component sizes for optimum economy. Having a range of connections designed in accordance with the current standards and the latest design models eliminates a great deal of detailed and time consuming engineering work. These connections have been developed based on OneSteel's hot rolled and welded universal beams and cover many practical situations. Given its involvement in this area, its engineers are able to assist OneSteel's partners to apply those connections and develop suitable one for alternative design situations, where they arise. This can provide significant efficiencies during design and fabrication.

OneSteel's expertise in engineering design and optimisation has provided significant benefits to our partners on a number of large infrastructure projects in Australia.These capabilities, plus an intimate knowledge of product attributes and mill capabilities contribute to a design that is efficient to manufacture, has reduced waste, reduced risk and ultimately reduced

OneSteel Piping Systems

OneSteel Piping Systems is one of Australia's leading product and service providers of pipe, valves and fittings for the resources, construction, manufacturing and energy markets. It partners with key customers in oil and gas, mining and engineering construction, offering customised solutions with a superior range of piping systems products and national service capability.

Its dedicated personnel bring industry experience and technical capability that enables the company to work closely with clients to add value to its relationships and maximise customer satisfaction.

By sourcing domestically and internationally, OneSteel Piping Systems is experienced in connecting customers with some of the most recognised brands for pipe, valves and fittings. It has longstanding relationships with some of the world's leading valve manufacturers and imports a comprehensive range of pipe and fittings. This is in addition to its locally manufactured pipe from its subsidiaries, Australian Tube Mills and OneSteel Oil & Gas Pipe.

As a specialist supplier to many industries, OneSteel Piping Systems offers a complete package, whether it's a project, application advice or next day delivery for a piping system product to anywhere in Australia,.

It offers an extensive range of global brands and high QA standards and certification processes and has a world class network of offshore manufacturers and its products are quality assured and embraced under OneSteel's ISO 9001 accreditation certificate. Supported by a dedicated international sourcing and procurement team, OneSteel Piping Systems is well placed to deliver quality products and service solutions, safely and on time delivery.

OneSteel Oil & Gas Pipe is one of Australia's most experienced API accredited manufacturers (API Q1, AS/NZS ISO 9001:2000) manufacturing quality Australian made carbon steel ERW linepipe.

Its Kembla Grange mill manufactures pipe in:

- Diameters 168.3mm to 508.0mm.
- Thicknesses to 12.7mm.
- Lengths to 18.3m.
- Grades up to API 5L-X80 in either PSL1 or PSL2.

Additionally, OneSteel's products are manufactured to comply with AS1163, the only structural hollow section material standard recognised by the Australian Structural Design Code, AS4100.

Its manufacturing capability is complemented with an ability to source an extended range of linepipe manufactured by pre-qualified overseas pipe mills. The company offers fully integrated supply packages that include corrosion coated and/or lined electronically traceable pipe to customers' stockpile sites or project right-of-ways.

It goes to great lengths to ensure that its pipe is specifically designed to meet the technical, commercial and logistical requirements of each client's needs. Regardless of the project type or size, OneSteel Oil & Gas Pipe aims to provide high quality pipe for your project.

Orrcon Steel

Orrcon Steel is a manufacturer and distributor of steel tube and pipe in Australia and a member of the Hills Industries Limited group of companies.

All Orrcon Steel manufactured products are quality assurance certified to appropriate standards such as ISO 9001 and API Q1 level of excellence. Orrcon Steel distribution centres are strategically located in Queensland, NSW, Victoria, South Australia and Western Australia, ensuring a solid distribution network which is complemented by an extensive spread of distributors and stockists in metropolitan and rural Australia.

Its Pipelines and Infrastructure group is a project-focused business unit within Orrcon Steel with a broad spectrum with expertise aligned to industry sectors covering the development of pipelines, energy, resources and infrastructure. It has world class production capability and support functions to deliver projects in-full on-time and to quality requirements. This dedicated team specialises in the manufacturing, procurement and management for some of the largest pipeline and infrastructure development products in Australia.

Manufacturing Locations and Scope

• **Wollongong** – a world class electric resistance welded (ERW) mill manufacturing large structural pipe and RHS, API Monogrammed Oil, Gas and Water Linepipe.
Capability 90,000t pa.

• **Brisbane** – Structural tube and pipe mills, plus and an electro-galvanising plant producing Orrcon Steel's own range of ALLGAL®. Providing ready-primed and zinc coated ERW product, manufactured for structural and pressure applications.
Capability 150,000t pa.

• **Adelaide** – Precision tube mills manufacturing cold rolled, hot rolled zinc and aluminum coated ERW steel tubing rolled to precise diameters and wall thicknesses.
Capability 85,000t pa.

Additional Products

- Merchant bar (eg: flats, rounds, squares and angles)
- Fittings and flanges.
- Seamless and large diameter spiral weld pipe.
- Fencing, wire, welding products, mesh, sheet, gates and roofing.

Processing Services

- Pipe cutting, threading, roll grooving, punching, hot dip galvanising.
- 3D laser processing and OrrTrack® pipe management.

Quality Management Systems and Product Standards

Orrcon Steel's stringent Quality Management System ensures every tubular product it produces is manufactured, inspected and tested to comply with one or more of the following standards:

- AS/NZS ISO 9001 Quality Management Systems.
- International API Specifications Q1.
- Precision – AS 1450 and the demands of the industry in all aspects of the product.
- Structural – AS/NZS 1163 Structural steel hollow sections.
- Low pressure pipe - AS 1074 and ASTM A53B. Tubes and tubular for ordinary service.
- AS1396 Bore casing.
- Oil and Gas line pipe is manufactured to the strict American Petroleum Institute standard API Specification 5L & 5CT.
- Water pipeline components AS1579.
- ALLGAL® standard AS4750 Electro-galvanised (zinc) coating on ferrous hollow and open sections.

For further information and complete product range information, visit www.orrcon.com.au

5B - Distribution

A network of steel distribution facilities exist across Australia with state-of-the-art processing and stock control systems to support demanding project schedules. These businesses carry large stocks throughout the branch network giving excellent availability of the full range of steel products.

Leading distributors include OneSteel Distribution, BlueScope Distribution, Southern Steel Group and CMC Coil Steels, all having a national footprint and providing the full range of steel products to resellers and end–users including merchant bar, pipe and tube, structural steel sections, steel plate, angles, channels, flat sheet, reinforcing steel, sheet steel and coil, roofing and rainwater goods, building materials, including purlins, battens and studs. Some distributors also carry a range of stainless steel, aluminium products and pipe fittings and valves.

Reinforcing businesses process, fabricate and coordinate the distribution of reinforcing bar and mesh throughout Australia for the construction, mining and oil and gas industries (refer section 5G for more information).

The integrated Australian steel channel typically holds in excess of two million tonnes of inventory providing project proponents with confidence that the industry can promptly and effectively respond to a project's steel requirements when and where they need them. Local availability dramatically reduces the need for projects to maintain large inventories onsite and greatly reduces the schedule risk for a project.

Not only do Australian distributors offer large stocks, but they also offer steel processing on equipment which includes CNC beam lines, angle lines, band saws and cropping lines

capable of processing the full range of structural steel, merchant bar, pipe and tube products. Plate processing capabilities include laser, plasma and oxy-fuel cutting, drilling, counter-sinking, boring, bevelling and marking of the biggest available plate. By using these processing facilities customers are able to substantially increase their productivity allowing them to take on larger projects, finishing them faster and within budget. They also benefit from reduced handling, the elimination of mistakes and the reduction of waste.

Australian steel distributors are accustomed to working closely with project designers, steel fabricators and other contractors to ensure that the optimal steel product, compliant with all relevant standards and fully traceable, is available where and when it is required. Consequently unnecessary and costly delays are avoided.

Distributors add considerable value to the management of projects by:

- Maintaining significant stocks of steel.
- Advising on the best use of steel lengths and plate sizes for minimum yield loss, thereby maximising cost savings.
- Supplying quality processing as needed to customers' exact requirements.
- Providing timely deliveries, coordinated to projects' construction schedules and in cooperation with other suppliers.

Australian distributors are located in over 300 sites across the country and offer a depth and breadth of range, coupled with logistics, supply chain, processing capability and expertise to facilitate fast, flexible and reliable delivery of product to all Australian steel users.

For further information, visit:

www.bluescopesteeldistribution.com.au

www.Onesteel.com

www.southernsteel.com.au

www.coilsteels.com.au

www.horansteel.com.au

5C-Fabrication

Fabrication Overview

The Australian structural steel sector is about equivalent in capacity to the highly regarded UK fabrication industry at between 1.6 and 2.0 million tonnes per annum but with a focus on the engineering projects sector.

One of the largest the steel industry sectors, Australian structural steel fabricators have committed heavily to new technology in recent times to meet the demands of new resources and infrastructure investments head on.

There has been a real increase in capability, capacity and competitiveness to take on major projects. A recent Australian Steel Institute survey, confirmed with ABS statistics shows $400 million having been spent on new technology capital equipment since 2007.

This investment takes in the latest technology in new overhead cranes, plate rolling equipment, CNC beam lines, angle lines and plasma cutting lines.

The fabricators are increasing their capability and capacity and investing in Australia's future not only by installing new plant but also by keeping skills in Australia to build and maintain a sustainable steel manufacturing sector.

This investment has seen the fabrication steel processing capacity increase by close to 30 percent. The sector has ample capacity in reserve and is more cost competitive due to this recent investment in automation.

General Fabrication

The Australian fabrication industry is characterised by a very large number of fabricators with a total output of approximately 1.6million tonnes/annum including some product used in repetition manufacturing like lintels, truck body and trailer fabrication. The medium and larger fabricators (2000–20,000 tonnes per annum) process approximately 1.1million tonnes with a large shift from labour-based fabrication to CNC, beam lining, angle lines and plasma and gas profile cutting. A trend is for fabricators to invest in detailing or to have close liaison with detailers to enable the benefits of computer files to drive their CNC equipment. Automotive processing is progressively being applied to plate profiling, line marking, identification marking, drilling and tapping and where required, weld preparation.

A characteristic of steel fabrication in recent years has been the move to introduce technology throughout the steel value chain, including processing facilities at distribution level.

New and innovative business models are being developed with better interface in the technology areas between engineers and detailers and the fabricator, flowing from the UK we are seeing an emergence of the Design and Construct Steel Contractor assuming an increased share of design and erection for the entire steel component.

Australian steel's market share for the industrial buildings market is worth approximately 120,000 tonnes a year, whilst its percentage of the multi-storey buildings market segment has grown over the past decade from three to about 13 percent.

This market segment includes portal frame buildings like factories and warehouses and commercial buildings such as offices, shops, schools, health and civic facilities. Steel brings advantages in speed of construction, lightweight and reduced foundation costs and a smaller manufacturing footprint to the construction site as most fabrication is off-site in more secure and safer manufacturing environments.

The Australian fabrication industry capacity is extended by the outsourcing of some functions to specialist processors and coaters. A community of specialist subcontractors augment the fabrication capacity in:

- Steel detailing.
- Blast cleaning.
- Painting.
- Galvanising.
- Non-destructive testing.
- Grating and handrail manufacture.
- Bending.
- Transportation.

Fabricators will often specialise in structural steel, pipe fabrication, plate fabrication or mechanical fabrication. This has served the industry well, maintaining capability, cost effectiveness and flexibility. In fact, fabricators often specialise in certain market segments which makes them more competitive and profitable in these segments.

This paper assumes that reference to 'fabricators' covers all these disciplines. Refer to the Australian Fabricator Listing with approx capacity tonnes indicated in the following pages.

The leading fabrication firms are equipped with state-of-the-art CNC automated fabrication equipment and are adept at utilising electronic information direct from the Engineer or Detailer to run fabrication machines. This improves cost and quality and enables ‘just in time’ processing and erection.

Fabricator Quality

The Australian steel industry is based around the integrated nature of Australian Standards.

For example the material specifications of Pipe and Tube (AS1163) and the structural sections Specification (AS3678) feed into the design requirements of AS4100 and AS3600 which are called up in the Building Code of Australia.

Significant to this structure is the welding code, AS1554. For special purpose welds, the welder needs to be qualified and tested and the equipment used calibrated and approved through the production of tested samples.

Australian fabricators maintain a system of apprenticeships to renew and update the skill levels in this country and to ensure training so that the skill sets to the relevant standards are maintained.

Similarly, the importance of a steel structure is dependent on the coating scheme which must be applied onsite or handled well to the site. These requirements defray significant on-costs from avoiding not getting the specification requirements right the first time.

Australian Fabricator Listing

State/Region	Approximate Tonnage
NSW and ACT Total	467,250
QLD and NT Total	272,350
SA Total	185,500
VIC and TAS Total	288,500
WA Total	640,200
Total Fabrication Approx Capacity Identified	1,853,800

	Company Name	Location	State	Approximate Capacity Tonne (per annum)
NSW	A & S Conveyors	Raymond Terrance	NSW	1000
	A J Mayr Enginerring	Tomago	NSW	10000
	Align Constructions & Engineering	Moss Vale	NSW	2000
	Alliance Engineering Group	Broken Hill	NSW	5000
	Allmen Engineering	North Sydney	NSW	10000
	Amarcon Group	Charmhaven	NSW	2000
	Armidale Romac Engineering	Armidale	NSW	2000
	Australia and Overseas Alloys	Unanderra	NSW	15000
	Australian Wrought Iron Design	Silverwater	NSW	1000
	B & G Welding	Blacktown	NSW	10000
	Bacicco Group	Clemton Park	NSW	1000
	Baker & Provan	St Mary's	NSW	1000
	Beltor Engineering	Edgeworth	NSW	2000
	Bosmac	Parkes	NSW	2000
	Boweld Constructions	Bomaderry	NSW	2000
	C&V Engineering Services	Mascot	NSW	5000
	Charles Heath Industries	Smithfield	NSW	2000
	Combell Steelfab	Hoxton Park	NSW	5000
	Compute Steel Structures	Riverstone	NSW	2000
	ConSep	Wetherill Park	NSW	5000
	Coolamon Steelworks	Coolamon	NSW	10000
	Cooma Steel Co.	Cooma	NSW	2000
	Cosme-Australia Stainless Steel Fab	Griffith	NSW	1500
	Cullen Steel Fabrications	Ingleburn	NSW	10000
	D.A.M. Structural Steel	Camden	NSW	10000
	DME Kermac Welding & Engineering	Wetherill Park	NSW	6000
	Davebilt Industries	North Gosford	NSW	2000
	Designed Building Systems	Fairfield	NSW	2000
	E.R. Curtain	Revesby	NSW	5000
	Edcon Steel	Arndell Park	NSW	2000
	Ficogi Engineering	Ingleburn	NSW	2000
	Flame-Cut	Wetherill Park	NSW	10000
	Forgacs Engineering	Hexham	NSW	15000
	Gonzalez Fabrication and Erection	Beresfield	NSW	5000
	H F Hand Constructors	South Kempsey	NSW	2000
	H&M Engineering & Construction	Rutherford	NSW	15000
	Hutchins Bros	Narrandera	NSW	2000
	ILB Steel Buildings	Orange	NSW	5000
	Industrial Building Systems	Hunter Region MC	NSW	5000
	J.D.Hall & Son	Arncliffe	NSW	250
	JME Tumut	Tumut	NSW	1000
	John Holland	Pyrmont	NSW	10000

	Company Name	Location	State	Approximate Capacity Tonne (per annum)
	Jord Bellows International	Sydney	NSW	1000
	K H P Steel Fabrications	Botany	NSW	2000
	L & A Pressure Welding	Revesby	NSW	5000
	Lifese Engineering	Auburn	NSW	10000
	Marine Consultants Australia	Parkes	NSW	1000
	Mecha Design & Fabrication	Wyong	NSW	2000
	Mine Consultants Australia	Parkes	NSW	5000
	Morson Engineering	Wyong	NSW	10000
	National Engineering	Young	NSW	10000
	Nepean Engineering	Narellan	NSW	25000
	NWEC	Yennora	NSW	10000
	Pacific Steel Constructions	St Marys	NSW	n/a
	Perfab	Tomago	NSW	5000
	Performance Engineering Group Australia	Berkeley Vale	NSW	15000
	Piper & Harvey Steel Fabrications (Wagga)	Wagga Wagga	NSW	2000
	Precision Oxycut	Smithfield	NSW	10000
	Rambler Welding Industries	Wagga Wagga	NSW	2000
	RCR Stelform	Bennetts Green	NSW	5000
	Riton Engineering	Wyong	NSW	10000
	S&L Steel Fabrications .	Rooty Hill	NSW	15000
	Saunders International	Condell Park	NSW	10000
	Sebastian Engineering	Campbelltown	NSW	20000
	Southern Cross Rigging & Constructions	Villawood	NSW	3000
	Spartan Steel	Villawood	NSW	2000
	Steel Solutions	Sydney	NSW	n/a
	T & M Group Engineering (NSW)	Sydney	NSW	10000
	TDA Snow Engineering	Heatherbrae	NSW	500
	Tenze Engineering	Greenacre	NSW	2000
	Tubular Steel Manufacturing	Maitland	NSW	2000
	Universal Steel Construction (Australia)	Wetherill Park	NSW	2000
	WGE	Unanderra	NSW	10000
	Walpett Engineering	Queanbeyan	NSW	2000
	Weldcraft Engineering (ACT)	Queanbeyan	NSW	2000
ACT	Baxter Engineering	Fyshwick	ACT	2000
	Mass Steel	Mitchell	ACT	10000
QLD	AG Rigging & Steel	Toowoomba	QLD	5000
	Ahrens M&S	Goombungee	QLD	10000
	Alltype Welding	Beenleigh	QLD	5000
	Associated Iron & Steel	Brisbane	QLD	5000
	Austin Engineering	Carole Park	QLD	10000
	Beenleigh Steel Fabrications	Crestmead	QLD	10000
	Belconnen Steel	Brendale	QLD	5000
	Brisbane House Stump Supplies	Redcliffe	QLD	1000
	Cairns Steel Fabricators	Bungalow	QLD	5000
	Casa Engineering (Brisbane)	Carole Park	QLD	5000
	Central Engineering	Currumbin	QLD	10000
	Centwest Engineering & Steel Supplies	Longreach	QLD	1000
	Combined Metal Fabrication	Garbutt	QLD	1000
	Commercial Facades Australia	Brisbane	QLD	1000
	DLF Enterprises	Gleneagle	QLD	1000
	Durable Engineering	Brisbane	QLD	2000
	DWW Engineering	Darra	QLD	5000

	Company Name	Location	State	Approximate Capacity Tonne (per annum)
	English Engineering	Carins	QLD	1000
	Fritz Steel (QLD)	Richlands	QLD	1000
	Gay Constructions	Morningside	QLD	10000
	G.S. Engineering (Qld)	Hervey Bay	QLD	1000
	GPW	Gladstone	QLD	350
	Hitec Welding	Pinkenba	QLD	10000
	Ironbark T/A Maklah Steel Fabrication	Underwood	QLD	5000
	John Holland Energy and Resources	Rockhampton	QLD	1500
	John Holland SMP	Brisbane	QLD	10000
	KG Engineering	Aitkenvale	QLD	1000
	Lazco Fabrications	Earlville	QLD	1000
	Maxglo Engineerng & Welding	Logan City DC	QLD	1000
	Milfab	Deception Bay	QLD	5000
	Morgan Engineering Gympie	Gympie	QLD	5000
	Morton Steel	Hemmant	QLD	5000
	Noosa Engineering & Crane Hire	Noosaville	QLD	1000
	Northern Engineering (Qld)	Yalala	QLD	1000
	Pacific Coast Engineering	Garbutt	QLD	5000
	Pierce Engineering	North Rockhampton	QLD	2000
	Piping Solutions	Wakerley	QLD	10000
	Quality Assured Bolt & Steel Fabrication	Narangba	QLD	2000
	Regent Fabrications	Buderim	QLD	1000
	Rimco Building Systems	Arundel	QLD	10000
	South Pacific Marine Aust.	Burpengary	QLD	1000
	Steel Fabrications Australia	Hemmant	QLD	15000
	Stewart & Sons Steel	Bundaberg	QLD	5000
	Studio Steel	Cooroy	QLD	1000
	Sun Engineering	Carole Park	QLD	10000
	Taringa Steel	Sumner Park	QLD	1000
	Thomas Steel Fabrication	Hyde Park	QLD	5000
	Townsville Engineering Industries	Townsville	QLD	5000
	Transafe Engineering	Brisbane	QLD	1000
	Vulcan Engineering Gladstone	Gladstone	QLD	1500
	Walz Construction	Gladstone	QLD	5000
	Watson Engineering (QLD)	Gladstone	QLD	5000
NT	E C & E	Berrimah	NT	5000
	M & J Welding And Engineering	Berrimah	NT	5000
	OGM Engineering	Hudson Creek	NT	5000
	Transcon	Darwin	NT	5000
	Tristar Industries	Darwin	NT	15000
	Universal Engineering (NT)	Berrimah	NT	10000
SA	Adelaide Fabrication	Port Adelaide	SA	5000
	Advanced Steel Fabrication	Gillman	SA	7000
	Adlingtons Australia	Wingfield	SA	5000
	Ahrens Group	Kingsford	SA	15000
	Bianco Structural Steel	Gepps Cross	SA	10000
	Bowhill Engineering	Bowhill	SA	2500
	Century Products (SA)	Beverley	SA	5000
	Civil Mechanical Services	Woodville North	SA	1000
	F.Miller & Co	Ottoway	SA	1000
	Flight Bros	Edwardstown	SA	1000
	G&L Bolnar Engineering	Wingfield	SA	5000
	Gadaleta Steel Fabrication	Port Pine	SA	2000
	Krueger Engineering	Mount Gambier	SA	5000

	Company Name	Location	State	Approximate Capacity Tonne (per annum)
	Louminco	Wingfield	SA	10000
	LWA Engineering	Wingfield	SA	5000
	Macweld Industries	Largs Bay	SA	10000
	Manuele Engineers	Clovelly Park	SA	10000
	Manufacturing Excellences & Robotics (MEAR)	Elizabeth West	SA	5000
	Medo Fabrication	Adelaide	SA	5000
	MWS Engineering	Para Hills	SA	8000
	Pipetech	Burton	SA	5000
	RC & ML Johnson	Magill	SA	5000
	S J Cheeseman	Port Pirie	SA	5000
	SA Structural	Salisbury North	SA	5000
	Samaras Structural Engineers	Rosewater East	SA	15000
	Smart Fabrications	Dry Creek	SA	1000
	Steriline Racing	Mt Barker	SA	1000
	Tali Engineering	Gillman	SA	10000
	Templeton Constructions	Mount Gambier	SA	10000
	Williams Metal Fabrication	Elizabeth	SA	5000
	Wturner Engineering	Adelaide	SA	5000
	Zuppa Engineering	Virginia	SA	1000
TAS	Amax Engineering (Tas)	Launceston	TAS	2000
	DPM Engineering Tas	Latrobe	TAS	2000
	Haywards Steel Fabrication & Construction	Launceston	TAS	10000
	Saunders & Ward	Kingston	TAS	5000
VIC	Actco Pickering Metal Industries	Dandenong	VIC	n/a
	ADM Engineering Services	Bannockburn	VIC	4000
	Alfasi Steel Constructions	Dandenong South	VIC	15000
	Apex Welding & Steel Fabrication	Bundoora LPO	VIC	7000
	Apollo General Engineering (Aust)	West Heidelberg	VIC	1500
	Australian Rollforming Manufacturers	Dandenong	VIC	1500
	Bahcon Steel	Morwell	VIC	10000
	Bulknet		VIC	2000
	C.P. Engineering	Clayton South	VIC	5000
	Crib Point Engineering	Hastings	VIC	2000
	Danum Engineering	North Shore	VIC	1500
	Eliott Engineering	Kilsyth	VIC	10000
	Embelton	Coburg	VIC	5000
	Fitzroy Engineering Group	Mont Albert	VIC	5000
	Fusion-Weld Engineering	Dandenong	VIC	5000
	Geelong Fabrications	Geelong	VIC	7000
	GFC Industries	Campbellfield	VIC	10000
	GVP Fabrications	Mordialloc	VIC	10000
	Hunt Engineering & Staff	Dingley	VIC	5000
	J C Smale & Sons (Aust)	Notting Hill	VIC	1000
	J. Furphy & Sons	Shepparton	VIC	5000
	John Holland Energy and Resources	South Melbourne	VIC	n/a
	Kiewa Valley Engineering	Birallee Park	VIC	3000
	Metalform Structures	Dandenong	VIC	n/a
	Mideco Dust Control	Bayswater	VIC	5000
	Minos Structural Engineering	Thomastown	VIC	5000
	Monks-Harper Fabrications	Dandenong South	VIC	5000
	Notley Engineering	Moolap	VIC	15000
	OneSteel Piping Systems	Lyndhurst	VIC	15000
	PACT International	Heidelberg	VIC	1000
	Page Steel Fabrications	Derrimut	VIC	15000

	Company Name	Location	State	Approximate Capacity Tonne (per annum)
	R & T Webb	Horsham	VIC	1000
	Riband Steel (Wangaratta)	Clayton	VIC	5000
	SES Sales (Aust)	Dandenong South	VIC	1000
	Shearform	Dandenong South	VIC	15000
	Skrobar Engineering	Moorabbin	VIC	7000
	Stable Australia	North Shore	VIC	15000
	Stilcon Holdings	Altona North	VIC	12000
	Structural Challenge	Hampton Park	VIC	7000
	Sutcliffe Fabrications	Hallam	VIC	5000
	Thornton Engineering Australia	Corio	VIC	15000
	Thornton Engineering Australia	Penhurst	VIC	5000
	Trojan Specialised Structures (Aust)	Dandenong South	VIC	5000
	Wolter Steel Co.	Seaford	VIC	2000
WA	20*20	Como	WA	n/a
	Acorn Industries	Canning Vale	WA	500
	Alfab Engineering (WA)	Bunbury	WA	1000
	All Things Stainless	Wangara	WA	1500
	Allied Heat Transfer International	Canning Vale	WA	1000
	Alloy & Pipe Specialists	Bibra Lake	WA	1500
	Alloy Steel International (Arcoplate)	Malaga	WA	1000
	Alltype Engineering Services	Naval Base	WA	20000
	AMEC Services	Fremantle	WA	1000
	ANJ Enginering	Harvey	WA	1000
	Applus RTD	Kwinana	WA	500
	Arch Engineering	Bibra Lake	WA	5000
	Arch Engineering	Bibra Lake	WA	1000
	Architectural Panels Australia	Kewdale	WA	1500
	Artex Enterprises	Kelmscott	WA	500
	AstraMetal Products	Malaga	WA	500
	Ausclad Group of Companies	Kwinana	WA	15000
	Austline Fabrications	Bentley	WA	1000
	Barclay Engineering (Ainsbury Holdings)	Canning Vale	WA	2000
	Bend-Tech Engineering	Perth	WA	5000
	Bez Engineering	Karratha	WA	5000
	Binder Group	Welshpool BC	WA	n/a
	BMR Engineering	Brunswick Junction	WA	500
	Bossong Engineering	Welshpool	WA	15000
	Boyd Metal Industries	Welshpool	WA	15000
	Bradken	Bassendean	WA	15000
	Bradken International	Bassendean	WA	5000
	C & P Colizzi Steel Fabricators	Lansdale	WA	5000
	Camco Engineering	Canning Vale	WA	10000
	Carey Gardner Engineering	Wedgefield	WA	1000
	Cays Engineering	Greenfields	WA	5000
	CCR Group	Bunbury	WA	10000
	Chrisp & Bremner Engineers	Malaga	WA	1000
	Complete Steel Projects	Jandakot	WA	5000
	Conquest Engineering & Supplies	Dalwallinu	WA	5000
	Contatore Engineering	Welshpool	WA	5000
	CR Steel	Perth	WA	5000
	Crisp Engineering	Rockingham	WA	5000
	CTE	Kewdale	WA	n/a
	DAX Engineering & Construction	Perth	WA	2500
	Doina Engineering	Kwinana	WA	10000
	Donhad	Bassendean	WA	n/a

Company Name	Location	State	Approximate Capacity Tonne (per annum)
DTE Group	Henderson	WA	10000
Dwyer Engineering and Construction	Harvey	WA	15000
Dyna Engineering	Malaga	WA	5000
Eimquip Service	Perth	WA	200
Elan Engineering	Bayswater	WA	5000
Esperance sheet Metal	Esperance	WA	1000
Exmouth Industrial Parts & Labour Hire	Exmouth	WA	3000
Fencing Un	Bunbury	WA	1000
Fitti Steel Fabrciation	Bibra Lake	WA	1000
Food Equipment Australia	Malaga	WA	1000
Fremantle Steel Fabrication Co (WA)	Jandakot	WA	15000
FTE Engineering	Busselton	WA	4000
G & G Mining Fabrication	Maddington	WA	1000
G&Y Press and Die	Jandakot	WA	5000
Goodline	Port Hedland	WA	5000
Goodwill Engineering	Malaga	WA	1000
GSTM	Derby	WA	3000
Hartway Galvanizers	Canning Vale	WA	5000
Highline	Welshpool DC	WA	5000
Holtfreters	Northam	WA	1000
Hotshore Investments (MPI Engineering)	Perth	WA	5000
Hotweld Fabrication	Bunbury	WA	5000
H'var Steel Services	Henderson	WA	1000
HWE Maintenance Services	Bayswater	WA	1000
Industrial & Marine Winch Hire	Henderson	WA	n/a
Industrial Galvanizers Corporation	Perth	WA	n/a
Inter-Steel	Canning Vale DC	WA	10000
Italsteel W.A.	Bentley	WA	5000
Jebray	Bellevue	WA	5000
JFK Engineering	Maddington	WA	5000
Jones Mining Innovation	Binninup	WA	N/A
KEP Management Services	Henderson	WA	5000
Kerr Engineering (WA)	Capel	WA	5000
Kounis Metal Industries	Booragoon	WA	1000
Leonard Engineering Services	Perth	WA	n/a
Link Weld Engineering	Henderson	WA	1000
MACA Biolermaking	Bunbury	WA	5000
Madco	Henderson	WA	5000
Maicon Engineering	Geraldton	WA	5000
Metro Lintels	Bibra Lake	WA	5000
Modular Engineering Company	Henderson	WA	5000
Msteel Heavy Fabrication	Lansdale	WA	3000
Narrogin Boilermakers	Narrogin	WA	500
P&A Welding	Bibra Lake	WA	500
Pacific Industrial Company	Naval Base	WA	15000
Park Engineerings	Welshpool	WA	15000
Pedco Engineering	Welshpool	WA	5000
Perna Engineering	Bibra Lake	WA	10000
Petroleum & Mining Engineering	Welshpool	WA	10000
Pinjarra Enginering	Pinjarra	WA	500
Press Construction Group	Kwinana	WA	5000
Process Materials Australia	Canning Vale	WA	500
Project Industries	Malaga	WA	1500
RCR Tomlinson	Welshpool	WA	15000
RTS Group / Superstruct	Lansdale	WA	5000

Company Name	Location	State	Approximate Capacity Tonne (per annum)
RCI Engineering Services t/a Pump Force Repairs	Kwinana	WA	500
RTW Steel Fabrication & Construction	Capel	WA	5000
Ryad Engineering	Wanneroo	WA	5000
Scenna Constructions	Jandakot	WA	5000
South West and Peel Fabrication Cluster	Gelorup	WA	500
Specialised Welding Australia	Hazelmere	WA	5000
Spiral Tube Makers	Embleton	WA	5000
Steelpipe Australia	East Rockingham	WA	15000
Steelstruct Engineering Group	Maddington	WA	10000
Steelstruct Precision Maching	Yarloop	WA	1000
Stirling Australia	Canning Vale	WA	n/a
STL Engineering	Henderson	WA	5000
Structural Marine	Henderson	WA	5000
Swan Fabricators	Kewdale	WA	15000
SWG Operations	Perth	WA	10000
Taylors Engineering and Welding Services	Naval Base	WA	2500
TCG Industries	Greenfields	WA	1000
Tenix	Belmont	WA	n/a
The Centrix Group	Welshpool	WA	1000
TME Group	Geraldton	WA	10000
Total Corrosion Control	Kwinana	WA	n/a
Transfield Services	West Perth	WA	15000
TSG Key Group	Henderson	WA	5000
UGL Resources	Perth	WA	15000
Unique Laser Cutting Services	Wangara	WA	15000
Unique Metals	Wangara	WA	5000
United Industries WA	Myaree	WA	7000
Uniweld Structural Co	Maddington	WA	1000
Ursidade	Canning Vale	WA	1000
V&D Engineering Service	Bibra Lake	WA	5000
Van Leeuwen Pipe and Tube	Canning Vale	WA	n/a
Watmarine Engineering	Naval Base	WA	500
Wearside Construction	Yangebup/Perth	WA	5000
Weld Industry Services	Bullsbrook	WA	1000
Weldtronics Australia	Perth	WA	5000
Wenco	Oconnor	WA	5000
Western Construction Co	Kwinana	WA	15000
Westralian Engineering	Henderson	WA	5000

This Fabricator Listing was compiled from ASI and ProjectConnect information

2D - Detailing

Australian detailers are widely sought and internationally recognised for application of advanced technologies and tight management with established relationships build from work in the US, Canada, East Asia, the UK and Africa.

For one, they have led the charge in Building Information Management (BIM), the process of generating and managing building data across its life cycle.

BIM uses three-dimensional, real-time, dynamic building modeling software to increase productivity in building design and construction, taking account of building geometry, spatial relationships, geography as well as quantities and properties of building materials.

Australian detailers have come to the fore on resource projects such the early stages on Woodside's LNG Train 4 and Pluto Project, Worsley's Alumina Expansion, and more extensively on various iron ore projects for BHP Billiton and Rio Tinto.

Benefits that have been realised from Australian detailers contributing to those iron ore projects encompass:

Project schedule and cost savings

Australian-based detailers keep projects on-time and on-budget through:

- Parallel managing of design and modeling stages.
- Delay mitigation during modeling ahead of construction.
- Project efficiencies through use of advanced BIM systems.
- Construction efficiencies by developing designs that avoid extra rework.
- Applying powerful multidiscipline inspection and clash detection tools.
- Achieving efficiencies through optimising use of datacentric information.
- Maximising workloads offsite.
- Using BIM tools to mitigate construction issues like RFI management.

Improved safety

Australian detailers enhance safety during project developments by:

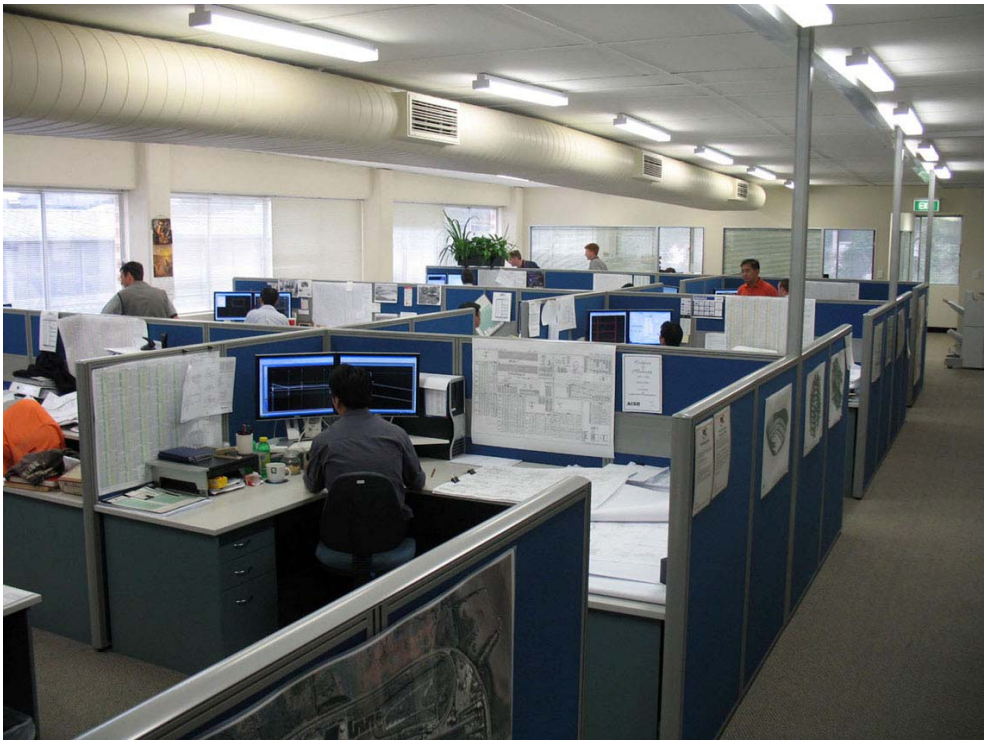
- Employing visualisations for training, inductions, construction sequencing and project scope to anticipate potential site hazards.

- Minimising onsite work commotion by maximising offsite preassembly.
- Deploying powerful intelligent multi-disciplined clash detection to ensure better design for more responsible construction and operating plant.

Environmental care

Steel detailers in Australia help to safeguard the environment through:

- Better planning that reduces site needs for lay-down areas.
- Facilitating improved site handling and less material wastage.



Experience and quality

Australian detailers are typically independent dedicated specialists who bring a higher level of expertise than a typical detailer associated with a fabricator. They generally have a higher level of industry experience due to the high portion of resource projects than commercial type work and this experience provides resource clients with risk mitigation by providing a more professional design verification process.

With close familiarity with advanced 3D systems, Australian detailers mitigate delays and site rectification costs. Leading Australian detailers are on record for very low rates of rework averaging just 0.01 percent.

With modularisation becoming more popular, steel supply and fabrication is typically falling on the critical path and owners are therefore engaging detailers that have high productivity rates, efficiencies and quality to mitigate typical engineering delays and maintain schedule.

Australian detailers boast a proven track record on a number of large resource projects with productivity rates of two to three times that of low-cost Asian workshops.

Technology

One of the reasons why Australian detailers lead the implementation of BIM technologies is due to their advanced knowledge of various 3D modeling technologies as required to maintain a competitive edge against low-cost centres.

They have systems and personnel that understand the complexity of providing accurate data to achieve the benefits of the BIM concept. In addition to the industry standard detailing packages such as *Bocad, ProSteel, StruCad* and *Tekla Structures*, specialised proprietary systems are also embraced.

EG: *Iconstruct*

Iconstruct was developed by PDC Consultants of WA with detailing skills covering pipework, heavy mechanical equipment, conveyors and structures. The system provides new tool sets to project teams and consultants to manage construction information for various industry segments, from design engineers to construction managers, and integrate that intelligence into a single 3D model displayed in *Autodesk's Navisworks*. *iConstruct's* extended range of tool sets allow users to extract information that is required at different stages in the construction process. This enables better planning and more informed decisions. The information can also be extracted from the model and presented through a variety of flexible reporting tools which can then be disseminated and distributed to relevant stakeholders.

5E - Hot Dip Galvanising

Hot dip galvanizing with a history of 170 years, commands an unrivalled reputation as a cost effective and efficient system of corrosion protection for steel assets. In Australia, there are examples of hot dip galvanising that have managed to survive in the harshest conditions for 130 years. Galvanising is prepared off-site in controlled conditions to reduce labour costs, minimise maintenance and ensure environmental cleanliness. This is of critical importance in meeting the environmental demands of many Australian projects. In most cases, this gives hot dip galvanising a competitive first cost and life cycle cost in comparison to other high performance corrosion protection systems.

The hot dip galvanising industry in Australia is experienced in the delivery of large infrastructure and resources projects and most of the plants offer large galvanising baths and state-of-the-art processes by global standards. Hot dip galvanising of steel structures for large infrastructure and process plant has become more common in recent years and this gives Australian galvanisers proven expertise in the delivery of such projects. The industry is active in global innovation and technology exchange through the Galvanizers Association of Australia (GAA). Members of the GAA have access to technical expertise on corrosion issues, case studies and are part of an international network. All of this backup can be utilised by project managers and asset owners in the delivery of their projects. The services provided by the Australian galvanising industry include assistance in the design of steelwork and detailing to meet the requirements of superior corrosion protection (eg; meeting Australian standards or others as required), chamfering/rounding of sharp edges, using the most effective methods of venting and draining work, and designing for maximum corrosion protection through initial product design.

Due to the large distances often encountered in Australia, the galvanising industry has developed proficiency in overcoming logistical challenges. Experience in transport coupled with the geographical distribution of galvanising plants (some in regional areas) gives the industry outstanding coverage and capability in meeting the requirements of all major projects.

The selection of materials for use in all industries and applications requires innovative design and selection. Infrastructure assets not only need to withstand the rigours of everyday use, but these days they need to reduce their economic and environmental impact by reducing maintenance and also their environmental footprint. Designers are beginning to appreciate the fact that galvanised steel is a material with superior corrosion resistance, abrasion and mechanical resistance and environmentally friendly qualities.

Hot dip galvanising provides a robust protective finish and minimises site work and ongoing maintenance. Its robustness and ability to withstand 'rough' handling also provides security during transport that reduces or eliminates the requirement for final dressing and touch up on site to maintain corrosion protection integrity prior to erection and installation – a significant factor when dealing with the remoteness of many Australian locations. Galvanising and steel combine to produce a cost effective sustainable building material that is totally recyclable and which is proven through a long list of successful local case studies.

Major galvanising facilities exist in all states of Australia and a general distribution map can be found on the website of the GAA (www.gaa.com.au).

The GAA works proactively with State EPAs and the Commonwealth Department of the Environment in implementing cleaner production programs:

http://www.environment.nsw.gov.au/resources/sustainbus/07411Galvaisers.pdf

The galvanising industry has been used as a case study (2007) by the Australian Government to highlight the industry's initiatives to reduce emissions:

www.npi.gov.au/publications/pubs/year9summaryreport.pdf

Capability of Australian Industry

A conservative estimate of the capability of the Australian galvanising industry is 67,000mt/month.

This is approximately distributed regionally as below:

WA	12,300mt/month
SA/NT	5,500
QLD	15,300
NSW	14,500
VIC	19,400

Galvanisers Directory

Listed below are the galvanising members of the Galvanizers Association of Australia along with their location and bath sizes (length x width x depth)**.**

Albury Galvanizing
Jindera, NSW
6.7 x 1.3 x 2.2m

Galvanising Services
Yagoona, NSW
10.3 x 1.85 x 2.3m

Galvanising Services (Coffs Harbour) Pty Ltd
Coffs Harbour, NSW
8.1 x 1.38 x 1.7m

Galvatech
Padstow, NSW
9.5 x 1.5 x 2.6m

Hunter Galvanizing
Tomago, NSW
10.0 x 1.5 x 2.4m
7.0 x 1.8 x 3.0m

Sydney Galvanizing
Prestons, NSW
Centrifuge Specialists

Darwin Galvanizing
Berrimah, NT
7.5 x 1.3 x 2.2m

National Galvanising Industries
Richlands, QLD
10.5 x 1.6 x 2.6m

One Steel Australian Tube Mills
Acacia Ridge, QLD
8.8 x 1.75 x 2.1m
7.6 x 4.3 x 0.9m

Australian Professional Galvanizing
Townsville, QLD
12.5 x 1.6 x 2.8m

Fero Galv. Qld
Narangba, QLD
13 x 1.8 x 3m
3.5 x 1.5 x 1.7m (Centrifuge)

Adelaide Galvanising Industries
Cavan, SA
9.5 x 1.3 x 2.8m

Korvest Galvanisers
Kilburn, SA
14.0 x 1.6 x 2.2m
4.0 x 1.25 x 1.6m (Centrifuge)

GB Galvanizing Service
Baywater, VIC
9.5 x 1.8 x 2.6m

GB Galvanizing Service
Dandenong South, VIC
13.7 x 1.8 x 2.95m

Geelong Galvanizing
Corio, VIC
9.5 x 1.5 x 2.6m

Furphy Galvanizing
Shepparton, VIC
9.7 x 1.5 x 2.2m

Kingfield Galvanizing
Campbellfield, VIC
10.0 x 1.5 x 2.4m
3.0 x 1.2 x 1.5m (Centrifuge)

Fero Group
Kewdale, WA
13.0 x 1.6 x 2.6m

Hartway Galvanizers
Canning Vale, WA
12.6 x 1.4 x 2.7m
3.5 x 1.0 x 1.8m (Centrifuge)

Hartway Galvanizers Naval Base
Naval Base, WA
12.6 x 1.4 x 3.0m

Mgalv
Landsdale, WA
9.2 x 1.6 x 2.7m

Western Galvanisers
O'Connor, WA
9.5 x 1.5 x 2.

5F - Protective Coatings

The use of coatings in the protection of steel substrates from the natural process of corrosion formation is required to minimise the cost and risk associated with corrosion on major oil and gas projects.

Annual corrosion costs in Australia are generally accepted to be between two to five percent of Australia's GDP.[i] According to the Australian Corrosion Association (ACA), that cost was estimated to be $28 billion in 2006.[ii]

What is Corrosion?

There are many definitions of corrosion, however, two common ones are:

Corrosion is the deterioration of a material, (usually steel), because of a reaction with its environment.

and

The destruction of steel by an electrochemical process that is recognised by the formation of rust or pits.

These two definitions bring together the idea of an *environment* and the *electrochemical process* which are fundamental in understanding corrosion in terms of why it occurs and how it can be prevented.

Consequences of corrosion

As steel corrodes, it deteriorates as more iron oxide is produced. This causes a reduction in the steel's structural integrity in terms of its fundamental properties which make it such an ideal cost effective and reliable construction material (ie: tensile strength, toughness and flexibility).

A good way to look at the consequence of corrosion is:

Corrosion = **Steel Metal Loss** = Reduced Steel Structure Design Life

Steel Metal Loss = Maintenance Costs

Reduced Steel Structure Design Life = **Potential for lost Revenue**

Consider steel constructions such as offshore structures, stadiums and bridges that must support the weight of extreme loadings and provide a safe working environment and the catastrophe of potential structural failure due to corrosion. What price has the loss of life? This simple, very natural, electrochemical process can be very costly! The latest figures for the USA suggest that corrosion costs approx $276 Billion per year!

Specifications for Major Projects

The onset of corrosion can be effectively controlled by a protective coating specification which outlines a paint system being a product or combination of products as well as appropriate surface preparation methodologies.

Consideration of the specifications at the early stages of a major project will assist in determining the most cost effective coatings solutions for the life of the asset.

In selecting a coating system it is important to understand the:

- Construction of a structure.
- Environment and location.
- Profile of the project and aesthetic requirements.
- Expected lifetime of the structure prior to first major maintenance.

To ensure correct specification and advice is received, certain Australian paint manufacturers can offer NACE (National Association of Corrosion Engineers) qualified personnel to minimise risk and costs associated with the potential onset of corrosion.

Credentials

A credible Australian paint manufacturer should hold the following accreditations:

- Quality Management System Standard: AS/NZS 9001:2000.
- APAS Recognised Manufacturer.
- NATA Accredited Laboratory ISO/IEC 17025.
- Environmental Management System Standard: AS/NZS 14001:2004.
- Health, Safety and Environment.
- Product Stewardship.

Product

Protective coating products should be tested to industry standards including NACE, ISO, NORSOK, NSF and more. Australian manufacturers should have products which follow these standards:

ISO 12944 Paints & Varnishes – Corrosion Protection of Steel Structures by protective paint systems (parts 1-8) (1998). ISO 12944 is intended to assist engineers and corrosion experts in adopting Best Practice in corrosion protection of structural steel at new construction.

AS/NZS 2312:2002 - Guide to the Protection of Structural Steel against atmospheric corrosion by the use of protective coatings.

Products unique for major steel projects are passive fire protection, ultra high build epoxies, antifouling coatings, high temperature resistant systems (including under insulation), abrasive resistant coatings, tank linings, aesthetics, zinc rich coatings and maintenance coatings.

Paint Products in Australia are free from lead due to local legislation.

Maintenance and Repair

Essential maintenance painting can be a costly and disruptive process. In the oil and gas industry, structures must be adequately maintained to extend life and reduce the hazards that can result from corrosion.

A comprehensive, proactive maintenance plan which identifies priority areas and specifies maintenance systems tailored individually for the asset should be in place to minimise downtime and reduce spend over the life of a project.

Regulatory Bodies

In Australia, there are recognised regulatory bodies that manage and assist the protective coatings industry, including:

Australian Paint Manufacturers' Federation (APMF)

The APMF was established in 1947 to represent the interests of Australian paint manufacturers. It was incorporated in New South Wales in 1986. Its objectives are to:

- Advance the theory and practice of paint technology in Australia.
- Promote efficiency and safe work practices.
- Foster international cooperation and standards.
- Advance, encourage and protect the interests of its members.

Australian Corrosion Association Incorporated (ACA)

The ACA is a non-profit organisation established for promoting the cooperation of academic, industrial, commercial and governmental organisations in relation to corrosion and its mitigation and for disseminating information on all aspects of corrosion and its prevention by promoting lectures, symposia, publications and other activities.

References

i – A holistic approach to solving corrosion problems, CSIRO, www.csiro.au/science/ps1ha.html

ii – Corrosion & Materials, Volume 32, No. 3 June 2007

5G - Grating and Handrails

ASI members, Webforge and The Graham Group manufacture grating in numerous combinations of load bar depth and thickness, load bar pitch and cross rod pitch.

Load bearing bars incorporated in grating are produced from steel which conforms to the equivalent standards: AS3679, BS4360 Grade 43A and ASTM A36.

Steel grating is suited to many applications, from light-duty applications (maintenance floors, occasion usage), though light/medium duty applications (residential, light industrial occasional public usage), medium duty applications (mining and commercial, regular or medium industrial usage), heavy duty applications (heavy industrial, mining and trolleys and industrial equipment), and extra heavy duty applications (frequent impact from trolleys).

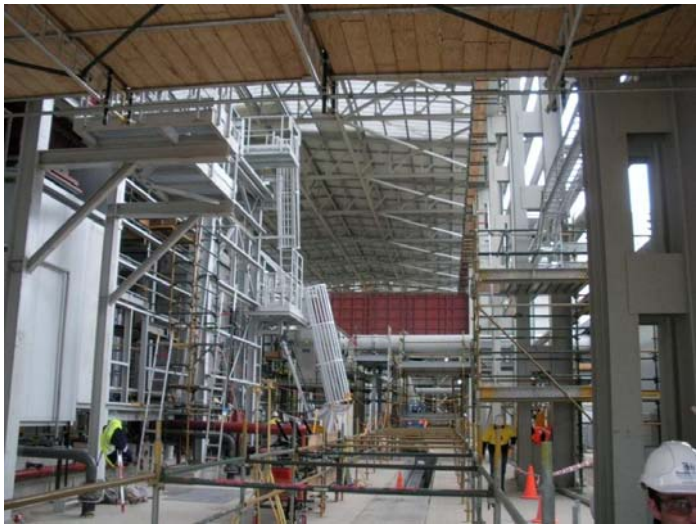
Both companies supply a complete range of mild steel grates in compliance with the load and permanent set requirements specified in AS3996-1992. Conformance certificates can be supplied upon request. They are also capable of custom manufacturing Mild Steel Grates and Frames to suit specific client applications and load test according to AS3996-1992 if required.

They also have an extensive range of handrail products in compliance with Australian Standards AS1657 – 1992. These handrail systems can be transported and erected economically in all applications and locations. Complete systems can be supplied, including stanchions, rails, bends, kick-plates, grating and stair treads as required.

For further information on both companies, visit:

www.grahamgroup.com.au

www.webforge.com.au



6 - Quality and Standards

Australia's two fully integrated steel manufacturers OneSteel and BlueScope Steel have a long and proud history of manufacturing structural steel in Australia. Both steel companies manufacture product to Australian and International Standards, providing a known level of quality with full traceability.

Over the years, the Australian Standards used for structural steel design have developed, reflecting improved understanding of material performance, structural behaviour and design processes.

Sites producing steel in Australia have a quality policy to guide process control to ensure product quality. All manufacturing facilities have quality management systems accredited to ISO 9001:2008. This accreditation is actively maintained and audited, ensuring a mature and fully functional system. Manufacturers are committed to the principles of quality assurance, thereby increasing the customers' confidence of the project being delivered to the required quality standards. Steel manufacturers are active in the development of improved product, fabrication and steel design standards. AS 4100 Steel Structures, Australia's main structural steel design, fabrication and erection standard, has been developed in conjunction with the steel manufacturers.

Australian manufactured products produced to the material standards AS 1163, AS/NZS 3678, AS/NZS 3679.1 and AS/NZS 3679.2 provided the statistical data used to calibrate the capacity factors and notch toughness defined in these standards. The quality and consistency of Australian manufactured products was recognised with prequalification of these materials to allow their use in structures without additional procedures. Therefore, Australian produced structural steel is inextricably linked to the structural and materials standards used in steel design.

In welded fabrication, statistical data associated with Australian manufactured steels was used in the calibration of standard AS/NZS 1554 Structural Steel Welding (specifically Parts 1 and 5). Control and consistency of chemistry in the Australian manufactured materials allows a large range of joint configurations to be prequalified for use without or with minimal additional weld testing necessary. Both AS4100 and AS/NZS1554.1 require the verification of steels produced to other standards or sourced from other suppliers, prior to use in design and fabrication. This may require a review of statistical data provided by the manufacturer or additional testing by the fabricator.

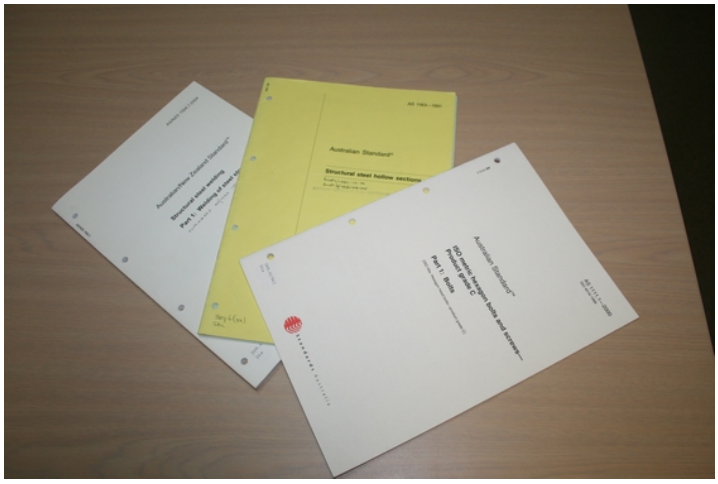
Technical expertise in standards, material, structural design and fabrication is provided by all Australian steel manufacturers. The ASI also has an extensive Library for reference and

many technical publications available from its bookshop. Assistance with specification, design and fabrication of steel products is available to members on request. Should any quality incidents arise, full technical backup of the products is provided.

All products manufactured are provided with documentary evidence of the inspection and testing performed. Laboratories used for performing these procedures have internationally recognised accreditation with the National Association of Testing Authorities (NATA) and the International Laboratory Accreditation Cooperation (ILAC). Prior to ordering, the customer can request additional testing and inspection procedures and documentation. The inspection and test documents will be supplied to the customer with the product order. In addition, the steel manufacturer archives this documentation. Products are branded with unique identification allowing traceability to the production facility linked to the manufacturing conditions for each item. All relevant product processing information is reviewed by the steel manufacturer to ensure conformance to its governing Australian Standard (as appropriate) and the results are archived for future reference.

If requested, third party product certification is available at various mills. This can incorporate factory production control (FPC) certification to ensure technical competence to produce the product and ensure continuing compliance with the provisions of the technical specification throughout the order production. FPC is a permanent internal control of production exercised by the manufacturer requiring the elements, requirements and provisions adapted by the manufacturer be documented in a systematic manner in the form of written policies and procedures. The FPC takes into account the process of the related production line from the raw material to finished product and storage of the product.

Assurance of total commitment to quality is backed up by ensuring that the manufacture of steel products is carried out in facilities with certified environmental (ISO 14001 compliance) and world-leading OH&S performance.



7 – Welding and Testing

Welding is an economical method of joining materials, enabling transmission of large critical loads which may be static and/or dynamic under various conditions (high/low temperature, etc). The welding and related testing industry in Australia is highly sophisticated and is on par, if not exceeds the service requirements and outputs of many similar industries around the world. Industrial applications in Australia are well serviced by specialist and general welding and testing contractors including experienced and qualified structural steel fabricators, boilermakers, pressure piping and mechanical contractors. Such contractors have been successfully engaged in many and various complex and high-profile welding applications both in Australia and abroad.

Complex and economical welded fabrication has been readily achieved with Australian welding contractors. Such positive outcomes have been due to rigorous welding, certification, testing and inspection as embraced by the local industry via Standards Australia, International Institute of Welding (IIW), International Standards Organisation (ISO) and other national standards (ASME, etc). The development and utilisation of such standards has taken place for many years.

Australian welding and related testing contractors generally have third-party certification to ISO 9001 and other relative certification for their specialist areas.

The evolution of much of the welding and testing standards used in Australia are based on many years of ongoing calibration with welding and inspection processes, personnel, equipment, consumables and materials with the correlation to design assumptions. Such has been the success that should welding contractors use such standards, their testing and compliance requirements are significantly minimised.

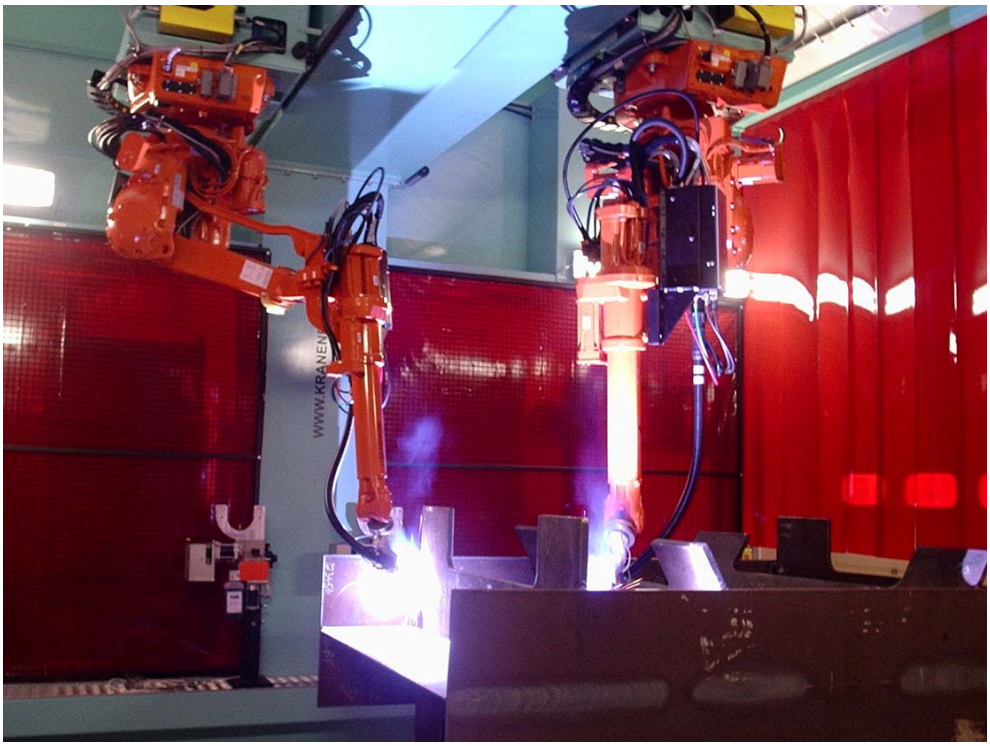
In welded fabrication, statistical data associated with Australian manufactured steels are used in the calibration of standard AS/NZS 1554 Structural Steel Welding (specifically Parts 1 and 5). Control and consistency of chemistry in the Australian manufactured materials allows a large range of joint configurations to be deemed pre-prequalified for end-use without or with minimal additional weld testing necessary. Both AS 4100 (design) and AS/NZS 1554 (welding) require the verification of steels produced to other standards or sourced from other suppliers, prior to use in design and fabrication. This may require a review of statistical data provided by the manufacturer or additional testing by the fabricator. Hence, the use of Australian welding contractors and their sophisticated welding standards helps to reduce the risk of non-compliance in this area.

Further support for addressing Australian welding, testing and inspection issues can be readily obtained from the:

- Welding Technology Institute of Australia (WTIA).
- Australian Steel Institute (ASI).
- Australian steelmaking and finished steel manufacturing companies, BlueScope Steel and OneSteel.

This backup includes assistance in standards, materials, structural design and fabrication. Should any quality incidents arise, full technical support of the products is provided.

Coupled with cost effectiveness, embracing Australian welding and related testing contractors increases confidence in such critical areas as welding and testing. The success of the industry in such areas over many years further validates this situation.



8 - Steel Reinforcing

About Steel Reinforcement Institute of Australia

The Steel Reinforcement Institute of Australia (SRIA) is a national non-profit organisation providing a high quality technical support and information service to the Australian building industry on the use of reinforcing steel in concrete, primarily reinforcing bar (Rebar) and reinforcing mesh (Reomesh). SRIA is funded and supported by the vast majority of the manufacturers and suppliers of steel reinforcing used in Australian construction. The SRIA offers practical solutions to meet the diverse and ever changing needs of the Australian building industry. The organisation actively supports and encourages the use of Australian capability and quality in the processing and use of reinforcing steel in concrete in an increasingly competitive global market.

SRIA Processor Members

SRIA Processor Members are established Australian companies responsible for subsequent processing of reinforcing steel supplied by a steel producer in Australia or from overseas which significantly changes the shape and properties of the steel. They are processors of steel reinforcement in Australia, meet recognised technical standards and keep production and financial records. Processors provide the market with a one-stop processing shop or fabrication of steel reinforcement to AS 3600, AS 5100 and AS 2870 in compliance with the relevant Australian Standard AS/NZS 4671:2001 *Steel reinforcing materials*. Steel reinforcing is often packaged with a range of complementary products supplied by SRIA Associate members.

SRIA Associate Members

SRIA Associate members (Accessories Suppliers, Machinery Suppliers and Steel Mills) are established Australian and International companies who have aims and objectives similar to those of SRIA. They strive for quality and compliance with the relevant standards, maintain quality assurance and implement workplace health and safety. They service Processor Members through supply of ancillary products providing the end user with a complete solution, supply of steel reinforcing feed materials to processors or processing equipment. SRIA Processor members commonly package in-house a range of Associate Member complementary products for delivery of a complete steel reinforcing solution.

Quality Assurance and Traceability

SRIA Processor members strive for compliance with the relevant standards that apply to the reinforcement industry and this professionalism is demonstrated in one of two ways:

a *Third-Party Product Quality Certification to AS/NZS 4671 and AS 3600*

ACRS certification will satisfy this criterion but this is not exclusive.

b *Documented Quality Management System plus Authority Product Approvals*

The ISO 9000 family of standards for quality management systems plus multiple product approvals from State and/or Federal Government Construction Authorities.

Mill Feed Materials

SRIA processors purchase their feed materials from quality Australian and overseas mills. A list of third party accredited mills can be found at www.acrs.net.au.

Capability – Tonnage and Footprint

The combined industry capacity of all SRIA Processor members is in excess of 1.5 million tonnes per annum of steel reinforcing supplied into resource, engineering construction, commercial and residential projects. This comprises both cut and bent reinforcing bar or manufactured reinforcing mesh. SRIA Member companies source, schedule, process and distribute packaged solutions to meet clients' procurement strategies and project plans.

The SRIA Processor footprint spreads across all states of Australia providing a reliable and efficient just-in-time supply chain. Steel reinforcing traditionally has very short lead times measured in hours to days. Members understand the customer needs and the importance of service and delivery performance on the project plan. SRIA Members efficiently control and manage risk in reinforcement supply. Engaging the professional members of the supply chain will turn potential risk into opportunity. With early SRIA processor member involvement on major and often the more remote projects, customers can confidently build in these shorter lead times after the issuing of final construction documentation.

Sustainability

The SRIA promotes a program of steel stewardship, seeking to engage the whole steel reinforcement supply chain in adopting more environmentally sustainable practices. SRIA Processor Members have an Environmental Sustainability Policy (ESP) encompassing the industry's environmental, social and economic performance. This is a continual process of benchmarking, monitoring and measuring progress. The SRIA has established and maintains

global networks to deliver improvement programs in responsible Best Practice to the local steel reinforcing sector.

The SRIA supports the Building Products Innovation Council (BPIC) in its three major areas of building code reform, product certification and sustainability. Reinforcement data is being submitted to a national materials data base that will create a 'level playing field' for all construction materials. This is part of a Life Cycle Inventory for construction materials. It will be used in Life Cycle Assessment and ultimately in Sustainability Rating Tools for more energy efficient and sustainable building construction.

Workplace Health and Safety

The SRIA promotes industry wellbeing and a safe and healthy working environment. The SRIA records trend data and monitors national industry statistics on lost-time injuries (LTIs) and medically treated injuries (MTIs), from participating Processor members. This data enables each company to compare and benchmark their safety record against the national industry values for continuous improvement of their Safety Policy or Safety Management System. Historical data reveals that the steel reinforcement industry over the past two years has halved the LTI figures and reduced MTI figures by 30 percent. This is an impressive achievement considering that the order of 0.5 million man hours per month is accrued and is a reflection of the safety conscious companies the SRIA represents. The ultimate aim is to achieve an accident-free workplace with zero harm to all steel reinforcing industry employees and contractors.

Standards

SRIA Processors benchmark both locally and internationally to sustain world's Best Practice across design, specification, production and supply. The SRIA Membership strives to achieve quality and continuous improvement and is actively involved in Standards Australia, with representation on the following Committees:

BD-002 Concrete structures (AS 3600)
WD-003 Welding of structures (AS 2214)
BD-006 Structural design actions (AS 1170)
BD-025 Residential slabs and footings (AS 2870)
BD-066 Tilt-up concrete construction (AS 3850)
BD-084 Steel reinforcing materials (AS/NZS 4671)
BD-090 Bridge design (AS 5100)
BD-098 Pavements

Leaders in Steel Processing

Processor Member	Capability Details
Active Steel	*www.activesteel.com.au*
AKZ Reinforcing	Ph (03) 5134 3899 or reception@akz.com.au
ARC - The Australian Reinforcing Company	www.arcreo.com.au
Ausreo	www.ausreo.com.au
Best Bar Reinforcements	www.bestbar.com.au/contact.htm
Bianco Reinforcing	www.bianco.com.au/building-supplies/reinforcing.jsp
Mesh & Bar	www.meshbar.com.au
NatSteel Australia	*www.natsteel.com.au*
Neumann Steel	*www.neumannsteel.com.au*
OneSteel Reinforcing	www.reinforcing.com
VicMesh	*www.vicmesh.com.au*
Wire Industries	(02) 8887 7777 or brisbane@wireind.com.au sydney@wireind.com.au

Leaders in Accessories Supply

Accessories Supplier Member	Capability Details
Action Products	(07) 3713 7444 or alex@actionproducts.com.au
Ancon	www.anconbp.com.au
aSa Australia - Applied Systems Associates	www.asaHQ.com
Connolly Key Joint	www.connollykeyjoint.com
Danley Construction Products	www.danley.com.au
Erico Products Australia	www.erico.com
Modfix	www.modfix.com.au
Reid Construction Systems	www.reid.com.au

For further information visit the SRIA website at www.sria.com.au

9- Whole of Industry Cooperation

Working together

The steel value chain has a very long and proud history of cooperation and banding together to get the job done in the most efficient way. The value chain is very strongly linked from manufacturer to distributor to fabricator as customers and suppliers, each of whom works seamlessly with the various other associated links including, engineers, architects, design detailers, painters, galvanisers, erectors and others to ensure that a solution is delivered to the end-users' satisfaction.

The Australian Steel Institute (ASI) also has long established links with a number of key industry bodies that supports the steel industry including; Engineers Australia, the Architects Institute of Australia, the Australian Industry Group, the Building Products Innovation Council, and other key associations who interact with the steel industry.

The ASI and the industry in general also work closely with the trade union movement and the specific relevant unions that work within the steel sector including the Australian Workers Union, Australian Metal Workers Union, National Union of Workers and the Construction Forestry Mining and Energy Union.

Steel Industry Innovation Council

Recently the Australian Federal Government's Minister for Innovation, Industry, Science and Research, Senator the Hon. Kim Carr established the Steel Industry innovation Council, under the guidance of his own Government Department. The Council includes senior representatives from the steel manufacturers, the ASI, trade unions and the academic and research community.

The Council supports the long term sustainability and competiveness of the Australian steel value chain. This includes boosting demand for Australian steel and looking at innovation to support international competitiveness.

The Council is a forum for steel industry stakeholders to form a whole-of-industry perspective on key issues and as a collective, presents its advice to the Minister. The Council operates at a high strategic level to identify and address impediments in achieving the goal of maintaining a competitive and sustainable industry in an increasingly global marketplace.

To achieve the goal of maintaining our international competitiveness into the next decade, the Council promotes innovation for the Australian steel industry. This includes promotion of

improvements in the steel value chain, from the raw steel production stage; right through to fabrication of the many forms of end-user steel products.

Another key resource and appointment by the Minister is the Steel Supplier Advocate (the Advocate) to provide leadership and act as a champion for the Australian steel industry in the market for major steel consuming projects. The Advocate also works along the Australian steel value chain with those from the major producers to fabrication by small and medium-sized enterprises (SMEs) to improve their competitiveness and coordinate support from the Industry Capability Network, EnterpriseConnect, Austrade and other Government agencies.

10 – Safety

The Australian steel industry ensures the safety of its employees is its Number One priority.

Its major integrated steel manufacturers have a world-class safety record (outlined in Section 5A).

All Australian steel manufacturers conform to the Australian Standard AS 4801 which sets out requirements for implementing, auditing and certifying Occupational Health and Safety Management systems.

Whilst all the industry companies work diligently on safety individually, the ASI also convenes a National Industry Safety Committee that is represented by all sectors of its membership. This is underpinned by State safety committees consisting of all industry sectors such as fabrication, coatings, transport, distribution, manufacturing and industry suppliers. The vision of these committees is simple - *A Safer Steel Industry*.

These committees aim to cultivate a healthier and safer steel industry through promotion, safety leadership, educational support and sharing initiatives. Their core principles are that

- All injuries and work-related illnesses can and must be prevented.
- Management is responsible and accountable for health and safety performance.
- Employee engagement and training is essential.
- Working safely is a right of employment.
- Excellent health and safety performance at work supports excellent business results and health and safety must be integrated in all business management processes to bolster that.

The ASI organises a National Occupational Health and Safety Awards program every year to recognise steel industry companies and individuals for high achievements in health and safety. There are three separate Awards covering a) Individual, b) Site and c) Improvement Initiative. All ASI members, regardless of business size are encouraged to enter. The Awards are presented annually at the Australian Steel Convention.

Another important initiative of the committees is ‘safety alerts’, where an incident at a particular site is shared with the rest of the industry. This has undoubtedly saved similar incidents from occurring at other locations.

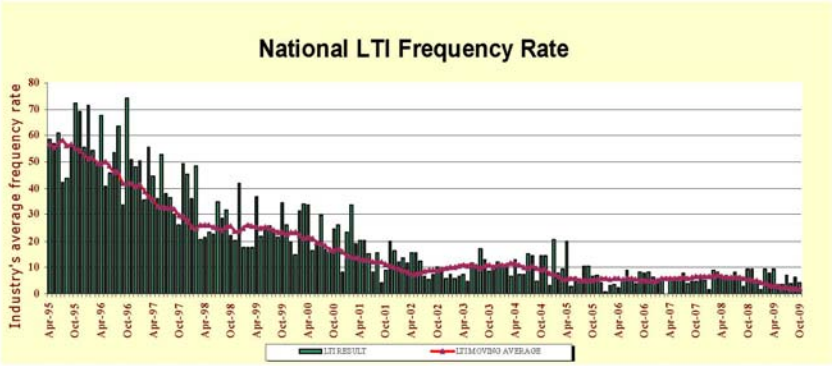
The ASI committees and the industry in general work closely with the various State government safety authorities and have co-authored various publications, including; the safe loading of trucks; a guide to safety in the metals fabrication industry and also guidance material on the safe use of overhead cranes.

The ASI and the industry are also members of the various Government advisory bodies on safety.

The ASI has also developed a specific Safety Portal in conjunction with the Queensland Government for fabricators that can be accessed from the ASI website and extensively covers what is needed to improve safety within the steel fabrication environment.

The industry is deservedly very proud of the safety improvements made over the past 15 years. See below the performance, as measured by the ASI over this period.

Lost Time Injury Results from April 1995 to October 2009



Source: ASI medium size manufacturers and distributors

11 - Environment and sustainability

The Australian steel industry takes its environmental and sustainability responsibilities very seriously. The two Australian steel manufacturers BlueScope Steel and OneSteel have environmental management systems to ISO14001 and are party to a convention on sustainable development established through World Steel, the international steel institute representing the major steel manufacturers and steel associations globally.

That policy lists the commitments made by its member companies to address the economic, environmental and social sustainability of their businesses and to engage in constructive and open dialogue with their stakeholders.

Eleven indicators have been developed to measure economic, environmental and social performance to systematically measure progress in steel's sustainable development. These measurements now form the basis of *The Sustainability Report of the World Steel Industry – Steel: the Foundation of a Sustainable Future* and are acting as benchmarks in the drive for world steel industry improvement.

These steel manufacturers are also members of the Climate Action Group which seeks to provide carbon breakthroughs by the sharing of data and technologies.

The ASI is also a member of World Steel and is working to provide a global approach to sustainability.

World Steel has joined the United Nations Environmental Program (UNEP), is a member of the International Life Cycle Board and has released global life cycle data to enable the impact of steel in a global sense to be included into Life Cycle Analysis (LCA) models so that preliminary estimates of steel in carbon impact studies can be made.

Locally, the ASI has been working through the venue of the Building Products Innovation Council (BPIC) to understand and agree on processes and measures for LCA to determine the environmental impacts of all building system materials. This three-year project will be concluded in approximately 12 months (early 2011).

The aim is to provide universally agreed information upon which the Australian construction industry can produce the lowest long-term environmental impacts.

Australian steel's environmental movement is given industry-wide thrust through the work of the ASI's dedicated Sustainability Committee which comprises sustainability experts, including those from the major Australian steel producers, who meet regularly on initiatives supporting steel's improving environmental performance and to promote adoption of the

latest sustainability advances to members. The ASI's website contains a dedicated Sustainability section that provides information on:

- Sustainable Construction Issues
- Structural Efficiency
- Embodied Energy
- Suitability for Manufacture
- Future Adaptability
- Steel Industry Responsibility

and a range of case studies on steel's sustainable use as well as a booklet freely available from the ASI, entitled *Touching the Earth lightly*.

Reducing energy and greenhouse gas (GHG) emissions is a major steel industry endeavour worldwide, both to reduce costs and improve environmental performance. In the past 40 years, the industry has embraced energy saving technologies.

A cleaner industry

Australian steel manufacturers and supply chain are taking sustainability seriously and are devoting considerable resources to understanding and minimising environmental impacts from operations and design and operation of their products.

Currently in Australia, it is estimated that 82 percent of all steel products are recovered from building demolition ranging from 95 percent for structural steel (world class recovery) to 70-80 percent for reinforcing steel.

An estimated 2.6 to 2.8 million tonnes of steel is available for recycling in Australia each year. This is improving as the scrap value increases. In a report recently commissioned by Hyder for the 2007-2008 financial year, only 299,681 tonnes of 2.6 million total tonnes was disposed of in landfill, while a massive 2.54 million tonnes was recovered for recycling.

In Australia about 2.7 million tonnes are recycled annually, a substantial part of the eight million tonnes produced. Continuous improvement in eco-efficiency during production, world class recycling rates and product development combined with design flexibility and innovation ensure that steel will continue to make a positive contribution to the life cycle performance of the built environment in Australia.

Australia's rigorous environmental standards and industry strides are matched by the steel mills' widespread use of cleaner technologies to save precious resources like water and energy.

BlueScope's sustainability successes

Since the early 1990s, BlueScope Steel has halved the amount of freshwater used to make a tonne of steel at Port Kembla Steelworks to about 2500 litres per tonne today. In September 2006, a major water conservation initiative between Sydney Water and BlueScope Steel began with the steelworks taking 20 million litres of recycled water each day replacing that previously drawn from the Avon Dam. This project has further cut the steelworks' freshwater consumption by over 50 percent. Already more than 10 billion litres of freshwater has been saved through this initiative. Today, 96 percent of the water used at Port Kembla Steelworks is either recycled water or salt water. The Group is also well advanced with investigations into developing a co-generation power plant at the site.

A significant reduction in greenhouse gas is also being achieved through the turning of what were once waste products into valuable by-products. About 80 percent of Australia's 1.6 million tonnes of blast furnace slag is now used as cement substitute in concrete making and about 60 percent of the one million tonnes of steelmaking slag is now used as road base to replace quarried material. And spent acid from sheet and coil galvanising and pickling processes are being used in fertiliser production and coal seam methane gas (which is 20 times more potent than CO_2 as a greenhouse gas) is being captured in collieries supplying the steelworks at Port Kembla and turned into electricity.

OneSteel's environmental advances

OneSteel's polymer injection technology follows three years of close collaboration between OneSteel and the University of NSW to replace some of the coke used as a slag foaming agent in Electric Arc Furnace (EAF) steelmaking with polymers, including recycled rubber and plastic. When injected, the coke/polymer blend improves slag foaming properties for more efficient use of electrical energy and to potentially reduce carbon consumption produced by coal-fired power stations. Polymers that are often diverted to landfill are recycled into value-added steel products. OneSteel has the exclusive right to take this technology to the world market. The company's recycling business in Australia employs 600 people across 37 locations collecting and trading nearly two million tonnes of scrap metal a year.

12A - CASE STUDY

Dalrymple Bay Coal Terminal, Mackay Queensland

John Holland (JH) achieved incredible success in supplying local fabricated steel for major coal loaders in Queensland's North Coast during 2008/09.

John Holland' SMP business completed a new wharf and conveyor contract as part of the Dalrymple Bay Coal Terminal (DBCT) development south of Mackay for client BBI Management. It is one of the largest coal terminals in the world and was upgraded to increase its output from 60 to 85 million tonnes per annum due to bigger customer demand. The contract included all piling, structural, mechanical and electrical works associated with a new off-shore outloading conveyor along a widened jetty that extends 3.8km over the ocean to a new 420 metre long fourth berth. This entailed placing over 400 steel piles of 1200mm diameter in thicknesses of 12mm and 16mm. As part of the contract, John Holland manufactured the 7900 tonnes of superstructure steelwork required for the project in-house at its facilities in Queensland and through alliances with local fabricators. John Holland also won the contract for local fabrication assembly and installation of a third shiploader, transfer bridge and tripper for the RG Tanna Coal Loader in Gladstone. Successful completion of these projects saw John Holland become a favoured contractor, also winning the follow-on development of Abbot Point wharf, land side conveyors and coal loader. On Dalrymple Bay, John Holland worked with BlueScope Steel to provide firm prices and guarantee steel supply.

12B - CASE STUDY

Project Cloudbreak Iron Ore Mine, Pilbara WA

Advanced 3D modeling technology from an Australian steel detailer sped the development buildings and structures for Fortescue Metals to get the Group's first mine in Western Australia off the ground to meet demand from foreign steelmakers.

Perth-based PDC Consultants developed a unique 3D modeling process that leverages the full capabilities of Building Information Modeling (BIM) and integrates the capabilities of leading software products such *as ProSteel, Tekla, Strucad* and *Autodesk Navisworks*. The proprietary BIM system enabled PDC to provide accurate, fully-intelligent 3D models of project structures that could be utilised during the design and construction phases, saving up to 50 percent of the time spent in the design and detailing phase and achieving significant cost and schedule savings during construction. On the Fortescue project, PDC provided all mechanical and structural shop detailing and modeling for a screening building with 11 product and scalping screen bins, a crushing building with bins and chutes, a stockpile facility, a train loadout facility with bins and chutes, 11 conveyers and associated transfer stations and a desanding building. All together, the structures represent in excess of 10,000 tonnes of Australian steelwork. The firm's 3D modeling process enabled full clash detection in the final design of Cloudbreak facilities. PDC completed their detailing work in late October 2008 with construction completed early 2009. Fortescue's Cloudbreak mine was constructed in record time, allowing the company to satisfy contracts for the initial tonnage and pursue market-driven expansion.

12C - CASE STUDY

Project Blacktip natural gas platform, Henderson WA

The Ausclad Group of Companies (AGC) in Western Australia delivered a substantial rig in early 2009 to extract natural gas from Australia's northwest shelf.

Fabricated in Australia by AGC as the main contractor, the project used 2800 tonnes of structural steel in total with 1300 tonnes on the jacket alone. The Blacktip field pipes natural gas from the Timor Sea to Weddell power station, the largest electricity generation project in the Northern Territory. AGC's work encompassed fabrication of the jacket, topside, piles and offshore installation manning as well as steel detailing work or the jacket, painting, electrical and instrumentation fit-out and pre-commissioning. AGC also completed the design, fabrication and construction of five storage tanks for the Blacktip onshore gas plant under a separate contract. The jacket and topside was assembled and completed by AGC at the Australian Marine Complex (AMC) facility in Henderson utilising modern modular construction techniques. Quality was critical for the structure to withstand the tough corrosive environment off Australia's northern coastline. All work had to comply with rigorous North Sea standards and weld quality and coatings were especially crucial so were subject to rigorous testing. AGC in consultation with their paint supplier's consultants proposed a coating system suitable for Australian water conditions different to North Sea applications.

12D - CASE STUDY

Naphtha Splitter Column, Kwinana WA

UGL Resources provided engineering design, detailing, supply, fabrication and delivery to site of a new naphtha splitter column used by the BP refinery at Kwinana, just south of Perth, to separate hydrocarbons.

For the work won against international competition, over 200 tonnes of 460N grade XLERPLATE® steel from BlueScope Steel was used to fabricate the unit's cylindrical shell and dished ends to tight tolerances. Designed to AS1210 – Class 2A pressure standard, the unit has to withstand operating temperatures up to 182 degrees Celsius and pressures up to 500kpa, considered high for a vessel of that volume to maintain its shape without distortion or rupturing. The project was completed on time with zero health and safety recordable injuries and zero quality issues, undertaken in 51 weeks, a lot earlier than the planned 68. The steel project integrated design, detailing, fabrication and final delivery by one commercial entity. Over one kilometre of welding was performed without a single defect and over 17,000 bolt holes made without a single misalignment. Fabrication, hydrotesting, painting, insulation and cladding in multiple work fronts at one plant location also meant that the vessel could be transported to site in one piece. The column fitted into the refinery on the first attempt.

13 - AIP Plans and EPBS guidelines

Australian Industry Participation Plans

Why Industry Participation Plans?

Major infrastructure and resource projects in Australia source a significant proportion of manufactured components and capital equipment from overseas even though local capability exists. Government wants to encourage the maximum level of local content in goods, services and labour for major projects where these are competitive in price, quality, and delivery requirements.

To address this issue, Federal and State Governments have developed Industry Participation Plans (IPPs). The purpose of these plans is to encourage major project proponents to provide fair and equal opportunity to local business to supply. It must be emphasised that IPPs *do not* mandate that Australian business tenders will be selected.

The policy intent of IPPs is to:

- Promote Australian capability.
- Maximise opportunities for Australian industry, especially small to medium enterprises (SMEs) to participate in major projects in Australia and overseas.
- To adopt a national approach to major projects.

AIP Framework is FTA and WTO compliant

State and Territory Industry Participation schemes have been developed to be consistent with Australia's national and international obligations, including the Australian Industry Participation Framework (AIPF) and the Australia New Zealand Government Procurement Agreement (ANZGPA). Further details are available at www.apcc.gov.au.

Other factors influencing the policy development of these schemes include:

- The World Trade Organisation (WTO).
- Australian National Competition Policy and other Commonwealth Legislation.
- Other treaties and Free trade Agreements.

Australian Industry Participation Framework

The Australian Industry Participation Framework (AIPF) has been signed by Australia's Industry Ministers and gives effect to their commitment to provide Australian industry will full, fair and reasonable opportunity to actively participate in investment projects. The framework encourages all spheres of government to adopt a coordinated approach to maximising Australian industry participation in investment projects, both in Australia and overseas.

Enhanced Project By-laws Scheme (EPBS)

Background

The EPBS is a Commonwealth Government program which provides an avenue for duty concessions in certain circumstances for imported eligible goods, including machinery, equipment and their components, for projects approved under the Scheme. Access to the benefits of this relief is subject to the terms of Item 71 and the policy and administrative criteria set out in those Guidelines.

All applications for duty concession under the EPBS are assessed against industry policy objectives as determined by the Government. The Minister for Innovation, Industry, Science and Research is responsible for the underlying policy guidelines and administration of the EPBS. The EPBS is administered by AusIndustry on behalf of the Minister and policy advice is provided by the Industry and Small Business Policy Division and the Manufacturing Division of the Department of Innovation, Industry, Science and Research.

The Tariff Act imposes duties on certain imported goods. Schedule 3 to the Tariff Act establishes the rate of duty to be paid on goods imported to Australia. Under certain conditions, the Government may grant duty concessions in respect of particular imported goods. Schedule 4 to the Tariff Act outlines the duty concessions available.

Sections 8 and 18 of the Tariff Act provide the authority for goods specified in Schedule 4 to be imported at a rate below that set out in Schedule 3. The items contained in Schedule 4 provide the legal basis for the concessional entry of certain imported goods in prescribed circumstances.

Determinations to permit the concessional entry of eligible goods under the EPBS are made under section 273 of the *Customs Act 1901*.

Key concepts

The following concepts are used in these Guidelines:

Australian Industry Participation Plan (AIP Plan) - will list and explain the strategies the project proponent will undertake to provide Australian industry with a full, fair and reasonable opportunity to participate in all aspects of the investment project.

Implementation Report - will provide evidence that the AIP Plan has been implemented as agreed. The Implementation Report will demonstrate how Australian industry has been afforded a full, fair and reasonable opportunity to supply eligible goods to the project.

Test of availability - A concession under the EPBS is only available for eligible goods that are:

- Not produced in Australia in the ordinary course of business; or
- Technologically more advanced, more efficient or more productive than goods currently available from Australian production.

The test of Australian availability or technological superiority applies at the eligible goods level.

Australian producer - is a person or business manufacturing, assembling or putting the eligible goods together in Australia from components sourced from Australia or from overseas. This includes businesses which supply goods on a continuous basis, such as Australian manufacturers and those that supply on an infrequent or on-off basis such as engineers, project managers, systems integrators and technology providers.

Eligible goods – can be any of the following:

1) Functional units: A functional unit may consist of one or more pieces of machinery, equipment or their components that are integrally connected to perform a process; or

2) Procurement/equipment packages: A quantity of the same type of machinery, equipment and their components which is used across a project; or

3) Pipes, pipelines, conveyors, flexible flow lines etc used to convey gas, liquids, minerals or other things; or

4) Stainless steel materials to be directly incorporated into the goods identified in (1), (2) or (3).

Integral to the project - Only eligible goods integral to a project may receive an EPBS concession. Examples of goods integral to a project (and which were previously ineligible) include conveyor lines and pipelines. Commissioning spare parts integral to a project are eligible for an EPBS concession.

Ineligible goods - Goods ancillary to the project including office equipment and goods used in activities such as land preparation, roads and transportation, buildings and office/personnel accommodation, off-site transportation of the goods being produced or manufactured and the provision of telecommunications and other general services are excluded.

The EPBS duty concession is directed at eligible goods including machinery, equipment and their components. Goods such as spare parts beyond the commissioning of the project and general consumables such as paints, lubricants, fuel etc are ineligible under the EPBS.

Life of the project - The life of the project is defined as being until the project is commissioned. Major upgrades will be considered to be separate projects for the purposes of the EPBS.

Further Information about various policies and programs is available in the Federal Government's Australian Industry Participation website at www.aip.gov.au.

14 - Acknowledgements

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