Chapter 2

Overview of the steel industry in Australia

2.1 This chapter gives a broad overview of the steel industry in Australia, including Australia's primary steel producers and the role of steel manufacturers and distributors. It also outlines the economic contribution of the steel industry to the Australian economy and local economies. The chapter ends with a discussion of the competitiveness of Australian steel and its contribution to innovation and technology.

2.2 The chapter does not cover in detail international conditions and how these have impacted the Australian industry – this issue is instead discussed in chapter 6.

Structure of the steel industry in Australia

2.3 Steel is used in almost all infrastructure and construction.[1] Significant amounts of steel have been produced in Australia since 1915.[2] Today, the Australian steel industry is an international leader in coatings, and is recognised globally for its leadership in safety and product development.[3] Steel remains an important part of the domestic economy, and the steel industry employs 90,000–100,000 people around the nation.[4]

2.4 The steel supply chain covers all aspects of steel production, from raw material inputs, to crude steel and steel products, to manufacturing and end-use demand for steel products.[5] The main industries purchasing iron and steel manufacturing products are manufacturing (48.7 per cent), construction (42.6 per cent) and mining (5.3 per cent).[6]

2.5 Today, the Australian steel industry consists of various companies involved in different stages of the steel production and supply chain. The two major integrated steel producers[7], BlueScope Steel and Arrium Steel (now Liberty OneSteel), which were both formerly part of BHP Limited, produce crude steel domestically as 'upstream' manufacturers, although they produce different products to each other.

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1 Arrium Ltd, *Submission 16*, p. 1.

2 Department of Industry, Innovation and Science, *Submission 18*, p. 6.

3 World Steel Association, *World Steel in Figures 2017*, p. 9; Mr Oscar Gregory, Director, ARC Research Hub for Australian Steel Manufacturing, University of Wollongong, *Committee Hansard*, 1 April 2016, p. 28.

4 Arrium Ltd, *Submission 16*, p. 2; BlueScope Steel Ltd, *Submission 4*, p. 3; Australian Industry Group, *Submission 10*, p. 9.

5 Department of Industry, Innovation and Science, *Submission 18*, p. 4.

6 Anti-Dumping Commission, *Analysis of Steel and Aluminium Markets: Report to the Commissioner of the Anti-Dumping Commission*, August 2016, p. 15.

7 An integrated steel producer converts iron ore into finished or semi-finished steel products, which traditionally requires coke ovens, blast furnaces, steelmaking furnaces and rolling mills. See: Department of Industry, Innovation and Science, *Submission 18*, p. 6.

2.6 The industry also includes smaller scale operators, manufacturers and distributors, a network of more than 160 steel distribution and warehouse premises, 'downstream' supply chains of structural steel fabricators, iron and steel product importers and recyclers.[8]

BlueScope Steel

2.7 BlueScope Steel is Australia's only producer of flat steel.[9] Formerly BHP Steel, BlueScope de-merged from BHP Billiton in 2002 to form a stand-alone public company. The steelworks that it now operates in Port Kembla, in the Illawarra region of New South Wales, first opened in 1928.[10]

2.8 BlueScope outlined in its submission that its annual steel production capacity in Australia is 2.6 million tonnes. It manufactures in all mainland states of Australia and exports approximately 800,000 tonnes a year to various markets, including the United States, Thailand, Vietnam, the United Arab Emirates, Malaysia and Singapore. The key focus of the company is:

> …higher value, branded products for the building & construction industry. Products manufactured by Bluescope in Australia include steel coil and plate, galvanised steels, and a range of coated and painted steel products... Steel coil and plate products are sold to a range of manufacturers who convert them into products such as structural steel sections, girders and beams, fabricated structures, machinery, defence and transport equipment.[11]

2.9 Following the committee's site visit to the steelworks at Port Kembla, BlueScope's Chief Executive, Mr Mark Vasella, explained that another key focus of BlueScope is innovation and research:

> Innovation is a key strategy of ours and the basis of our success in our coated and steel products, which you witnessed today. We are a small producer of commodity steel by global standards but we are, unusually, a large manufacturer in terms of value-added painted and coated steel products. We run an innovation and product development facility here at Port Kembla, with 70 people employed and some 30 PhD qualified scientists. We continue to invest in our products, such as Colorbond—most recently with the next generation of Colorbond in partnership with Nippon Steel, our joint venture partner from Japan. We also invest in the steel innovation hub at the University of Wollongong.[12]

2.10 BlueScope also supplies products through its Lysaght division which, according to the division's website, was a pioneering producer of Australian

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8 Arrium Ltd, *Submission 16*, p 2; Australian Industry Group, *Submission 10*, p. 9.

9 BlueScope Steel Ltd, *Submission 4*, p. 3.

10 Department of Industry, Innovation and Science, *Submission 18*, p. 6.

11 BlueScope Steel Ltd, *Submission 4*, pp. 2, 3.

12 Mr Mark Vassella, Chief Executive, BlueScope Australia and New Zealand, *Committee Hansard*, 1 April 2016, p. 2.

corrugated iron sheeting used in roofs, sheds and other buildings.[13] Today, Lysaght rollforms and creates products that include fencing, roof and wall cladding, rainwater products, steel house framing, structural products such as flooring systems, walkways and meshes, and home improvement products.[14]

2.11 Between 2011 and 2014, BlueScope reported consecutive net losses after tax. Mr Vasella stated that 'the current trading environment for BlueScope has been probably the toughest in living memory'.[15]

2.12 BlueScope outlined in its submission that because of these circumstances, it had:

> …undertaken significant structural transformation, including halving its commodity steel production in Australia by shutting one of two blast furnaces, and nominally exiting the export market (although exports continue due to weaknesses in key domestic markets)… The company has recently taken action to reduce costs at our Australian steelmaking operations by approximately $200 million, in order to achieve cashflow breakeven on hot rolled coil production given current global steel prices and spreads.[16]

2.13 The burden of cost-cutting at BlueScope has fallen heavily on its workers. In November 2015, BlueScope workers agreed to a new Enterprise Agreement that triggered 500 job losses, a three-year pay freeze and the loss of various employee conditions.[17] Witnesses from the Australian Workers' Union suggested that because of the measures employees agreed to so that BlueScope could achieve cashflow breakeven, some employees experienced financial losses as great as $30,000 a year.[18]

2.14 The NSW Government announced an assistance package for BlueScope in October 2015 that involved the deferral of $60 million in payroll tax over three years.[19] A federal government assistance package was in turn announced in

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13 Lysaght, 'An Australian Icon', http://www.lysaght.com/about-us/an-australian-icon (accessed 31 July 2017).

14 BlueScope Steel Ltd, *Submission 4*, p. 3.

15 Mr Mark Vassella, Chief Executive, BlueScope Australia and New Zealand, *Committee Hansard*, 1 April 2016, p. 2.

16 BlueScope Steel Ltd, *Submission 4*, p. 4.

17 ABC News Online, 'BlueScope assistance package passes through NSW Parliament', http://www.abc.net.au/news/2015-11-19/bluescope-assitance-package-enacted-in-law/6954030 (accessed 3 August 2017).

18 Mr Glenn Leake, Branch Executive Delegate, The Australian Workers' Union; Mr Wayne Phillips, Branch Secretary, The Australian Workers' Union; and Mr Lance Turner, Branch Executive Delegate, The Australian Workers' Union, *Committee Hansard*, 1 April 2016, pp. 18–20.

19 ABC News Online, 'BlueScope assistance package passes through NSW Parliament', http://www.abc.net.au/news/2015-11-19/bluescope-assitance-package-enacted-in-law/6954030 (accessed 3 August 2017).

December 2015, consisting of $670,000 to assist retrenched workers make the transition to new jobs, and appoint a local employment facilitator.[20]

2.15 BlueScope reported that it had returned to profitability and payment of a dividend in the 2015 financial year.[21] In February 2016, BlueScope announced a $50 million increase in its half-year earnings expectations to $230 million, which it attributed to 'earlier [than expected] delivery of cost reductions, growth in Australia domestic dispatches and better margins'.[22]

Arrium Mining and Materials

2.16 Arrium, previously known as Onesteel, spun off from BHP in 2000. It was Australia's only manufacturer of steel long products, and is Australia's leading steel distributor and reinforcing steel supplier.[23] The Arrium-owned steelworks in Whyalla, South Australia have operated since 1941.[24]

2.17 Arrium outlined in its submission that its annual steel production capacity in Australia was 2.6 million tonnes. It produced around 44 per cent of the total amount of crude steel made in Australia each year, and its share of the domestic steel production market was approximately 75 per cent.[25]

2.18 Arrium was placed into voluntary administration on 7 April 2016. On 13 July 2017, Arrium's creditors formally approved the purchase of Arrium's steel division by international industrial and metals company Liberty House under the banner of the London-based company GFG Alliance.[26] Further details of the sale are outlined in Chapter 3.

Steel manufacturers and distributors

2.19 The Australian steel industry, including both upstream and downstream supply chains, comprised 12,253 registered businesses as of June 2014. Besides the major upstream companies, the industry overwhelmingly consists of a large number of smaller iron smelters, and downstream steel manufacturers and fabricators, including a

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20 Senator the Hon Michaelia Cash, Minister for Employment, *Media Release*, 'Help at hand for Port Kembla BlueScope workers', 21 December 2015.

21 BlueScope Steel Ltd, *Submission 4*, p. 4.

22 Tim Binsted, *The Sydney Morning Herald*, 'BlueScope tips $50m profit boost after job cuts, new Port Kembla enterprise agreement', 12 February 2016, http://www.smh.com.au/business/mining-and-resources/bluescope-upgrades-profit-forecast-to-230m-20160211-gms53n.html (accessed 3 August 2017).

23 Arrium Ltd, *Annual Report 2015: Building Resilience*, p. 2.

24 Department of Industry, Innovation and Science, *Submission 18*, p. 6.

25 Arrium Ltd, *Submission 16*, p. 2.

26 KordaMentha Restructuring, 'Arrium Creditor Committee Approves Sale to GFG Alliance', http://www.arrium.com/~/media/Arrium%20Mining%20and%20Materials/Files/ASX%20Announcements/FY2018/Arrium%20Creditor%20Committee%20approves%20sale%20to%20GFG%20Alliance%2013%20July%202017.pdf (accessed 31 July 2017).

network of over 160 steel distribution and warehouse premises.[27] The Australian Industry Group reported in its submission that most of these registered businesses were small: as of June 2014, 93.2 per cent were small businesses with fewer than 20 employees, and only 6.4 per cent were medium sized with 21 to 199 employees.[28]

2.20 The Department of Industry, Innovation and Science (Department of Industry) made a similar observation in its submission, noting that downstream industries consisted of smaller businesses:

> Of the employing businesses, the majority of the firms in the Iron Smelting and Steel Manufacturing, Iron and Steel Casting, and Steel Pipe and Tube Manufacturing industries are small businesses employing 1–19 employees. It is only in the upstream industries i.e. the Iron Smelting and Steel Manufacturing and the Iron and Steel Casting industries where there are any large firms employing 200 employees or more.[29]

2.21 BlueScope and Arrium also compete in the downstream market, as they both sell raw steel products to downstream Australian manufacturers and compete against these manufacturers with their own value-added downstream products.

2.22 Several submitters noted that Arrium and BlueScope's domestic market shares can be problematic, because they hold a significant degree of market power and can refuse to supply to or impose particular terms on smaller industry competitors.[30] As one submitter observed:

> [B]ecause BlueScope and Arrium are so integrated, the smaller industry participants will generally be required to compete with BlueScope or Arrium related entities in downstream, value-added markets…
>
> Here-in lies the problem – there are no internal sources of competition for Arrium or BlueScope. They produce different products from one another. If an entity cannot purchase steel products from these entities, it must seek a source from elsewhere, or close-up shop.[31]

Economic contribution of the steel industry to Australia

2.23 The steel industry is an important contributor to the Australian economy, both in terms of its earnings and as a provider of employment. In its submission, the Australian Steel Institute referred to ABS data showing that in 2011, the entire steel industry supply chain employed over 100,000 people in Australia, with an annual turnover in excess of $35 billion.[32] According to 2013–14 ABS data referred to by the Australian Industry Group, the upstream steel industry (iron smelting and steel

27 Australian Industry Group, *Submission 10*, p. 9.

28 Australian Industry Group, *Submission 10*, p. 16.

29 Department of Industry, Innovation and Science, *Submission 18*, p. 16.

30 Best Bar Reinforcements, *Submission 22*, p. 1; Steelforce, *Submission 11*, p. 5.

31 Best Bar Reinforcements, *Submission 22*, pp. 1–2.

32 Australian Steel Institute, *Submission 19*, p. 3.

manufacturing) directly employed about 18,500 people, paid annual wages of $1.5 billion and had an annual sales and service income of about $11.1 billion.[33]

2.24 A summary of the 2013–14 ABS data provided by the Australian Industry Group in its submission is shown in Figure 2.1.

Figure 2.1 Australian Steel Industry and Downstream Supply Chain (2013–14)[34]

Industry sector (ANZSIC groups) added	Industry value		Employment	Sales and service income	Wages and salaries
	Nominal $mn per annum	*% of manuf.*	*At end of June number*	*Nominal $mn per annum*	*Nominal $mn per annum*
Iron Smelting and Steel Manufacturing *(2110)*	**2,159**	**2.2**	**18,569**	**11,133**	**1,490**
Basic Ferrous Metal Product Manufacturing					
Iron and Steel Casting (2121)	600	0.6	5,753	2,132	445
Steel Pipe and Tube Manufacturing (2122)	236	0.2	2,220	997	154
Total	**836**	**0.8**	**7,973**	**3,129**	**599**
Steel Products Manufacturing and Fabrication*					
Iron and Steel Forging (2210)	166	0.2	1,534	618	132
Structural Steel Fabricating (2221)	2,185	2.2	21,835	7,167	1,480
Metal roof and guttering – excl. aluminium (2224)	287	0.3	2,723	1,239	189
Other structural metal prod. manufacturing (2229)	807	0.8	8,894	2,459	477
Boiler, tank and heavy gauge containers (2231)	433	0.4	5,255	1,104	283
Sheet metal product manufacturing (2240)	820	0.8	9,280	2,034	517
Spring and Wire Product Manufacturing (2291)	363	0.4	3,609	1,373	226
Nuts, bolts, screws (2292)	176	0.2	1,522	627	102
Other fabricated metal prod. manufacturing (2299)	1,936	2.0	19,874	4,924	1,197
Total	**7,173**	**7.4**	**74,526**	**21,545**	**4,603**
Total Steel Industry and downstream supply chain	**10,168**	**10.4**	**101,068**	**35,807**	**6,692**
Total Manufacturing	**97,547**	**100.0**	**879,073**	**385,671**	**55,381**

*Source: ABS, Australian Industry, 2013-14, *sectors where most businesses use iron and steel as their principal inputs using information from IBISWorld Industry Reports.*

2.25 The Illawarra Business Chamber noted that the multiplier effect of the steel industry in Australia is significant, with 3–5 indirect jobs for every direct job generated by the industry.[35]

2.26 In its submission, BlueScope stated that it employs approximately 7,500 workers in its Australian operations, thousands more as contractors and suppliers, and a further 8,500 employees overseas.[36] Arrium stated in its submission that it employs

33 Australian Industry Group, *Submission 10*, p. 11.

34 Australian Industry Group, *Submission 10*, p. 11.

35 Illawarra Business Chamber, *Submission 5*, p. 1.

36 BlueScope Steel Ltd, *Submission 4*, p. 3.

almost 7,000 people directly, generates around 14,000 jobs through its activities, and spends nearly $4 billion in goods, services and taxes annually.[37]

2.27 The Bureau of Steel Manufacturers of Australia in its submission noted that 'it has been estimated that every dollar of steel production generates an additional gross output of $2.30 across the wider economy'.[38]

Economic contribution of the steel industry to local communities

2.28 The Bureau of Steel Manufacturers of Australia also highlighted that 'many steelmaking facilities are… located in regional centres, and form the basis for the area's economy'.[39] The presence of local steel plants leads to flow-on jobs in the education, health, banking and hospitality sectors, which service steel employees. Two examples of this are the Illawarra region and Whyalla. Both regional economies are heavily dependent on BlueScope and Arrium continuing to operate within their regions.

The Illawarra region

2.29 BlueScope Illawarra on its website reported that it directly employs around 3,000 people in the Illawarra and indirectly supports about 10,000 jobs in the region, including contractors, suppliers and other service providers who depend upon the Port Kembla Steelworks.[40]

2.30 Submitters highlighted that the economic impact of Bluescope's operations in the Illawarra region is significant. The Illawarra Business Chamber submitted:

> Analysis conducted by Wollongong City Council estimated the impact of this aspect of BlueScope's business at $1.916 billion per annum (without taking into effect the multiplier effects). This impact would increase to approximately $2.572 billion per annum, after taking into account all direct, indirect and consumption effects.[41]

2.31 Councillor Gordon Bradbery, the Lord Mayor of Wollongong, provided evidence at the Wollongong hearing that the loss of 500 jobs in the BlueScope steelworks was anticipated to lead to an economic impact on the local economy of around $402 million. He also argued that even though the region had experienced a number of economic downturns because of decreases in the size of BlueScope's workforce since the 1980s:

> Manufacturing remains the most important sector in the output of the region. It contributes about $7.9 billion annually in revenue to the region's gross regional product. The manufacturing sector is the second largest industry in terms of

37 Arrium Ltd, *Submission 16*, p. 2.

38 Bureau of Steel Manufacturers of Australia Ltd, *Submission 6*, p. 4.

39 Bureau of Steel Manufacturers of Australia Ltd, *Submission 6*, p. 3.

40 BlueScope Illawarra, 'About Us: BlueScope in the Illawarra', https://www.bluescopeillawarra.com.au/about-us/ (accessed 31 July 2017).

41 Illawarra Business Chamber, *Submission 5*, p. 2.

> employment, after health and social services, employing about 8,570-odd people, equating to about 12 per cent of Wollongong's workforce.[42]

2.32 A representative from the Australian Workers' Union who gave evidence suggested the closure of the BlueScope steelworks would have a 'devastating effect' on the region, given the number of jobs and businesses dependent on the steelworks:

> We have hundreds and hundreds of people who directly or indirectly rely on the works. Apart from about a thousand contractors on site, there are also a number of other contractors, fabricators, who buy product directly for their work or who do work for the company. [W]hether it be a cafe shop, the little company that supplies the doormats or the people that take away the oil and recycle it…[43]

Whyalla

2.33 A range of submitters and witnesses at the Whyalla hearing emphasised that Whyalla's economy is heavily dependent on the local steel industry.[44]

2.34 In its submission, Arrium outlined the contribution of the steelworks to Whyalla's economy in more detail:

> [The Whyalla steelworks] employs 25 per cent of the town's workforce and makes up 35 per cent of its economy. The presence of the Steelworks also provides indirect benefits: other sectors, such as education, health, hospitality and tourism rely on the population base the Steelworks provides. This base also ensures access to a level of services from governments (including schools and healthcare) that generally do not exist in nearby, lower-population towns.[45]

2.35 The importance of Arrium to the Whyalla economy, and the impact of Arrium's financial crisis on the city, is further discussed in chapter 3.

Trends in Australian steel production and utilisation

2.36 Integrated steel manufacturing in Australia began in the late nineteenth century with the discovery of iron ore resources in South Australia. Over the years, integrated steelworks have closed around the country, with only Arrium and BlueScope remaining.[46]

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42 Councillor Gordon Bradbery, Lord Mayor, Wollongong City Council, *Committee Hansard*, 1 April 2016, p. 34.

43 Mr Wayne Phillips, Branch Secretary, the Australian Workers' Union, *Committee Hansard*, 1 April 2016, p. 18.

44 See, for example, Mr Tom Antonio, Acting Mayor, City of Whyalla, *Committee Hansard*, 5 April 2016, p. 27.

45 Arrium Ltd, *Submission 16*, p. 10.

46 Department of Industry, Innovation and Science, *Submission 18*, p. 6.

2.37 The Bureau of Steel Manufacturers of Australia in its submission outlined the current largest market sectors for steel:

> The two biggest market sectors for steel used in Australia are steel reinforcement and associated steels used in concrete buildings and structures, and structural steel and associated steels used in steel framed buildings and structures.[47]

2.38 Australian steel production mainly uses the Blast Oxygen Furnace (BOF) method.[48] The weighted capacity utilisation of the BOF in Australia (74 per cent) is relatively low compared to the weighted world average (81 per cent). Of those plants that use the Electric Arc Furnace (EAF) method, the capacity utilisation is very high (97 per cent).[49] Capacity utilisation 'is calculated as the ratio of actual output to the reported total (maximum) available productive capacity at each plant'.[50] These ratios are outlined further in Figure 2.2.

Figure 2.2: Available capacity and capacity utilisation for crude steel production, by method in 2015[51]

	Blast Oxygen Furnace (BOF)		Electric Arc Furnace (EAF)		Notes
	Available Capacity ('000 tonnes)	Capacity Utilisation (%)	Available Capacity ('000 tonnes)	Capacity Utilisation (%)	
Australia	6,556	74	1,558	97	Available capacity includes inactive or mothballed lines.
World (n=677)	970,816	81	354,595	89	

Source: MCI Steel Consultants and Department calculations; capacity utilisation is output divided by total available plant capacity.

Trends in exporting and importing

2.39 Australian steel output has varied across different decades, from 7.6 million tonnes in 1980, to a peak of 8.9 million tonnes in 1998, to 7.3 million tonnes in 2010.[52] In recent years, steel production in Australia has fallen significantly, to a low of 4.6 million tonnes in 2014,[53] with a slight increase in production in 2015 to

47 Bureau of Steel Manufacturers of Australia Ltd, *Submission 6*, p. 2.

48 This method involves oxygen being blown into molten iron and scrap from a blast furnace.

49 This method involves melting scrap steel or direct reduced iron in an electric arc furnace.

50 Department of Industry, Innovation and Science, *Submission 18*, p. 8.

51 Department of Industry, Innovation and Science, *Submission 18*, p. 9.

52 Department of Industry, Innovation and Science, *Submission 18*, p. 6.

53 Australian Steel Institute, webpage, 'Steel Indicators', http://steel.org.au/about-our-industry/steel-indicators/#overview-1 (accessed 24 November 2017).

4.9 million tonnes.[54] Recent output has been affected by global conditions. The Department of Industry submitted that:

> Australian steel exports have been negatively affected by the Global Financial Crisis and, until recently, the high exchange rate, with the export index falling almost two thirds since 2005–06. Imports of steel into Australia have been less affected, which may be due to some combination of price effects, the import of varieties not produced in Australia and the continuing investments in the mining and gas sectors.[55]

2.40 Figures provided by the Department of Industry show that in 2014–15, Australia exported steel to the value of $692.5 million, and imported $1.7 billion worth of steel. While the export value of Australia's steel had declined since 2006/07, thanks to the effects of the Global Financial Crisis and, until recently, a high exchange rate, the import value of steel had also declined, though to a lesser extent (see Figure 2.3).

Figure 2.3: Indices of Australian steel exports and imports – 2006-07 to 2015-16[56]

Iron and Steel Exports	2006/07	2008/09	2010/11	2012/13	2014/15
Export Value (AU$ million)	1,742.8	1,363.0	1,303.0	820.4	692.5
Export Quantity Index (2005/06 = 100 or 2.4 Mt)	109.1	71.7	73.5	40.9	35.0
Iron and Steel Imports	**2006/07**	**2008/09**	**20010/11**	**2012/13**	**2014/15**
Import Value (AU$ million)	2,479.3	3,191.0	2,121.5	1,755.0	1,731.3
Import Quantity Index (2005/06 = 100 or 2.2 Mt)	105.8	95.0	85.2	76.5	71.8

Source: Economic and Analytical Services, Department of Industry, Innovation and Science – Resources and Energy Statistics

2.41 Further figures in the Department of Industry submission sourced from the ABS suggest that the raw materials used to create steel are primarily sourced locally. The figures also show that Australia is a net exporter of flat-rolled products of iron or non-alloy steel that are not clad, plated or coated. These products accounted for the largest share of total sales revenue from major iron/steel products in 2014–15. However, Australia predominantly imports rather than exports first transformation

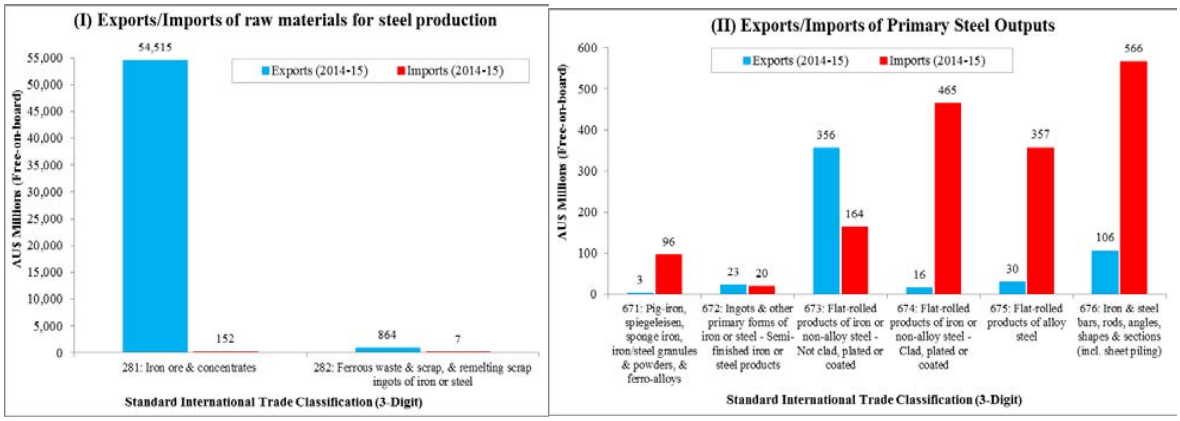
54 Worldsteel Association, *Steel Statistical Yearbook 2016*, p. 2. Figures from the Office of the Chief Economist, Department of Industry, Innovation and Science, shown on a financial year basis, show further modest increases in production, to 5 million tonnes in 2015–16, and to 5.4 million tonnes in 2016–17. Department of Industry, Innovation and Science, *Resources and Energy Quarterly: September 2017*, Historical Data, available at https://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/ResourcesandEnergyQuarterlySeptember2017/index.html.

55 Department of Industry, Innovation and Science, *Submission 18*, p. 13.

56 Department of Industry, Innovation and Science, *Submission 18*, p. 14.

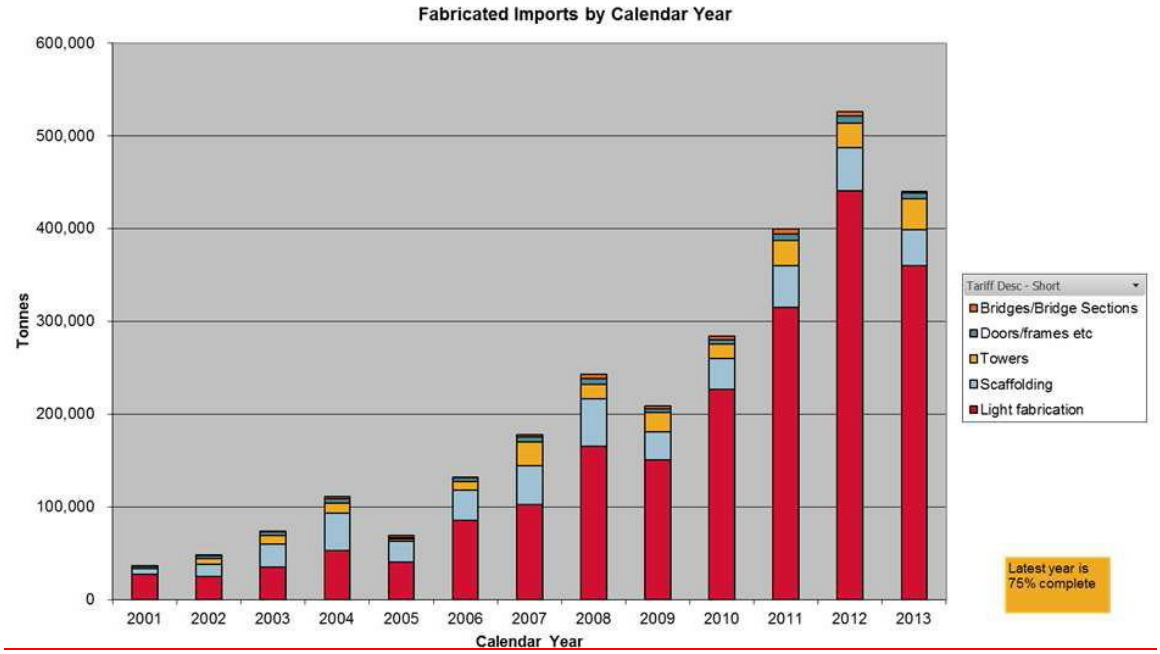
steel products that are clad, plated/coated or steel alloys, as well as iron and sheet bars and rods (see Figure 2.4(I) and (II)).[57]

Figure 2.4(I) and (II): Australian imports and exports of steel in 2014–15: (I) raw materials and (II) primary steel outputs[58]



Source: ABS (2016) International Trade in Goods and Services, Australia. Catalogue No. 5368.0

Figure 2.5: Fabricated imports by calendar year[59]



Source: OneSteel, in Australian Steel Association

57 Alloyed steels have a larger proportion of elements in them than carbon steel, such as manganese and silicon. Coated steel is steel coated through a heat process or through electrolysis to protect its metal base against corrosion. Flat-rolled steel is produced by rolls with smooth surfaces and different ranges of dimension that vary in thickness. Clad steel is steel bonded with dissimilar metals. See ArcelorMittal, *A guide to the language of steel*, http://corporate.arcelormittal.com/news-and-media/factfile/steel-terminology (accessed 15 November 2017).

58 Department of Industry, Innovation and Science, *Submission 18*, pp. 14–15.

59 Australian Steel Association, *Submission 24*, p. 7.

2.42 The Australian Steel Industry provided figures showing a dramatic increase in the number of fabricated imports between 2001 and 2013 (Figure 2.5). As outlined in chapter 6, the global oversupply of steel has led to a significant increase in imports and this has impacted the Australian steel industry.

Employment

2.43 Arrium commented in their submission that annual industry revenue in the last five years had fallen by an annualised rate of 7.5 per cent.[60]

2.44 Employment in the steel industry in Australia has been declining steadily since 2006. Between 2006 and 2011, both full-time and part-time employment in steel production was above 40,000, but since 2012 has remained below 40,000. The decline in employment between 2012 and 2015 was around 26 per cent, compared with 12 per cent in manufacturing for the decade. Figure 2.6 outlines changes in employment in the steel industry between 2006 and 2015.

Figure 2.6: Changes in employment for the steel industry, manufacturing and all industries between 2006 and 2015 (total employment)[61]

Employment, levels and	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Steel Production ('000)	45.5	42.3	48.8	40.9	43.1	45.4	36.2	35.7	39.7	33.8
Manufacturing ('000)	1,009.	1,027.	1,044.	998.2	978.7	947.3	947.8	920.1	921.7	888.6
All industries ('000)	10,088	10,408	10,695	10,775	10,991	11,178	11,315	11,425	11,536	11,770
Steel as a percentage of manufacturing (%)	4.5	4.1	4.7	4.1	4.4	4.8	3.8	3.9	4.3	3.8

Source: Economic and Analytical Services, Department of Industry, Innovation and Science; ABS, Labour Force, Australia, Detailed, Quarterly, Nov 2015, cat.no. 6291.0.55.003

2.45 Despite a global glut in steel supply, and recent falling commodity prices in the mining sector, demand for domestic steel products remains considerable. This demand comes primarily from construction services (25.9 per cent of use as a share of total supply), structural metal product manufacturing (17.3 per cent), heavy and civil engineering construction (8.2 per cent) and residential building construction (6.1 per cent).[62]

2.46 The Australian Workers' Union in their submission cited figures indicating that even though:

> …total steel consumption has been fairly stable over the past seven years, local steel makers have lost a significant share of the total Australian steel market to imports, falling from a peak of over 62 [per cent] in 2009/10 to below 56 [per cent] in 2014/15.[63]

60 Arrium Ltd, *Submission 16*, p. 2.

61 Department of Industry, Innovation and Science, *Submission 18*, p. 15.

62 Department of Industry, Innovation and Science, *Submission 18*, p. 20.

63 Australian Workers' Union, *Submission 25*, p. 17.

Competitiveness of Australian steel production and utilisation

2.47 Factors that make steel competitive include how innovative or cutting-edge the product is, its value for money and the quality of the finished product. Factors that influence how cost competitive steel is compared with steel produced in different contexts include costs involved in production technology, the regulatory environment, location and demand.[64]

2.48 The Australian Industry Group argued that local steel manufacturers have several key advantages over international competitors. These include:

- access to high quality reserves of iron ore and coking coal;
- the ability to respond quickly to local demand requirements;
- relatively short lead times;
- less likelihood of reworks because of misinformation and mistakes;
- reduced whole-of-life costs, including maintenance and technical support;
- a skilled labour force trained in the latest steel fabrication techniques and welding processes;
- strong brand recognition of several product lines; and
- products that comply with established Australian standards.[65]

Innovation and emerging steel technologies in Australia

2.49 Several submitters highlighted that one of the strengths of the Australian steel industry is its track record of producing new and cutting-edge steel products. These may contribute to the long-term competitiveness of Australian steel products. The Australian Industry Group submitted:

> The Australian steel industry has a long-standing reputation for producing high quality products and services backed by a commitment to investing in technology, innovation and skills development. Modern steel products are highly sophisticated with new lightweight steel allowing lighter and more flexible applications that are utilised in the design of cars and transport equipment, cutting edge medical equipment, defence applications, and building and construction applications.[66]

2.50 Around 75 per cent of modern steels have been developed in the past 20 years. This indicates the importance of technology and innovation in the steel industry, and also the potential for specialisation and niche production.[67]

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64 Department of Industry, Innovation and Science, *Submission 18*, p. 4.

65 Australian Industry Group, *Submission 10*, pp. 9–10. See also Bureau of Steel Manufacturers of Australia Ltd, *Submission 6*, p. 9.

66 Australian Industry Group, *Submission 10*, p. 9.

67 Department of Industry, Innovation and Science, *Submission 18*, p. 18.

2.51 Mr Kenneth Watson, the Executive Director of the National Association of Steel-Framed Housing, gave evidence outlining Australia's position in terms of steel innovation:

> Australia is seen around the world as a leader in the design and construction of steel-framed buildings using cold-formed steel. The technological basis for this has been led by BlueScope, with support from many universities and industry associations around Australia. Due to this leading technology, Australian companies are exporting products and technology overseas, particularly to the South-East Asian and African regions. These technologies include the use of high-strength steels and the development and application of sophisticated CAD/CAM systems to manufacture steel frames. [However], recently the overseas countries have been catching up with their technology and, in some cases, surpassing Australia's leading position.[68]

2.52 The Department of Industry noted in its submission that businesses classified by the Australian Bureau of Statistics under the *Primary Metal and Metal Product Manufacturing* subdivision have a higher level of research and development (R&D) activity than other industries. For example, between 2008–09 and 2013–14, R&D expenditure as a share of value added for the primary metal and metal product manufacturing industry ranged from 5.9 to 7.4 per cent; this compared to expenditure between 4.0 to 4.8 per cent for the manufacturing industry and 1.4 to 1.5 per cent expenditure for all industries over the same period. This was likely because of 'the increasingly technology intensive production of transformed steel products, as well as the continued improvements in production technology'.[69]

2.53 Collaboration between iron and steel manufacturing and downstream steel product manufacturers in Australia has led to the creation of specialised high strength steel products. These include military products and products for high-rise construction, storage bins, cement rotating mixers, compactors, tanker vessels, refinery and petrochemical equipment.[70]

2.54 Other innovations in the Australian steel industry include new technologies adopted to improve energy efficiency and reduce emissions, and improvements in plant-heat recovery and air-leakage reduction that have resulted from technological changes in the sintering stage of the steel production process. The Australian Industry Group submitted that 'Australia's leading steel detailing businesses are also at the forefront of international developments in data interfacing'.[71]

2.55 Liberty OneSteel's recently announced 'green steel' project provides an example on continuing innovation in the industry. Mr Sanjeev Gupta, Chairman and

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68 Mr Kenneth Watson, Executive Director, National Association of Steel-Framed Housing Inc, *Committee Hansard*, 6 April 2016, p. 43.

69 Department of Industry, Innovation and Science, *Submission 18*, p. 18.

70 Department of Industry, Innovation and Science, *Submission 18*, p. 20.

71 Australian Industry Group, *Submission 10*, p. 19.

CEO of GFG Alliance (owner of the Liberty OneSteel steelworks), announced in September 2017 that ZEN Energy (also controlled by Mr Gupta) would deliver renewable energy to power the Whyalla steelworks. The multi-pronged project will include a mix of solar panels in and around the Whyalla steelworks, and battery storage and pumped hydro storage in the surrounding region. Mr Gupta explained:

> These first steps in SA will improve reliability and greatly reduce costs of electricity in our own steelworks at Whyalla, and provide competitive sources of power for other industrial and commercial users.
>
> This will be followed by early steps to lower Liberty OneSteel's electricity costs in NSW and Victoria, and to provide power at lower cost to other industrial enterprises in these states and Queensland.[72]

2.56 BlueScope noted that its operations include innovation and product development facilities at Port Kembla that employ approximately 70 people, including around 30 PhD qualified scientists, and at Minchinbury that employ a further 12 people. It highlighted a new steel coating technology as an example of an innovative product it had recently developed, which significantly improved the product's performance and resistance to corrosion, and reduced its environmental footprint.[73]

2.57 Arrium's Chief Executive of Strategy highlighted:

> …the importance of a domestic industry in terms of research and development, particularly in relationship to new and innovative processes and technologies…Arrium partners with multiple universities and research institutions across the country. These partnerships provide us with access to some of the brightest minds in Australia, and in turn we provide access to hands-on development.[74]

2.58 Several submitters commented on the work of the Australian Research Council Research Hub for Australian Steel Manufacturing at the University of Wollongong, established in 2014.[75] The Hub's partner is BlueScope Steel, and supporting partners include Arrium, Bisalloy Steels, the Australian Steel Institute and Lysaght. The University of Wollongong outlined in its submission the potential benefits of the Steel Research Hub for the Australian steel industry:

> [T]he Australian Research Council Research Hub for Australian Steel Manufacturing (the hub) is a research hub bringing together the best and brightest scientists and engineers from Australia's steel manufacturers and research institutions to drive industry innovation in product development and

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72 Ben Potter, 'Sanjeev Gupta's $700 million solar-battery-hydro bet to power Whyalla's green steel', *AFR*, 30 October 2017, http://www.afr.com/news/sanjeev-guptas-700-million-solarbatteryhydro-bet-to-power-whyalla-steel-20171029-gzaqfe (accessed 24 November 2017).

73 BlueScope Steel Ltd, *Submission 4*, pp 4–5.

74 Ms Naomi Margaret James, Chief Executive, Strategy, Arrium Mining and Materials, *Committee Hansard*, 6 April 2016, p. 26.

75 See, for example, Australian Industry Group, *Submission 10*, pp 19–20; BlueScope Steel Ltd, *Submission 4*, p. 5.

> improve global competitiveness. The hub conducts research and development programs that address manufacturing techniques and best-practice pathways for bringing new ideas to market…
>
> UOW researchers, in a long-standing collaboration with hub partner BlueScope Steel Ltd, are drawing on expertise in microbiology, surface engineering, and molecular dynamics to make paints and coatings for steel sheeting that prevent bacterial growth. Product innovations include a project to develop a self-cleaning, anti-microbial organic coating for painted sheet steel to prevent the build-up of mould, algae and other bacteria on roofs, particularly in humid environments.[76]

Cost-competitiveness

2.59 The Department of Industry in its submission presented figures from 2015 showing how costs in Australian steel plants compare to the rest of the world. On average, Australian plants using the Blast Oxygen Furnace (BOF) method have a material cost that is about 10 per cent lower than other plants using the BOF method in the world in terms of raw materials. However, they also have significantly higher average labour and overhead costs (54 per cent) and capital charges (40 per cent). Overall, the cost per tonne output for Australia on average is about 14 per cent higher than elsewhere in the world.[77] Input costs are outlined further in Figure 2.7.

Figure 2.7: Contribution of input costs to total product costs – total plant (Blast Oxygen Furnace), 2015[78]

	Raw Materials	Energy & Reductants	Labour & Overheads	Capital Charges	Total Cost
Australian input cost relative to weighted world average input cost	-10%	+6%	+54%	+40%	+14%
Component share of Australian total cost	31%	25%	28%	15%	100%
Weighted world average component share of total cost	40%	27%	21%	12%	100%

Source: MCI Steel Consultants and Department calculations

2.60 It might be noted that since this data was collected in 2015, energy costs have increased substantially. Underscoring the challenge for Australian steel producers in this regard, Bluescope recently reported that its Australian electricity costs have increased from $59 million in 2015–16, to a projected $113 million in 2017–18, a 93 per cent increase. Bluescope further reported that its Australian gas costs have increased an estimated 33 per cent over the same period, from $24 million to $32 million. Overall, Bluescope's forecast $145 million energy bill in 2017–18 represents a 75 per cent increase over a two-year period.[79] Given the large increases in energy costs since the collection of the data presented in Figure 2.7, it is almost

76 University of Wollongong, *Submission 9*, pp. 2–3.

77 Department of Industry, Innovation and Science, *Submission 18*, p. 9.

78 Department of Industry, Innovation and Science, *Submission 18*, p. 10.

79 See Matthew Dunkley, *Sydney Morning Herald*, 'Bluescope's power price shock triggers share slide', 21 August 2017, http://www.smh.com.au/business/mining-and-resources/bluescope-taps-new-ceo-warns-earnings-set-to-slide-20170820-gy0hqp.html (accessed 29 November 2017).

certain the proportionate input cost attributable to energy will have also increased significantly.

2.61 The Electric Arc Method (EAM) on average is more expensive than the Blast Oxygen Furnace method, in which crude steel is recovered from recycled steel. On average, Australian plants using the EAM method have a material cost that is about 4 per cent lower than other plants using the EAM method in terms of raw material. Like plants using the BOF method, however, they also have significantly higher labour and overhead costs than other countries (18 per cent – see Figure 2.8).[80]

Figure 2.8: Contribution of input costs to total product costs – total plant (Electric Arc Method)[81]

	Raw Materials	Energy & Reductants	Labour & Overheads	Capital Charges	Total Cost per tonne
Australian input costs relative to weighted world average cost	-4%	-7%	+18%	-34%	-4%
Weighted input cost share of Australian total cost	66%	13%	16%	5%	100%
Weighted world average input cost share of total cost	65%	14%	13%	8%	100%

Source: MCI Steel Consultants and Department calculations

Factors influencing the recent cost competitiveness of Australian steel

2.62 The Chief Executive of the Australian Steel Institute gave evidence in the Canberra hearing outlining some of the factors highlighted by submitters leading to a current crisis in the Australian steel industry:

> The crisis is a global crisis and it is manifest and very strong in Australia… When you go right through the value chain, all of our members—fabricators, galvanisers, all of them—are saying that they are underutilised and suffering profitability strain… What we are sitting in at the moment is almost a perfect storm for our manufacturers, where the dollar has stayed stubbornly high, the margins, because of the glut of steel, have shrunk quite aggressively and the market share is under threat because of the volume that is available globally. This is a very unique time and it is a perfect storm... The process is broken.[82]

2.63 BlueScope Steel, in a previous submission to the Productivity Commission's inquiry into Productivity and the Australian Workplace Relations System, also commented on recent changes to the global market and how this had impacted its activities:

> At the time of the de-merger [from BHP in 2002], world steel production stood at around 905 million tonnes. BlueScope manufactured about 5.2 million tonnes of steel per year in Australia. The company's Port Kembla Steelworks was a low-cost producer, operating in the lowest

80 Department of Industry, Innovation and Science, *Submission 18*, p. 11.

81 Department of Industry, Innovation and Science, *Submission 18*, p. 11.

82 Mr Tony Dixon, Chief Executive, Australian Steel Institute, *Committee Hansard*, 6 April 2016, pp. 7–8.

> quartile of the world steel production cost curve. The average Australian dollar (AUD) – US dollar (USD) exchange rate was AUD $0.54 cents.
>
> Since then… BlueScope's Australian steel manufacturing capacity has halved to approximately 2.6 million tonnes per annum, after the company closed one of two blast furnaces in 2011 as a result of financial losses, particularly in export markets. The majority of the company's Australian production is now sold in the domestic market, with approximately 480,000 tonnes (down from 2.6 million) of exports in FY2014 or about 20 per cent of Australian production and despatches. Import competition has risen steeply in the domestic market. There has been a significant rationalisation of businesses in the Australian steel industry.[83]

2.64 The committee also heard from the Bureau of Steel Manufacturers of Australia that dumping, or the offloading of surplus or subsidised products by selling them into foreign markets at reduced prices, may create issues for the cost-competitiveness of Australian-produced steel.[84]

2.65 Besides global conditions, the Department of Industry in its submission stated that government policy reforms over the past few decades have also impacted the domestic steel industry. These include a phased reduction in tariffs on imported steel, and the implementation of a flexible exchange rate system, both of which have increased steel manufacturers' exposure to direct competition from foreign markets. Free Trade Agreements with China, Japan, Korea and Trans-Pacific Partnership countries, which aimed to increase Australian access to key markets and reduce import costs for Australian businesses, have further opened up the market.[85]

2.66 The Chief Executive Officer of the Welding Technology Institute of Australia gave evidence that, in his opinion, the impact of global conditions on the Australian steel industry may mean that 'within five years we may not have a steel industry or a fabricator in Australia'.[86] These conditions appear to have contributed to Arrium's collapse, as outlined in chapter 3, and remain a major contributing factor to the uncertainty surrounding the future of the Australian steel industry.

2.67 International conditions, including the global glut in steel, dumping, subsidies and other trade measures from foreign governments and their impact on Australian steel are outlined further in chapter 6.

Energy costs and security

2.68 When this inquiry commenced, energy affordability was not a key focus of submitters and witnesses. Previously, Australian steel manufacturers had a relative competitive advantage because of low energy costs compared to the current

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83 BlueScope Steel Ltd, *Submission 58 to the Productivity Commission's inquiry into Productivity & the Australian Workplace Relations System*, March 2015, p. 2.

84 Bureau of Steel Manufacturers of Australia Ltd, *Submission 6*, p. 6.

85 Department of Industry, Innovation and Science, *Submission 18*, p. 7.

86 Mr Geoff Crittenden, Chief Executive Officer, Welding Technology Institute of Australia, *Committee Hansard*, 6 April 2016, p. 38.

environment. However, recent increased energy prices have affected the viability of energy-intensive manufacturers like steel.[87]

2.69 BlueScope's chief executive noted that escalating energy costs have contributed to its decline in underlying earnings in 2017. He predicted that BlueScope's electricity costs will have almost doubled over the two years to June 2018, and gas costs will have increased by a third during the same period.[88] This changed situation led the new owner of the Whyalla steelworks, Mr Sanjeev Gupta, to declare in October 2017 that Australia has the highest energy costs in the world:

> Over the last year, energy prices have doubled and continue to remain high and, apart from the price increase, the volatility of prices is intense…It makes Australia the highest-cost energy environment in the world.[89]

2.70 Mr Gupta declared that Australia's high energy costs had led GFG Alliance to consider ways in which to make the Whyalla steelworks self-sufficient, and assist in providing solutions nationwide.[90] This could prevent a situation such as the state-wide power outage that occurred in South Australia from recurring and impacting the operations of the Whyalla steelworks.[91]

Committee view

2.71 The committee notes the important role to be played by governments in defending Australia's steel manufacturing value chain, from steel makers to steel fabricators, recognising that it is a strategic national asset. The steel industry supply chain accounts for tens of thousands of jobs nation-wide, with every dollar of steel production generating an additional gross output of $2.30 across the Australian economy. Further, Australia is a global leader in innovation and cutting-edge products in particular steel sectors. The committee considers that securing the future of the steel industry is essential for the broader Australian economy.

2.72 Steel manufacturers are heavy consumers of energy and extremely susceptible to price volatility. The evidence provided to this inquiry largely concerned conditions during the 44th Parliament and did not focus on energy. However, because of recent

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87 Carrie Fellner, 'Soaring prices a "killer blow", industry warns', *Newcastle Herald*, 24 August 2017, p. 4.

88 Herald Sun, 'Rising costs give steel giant the blues', *Herald Sun*, 12 October 2017, p. 26.

89 Matt Chambers, 'Australia has highest power costs in the world: Gupta', *The Australian*, 31 October 2017, http://www.theaustralian.com.au/business/mining-energy/australia-has-the-highest-power-costs-in-the-world-gupta/news-story/3f54bd44b3916127d9e085b5160cc8b0 (accessed 25 November 2017).

90 Cameron England, 'Arrium's Zen moment to reduce power costs', *The Advertiser*, 21 September 2017, p. 4.

91 Cameron England, 'The state's two blast furnaces are in serious trouble following the storm, with the Port Pirie smelter out of action for up to two weeks', *The Advertiser*, 29 September 2016, http://www.adelaidenow.com.au/business/the-states-two-blast-furnaces-are-in-serious-trouble-following-the-storm-with-the-port-pirie-smelter-out-of-action-for-up-to-two-weeks/news-story/c7b496663e93c6bf55cdbf8e0c9f7ca2 (accessed 25 November 2017).

price increases in electricity, the committee is of the view that energy security and affordability is now the biggest policy issue concern for energy-intensive manufacturers, including steel. Given the centrality of this issue to the future of the steel industry, the committee recommends that a bipartisan solution be formulated that will reduce energy prices and secure supply for steel manufacturers.

Recommendation 1

2.73 The committee recommends that the Australian Government develop a bipartisan solution to high energy costs that will reduce energy prices and secure supply for steel manufacturers.

2.74 The most obvious casualty of the recent decline in the revenue and size of the Australian steel industry is the collapse of Arrium, as discussed in the following chapter. The committee is concerned that without remedial measures and a tenable bipartisan plan to reduce energy costs, the future of the Australian steel industry remains in doubt.