

The Metals Fabrication Industry in Victoria

Strategic Audit Report

MAY 2002

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Finally, I am grateful for the active interest and support that Minister Rob Hulls; Minister for Manufacturing and his staff gave to the audit team throughout the long audit process.

Tony John
Project Coordinator
Strategic Audit Team

1. EXECUTIVE SUMMARY

The metals fabrication industry is an essential supplier of inputs to virtually all other manufacturing sectors in Victoria. With few exceptions the various segments involved in metals fabrication show admirable entrepreneurial capabilities and continue to support the many sectors of manufacturing requiring their capacity and expertise.

In the year 2000 the metals fabrication industry market in Victoria was valued at \$5.7 billion and local turnover was almost \$4.6 billion, over 80% of the market value and almost 35% of the national turnover. Exports are quite small at about 4% of production and imports account for the remainder. The industry employs around 28,000 people in about 2,600 establishments in the State with a significant number of those located in regional centres. There are a few large and medium sized employers, some of which are publicly listed, and many small enterprises, with the vast majority being privately owned.

The industry sector is comprised of three major segments, Casting and Forging, Basic Metal Product manufacturing, and Manufactured Metal Products. The output is very diverse, ranging from high volume basic metal containers, complex light alloy automotive castings, hand tools, architectural fabrications, through to quite elaborately transformed manufactures such as control valves, boiler equipment and aerospace and marine components.

This strategic audit covers the three major segments with thirteen sub-segments. Although some very analogous industries have not been included, as the coverage was already very wide, further areas must be reviewed in the industry planning process as time permits. A full description of each sub-segment performance and characteristics is contained in the body of the report together with each of the issues relevant to that sub-segment.

The metals fabrication industry sector as a whole has a low proportion of direct exports. This indicates that the levels of national economic growth and income are the key drivers of demand for the industry. However, there are some exceptions to this with regard to future opportunities. The segments that are more directly affected by increasing global competition ironically have examples of companies that suffer the greatest distress and others that show the strongest growth and entrepreneurship.

At present, almost half of the total sector turnover is from the Basic Metal Product Manufacturing segment where two of its four sub-segments have achieved average annual turnover growths of 9 and 12 % respectively since 1993. Historically the best performing sub-segments in terms of increasing turnover have been Steel Pipe and Tube Manufacturing at 14%, Architectural Aluminium Product Manufacturing at 12% and Structural Metal Product Manufacturing at 9%. The other sub-segments performing better than or equal to national average manufacturing growth are Sheet Metal Product Manufacturing, Metal Coating and Finishing and Fabricated Metal Product Manufacturing.

It is interesting that the growth in all these sub-segments has been almost entirely due to increasing domestic demand for metal products, including product substitution, for example, aluminium instead of timber window frames. In these sub-segments there is

very little growth in exports, but there is the stimulus of increasing competition from imports. Also to be noted is that some companies are managing to do very well while many others are struggling to sustain their levels of business.

Of particular interest are the two sub-segments of Iron and Steel Casting and Forging and Non-ferrous Metal Casting and Forging. Neither of these sub-segments as a total has improved its performance as measured by turnover, but they still hold great promise. There has been some degree of cooperation and amalgamation of resources during the last two years and this appears to be beneficial to the development of a stronger industry segment. The anticipated growth in the use of cast and forged advanced alloys of ferrous and non-ferrous materials including stainless steels, aluminium, titanium and magnesium, foreshadowed by many years of research and development, has been a long time in coming. The global vehicle and aerospace industry take-up of these advanced materials and new manufacturing processes is happening more and more rapidly. Victoria has a unique opportunity to take advantage of the local capabilities available with its strong base of automotive production. Several new processing techniques have been developed, some in Victoria, others available from other elsewhere, which if practiced here in combination with the other resources available locally will enable the development of a significant, well structured industry.

The recommendations made in this audit report are put forward to the Metals Fabrication Industry and focus on the synergistic use of cooperation and joint collaboration to improve performance. The industry, with assistance from governments must endeavour to discover the best strategies and actions to develop continually enhanced whole of industry capability.

2. Summary of Key Issues and Recommendations

The five key issues that are of prime importance to the Metals Fabrication Industry are as follows:

- Government commitment, encouragement, coordination and assistance
- The image of manufacturing industry
- Exports and import replacement
- Finance, funding and incentives
- Education, training and the emerging technologies

The following summaries of a total of six recommendations to Government are grouped under the sub-headings of each of the relevant five key issues. The logic of and the support for these recommendations in context are contained in *Section 7 - Key Issues and Challenges*.

Government commitment, encouragement, coordination and assistance

R1. The formation or expansion of existing industry representative associations to cover all of the sub-segments of MFI should be further facilitated and empowered by Government so that they can be involved in:

- The development of a detailed Metals Fabrication Industry plan,
- An industry study established to determine the high growth potential industry segments within the MFI,
- Establishment of a committee with representatives of AFI/NCMC, AFG, FIMMA, ADCA and other proposed associations to determine the benefits of an “umbrella” industry body for the MFI and other related industries. Such a body should have representation on the MICC,
- Establishing that Product Standards and Regulations are being administered to the highest levels,
- Consideration of assistance to regional areas in the State to develop/enhance strategically placed centres for training, technology diffusion and materials supply and support to the MFI,

Image of manufacturing industry

R2. Establish an Industry image marketing approach that includes:

- Referring to the MICC for direction for the state manufacturing marketing campaign/strategy and highlighting that the image marketing campaign for manufacturing needs to take into account the many segments in the MFI.
- The MFI and Government to establish “school to industry” links involving visits to industry and campus visits to promote career prospects within the industry.

Exports and import replacement

R3. Develop a growth strategy for the MFI taking into consideration:

- Extension of export success in high value niche markets using resources of the Victorian government’s international bases to identify global opportunities in those sub-segments with real potential for growth,
- Consideration of appropriate export assistance analogous to the Export Manager Program,
- Training and familiarisation with Austrade assistance schemes,
- Cooperation with the ISO on developing an import replacement strategy and maximising the VIPP initiative.

Finance and funding

R4. A committee should be formed consisting of representatives of the MFI and government to:

- Promote existing commercialisation assistance programs to industry,
- Formulate ideas for new CRCs for development of the strong growth potential sub-segments of the MFI,
- Consider making joint submissions from Government, industry leaders and unions to key lending institutions in Victoria for a more long-term industry development perspective in lending to the MFI in Victoria.

Education, training and emerging technologies

R5. To determine future skilling needs and direction the MFI must:

- Conduct a skills audit of the industry in each of its sub-segments,
- Develop a database of short and long term skill requirements,
- Work cooperatively with the training providers,
- Determine methods to attract skilled employees such as graduate engineers, researchers and technicians,
- Seek information about how firms can employ technicians, provide training, pay a training wage, and receive a federal subsidy,
- Undertake a study with Government to examine the role that secondary education plays in the demand for engineering and science places at Universities. The same applies to the demand for and the quality of the outcomes from the apprenticeship system.

R6. To improve the skills and technology training the MFI needs further assistance from Government to:

- Through ESTB, determine the viability of skills training being carried out in-house utilising the web and virtual technologies for regional areas and for low demand industry segments,
- Develop more effective mechanisms to help disseminate existing education and also most recent technology training programs more effectively and to determine new training requirements,
- The MFI and Government to create programs to develop management, strategic and entrepreneurial skills specifically for each of the sub-segments.

3. Strategic Audit Process

The Victorian Government is developing a long-term strategic approach to industry development in the State which recognises the importance of the manufacturing industry to Victoria's economic wellbeing.

The Government committed to a strategic audit of Victorian industry to identify both current business needs and the long term strategies needed to realise the growth potential of Victorian industries.

The Department of Industry, Innovation and Regional Development is now implementing this commitment in respect of a number of key industries. The metal fabrication industry is one such key industry and was selected because of its vital role in manufacturing and its part in the total manufacturing supply chain. The industry sector is diverse but basically covers the field of transformation of basic metal products into components for use in other equipment and facilities.

While recognising that responsibility for many of the policy levers impacting upon the metal fabrication industry rests with the Federal Government, the Victorian Government is committed to playing a constructive role in facilitating the industry's growth.

A primary objective for the metal fabrication industry strategic audit is to develop, in conjunction with industry, a clear vision of what is required to ensure the long-term success of the industry.

3.1 *Audit Process*

Each stage of the audit process was conducted in close consultation with industry stakeholders. The major stages of the audit process included:

- an initial assessment of the key issues currently facing the metal fabrication industry;
- publication of a Background and Issues Paper
- industry stakeholder feedback on these issues and an industry stakeholder assessment of the challenges and opportunities the industry faces;
- a joint forum involving several key segments of the metal fabrication industry and the precision engineering industry
- regional workshops in Ballarat and Geelong (regional consultation also took place in Bendigo, Wodonga and Hamilton)
- the identification of future opportunities for industry growth
- the preparation of the final audit report, overseen by an Industry Reference Group, which now provides the basis for the development of an Industry Development Plan.

3.2 *Development of Issues Paper*

The Background and Issues paper represented the first stage in the audit process and is designed to stimulate debate on key challenges facing the industry over the next five to ten years and the strategies needed to secure its future success.

The Background and Issues paper was developed by means of a desktop evaluation of available data from ABS and IBIS and published industry reports. Coupled with this data, a series of preliminary discussions took place with various interested parties including:

- DIIRD– Industry Victoria/Office of Manufacturing
- Industry bodies such as Australian Institute of Steel Construction (AISC), Australian Die-Casting Association (ADCA) and the Australian Foundry Institute (AFI).

The trends from the historical data and economic analysis for a number of industry segments were tested and discussed with the stakeholders listed above in an effort to derive a set of initial themes and key issues that concern the industry at the present time.

The outcome from these discussions along with the economic analysis was presented earlier in the Background and Issues paper.

4.0 Industry Sector Overview

4.1 Industry Definition & Terminology

The metal fabrication industry, for the purpose of this Audit, is defined to include all manufacturing processes that transform basic metallic raw materials into other components or products.

Examples of the types of manufacturing processes employed in this sector in Victoria include: die-casting, sand casting, hot forging, cold forging, extruding, hot and cold rolling, welding, cutting, stamping, forming, brazing, joining and bending, electroplating, galvanising, painting, powder coating and assembly.

This definition encompasses three groups of Australian and New Zealand Specialised Industry Codes (ANZSIC). The groups have been titled “Casting and Forging”, “Basic Metal Product Manufacturing” and “Manufactured Metal Products”.

Note that although this Audit is titled “Metal Fabrication Industry”, there are several manufacturing sub-sectors that have not been covered because they fall outside the definition within the ANZIC groups above. These omitted sub-sectors will be addressed and taken into consideration during the planning phase of the Manufacturing Industry Strategy development.

For the purpose of this study, the three groups of ANZSIC codes in the metal fabrication industry are from here on called *segments* and the individual ANZSIC codes are referred to as *sub-segments*. For statistical details of the individual sub-segments for each segment, refer to Appendix 7.

4.2 Industry Size and Economic Importance

The metal fabrication industry in Australia had a combined turnover in 1998 of \$14.2 billion with more than 90,000 employees, producing 2.3% of national gross domestic product (GDP).

In Victoria this sector represents 2.9% of State domestic product (SDP) with combined industry turnover of \$4.6 billion or 32% share of national sector turnover, with almost 30,000 employees and some 2,600 establishments.

The Victorian metal fabrication industry clearly plays a significant role in the Victorian manufacturing economy, and contributed 7% to State manufacturing output and employed 1.4 % of the total Victorian workforce in 1998.

The Victorian metal fabrication industry, although concentrated in the metropolitan area, is spread across most parts of the State in proportion to population, particularly in the provincial cities and major towns.

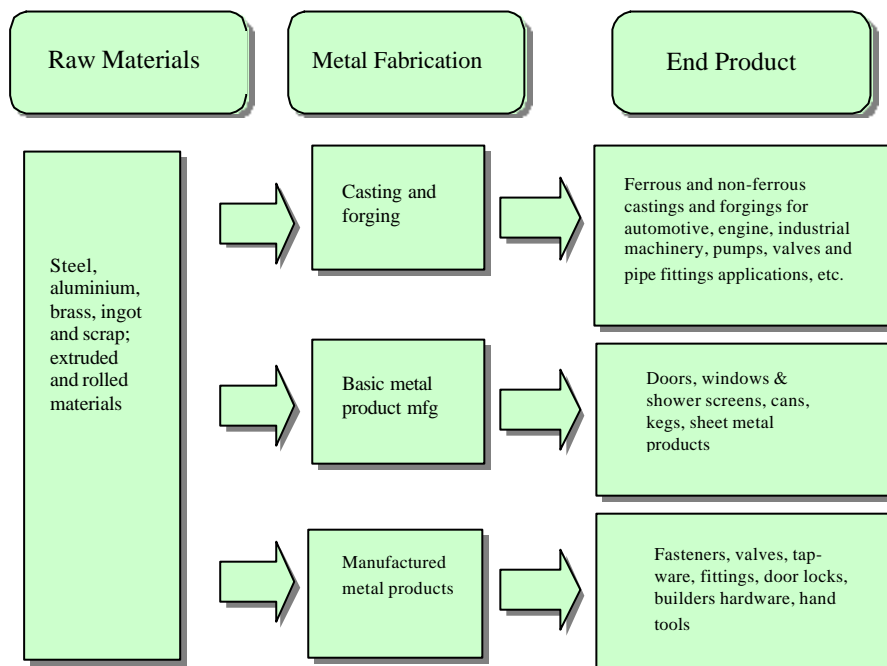
There are several strategically important companies operating in the metal fabrication industry in Ballarat, Bendigo, Geelong, Hamilton, Kyabram, Shepparton, Wodonga and Wonthaggi, with some provincial areas reliant on a particular key employer. For

example, hand tools are forged at Wonthaggi and there is manufacture of steel food cans at Wodonga, Shepparton and Kyabram.

The sector provides the essential inputs such as components, materials, assemblies and manufactured products to other key downstream manufacturers, assemblers and end consumers in Australia.

The flow of materials – from raw material inputs, through the various manufacturing processes to end products and services is depicted in the figure below. In addition to this flow some products and components, from the casting and forging segment for example, undergo further processing in the manufactured metal products segment.

Chart 1 - Process Flow in the Metal Fabrication Industry



4.3 Key Products and Markets

The metal fabrication industry in Victoria produces a vast range of products and a study by IBIS reveals the extent of the spread of products across the industry¹. The five highest selling product groups – door, window and door/window combination products (11%), steel and aluminium cans (6%), pipes and tubing (6%), boiler and plate work (4%) and door and window furniture (3%) - constitute less than 30% of industry turnover. The other 70% of industry turnover consists of products which each represent a manufacturing turnover of 2% or less of the total industry sector.

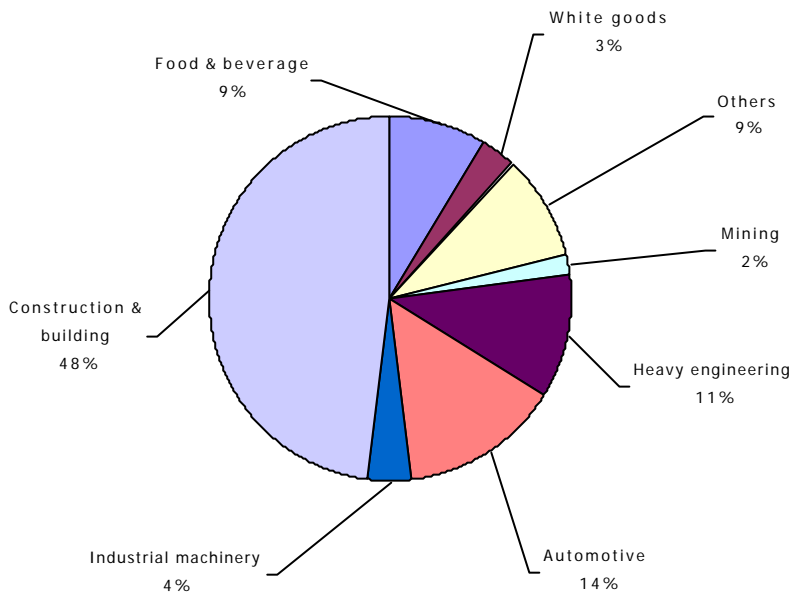
Victoria has some of the most important metal fabrication companies in Australia, offering a wide range of products for the automotive, building, industrial machinery, mining, packaging and transport markets. Other markets such as whitegoods manufacture and beverage production are also important for the industry. Many of the companies have, over a number of years, either established or expanded operations in Victoria to be closer to their key customers.

¹ IBIS Industry Outlook, June 2000

The automotive market and the building and construction markets are the two most important markets for the metal fabrication industry in Victoria. These markets create demand for products such as cast and forged metal components and aluminium and steel building materials.

The key markets identified for products manufactured by the metal fabrication industry are depicted in the Figure below.

Key Markets of the Metal Fabrication Industry



Despite this strong base however the industry in Victoria is still under constant threat from interstate and overseas business relocation – either through corporate restructure or as part of an overseas parents’ globalisation plans.²

4.4 Industry Performance

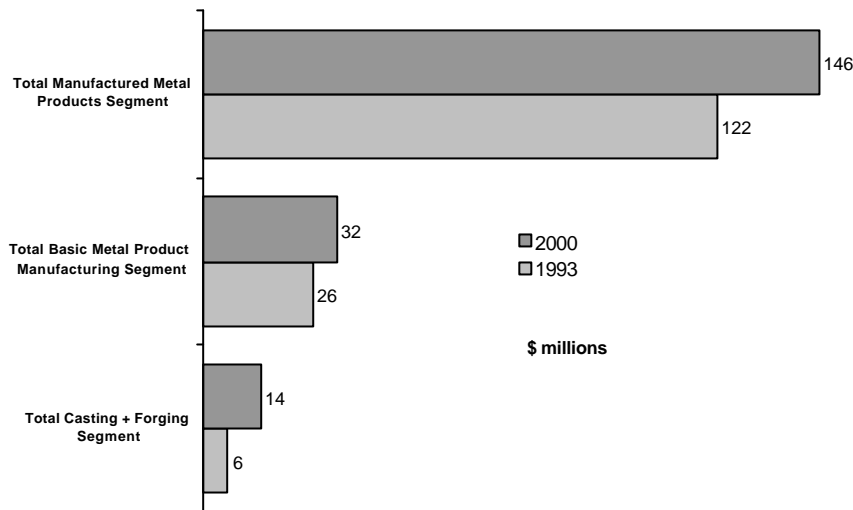
In Victoria turnover of the metal fabrication industry in 2000 grew by 3.1% average per year in the seven years since 1993 with employment numbers increasing by almost 1,700 to over 28,000.

The casting and forging, basic metal product manufacturing and manufactured metal products segments represented 11%, 49% and 39% respectively of the total industry turnover in 2000.

Export activity in Victoria in the industry grew at an average rate of 3.1% per annum for the seven-year period 1993 to 2000. Exports at 3.1% of industry turnover are, however, well below the average for all manufacturing industry in Victoria at 13.6%.

² Herald Sun, Factory Downs Tools, 25 July, 2000

Chart 3 - Significant Exports by Segments - Victoria - 1993 and 2000



In 1998, exports from Victorian industries engaged in metal fabrication were \$192 million, whilst imports were six times the value at \$1.12 billion, indicating the huge trade imbalance and potential opportunity in this sector.

According to ABS statistics, imports into the metal fabrication market have grown at a faster rate than exports – up 10% pa from 1993 to 1998 – and have secured 22% share of the market in Victoria. Consistent feedback from companies in the sector indicates that price remains the largest factor in the shift towards an increase in imported metal products.

Employment growth has been strongest in the manufactured metal products segment at an average of 4% per year and represented over 65% of the growth in total employment for the industry in Victoria. In 1998 there were over 2,600 establishments in Victoria involved in metal fabrication and this number has increased by a remarkable 48% in five years.

4.5 Brief Summary

The Victorian metals manufacturing industry:

- is an important part of the State's economy.
- is a significant employer in the State
- has significant export growth
- has further niche product export potential

5.0 Key Drivers

The audit team has established there are five major factors that currently affect the performance and growth prospects for the metal fabrication industry. A discussion on each of these factors follows.

5.1 Economic Cycle

The metal fabrication industry is heavily influenced and impacted by cyclical economic factors such as consumer spending, building activity – new domestic housing starts and renovation, commercial building, local auto production, currency fluctuations, interest rates, supply and demand and capacity issues.

5.2 Globalisation

With the increase of the globalisation effect in the economy, many of the products traditionally manufactured in Australia are now imported from any number of global sources. This has already had a significant impact on the metal fabrication industry in Australia.

A major challenge for the industry now is to more fully access the global economy as an opportunity to grow and compete in a larger marketplace. This will necessitate increasing capabilities and taking on greater export knowledge.

Despite the significant promise that more open access to global markets offers to the industry, the commodity-based nature of the sector's products creates an additional set of challenges.

Concerns also exist in the metal fabrication industry about the potential significant flow-on effects of business losses from primary sourcing activities. For example, it is becoming apparent to some sections of the industry that if the base technology, the research and product development is not developed in Victoria then the products and other components that make up the products, will themselves in all probability, also not be made in Victoria.

5.3 Manufacturing Growth in Australia

Most of the industry consists of second and third tier manufacturing supply to users higher up the chain. Therefore much of the output from the metal fabrication sector is in turn used by other manufacturing organisations as basic “raw material” or inputs to their own production processes. For example cast, forged and fabricated components are used to build engine, suspension and brake systems for the vehicle industry. Stainless steel fabricated assemblies are used in the food, beverage and biotechnology industries. Castings are used for making pumps, valves and transmission housings.

Newer industries brought into being by the advent of biotechnology developments, information technology, telecommunications or light metals developments are having an increasing impact on the future developments. Therefore the health or otherwise of the metal fabrication industry is inexorably linked to the economic performance and growth of downstream manufacturing.

With the increasing trend of many areas of manufacturing industry moving to either offshore manufacture or supplementing a proportion of processes with imported

components, the underlying demand for locally produced fabricated metal products is under greater threat of being further reduced. Strategies for growth and specialisation to offset this trend are therefore of critical concern to the various segments of the industry. Industry focus and development of niche capabilities and products for the global marketplace are seen as critical factors for industry.

Growth in the Victorian metal fabrication industry can best be stimulated through:

- formation of alliances and networks to add further value to imported inputs
- developing areas of specialisation, increasing scale in global niches markets
- striving for “world best” rather than “good enough”.

5.4 Technological Change

In the metal fabrication industry, a key challenge is the inevitability of new materials and new technologies to replace currently used manufacturing processes and equipment.

The threats posed to the metal fabrication industry by the introduction of new materials and new technology for manufacturing processes will cause continual pressure and challenges.

The challenge to the industry however can be to take up the new technologies as they arise and also use product innovation and research and development in the application of new materials in Victoria to combat these potential external threats. Examples are the increasing usage of light metals in automotive components, new casting/moulding processes and new high strength alloys in telecommunication and aerospace components and in sporting equipment such as golf club heads.

5.5 Community Responsibility

The challenges for the industry regarding its responsibilities within the community and the need to attract and reward skilled labour are ongoing ones. Workplace health and safety, the environment, the direction of education and training needs, career path opportunities, industrial and community relations, are challenges that need to be more strategically addressed for the long term by all the industry stakeholders. Many larger manufacturers are increasing their use of “triple bottom line” accounting, which takes into account economic, social and environmental costs and benefits.

All responsible firms are driven to continuously improve safety and conditions in the workplace and to encourage all employees to develop positive attitudes to safety in their private lives as well. There are many examples. At the time of interview³ OneSteel Tube Division in Port Melbourne have not had a lost time injury (LTI) since July 1999, and VisyPak in Clayton was similar with no lost time injuries for several years. Companies such as these are now drilling down and focusing in on the medical treated injuries (MTI) and the near misses in their operations. It is suggested that for every ten near misses there is potentially a lost time injury in the workplace. The audit team has seen that some parts of industry with their very strong and pro-active approach to risk management and safety performance have positive business benefits. With excellent safety records and a focus on an improved performance for an ever-diminishing goal, financial benefits of 6 to 8 % of costs are possible.

³ Russell Marsden, General Manager – OneSteel Tube Division

The environmental image of industry is another source of community sensitivity. It is perceived that the industry is not environment friendly and is a key polluter. The triple-bottom-line accounting approach may also lead to a better outcome. The move towards environmental management systems, environmental accreditation - usually to international standard IO 14001 - and waste reduction programs is now particularly strong. However many SMEs are yet to realise the benefits and the positive outcomes possible from the adoption of such practices in their business. In the automotive markets, for example, in Victoria it is now expected that all the tier one suppliers will be accredited to ISO 14001 by December 2002. This policy will drive such firms and, in turn, their suppliers, towards accreditation, environmental awareness and responsibility.

In order to raise the image of manufacturing in the community, even if only for the need to attract new employees, the industry itself must recognise it has a strong social responsibility. It should move as fast as possible towards behaviour, promotion and positive reinforcement that feeds a community perception that manufacturing industry is an environment-responsible and safe industry and as such a great place for young Victorians to build their careers.

Union and Business, through partnerships have a key role to play in improving the Investment and Industrial Relations climate in the metal fabrication industry in Victoria. The real challenges for Victorian industry is to create a climate that promotes high performance, cooperative workplaces, to develop ways of resolving issues at local levels taking a whole-of-community-benefit approach and to boost the industry's image in the general community.

6.0 Current Industry Status and Opportunities

The Audit Team has looked in detail at each of the industry segments and sub-segments under the current conditions. It is important to understand the dynamics of the market conditions that prevail at the current time. From an analysis of these dynamics and discussions with key industry stakeholders in each sub-segment the most important issues for each segment of the industry have been generally defined.

At the outset it needs to be pointed out that accurate and up to date industry segment data and performance statistics are difficult to obtain. Due to the arrangement of the ANZSIC codes and the detail level available of ABS statistics, very few industry bodies or enterprises can obtain detail about their industry segment performance. This matter is a problem to the industry.

Brief analyses of each segment and their sub-segments are presented below.

6.1 Casting and Forging, Steel Pipe & Tube Segment

This Segment manufactures castings and forgings in a large range of metals and processes broadly categorised into ferrous and non-ferrous materials and also seamless or welded steel pipe and tube.

The segment has a total market in Victoria of \$640 million, total sales of \$523 million, employs almost 3,600 people, imports \$134 million mainly of steel pipe and tube, and exports \$14 million of its product⁴.

Studies show that all the advanced manufacturing based nations maintain their leading edge by nurturing a strong and technologically advanced casting, forging and tube making industry. In Australia, like in the USA, Japan and the EU nations, an important factor is that the casting and forging sub-segments are relatively labour intensive. New technology has allowed some reduction in the labour costs but it entails equipment that is expensive both to purchase and maintain. Victoria and Australia have lagged behind in re-investment in the new technologies. Therefore in the more basic metal alloys where process costs are lower and product weight is not critical, the competition from several lower labour cost countries is intense.

Due to their differing physical characteristics the two sub-segments of castings and forgings often compete with and complement each other. As new alloys and techniques are developed, engineering designers may change between forgings and castings for their products. Thus some of the opportunities for each segment may be to take from the other.

Investigation indicates however that most of the issues of concern for each sub-segment have strong similarities although the opportunities differ relative to process and materials. The audit process has viewed each sub-segment in detail to determine the critical issues and opportunities for the whole segment.

⁴ ABS data (Ref: Appendix 7)

6.1.1 Iron and Steel Casting (ANZSIC C2712)

The iron and steel foundry industry sub-segment in Victoria has gone through a massive rationalisation over the last 15 years. According to the Australian Foundry Institute⁵ output has fallen by 40% over this period, but most businesses remaining are "... world-class, with personnel who can adapt, think laterally and be innovative."

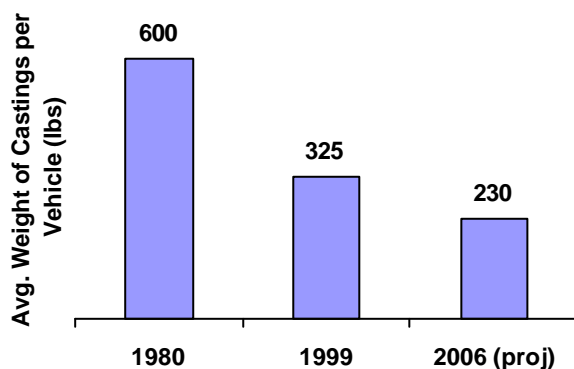
Much of the rationalisation has been as a direct result of a slowdown in Victoria's manufacturing and industrial base over the past decade or so. The change to new lightweight materials such as aluminium and plastics has also had an effect, as has the loss to overseas suppliers of major infrastructure projects such as the Victorian train and tram replacement programs.

Data for Australia on the foundry industry is very difficult to obtain, but South Australia which has its own Cast Metals Precinct⁶ claims to have 30% of the national foundry output (both ferrous and aluminium castings). On the basis of 55,000 tonnes per year of ferrous castings produced in South Australia a reasonable estimate for the national output is 225,000 tonnes.

To put this into some form of perspective, in the USA, there were 2,950 foundries and 225,000 employees in 1999 and which produced 14.4 million tons of castings worth US\$29 billion. This puts the US market (in tonnage) at over 60 times the size of the Australian market for castings. This figure correlates reasonably with the relative ratios of the locally produced car and truck markets between the US and Australia, 16 million units compared with 365,000. In the US automotive industry however the use of ferrous castings has been dropping dramatically as more light weight components and materials find increasing acceptance. Chart 4 below illustrates this trend graphically.

Decline in Use of Ferrous Castings in US Automotive Industry

Source: American Foundry Society



In the US automotive demand for lighter weight components driven by the 1977 USA Corporate Average Fuel Economy (CAFE) regulations has reduced demand tonnage in the US for ferrous castings despite a growth in the total market size for new vehicles.

In Australia reduced demand for foundry products and castings has been caused both by a reduction in general manufacturing activity and some reduction in the casting usage

⁵ <http://www.australianfoundries.com>, accessed 22 February 2001.

⁶ <http://www.foundrysa.on.net/information/index.html>, accessed 17 August 2000

weight per vehicle of locally manufactured vehicles, even though they have not been subject to regulations such as CAFE.

Victoria is well represented in the ferrous foundry industry. However the majority of the output is for the automotive industry with in-house automotive producers such as Holden Engine Company and Ford Casting plant. Therefore the majority of the local non-captive foundry businesses are in other market sectors besides automotive in order to achieve critical operating masses. A typical breakdown in production output for the industry is detailed in the Table below.

Table 1 - Foundry Output in Australia

State	Captive / Independent	Company	Est. Annual Output (tonnes)	% of Australian Production	
Victoria	Captive	Holden Engine Co	40,000	18.1%	
		Ford Casting Plant	26,000	11.8%	
	Independent	Thompson, Kelly & Lewis	}	6,000	2.7%
		Other pump & valve Coys.			
		ANI Bradken	}	10,000	4.5%
		Alan Beckwith Macbro			
		Allen Foundry			
		Davies & Baird			
		Graham Campbell Ferrum			
		Norvil			
		IXL Metal Castings			
Steel Castings					
Steele and Lincoln					
		Other general foundries			
Total Vic.			86,500	39.1%	
SA	Captive	Mitsubishi	15,000	6.8%	
	Independent	BTR	11,000	5.0%	
		ANI Bradken	7,000	3.2%	
		Mason + Cox	9,000	4.1%	
		Others	13,000	5.9%	
Total SA			55,000	24.9%	
NSW	Independent	TRW	}	34,000	
		Tyco Water (pipe)			
		Others			
NSW Total			34,000	15.4%	
Qld	Independent	Toowoomba Foundry	16,000	7.2%	
		ANI Bradken	16,000	7.2%	
		Crevet (NIBF) & others	2,500	1.1%	
Total Qld			34,500	15.6%	
WA	Independent	ANI Bradken & others	11,000	5.0%	
Total WA			11,000	5.0%	
Australia Total			221,000	100.0%	

* Based on 65% of quoted annual capacity.

Other figures are based on quoted employee numbers and 65 tonnes pa of output / employee.

The ferrous casting and foundry industry in Victoria (besides the in-house automotive foundries) appears to be heavily reliant on the mining, transportation and general manufacturing industries, far more so than South Australia where automotive casting supplier such as BTR are located. This being the case creates a natural impediment for

this industry in Victoria, as most of the mining industry customers are located in other states of Australia.

From the Table above, it is noticeable that despite the Victorian economy having the dominant share of casting and foundry activity in Australia (over 40% share), the majority of this activity is related to either in-house automotive and pump and valve manufacturing. Without these activities Victoria would be hard pressed to have a viable foundry industry. It therefore raises the broader question of the strategic direction of the foundry industry in Victoria and its commitment to growth and the search for new opportunities. There appear to be real opportunities in the automotive sector – in local and overseas markets but there are critical impediments to seizing and converting these opportunities.

A claim in the US trade publication, Engineered Casting Solutions, is that the use of ductile iron is expected to increase by 2% per annum to 85 kg/car in 10 years time with new applications in braking and suspension parts⁷. Austenitic ductile iron (ADI) which is a special heat-treated ductile iron is expected to replace many applications currently produced as forgings. ADI alloy castings are produced in Victoria in companies such as Steel & Lincoln in Dandenong.

The pump and valve manufacturing industry in Australia is heavily reliant on the quality and technology of castings from the foundry industry. The Australian Pump Manufacturers Association in support of the \$600 million annual market for pumping equipment in Australia comments “...a shakedown in the Australian foundry industry in the early 1980’s preceded the restructuring of pump manufacturers themselves, and of the foundries operating today a number has specialised in the moulding techniques and metallurgy peculiar to pump designs. Several pump manufacturers maintain their own foundries.”⁸ Pump manufacturers such as Thompson, Kelly and Lewis are a part of international pump groups and maintain foundry capabilities in Castlemaine and also in Melbourne.

Another very important part of the ferrous casting industry in Australia is the cast ductile iron business used in the manufacture of water pipes and fittings. Tyco Water now in Sydney mainly carries out this process after they purchased the Tubemakers Fluid Conveyance business from BHP in 1999⁹. Tyco along with another manufacturer Crevet Limited hold dominant positions in the \$100 million cast-iron pipe market in Australia. Despite this, Crevet’s foundry facilities were relocated from Sale in Victoria to Innisfail in North Queensland in July 1999, citing lower cost structures¹⁰ and imported product from the world’s largest producer of cast-iron pipe Sinclair Foundry Products (part of the French Saint Gobain group).

The industry associations, lobby groups and state-based facilitation mechanisms for the foundry and casting industry in Australia are as follows:

- Australian Foundry Institute (AFI), <http://www.australianfoundries.com>, which is a register of foundry capabilities for Victorian companies and also represents foundries in the rest of Australia.

⁷ Engineered Casting Solutions, Automotive Casting Applications, Fall 2000 edition, Pages 37-40

⁸ <http://www.pumps.asn.au/dir-industry.html>, accessed 23 February 2001

⁹ Page 23, IBIS Industry Outlook – C2712 Iron and Steel Casting and Forging (Mar 00)

¹⁰ 1999 Crevet Limited Annual Report, Page 2 – Chairman’s Report, <http://www.crevet.com.au/chairmain.htm> accessed 23 February 2001.

- Foundry Industry of South Australia, <http://www.foundrysa.on.net>, an Internet guide to the capabilities of the foundry and casting industry in South Australia as part of the South Australian Centre for Innovation, Business and Manufacturing (CIBM), which is in turn part of the South Australian Department of Industry and Trade.
- Australian Industry Group (AIG) – Foundry Section

The South Australian Department of Industry and Trade has direct links under its “Manufacturing Capabilities” menu to Foundry SA On-Line, Tooling SA and an unlinked reference to their Cast Metals Precinct. There is also a link to the CIBM, who offer many of the services and programs that are offered in Victoria by the Office of Manufacturing.

In Queensland the Department of State Development has as one of its key industry segments – the Light Metals industry and there is a full report on the light metals industry in Queensland available for downloading.

Like the two other States, in Victoria there is a need for more complete and more compelling web information for all industry segments being evaluated in this audit. For example, in referring to the “Office of Manufacturing” homepage ¹¹ which is linked from the “Business Victoria” homepage, the Aerospace, Automotive, Defence and Rail industry sectors are hyper-linked. Neither the metal fabrication industry nor the more specific foundry or forging or casting sectors get any mention on the Victorian Department for Innovation, Industry and Regional development’s WebPages.

Just how the foundry organisations work and inter-relate together needs more detailed study. But it was clear that the National Cast Metals Council now has the national voice for the industry, with the AFI for example more focused on technical and training issues. AIG recently stated that industry promotion and marketing are now the key issues for the NCMC to address. In order to re-develop the industry the peak industry body, the NCMC, has developed a visionary strategy to:

- Promote and raise awareness of the industry
- Encourage young people to consider cast metals for a career
- Coordinate industry training
- Raise awareness on innovations, technical developments and market changes

The industry also aspires to the degree of recognition and political influence the foundry industry has in the USA where we are told, its peak body, the American Foundrymen Society Inc., normally has direct access to the US President.

The industry in Victoria is spread widely across the state from the 15-20 metropolitan foundries to foundries in the regional centres of Geelong, Ballarat, Bendigo, Horsham and Wodonga. So the importance of this industry is not just confined to metropolitan Melbourne but to the regional cities and key centres of the State. It is claimed that one of Australia’s most efficient foundries is in fact in regional Victoria – Southpac Metal Manufacturing foundry in Horsham. This foundry which has diversified from a total reliance on automotive market now exports to the USA and has contracts in Australia with the aerospace industry.

¹¹ <http://202.12.135.164/dir164/business/bvweb.nsf/CD/Office+of+Manufacturing?OpenDocument>, accessed 19 December 2001.

The Industry view is that there is more scope for the Victorian Government to further promote, encourage and help develop these sectors of business. Opportunities for the future for the foundry industry in Victoria include:

- More automotive work, particularly as the global market changes more to light-weight ductile iron castings instead of steel forgings
 - The adoption of more lost-foam technology in the casting segment, particularly again in the automotive industry. Norvil Foundry on their website ¹² claim that by 2005 lost foam castings will have 29% share of the aluminium and 14% share of the ferrous castings markets globally. In 1998 in the US alone there was 140,000 tons of castings produced by lost foam technology. Lost foam technology in Victoria is currently available from Norvil Foundry in Ballarat and IXL Metal Castings in Geelong.
- Outsourcing and partnership opportunities by means of casting and foundry applications with Holden and Ford on their new engine programs.

Issues for Ferrous Foundry Industry Segment

Issues	Possible Alternatives Actions / Strategies
Loss of work placed overseas by Australian public sector bodies.	Support for the local industry in Government purchasing policies such as the VIPP
Not enough vision and strategic thinking by enterprises.	Create centralised industry body to promote and facilitate best practices in manufacturing. Encouragement of networks, capacity sharing, enterprise consolidation through mergers or acquisitions
High energy costs.	Combined Industry negotiations with energy corporations
Shrinking domestic market and insufficient management skills to find and seize new opportunities.	Combined industry export and import replacement policy and actions such as market strategy development and inwards/outwards missions
Lack of technical personnel. Training facilities – Metropolitan and Regional.	Review of central facilities and possible creation of web based virtual training provided in-house

¹² <http://www.australianfoundries.com/norvil/next.htm>, accessed 23 February 2001.

6.1.2 Ferrous & Non-ferrous Forging (ANZSIC C2712 & ANZSIC C2733)

The forging industry in Victoria forges ferrous alloys, copper-based alloys - mainly brasses, aluminium alloys, stainless steels, titanium, magnesium and other more exotic materials.

The industry is represented by a loose industry association – the Australian Forging Group, with its 41 members represent both the ferrous and non-ferrous industry plus, trade supplier's etc. The AFG is like many of the trade associations in the metal fabrication sector mainly focused on technical skills and issues and has little emphasis on marketing or trade promotion of the industry or its members' skills.

The forging industry in Victoria is now centred on very few companies following recent industry rationalisation and mergers. Of the 41 members of the Australia Forging Group (AFG), the peak industry body for the ferrous and non-ferrous industry in Australia, there are 27 members in Victoria¹³. This is an indication of the Victorian dominance of forging industry in Australia. The most recent merger occurred when National Forge acquired West Footscray Engineering in February 2000¹⁴. National Forge now dominates the Victorian forging market with turnover approaching \$40 million in 2001 and directly employs 300 people. Smaller companies such as Greg Sewell Forgings and Townley Drop Forge add dimension and diversity to an otherwise diminishing number of companies. Much of their product is brass with the largest demand for brass products being the plumbing and tap-ware industry. Ferrous forging is still a key process technology with Unidrive in Clayton and who are now part of the global GKN organisation.

Traditionally the ferrous and non-ferrous forging industries would have remained separate with the technology and forging equipment different in each sector. In more recent times however a number of the ferrous forging businesses have moved into the non-ferrous field – particularly with the growing demand for aluminium forgings in the automotive sector, a move which has been borne out of their experience with titanium.

Aluminium automotive forgings are (or have been) big business in the automotive markets of North America and Europe where the drive for light weight auto components has pushed designers towards the use of aluminium in structural components such as suspension arms, struts and other components.

National Forge would appear to have been the most successful of the local industry participants by diversifying into sub-assemblies for automotive producers, forging titanium alloy components for aircraft and more recently golf club head applications. It is also reported that a strong commitment to research and development, in collaboration with Melbourne University, has generated innovative new technologies in the semi-solid material field. This has substantial applications in the area of light metal automotive components.

A number of producers are now focusing on forged aluminium automotive components for predominantly the North American export market – engine brackets, door hinges and air conditioning compressors, and also the domestic market for drive-line yokes,

¹³ <http://www.afg.org.au>, accessed 23 February 2001.

¹⁴ <http://www.industrysearch.com.au/news/viewrecord.asp?ID=1586&SearchField='national%20forge'>, accessed 26 February 2001.

independent rear axle components and brake calliper pistons. The US market however is already moving on from forged light weight aluminium components to die cast, either squeeze or semi-solid technologies, for reasons of cost and design flexibility. Having a local presence in the market as well as full design capabilities are also key requirements for the industry in markets such as North America. Australian producers at this stage have not made such commitments and may possibly lose these opportunities.

There is however a changing global trend in this market and in a technical sense the forging producers now need to be capable of supplying complete assemblies to their 2nd tier customers and not just raw or machined forged components. The major obstacle up to the present time in the lightweight aluminium export forging business in Australia has been the high cost of raw materials. Most of the local aluminium extruders who produce the raw material feedstock for the forging industry are not able to offer world-competitive raw material pricing to the forging industry in Victoria. Hence the industry is unable to any degree to penetrate the markets of high demand – such as USA and Europe.

Also critical is the development of strong customer relationships building on a supplier's capabilities and expertise. These all-important attributes for the industry in Victoria are essential for global success and industry and Government need to work together to better understand these needs and develop the skills required to service them. Otherwise significant opportunities may pass by the Victorian forging industry.

Issues for the Forging Industry Segment

Issues	Possible Alternatives Actions / Strategies
Need to improve industry vision and representation to Governments and the community.	An industry representative body could promote and facilitate networks, exports, technology diffusion, capacity sharing, major projects, etc. Evaluate the benefits of a joint industry body for the sections of the metal fabrication and precision engineering industries
Need to increase scale of industry – by generating exports	Combined industry export and import replacement policy and actions such as market strategy development
Different interests of ferrous and non-ferrous industry not best served by current industry body structure.	Encourage common issues/problem solving and cater for segment requirements within representative body
Aluminium forging opportunities are under-developed, particularly within the automotive industry.	Develop combined Industry market strategy for the local market – including engineering personnel at OEMs, 1 st & 2 nd tier suppliers, Universities, etc.
New technology global commercialisation expensive. eg. The work done locally by National Forge and Melbourne University for semi-solid materials technology.	Industry needs marketing expertise in order to capitalise on research and development activities. Develop new industry programs that support the hiring / development of new marketing personnel for the industry.
Pipe fitting imports intensively competitive	Compliance with regulations needs verification

6.1.3 Steel Pipe and Tube Manufacturing (ANZSIC C2713)

In Victoria there are only two main producers of welded steel tube and pipe – OneSteel Pipe & Tube Products and Palmer Tube Mills (part of the Smorgon Steel Group). There

are no manufacturers of seamless tube or pipe in Australia now and all of this material is now imported after BHP stopped producing this product in 1992 due to falling demand.

Palmer Tube Mills with manufacturing operations at both Sunshine in Victoria and Acacia Ridge in Queensland supplies about 40% of the total market demand for welded steel tube ¹⁵.

OneSteel Pipe & Tube Products has seven manufacturing operations in Australia, one at Altona North in Victoria and three core divisions – SPD for structural products, BTM for precision tubing and Oil and Gas Pipelines ¹⁶.

In August 2000 the other main Australian competitors in the steel pipe and tube market in Australia – Hills Tubing Division based in Adelaide and Welded Tube Mills based in Brisbane merged to form a new organisation called Orrcon. It is stated that Orrcon now have 35% of the Australian tube market.

The main applications for steel tube and pipe are in the automotive industry – for shock absorbers, exhaust systems, brake lines and fuel rails, for structural applications in structures and commercial building and in the industrial boiler market. The other main application for tubing in Australia is for domestic clotheslines and other similar products. The main import competition comes from New Zealand, South Africa and India.

There are several new opportunities for the industry such as in-line galvanised pipe products and very high strength (VHS) impact beams and side intrusion bars for the automotive industry. Other developments overseas such as hydro-formed tube components are yet to see demand in the Australia automotive industry, because of the relatively small size of the Australian market and the capital cost of the equipment required. Hydro-forming is where tubing held between two dies is deformed under water pressure to form complex hollow shapes that usually could only be manufactured by casting or fabrication and welding.

Issues for the Steel Tube and Pipe Industry Sub-segment

Issues	Possible Alternatives Actions / Strategies
The industry needs more competitive raw materials.	Review purchasing practices with consideration of current importing practices
Slow technology diffusion	Other added-value opportunities – such as hydro forming, need to be stimulated.
Niche market identification.	Industry members need to determine if they can work together on this. Sort out niches and develop global markets.
More collaboration (to maximise opportunities for areas of specialisation)	Industry members can share capacity and manage large projects on JV or cooperative basis.

6.1.4 Non-Ferrous Metal Casting (ANZSIC C 2733)

Non-ferrous metal casting is a significant industry in Victoria. The non-ferrous metal casting industry is made up of companies producing castings in aluminium, bronze,

¹⁵ Palmer Tube Mills accessed 9 January 2001 at URL <http://www.ptm.com.au/fspprof.htm>

¹⁶ OneSteel Pipe & Tube Products accessed 9 January 2001 at URL <http://www.BHPBilliton.com.au/menu/company.html>

zinc, magnesium and various other alloys utilising several processes. The major material by far is aluminium and its alloys. The predominant process utilised is high-pressure die-casting. Other die-casting processes include gravity or semi-permanent mould casting, which may use steel dies with sand cores for hollow components, and also low-pressure die-casting.

International Trends

Within the United States Corporate Average Fuel Efficiency (CAFE) legislation has required the automotive industry to increase fuel efficiencies. This is primarily achieved through vehicle weight reduction and will soon apply also to sports utility vehicles. As a result, demand for lightweight cast aluminium components has been rising significantly.

Within Europe the demand for lightweight automotive components has also increased considerably over the last decade.

The personal electronics industry is adopting lightweight cast components to increase strength and functionality, reduce weight, and provide improved electromagnetic shielding. For example, increasingly mobile phone and computer cases are made from magnesium castings.

International demand for aluminium and magnesium die-castings is significant in support of the light weighting activities, with magnesium at 126,000 tpa and aluminium at 4,831,000 tpa in 1999¹⁷ and projections of annual growth rates of 15 to 20%. Aluminium die-castings have been increasing at a growth rate of 4% per year for the last decade and are projected to grow at a similar rate largely due to demand in the automotive industry. Magnesium die-castings have started from a lower base but over the last decade have grown by over 400%. Almost all of this growth is within Europe and North America.

Zinc alloy die-castings have experienced annual growth of 2% per annum over the last decade to a total of about 1.2 million tonnes per year. Most of this growth has been in North America and the Asia Pacific region. The zinc die-castings historical advantage of low cost and good castability has been eroded as aluminium alloys have advanced in applications. However there are still a large number of zinc die casters in the industry. Application growth has been mainly in building hardware, toys, replicas, fasteners, and electronic heat sinks.

Growth is not uniform across the die casting sector, but rather is focussed on larger high pressure die cast and/or more complicated parts where light alloys can replace assemblies or have inherent material properties advantages. These castings offer higher value and require specialist skills and capability to manufacture. As a result companies that are innovative and adopters of advanced technology are achieving growth.

A critical factor is that the development driver in light metals casting, the automotive industry, is itself changing. The car companies are becoming assemblers and requiring the tier 1, 2 and 3 suppliers to design and develop product and complete systems including such fundamental parts as engine blocks. Companies without the design and development capability face limited opportunities in the future.

¹⁷ Data supplied by ADCA

Australian Trends

The Australian die casting sector is composed of approximately 100 companies and half of these are based in Victoria. The sector contributes in the order of \$250 million in national sales employing around 3,300 people¹⁸. There are six significant producers in Victoria and the balance is SMEs. The industry is made up of two categories:

1. Captive die-casting operations within a manufacturing company to enable a complete product to be manufactured.
2. Contract die-casters that generally manufacture to drawings and specifications supplied by the client. These operations may also include machining, finishing and further sub-assembly.

Note that South Australia with its “casting precinct” also considers the casting industry as a very important industry sector. Castalloy, a key automotive supplier in Adelaide produces cylinder heads, inlet manifolds and engine sumps for Holden Engine in Melbourne and exports cast aluminium wheel products to Harley Davidson, USA.

In Victoria the die-casting industry is strongly focused on the automotive sector with major customers being Holden, Ford, Mitsubishi (Adelaide), Toyota and 1st tier customers such as Robert Bosch, Schefenacker Vision Systems (Adelaide), Holding Rubber, etc.

The majority of the components cast in Victoria are for the automotive companies engine and transmission assembly lines – such as the V6 lines for Holden, Mitsubishi and Toyota, the 4-litre six-cylinder line for Ford, the four-cylinder line for Toyota and the export Family II line for Holden.

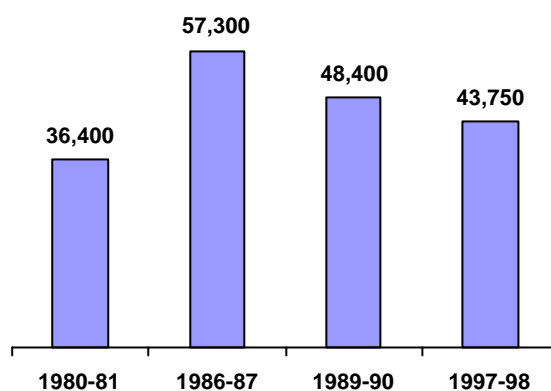
The importance to the die-casting industry of continued engine-building commitments with further localisation where possible and maintaining the 1st tier manufacturers should not be underestimated.

Historically, demand for primary aluminium for die-castings produced in Australia peaked in 1987 at 57,300 tonnes¹⁹. This figure was calculated from the amount of silicon consumed in Australia and given that die-casting alloys contain some 8.5% silicon to aid the casting process. Secondary aluminium usage of 27,000 to 30,000 tonnes annually makes up the balance of output as shown in Table 2 below. Further IBIS data, see Chart 6 below, reflects the changes in demand in the aluminium casting industry in Australia. This can be closely correlated with both local automotive demand and the demand of fully assembled engines such as the Holden Family II engine exported to Europe and Korea.

Chart 6 - Primary Aluminium Usage in Die-Castings in Australia, 1980 - 1998

¹⁸ Lewis, 1995, The Australian Die Casting Industry

¹⁹ IBIS Business Information C2733 Non-Ferrous Metal Casting Vol 12 (Aug 99), page 16



Source: IBIS Business Information

The captive producers – such as Ford, at Geelong, Toyota at Altona, PBR Automotive at East Bentleigh and to some extent Nissan Casting in Dandenong, would all normally not compete with the contract producers. The audit team’s estimation of industry participation, by process, is detailed in the Table below.

Table 2 - Die-Casting Production in Australia by Process

Company	Annual Production by Die-Casting Process (tpa)					Totals
	HPDC-Al	LP-Al	G-Al	HPDC-Mg	HPDC-Zinc	
Ford Casting	1,800	1,760	880			4,440
Nissan Castings	6,000	600				6,600
PBR Automotive			4,000			4,000
ACL Piston			1,000			1,000
All other	7,000	1,000	2,000	50	2,200	12,250
Total Victoria	14,800	3,360	7,880	50	2,200	28,290
<i>Victoria's share</i>	<i>51.4%</i>	<i>25.6%</i>	<i>30.7%</i>	<i>45.5%</i>	<i>35.5%</i>	<i>38.3%</i>
SA	8,000	7,000	10,000	60	2,000	27,060
<i>SA's share</i>	<i>27.8%</i>	<i>53.4%</i>	<i>38.9%</i>	<i>54.5%</i>	<i>32.3%</i>	<i>36.6%</i>
NSW	3,500	2,500	6,000	0	1,000	13,000
<i>NSW's share</i>	<i>12.2%</i>	<i>19.1%</i>	<i>23.4%</i>	<i>0.0%</i>	<i>16.1%</i>	<i>17.6%</i>
Queensland	1,500	250	500	0	500	2,750
<i>Qld's share</i>	<i>5.2%</i>	<i>1.9%</i>	<i>1.9%</i>	<i>0.0%</i>	<i>8.1%</i>	<i>3.7%</i>
WA	500	0	800	0	250	1,550
<i>WA's share</i>	<i>1.7%</i>	<i>0.0%</i>	<i>3.1%</i>	<i>0.0%</i>	<i>4.0%</i>	<i>2.1%</i>
Tasmania	500	0	500	0	250	1,250
<i>Tas's share</i>	<i>1.7%</i>	<i>0.0%</i>	<i>1.9%</i>	<i>0.0%</i>	<i>4.0%</i>	<i>1.7%</i>
Australian Prod.	28,800	13,110	25,680	110	6,200	73,900

With the new V6 engine plant now committed to Victoria, much of the activity at the Holden Fishermen’s Bend plant will revert to this new engine line. The volume of 4-cylinder Family II engines will drop due to the weaker demand from Daewoo in Korea. With the new V6 engine being an all-alloy engine with a cast aluminium block rather than the cast iron block in the current 3.8 litre V6 engine, new casting technology is required to manufacture such a product.

Few Victorian die-casting companies have state-of-the-art die casting equipment. Some are still using die casting technology that is one or more generations old. Few companies have advanced into emerging die casting technologies such as ultra-vacuum

or thixotropic or squeeze casting. There is no aluminium alloy engine block casting activity in Victoria at present.

Nearly all castings produced are “commodity” type castings that could be made in many countries around the world with the result for the manufacturers. There are exceptions to the above, Mett Die Casting are one of the few companies who have invested significantly in new state-of-the-art machines giving them an advantage over other domestic die-casters.

Currently there is only one production plant producing magnesium die-castings for automotive applications in Australia – Bridgestone TG in Adelaide, using imported designs for their high-end steering wheel at 60 tpa. The only other contract die casting operation currently in magnesium production is Heslop die casters in Reservoir at around 25 tpa.

Most local die casting companies have limited in-house product design capability resulting in them missing much of the international growth from the overseas automotive companies who expect “concept to production” involvement from their suppliers.

There therefore exists a real challenge to attract an international die-casting company to Australia who has the technology to produce precision sand cast aluminium blocks. It is however possible that the Victorian and Federal Government could coordinate efforts to encourage the local industry to take up the challenge and provide potentially a more modest incentive package to achieve the same end result. The R&D infrastructure is in place to support such a venture with minimal modifications needed to cater for the precision sand casting process.

Australian-designed cars will not incorporate any significant quantity of magnesium alloy components without Government intervention. There are no regulatory pressures on auto producers to both reduce weight and fuel consumption or reduce emission – unlike the CAFE. regulations in the USA which drive “light-weight vehicle design.” Hence all of the potential applications for magnesium cast components in the automotive market will be in North America, the EU and Japan, with few exceptions.

Support Infrastructure and Initiatives for Victorian Industry

The Australian Die Casting Association (ADCA) was formed 35 years ago when a group of industry participants came together to form an interest group. At the time, technical knowledge of the die-casting process was limited and therefore the key role of the newly formed ADCA was one of information dissemination, provision of training assistance and technical input. Many still see this as the key role for ADCA today. ADCA is however looking to identify the necessary roles for it to support industry growth. ADCA is run basically by volunteers and has limited resources to support industry effectively. To support industry ADCA works closely with initiatives from Government and R&D providers such as the CSIRO Casting and Alloys Group and CAST.

ADCA recently developed an initiative to convene quarterly meetings of the CEOs of the die casting association’s member companies to canvas issues and share ideas within the industry. The output from these sessions, while not available publicly, is regarded amongst industry members as a valuable initiative and a beneficial development for the industry.

Commonwealth and State initiatives to study or support the industry include:

- Action Agenda – Light Metals (aluminium, magnesium and titanium – upstream and downstream)
- This Strategic Audit of Victorian Industry
- Invest Australia – questionnaires to industry for investment studies.
- House of Representatives Standing Committee on Industry Science and Resources – “Increasing value-adding to Australian raw materials”

Several State Governments are supporting the growth of their light metals industry, generally at a local level.

Queensland have established a \$10 million fund to support the growth of the downstream light metals industries such as die-casting to add value to the large investments in the State’s primary metal and ore production. There are also major efforts to support the development of upstream light metals industries in Queensland. In November 2000 the Queensland Government announced a \$50 million investment package for the development of a light metals industrial park at Stanwell near Rockhampton. The Commonwealth Government at the same time announced it would also provide \$50 million through CSIRO to assist AMC – Australian Magnesium Corporation, in the commercialisation of magnesium processing technology.

Through CIBM, South Australia has established a 38-hectare Cast Metals Precinct to support the growth of the metals casting sector. South Australia currently have 27 % of the national castings output with 55,000 tonnes of ferrous castings and 23,000 tonnes of aluminium castings per year.

Whilst the Victorian Government recognises the importance and value of the die casting sector, it requires a coordinated strategy to specifically support sector growth. The Victorian government is a core partner in CAST and supports specific initiatives on a case-by-case basis within the scope of general manufacturing.

CSIRO MST has had a 30 year involvement with the die casting sector with significant internationally recognised achievements including runner systems developed in the 1970s and more recently a metal delivery system that dramatically reduces waste of magnesium that is currently in the initial stages of commercialisation. CSIRO have a significant R&D infrastructure in the die casting field with 45 staff in the Casting and Alloys Program.

The Cooperative Research Centre for Cast Metals Manufacturing (CAST) and its members in Victoria (CSIRO – Manufacturing Science and Technology, Deakin University, Monash University and Swinburne University) represent a significant R&D effort to support the growth of the light metals industry. The majority of the CAST annual budget is spent in Victoria, accounting for over \$7 million in R&D, providing excellent leveraging of the State’s investment in CAST.

During the last year, CAST in partnership with ADCA has established a Best Practice Program to support SMEs to innovate. This program is being strongly supported by industry with 18 industry participants - the program is over subscribed - with most of the participants SMEs. The program consists of the following elements:

1. Benchmarking – to identify levels of performance, identify areas of excellence and opportunities for improvement.
2. Improvement cycle – companies identify an area for improvement and are supported by researchers to prepare and implement improvement plans.
3. Training - workshops are delivered to industry where common needs are identified.

The benefits to industry of the program will be:

- improved manufacturing performance;
- support for the establishment of a culture of innovation;
- transfer of key technologies from the research community into industry; and
- access to CAST and international technologies and IP.

The key reason for the program's strong support from industry is its focus on meeting industry needs within the environment that SMEs operate rather than focusing specifically on the needs of larger companies or on longer term research projects.

Opportunities for Victorian Industry

Australia is a small player within the global cast light metals sector, comprising around 2% of all castings. The annual growth in the sector is approximately two times the total of Australian production.

Germany, a leading die casting country is now achieving growth rates of 19% for aluminium and 44% for magnesium die castings (for automotive industries). Taiwan has achieved growth of around 40% for magnesium castings mainly used in the electronics industries). These two countries have adopted leading manufacturing technology with a highly skilled workforce and design capability to achieve these rates of growth. The growth opportunity for Victorian companies lies within this market segment. The low value "commodity" casting market will increasingly be taken by low labour cost nations.

The Australian automotive industry is becoming more global. It is expected that all future domestic production will have a strong export element. Therefore the international trends of "light weighting" vehicles and increasing materials performance will be experienced locally. For example the new V6 Holden engine will have an aluminium alloy block that can meet export requirements for GM front and rear wheel drive cars. This engine has been designed overseas and will be built in two or three plants around the world for the global market.

The V6 engine finally selected by GM for manufacture in Australia has a V6 engine block designed to be made using the precision sand cast process. Overseas players are possible new entrants to the Victorian casting market to manufacture this block.

Toyota at Altona is expected to commence manufacture in late 2002 of a high-pressure die cast aluminium alloy block for their next generation of cars manufactured locally. This engine would also be for the world market. Attracting this production to Australia will be a significant boost to the local die casting industry. There are other opportunities to manufacture high-pressure die cast blocks for overseas markets if a specialisation was developed in Australia. These markets are likely to be for engines at the lower end of the production volume range. It is in these lower volume market

segments that Australia companies have shown themselves to be internationally competitive.

Impediments to Growth

The automotive producers in Australia have told the die-casting industry over a number of years that they need a strong, competitive and technically capable industry to support their engine programs in particular. The automotive industry is concerned that there is still only a small number of capable high-pressure die-casting producers in Australia. Mett Die Casting have just recently purchased the die casting operations of Forgecast Australia, amplifying their position of strength in the industry. Excel Pacific is another company embracing new technology having recently purchased a latest generation die casting machine. PBR Automotive in East Bentleigh and Castalloy in Adelaide have also expanded their operations with new and existing technologies to cater for export opportunities.

Most other die-casting companies in Australia have not invested significantly in new equipment or the latest technology and hence will find it more difficult to meet the customers' expectations on cost, quality and reliability. The first high volume entrants into the magnesium die casting market in Australia will need to be prepared for the additional infrastructure costs required as compared to the aluminium industry.

There is thus a need for additional high quality die casting suppliers to the automotive industry in Victoria. However, without a significant re-think from potential entrepreneurs, investors, financiers and other stakeholders, the new players may well be offshore entrants who may or may not have the same developmental empathy with the local market and the community. The risk is that they will use technology developed overseas and the benefits may not flow on to the local industry.

The key impediments to growth of the local die casting industry are:

1. Process and Product Development Capability

There has been a major change in requirements from the key customers in the die casting industry. The major automotive companies are seeking product design and development capabilities whereas in the past this was not required. Most die casting companies do not currently have this capability. In addition, Victorian industry has used production facilities and the capabilities of CSIRO to develop new products and processes. Industry in-house R&D usually takes second priority to production and is therefore intermittent.

2. Technical Skills

ADCA has identified a looming problem for the industry brought about by the dismantling of the educational infrastructure for manufacturing technology. Although hastened by the slowdown in manufacturing nationally it has been exacerbated by the funding formulae of Federal and some State Governments that appear to make the teaching of expensive courses financially unrewarding. The industry is left with understaffed and under-funded TAFE colleges that have lost or are losing their critical mass.

Right across the industry there is a very serious shortage of technicians, trades people and professional engineers with sufficient skills to support product design, process

development and production. Many of the smaller die casting companies have a single engineer, technician or tradesman responsible for many functions, with machines often being operated by unskilled labour trained on-site on-the-job or through the ADCA short term operator courses.

ADCA advocates that the State Government work with them and other industry representative bodies to consolidate technician training needs for the metals manufacturing sector. There are opportunities for collaboration in training involving die-casting, ferrous and non-ferrous foundry, ferrous and non-ferrous forging, extrusion, heat treatment, toolmaking, pattern making, precision machining and possibly plastics processing.

Consolidation of educational infrastructure for manufacturing technology needs to be overseen by Government as industry sectors and colleges are unable to do this alone.

A unique part-time diploma course for die casting technicians is run from RMIT. The course, devised by ADCA, is the only one of its kind known in both level and duration, but the size and investment capability of the local industry is reflected in the small student intake.

Manufacturing in Australia, and perhaps particularly die-casting has become less attractive as a career choice. In addition there are limited opportunities currently in the Australian industry to work with world standard technology and equipment. Due to these image problems one local automotive company recently had difficulties in filling two of five vacancies for a graduate program in casting manufacture.

3. Cost and Risk of Innovation

Many die casting companies are operating on minimal margins and have very limited resources with which to develop new products and processes. This is compounded by the fact that such innovation always has a large element of risk. As a result of their financial position, most companies are very risk adverse. Challenges of innovative processes of the nature of Thixomolding²⁰ currently used in very few countries but holding out very significant advantages once the process is fully viable, will therefore be difficult to take up.

²⁰ Registered Trade mark and patent.

4. Cultural Issues

Investors in Australia are not easily drawn to cast metal manufacturing. It is not perceived as financially rewarding, clean, green and wholesome. The current industry climate does not engender a forward looking or risk taking attitude. Die casters frequently see themselves as locked into the supply chain where they do not dictate or influence the actual parts they make. Others make these decisions in the chain. Some die casters however break away from this syndrome by designing and developing their own proprietary die cast products and handling large projects. Die casters have shown they are ready to utilise newer technologies such as rapid prototyping, CAD, e-commerce and have participated in the development and utilisation of world first die casting technology, eg PQ2, CASTFLOW and CASTHERM software.

Companies will need a culture of innovation, such as that identified by people like Government Chief Scientist Robin Batterham and exhibited by leading local and international die casting companies as critical to growth and prosperity.

5. Winning New Work

The capital investment conundrum: Die casting companies are very reluctant to invest in new equipment and technology without new orders to fund this equipment. Customers do not want to commit orders with companies without demonstration of proven capability. This capability in many instances cannot be demonstrated without new equipment and technology. For example there have been a number of instances where both customers and manufacturers have investigated magnesium components. These have not eventuated due to this impasse, together with other business uncertainties.

Some die casting companies when quoting on magnesium work have placed monetary values on the risks and uncertainties to produce product resulting in expensive components. Customers are unwilling to purchase components with this cost penalty and will consider the price only on its competitiveness on the global market.

Despite this a number of the key players in the Australian die casting industry are either magnesium ready or capable. Several years ago Forgecast Australia using their existing cold chamber machines and the CSIRO mobile magnesium furnace have successfully trialed perhaps what is claimed to be the world's most innovative magnesium seat design. This project, part of a Commonwealth GIRD grant, involved collaboration partners – CSIRO, Hendersons and Forgecast to jointly develop an innovative magnesium seat back – suitable for a large Australian passenger vehicle. The final design of one component weighed in at 1.2 kg and replaced a system of 15 steel components as an assembly weighing 3.5 kg. Whilst the engineering and product development were world class, the next stage of investment was not forthcoming to optimise the broader manufacturing process. Castalloy have produced prototype magnesium wheels which were seen on the first version of the Axxess I Car and other die casters have had serious business appraisals of the limited opportunities presented. CSIRO with their industrial scale manufacturing equipment and mobile magnesium furnace are capable of assisting industry in this area of the light metals casting sector.

6. Magnesium Raw Material costs

Factors such as metal, energy, labour and other expense costs need to be analysed and evaluated for each application. With so much of the world's future source of magnesium metal currently in the ground in the form of magnesite (magnesium carbonate $MgCO_3$) it would be logical to expect that Australian producers should be competitive at metal supply. World competitive pricing for this commodity product will not give any specific advantage to any local manufacturer of magnesium die-castings.

7. Magnesium Recycling Facility

When companies die cast magnesium alloys there are significant amounts of scrap material generated in the form of runners, biscuit, overflows and reject product. Unlike aluminium alloys this material cannot be easily recycled in-house but must be sent out to a recycling facility. Currently no such recycling facility exists within Australia for the high purity requirements of magnesium casting alloys. As a result companies that die cast magnesium purchase the alloy at around \$6/kg and sell the scrap for less than \$1/kg. As scrap runners, etc., may represent 50 % of cast material, there is a huge cost to companies. This situation has created an incentive to develop technology to further optimise casting yield. CSIRO has undertaken such an R&D project with significant casting yield benefits. The activity is about to be commercialised.

Competitor companies within the established magnesium industry have recycling facilities where companies may recycle their scrap back to original alloy specification for approximately \$1/kilo, or return it to the producers for recycling. Australian companies, without improved casting yield technology, will have difficulty entering this market whilst no recycling facility exists.

Scope exists for a dedicated magnesium recycling facility to process magnesium die casting scrap back to original specification, once a business is generated in die casting magnesium.

How to Achieve Growth

1. Adapting to Market Developments

Growth will only be achieved in the sector through the efforts of die casting companies. Efforts need to be placed to enable companies to realise the market opportunities, especially export. A key to this is to support companies to operate in the new paradigm where customers expect product design and development capability and state of the art manufacturing processes from suppliers.

2. Export Facilitation

Industry has called on Governments to support companies export products to international markets. There may be opportunities to group participants so that collectively they have the required expertise and production capacity to win major overseas contracts. This should also encompass a joint venture approach if necessary to win new business.

3. Networking

Networking/ partnering and assistance in establishing key alliances (both within the industry and also externally – particularly in bringing together partners who can add component parts to a more diverse market offering). The CAST/ADCA Best Practice Project can play a key role in this. The AIG may have a role in this field of bringing together partners, and assisting in lobbying etc.

4. Skilled Workforce

Many companies identify a deficiency of industry skills to support die casting processes. The primary area of opportunity is to increase engineer level competence within industry by training and employment of engineering graduates/diplomates. Joint projects between the industry and research providers would provide opportunities for newly graduated engineers to gain die-casting expertise under the mentoring of R & D Engineers. The concept of research institute staff working on secondment within industry could be explored.

5. Value Adding

We need to encourage through bodies like ADCA, the OoM, FCAI etc the significance of value adding to raw castings. The creation of a marketing arm within the industry with structured overseas missions involving die casters, machining and sub-assemblers should be considered. We need to present a united manufacturing voice to the export markets, to the extent of promotion of not just capability in casting, but machining, finishing and sub-assembly.

Issues for the Non-ferrous Casting Industry Sub-segment

Issues	Possible Alternatives Actions / Strategies
Insufficient access to export markets	<input type="checkbox"/> Focussed Trade Missions <input type="checkbox"/> Form a coordinated marketing link between industry and government
Poor Industry coordination	Role for OoM to develop a coordinated approach with industry bodies such as ADCA, FCAI, FAPM, AFI, TIFA, etc.
Lack of Technician and Engineering Education and Training	<input type="checkbox"/> Review funding formulae and mechanisms for technician and postgraduate technical education. <input type="checkbox"/> Investigate an amalgamated manufacturing technical education centre.

6.2 Basic Metal Product Manufacturing

The segment has a total market in Victoria of \$2.34 billion, total sales of \$2.26 billion, employs 11,600 people, imports \$111 million and exports \$32 million of its product²¹.

6.2.1 Architectural Aluminium Product Manufacturing (ANZSIC C2742)

The following aluminium products are included in this sub-sector²²:

²¹ ABS and industry data

²² IBIS Industry Outlook – C2742 Architectural Aluminium Product Manufacturing (Nov 99)

- Doors or door frames, Glazed framed doors, Fly screen doors, Garage doors, Gates, Roller shutters, Shutters, Framed Shower screens
- Architectural products, Ornamental architectural work, Fascias, Railings, Shop fronts
- Fabricated ceiling sections, Curtain walls, Prefabricated partitions
- Window frames or sashes, Window screens, Skylights, Window frames including glass

Relative importance of the above product categories are as follows again according to IBIS, windows 55%, doors 16%, combined window/door units 4%, shower screens 5% and other architectural products, eg. railing, 20%.

Victoria is under-represented nationally with only 19% of national window manufacture (compared with NSW 32% and Queensland 24%). This is due to the high levels of aluminium extrusion capacity concentrated in NSW, Queensland and until recently in South Australia. In fact most recently, the Crane Group made moves that further erode the Victorian non-ferrous extrusion capacity. Crane have during this year re-located their brass extrusion facility, Extruded Metals, from Maidstone to Campbelltown, NSW and their aluminium extrusion plant, Crane Extrusions, in Huntingdale also to NSW.

Major Victorian window producers include Stegbar (part of Jeld-Wen Inc. of Oregon, USA), Boral (Dowell brand), James Hardie (Trend Windows), A&L Windows. Most produce both timber (hardwood, meranti or cedar) and aluminium windows, sliding doors and patio doors etc.

The industry is currently going through a period of change with Stegbar being purchased by US door group Jeld-Wen Inc. and now the James Hardie window business is for sale with several overseas organisations looking for acquisitions.

With new modern window designs and innovative door hardware design, mostly from New Zealand companies, the aluminium window business should increase its share of the overall market.

There are more opportunities in the aluminium window business in the future in moving towards a system of decentralised franchises with regional assemblers, including glaziers, fabricating window and door frames from pre-cut packs of components from factories in capital cities. This can improve employment opportunities in this industry in regional areas of Victoria and may appeal to local communities who want to support local industry.

The local aluminium extrusion industry is very supportive of the need to supply new aluminium sections for industry projects. We understood that recently a Chinese aluminium extruder using the latest extrusion technology was not only able to produce a thinner wall section than the local industry, they were also able to offer a 4-week turnaround on a new product section. This example should act as a warning to the local industry not to be complacent on import competition who have now proven more technically-competent and faster reacting than Australian extruders.

The size of the Victorian aluminium window, door and shower screen market is put at \$600 million annually²³. However, efforts are needed to resolve chronic industrial

²³ ABS Victoria Manufacturing Industry data

problems within this sector or further investment in Victoria may be stifled and possibly lost to other states.

Other opportunities in the segment involve new product development with innovative new window products such as James Hardie's Quantum and Stegbar's A. T. 2000 series products. These premium products developed with the assistance of institutions such as Monash University have the potential to redefine the upper-end of the window market in Australia. These new opportunities however require new assembly skills and technology and new training to fabricate these innovative products.

Labour costs and rising raw material costs are also of concern to the industry. These higher costs can usually not be passed on to consumers because of market competition.

Issues for the Architectural Aluminium Industry Sub-segment

Issues	Possible Alternatives Actions / Strategies
Low product development activity.	Development of market research into niche products and markets
Industrial relations	Facilitation of improved relationship between players
Specialist new training skills needed. For new assembly processes etc.	Development with providers of training in new technologies in semi-skilled processes.
Regional sub-contract assemblers	Industry develop local franchise operations, in regional Victoria

6.2.2 Structural Metal Product Manufacturing n.e.c. (ANZSIC C2749)

The structural metal product industry in Victoria includes the following products or market segments ²⁴:

- Architectural metal products, Ornamental architectural metalwork, Balconies, Balustrades, Curtain walls, Fascias, Railings,
- Window frames or sashes, Window screens, Skylights,
- Doors and door frames, Fire resistant doors, Fly screen doors, Garage doors metal, Gates (except of wire), Rollers shutters,
- Prefabricated fire escapes, Prefabricated stairs or staircases, Prefabricated partitions,

IBIS also reports on the following industry segmentation:

<i>Product</i>	<i>Share</i>
Garage doors	25%
Curtain walling and fire doors	7%
Steel grating for platforms, stairways, catwalks	9%
Other products	59%

All of the products in this segment are related almost entirely to building and construction activity – in both residential and non-dwelling construction.

Major organisations in this segment in Victoria include the following:

- B&D Australia, in Kilsyth, with 80 staff, is Australia’s largest manufacturer of tilt and roller door products for garages.
- Melwire (including Webforge), with 150 staff in South Clayton, is a large producer of steel and aluminium grates, and pre-fabricated handrail and stair products.
- Creeks Metal Industries, with 50 staff in Bayswater, is a producer of metal fabricated products such as raingoods, facias and garage doors etc.

In this segment there is a high reliance on new housing starts, particularly for the garage door businesses of B&D and to a lesser extent Creeks.

In this same industry competition from interstate rivals such as Gliderol in Adelaide and Steel-Line in Brisbane is intense. In addition firms are now looking more closely than ever at the comparative advantages of pay-roll tax rates, workers compensation schemes and industrial relations climates in different states.

Issues for the Structural Metal Products Industry

Issues	Possible Alternatives Actions / Strategies
Industrial relations	Facilitation of improved relationship between players
Reducing business imposts to improve competitive viability	Government addressed payroll tax and workcover cost issues in recent Business Statement

²⁴ IBIS Business Information, C2749 Structural Metal Product Manufacturing n.e.c, Vol 5 (Nov 99)

6.2.3 Metal Container Manufacturing (ANZSIC C2751)

The metal container industry in Victoria and Australia consists of the following activities or product groups ²⁵:

Aerosol Containers, Barrels, Canisters, Cans, Casks
Collapsible Tubes, Containers, Drums
Gas Cylinders, Kegs, Metal vats, Packers cans

The segmentation is as follows:

<u>Product</u>	<u>Share</u>
Steel and aluminium cans	76%
Barrels, kegs and drums	19%
Gas cylinders	5%

(Source IBIS)

Steel Food Cans

In the steel foodstuff industry Amcor Packaging and Southcorp Packaging (now Visy Packaging) dominate the market.

The major customers for these can producers are the large multi-national food preserving industry – such as H J Heinz Inc (based in Pittsburgh USA) and Nestle S.A. (based in Vevey Switzerland). These global food producers now as part of globalisation in the industry are making international sourcing decisions on raw materials and commodities for their businesses. We understand that Heinz have decided globally to award their steel can supply contract to a global can producer based in Europe.

Despite Australian companies such as Amcor being in the top 10 packaging companies in the world – by market capitalisation and sales ²⁶, it seems that it is still difficult to compete with the larger global producers who have a significant local market from which to leverage.

Australian producers of steel cans feel they are disadvantaged by at least two additional factors, these being:

- Lack of competitive tinplate pricing from the only Australian producer – BHP Steel.
- BHP also either through a lack of technology or technical ability fails to offer the industry the sheet thickness or sheet width required to better enable the industry to compete.

BHP Steel, however believes that whilst its relationship with the industry in the past has been poor and adversarial in the past new thinking within BHP Billiton has greatly improved relationships with major customers. Key personnel at BHP Billiton now also

²⁵ IBIS Business Information, C2751 Metal Container Manufacturing, Vol 4 (Nov 99)

²⁶ Packaging Council of Australia, An Equities Market View of the Packaging Sector, Presentation by Rohan Gallagher, Credit Suisse First Boston, 16 October 2000

contend they are offering the can manufacturing industry a very competitive “package” – in terms of pricing, logistics and technical specifications etc. If the local industry however feels that a more competitive package can be sourced from overseas then they may use overseas sources for their tin plate requirements.

In fact, one industry player has told the Audit Team that New Zealand provides more options in tin plate in the preferred gauge and sheet width etc.

Asian producers of metal packaging containers have invested in new technology to print multi-colours on the outside of cans in one pass. Australian producers have to print cans in less appealing design or print the packaging designs in multiple passes – adding cost and reducing capacity. This technology however is used mainly in the decorative can markets – such as in the lower volume products in the diary market.

Not only do the Asian producers have low cost labour, they are also equipping their factories with the latest technology - in some cases more advanced than Australian producers. This makes countries such as Malaysia better able to compete. It is now more common to bulk ship processed food to South East Asia for packaging into cans and then re-import these foods back into Australia. Hence Australia is losing the added-value opportunities presented to us by our competitive and efficient farm and food producers.

The metal can industry has lost market share, down from 23% to 20%, in a growing total packaging market in Australia worth \$7.0 billion in 2000 attributed to the increasing use of plastics and new “pouch-style” packaging for prepared foods such as soups and sauces.

The Australian steel food can market is led by VisyPak, a division of Visy Industries who use more than 90,000 tonnes per annum of tin plate. VisyPak have a can-end, sheet cutting and decorating plant in Coburg and can manufacturing plants in regional centres such as Shepparton and Wodonga where the fruit and pet food filling companies are based.

Amcor, also have a strong market position, consuming some 87,000 tonnes of tin plate for cans annually. Production is based in Melbourne and regional centres such as Kyabram where there are significant “fillers” (food processor).

Annually in Australia 230,000 tonnes is consumed in the steel can industry with 35 – 40,000 tonnes imported. The remainder is produced at BHP Steel’s tin plate plant in Port Kembla NSW.

In order to become more competitive and to stay in the business supplying the Australian can industry BHP Steel have committed a \$300 million upgrade to their tin mill in Port Kembla in an initiative called *Tinmill 2000*. This investment BHP claims has almost produced all of the outcomes promised to the industry. Some sections of the industry are still yet to be convinced.

The processed food industry in Australia has three key parties in the supply chain – the steel or tin plate producer, the can manufacturer and the filler. Each party in the supply chain has a vital part to play in order to deliver efficiencies and cost benefits to the end seller of the commodity in order to remain globally competitive.

There have been complaints by the can manufacturers to the Audit team of their raw material suppliers being either uncompetitive or not able to supply “best practice” material gauges or roll widths.

BHP Steel has brought a dumping action against imported tin plate from Taiwan and UK in 2000. Customs brought down an affirmative finding against Taiwanese imports²⁷ in January 2001, suggesting that the imported tin plate was, on a weighted average basis, discounted 19 % to the local market price. This may however been a test case for the industry.

This case may have longer term ramifications for the mix of imported versus locally produced and exported tin plate.

In the industrial can market for products such as paint cans, drums, pails, spools, canisters and aerosol cans, Victorian producer National Can Industries (NCI) is a market leader with an estimated 40-50 % market share of the Australian market. NCI have local competition in this segment of the market from VisyPak, Hutomaki Van Leer (New Zealand) and other importers.

The Australian industrial packaging market is estimated to be around \$2 billion annually, with very slow growth anticipated over the next 10 years.

The market structure in Australia is reflective of the metal packaging industry globally, with the industry plagued with heavy rationalisation and on-going regionalism. There are only a few companies in this mature industry. Technological developments are not high on the agenda, because of the fairly simplistic final product. There is some degree of competition from imports and product substitution that could threaten the industry. At the moment, the market has an excess capacity, which has seen prices reduce over the last decade.

²⁷ Australian Customs Service. Statement of Essential Facts No. 26.
<http://www.customs.gov.au/notices/sef/sef26a.htm>, accessed 12 February 2001

Issues for the Steel Container Industry Sub-segment

Issues	Possible Alternatives Actions / Strategies
Sections of the industry feel that BHP Steel is not globally competitive on tin plate. (This is disputed by BHP Steel who regard this rhetoric as historical)	Facilitated by government or industry bodies: <ul style="list-style-type: none"> ❑ hold an open and honest discussion on all costs involved in the supply chain from farm gate / tin mill, through to can filler ❑ examine opportunities to make the Victorian canning industry more competitive. [Identify the areas of most potential for cost reduction].
The can industry needs to be convinced that BHP Steel will be a long-term player. Otherwise they need to seek alternative supplies.	BHP Steel needs to find new ways to show its commitment to the industry
Metal container packaging is losing market share to other forms of packaging – eg. Plastic pouches and PET containers.	Improve new product development processes
Growing levels of plastic paint containers for water-based paints despite the recycling problems with plastics.	Examine regulatory situation on re-cycling
Regulation inconsistencies in areas such as environment, recycling and container deposit – not uniform across all states of Australia.	States to reach agreement on regulations
To replace imported aerosol containers new equipment and technology is required by fillers ²⁸	Technology diffusion assistance needed

Aluminium Beverage Can Market

In Australia, like the USA, the beverage (soft drink and beer) market is dominated by the proliferation of aluminium cans. Of the 100 billion cans produced in the USA annually some 95% of these are aluminium for the beverage industry. In Australia whilst the market size is considerably smaller at 3 billion cans or between 100 – 120,000 tonnes per year, the same high percentage of aluminium to steel remains.

In Europe (and the UK in particular) the market is more divided between aluminium and steel cans for beverages. Annual volumes in Europe amount to 33 billion cans per year across 35 plants in 13 countries²⁹. Recent reports suggest that this market is more like 50/50 steel to aluminium with consumers in European countries more discerning in branding and promotion than the lightweight features of aluminium in volume markets such as Australia and the USA. This gives a significant advantage in volume to the European producers who can gear up for higher production run quantities not only because of the larger population base over Australia but also because of consumer choice still favours steel beverage cans.

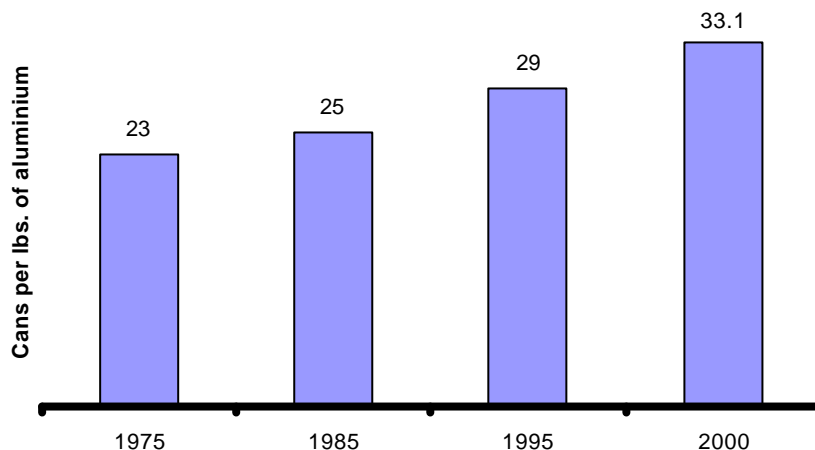
Most aluminium cans today are two-piece with a retained ring-pull top and an extruded or drawn side and end. It is also interesting to note that beverage cans today are 32% less in weight than aluminium cans produced 25 years ago. See Figure 6 below.

²⁸ From Amcor Metal Packaging submission dated 30 October 2000.

²⁹ Can Makers Report. http://www.canmakers.co.uk/industry/can_makers_report.asp accessed 12 February 2001.

Reduction in Aluminium Can Thickness - over 25 years

Source: 1999 US Can Manufacturers Association



In Victoria VisyPak have two aluminium can manufacturing plants in Melbourne at Clayton and Dandenong (as well as in NSW and New Zealand) and Amcor also have two plants in Melbourne. Although employment numbers in these plants is not particularly high (due to the high level of capital investment and automation) these operations are of strategic importance to Victoria.

Issues for the Aluminium Can Industry Sub-segment

Issues	Possible Alternatives Actions / Strategies
Aluminium can sheet from Victorian producer such, as KAAL is no more competitive that overseas produced materials. This is in spite the fact that Australia is one of the lowest cost producers of aluminium (and bauxite and alumina) in the world ³⁰ .	This stems from the fact that aluminium is a globally-priced commodity (on the London Metal Exchange – LME) and therefore local consumers of the metal do not receive any significant benefits (in terms of price) by virtue to being close to the production sources. This requires investigation.
Reducing energy costs to improve competitiveness.	Now that the electricity market has been deregulated the industry should consider its representative body develops a strategy.
The relative high cost and unreliability of rail freight in Australia, particularly to destinations such as Perth.	The industry should consider its representative body develops a strategy facilitated by Government.

6.2.4 Sheet Metal Product Manufacturing n.e.c. (ANZSIC C2759)

This is a widespread and very general segment of metals manufacturing in Victoria. However according to IBIS³¹ the following list of major products constitute the bulk of the industry:

³⁰ Aluminium and the Australian Economy – A Report to the Australian Aluminium Council, May 2000, Page 20.

³¹ IBIS Business Information, C2759 Sheet Metal Product Manufacturing n.e.c, Vol 3 (Nov 99)

- Bottle closures, Buckets, Crown seals, Eyelets, Funnels, Garbage cans, Hollow ware, pressed and spun, Motor vehicle number plates, Stainless steel pressed hollow ware, Tags, Vacuum flask covers
- Chutes, Conduit tubing, Cornices, Downpipe, Duct work, Guttering, Sanitary ware, Stove pipes, Tanks
- Hoppers, Machine guards, Metal stampings, Milk or cream cans (except packers cans), Sheet metal products n.e.c, Tool boxes, Vats, galvanised, Ventilators

This segment has a widely dispersed set of products with the top three categories of products, representing only 25% of industry turnover. Segmentation is as follows:

<u>Product</u>	<u>Share</u>
Guttering and ducting	10%
Production of sanitary ware (mainly sinks and troughs)	10%
Metal bottle and can closures	5%
Other products	75%

During the Audit, air conditioning duct, stainless steel vat and general sheet metal fabricators and manufacturers were consulted regarding the issues in the industry.

Issues for the Sheet Metal Product Industry Sub-segment

<u>Issues</u>	<u>Possible Alternatives Actions / Strategies</u>
High costs of raw materials (relative to other competing countries).	Industry bodies to investigate
Lack of steady work load – Some segments highly reliant on major new infrastructure projects as a demand driver.	Requires facilitation by an industry body and Government to detect opportunities for clustering / banding together of smaller players to cooperatively take on larger projects currently lost to overseas.

6.3 Manufactured Metal Products

The segment had a total market in Victoria of \$2.73 billion, total sales of over \$1.8 billion, employed almost 13,000 people, imported \$1.07 billion and exported \$146 million of its products during 2000³².

6.3.1 Hand Tools and General Hardware Manufacturing (ANZSIC C2761)

In 2000 the market in this sub-segment sales was \$215 million and sales of local production were a little under 50% of the market at \$106 million. The hand tools and general hardware manufacturing industry in Victoria consists of a small number of large manufacturers and a larger number of small, but growing niche manufacturers. Leading companies in this segment include:

- Cyclone Industries, part of ITW group, based in Wonthaggi and East Bentleigh, with 45 and 50 employees respectively [Hand, garden and striking tools].

³² ABS Manufacturing data 2001

- Moss Products, based in Clayton South, with 80 employees [Garden tools]
- Drillmate, based in Bayswater, with 20 employees [Drilling accessories]
- Dawn Tools, based in Reservoir, with 60 employees [Vices and clamps]
- Triton Manufacturing, based in Cheltenham, with 120 employees [Workbenches and clamps]
- Australian Saw Company based in Thomastown, with 17 employees [Saw blades]

A typical breakdown of the major product categories in this segment is as follows:

<i>Product</i>	<i>Share</i>
Hand tools	80%
Machine knives	12%
Cutlery	5%

The industry segment turnover in 2000 in Victoria was \$340 million with the State representing 35% of national production.

Hand tool production in Victoria consists of small number of local producers such as Cyclone Industries and Moss Products who make garden tools, axes, hammers and other implements.

This segment has a regional importance for Victoria with regional manufacturing for Cyclone in Wonthaggi and Hamilton and Maryborough. However there is room improvement in local service infrastructure in these centres – particularly in Wonthaggi, which requires equipment and support services to be sourced from Melbourne.

Import competition into this segment is fierce and most of the existing manufacturers are either already importing some of their range or contemplating doing so in order to remain competitive with cheaper but inferior quality imported products from Asia and India.

There is a possibility that within five years time there will be no local manufacturing of hand tools anywhere in Australia because of imports and low standard levels in the relevant Australian Standards for tools. A clear example highlights the problem. Imported drill bits meet the Australian Standard and are capable of drilling through a piece of mild steel five times although they are nowhere near the quality of the locally manufactured product. Local manufactured drills can drill several hundred holes without the need for re-sharpening. Hence there is a wide discrepancy in quality between the local and cheaper imported products – a fact that most consumers are not made aware of at the retail point of sale.

Issues for the Hand Tool and General Hardware Manufacturing Sub-segment

Issues	Possible Alternatives Actions / Strategies
Imports intensively competitive	Compliance with regulations needs verification Review of Australian Standards and regulations
Concern about market power of major hardware chains.	Promote and market Australian-made products as being better value for money than cheap imports.

Issues	Possible Alternatives Actions / Strategies
Need to improve regional support services.	Facilitate and create improved regional infrastructure – eg. Local engineering service suppliers, and regional service hubs.

6.3.2 Spring and Wire Product Manufacturing (ANZSIC C2762)

Major product groups or activities according to IBIS³³ include:

- Braided ferrous wire, cables or strip, Wire slings, Stranded ferrous wire, cable or strip,
- Barbed wire, Chain, Wire fence droppers, Rolled steel fence posts or droppers, Wire gates, Wire guards, Shopping trolleys, Wire hooks, Welded link chain,
- Nails, Pins, Skewers metal, Wire spikes,
- Wire Screening, Wire mesh (except reinforcing mesh), Wire netting, Woven wire products (except mattress supports),
- Springs, Wire products n.e.c

Key product segments include:

<i>Product</i>	<i>Share</i>
Cables	25%
Vehicle springs	20%
Nails	20%
wire fabric	10%
barbed wire and other products	25%

(Source: IBIS)

³³ IBIS Industry Outlook – C2762 Spring and Wire Product Manufacturing Vol 6 (Nov 99)

Spring Manufacturers

Producers such as National Springs, CMI, Bayswater Spring Works produce a variety of heavy duty and precision leaf and coil springs, specific spring configurations and other wire and flat spring forms for industry in Australia.

This industry like most in the metal fabrication sector is heavily reliant on manufacturing activity for constant demand and growth. There is very little direct export. The industry is however very important to other industries that do export their product. Most Victorian firms are only locally based and therefore find it difficult to service interstate clients.

Wire Products Manufacturers

Manufacturers in this segment produce welded mesh, wire containers, shelving and retail display systems etc.

Competition both locally and in an increasing sense from overseas where it is claimed that the raw materials for these products is cheaper and Asian regional competitors are now buying the latest wire-forming machines. Some wire suppliers to the industry, in tight demand periods, bring work back in-house to better absorb their own overheads but at the same time create new competition for the contract producers.

This industry segment is very capital intensive. The latest technology mesh welding machines from Europe cost over \$700,000. The industry therefore is looking to Governments for a reinstatement of investment incentives, and more access to research and development funding. Although Workcover was mentioned as an issue by industry, the recent Business Statement by the Government (Building Tomorrow's Businesses Today) announced a freeze on premiums for the third year running.

This segment also offered the Audit Team some reflections on the need to improve the image of manufacturing in Victoria.

- Encourage local councils to improve their emphasis on industry development
- Enforce planning certificates
- More widespread dissemination of environmental programs from local government to industry (such as the current Environment Management System program being delivered by the Australian Productivity Council (APC) and DIIRD).

Nail Producers

Major manufacturers in the state include Ajax Fasteners, Otter Nails and Melbourne Nails, with regional manufacturers such as Geelong Nail who are a small producer of hot dipped galvanised common nails which are mainly sold into the Western District of Victoria.

Most manufacturers now make and sell both common and collated nails. Collated nails are the nail products used in compressed air powered nail guns used by builders and carpenters for housing and framing construction.

Major customers of the nail manufacturing industry are the five main hardware-buying groups in Australia of Bunnings, BBC, Mitre 10, John Danks and National Building

Supply Group as well as trade customers who are serviced through specialist building and timber supply firms.

Total volume of nails in the Australian market is falling due to other forms of construction – concrete floors and adhesives instead of nailed strip flooring and the growing demand for flats and units which have different construction techniques and usually require less nails.

The use of common nails is also falling and is now mainly in the domain of the home handyman or specialist applications such as furniture manufacture. The majority of builders would be using pneumatic nail guns and most pre-fabricated wall frames or roof trusses would be fastened with automatic nailing systems or nail plates.

Over the last 2-3 years importation of common and collated nails has risen from Asian Pacific countries. This has forced the local producers to also import in order to compete by either supplementing their range or else importing entire range. The audit team were told that some of these nails can be imported for less than the cost of the nail wire from local BHP Steel, but they are usually of lower quality than the local product.

Recent developments in the nail industry globally include automatic nail making and collating systems (to further reduce labour input), plastic nails (for colour matching applications) and improved fastener coatings for nails for better corrosion protection.

Issues for the Spring, Wire and Nail Industry Sub-segment

Issues	Possible Alternatives Actions / Strategies
Brand or Australian made not promoted as regards quality differentiation.	Develop more informative marketing
Import ratios continue growing	Need for better technology diffusion required to stay globally competitive.
Industry Image	Better Environmental planning/compliance from local government should help improve image
Lower Quality Imports	Aust standards and enforcement mechanisms need to be examined

6.3.3 Nut, Bolt, Screw and Rivet Manufacturing (ANZSIC C2763)

The major groups or activities in this industry segment,³⁴ is as follows:

<u>Product</u>	<u>Share</u>
Bolts	46%
Screws	27%
Nuts	12%
Other	15%

Industry turnover is estimated at \$360M with Victoria having 40 % of the national manufacturing output of this segment.

The major fastener producers in Victoria include the following organisations:

³⁴ IBIS Industry Outlook C2763 Nut, Bolt, Screw and Rivet Manufacturing Vol 4 (Nov 99)

- Ajax Fasteners, based in Braeside, with 300 employees
- ITW Buildex, based in Moorabbin, with 150 employees
- Ramset Fasteners, based in Croydon, with 300 employees

The bolt, screw and rivet manufacturing industry in Victoria has like many other manufacturing industries in the state over the last 10 years gone through massive restructuring and consolidation.

As many manufacturers moved offshore in the past decade the customer base for the local fastener, business has been shrinking at a rapid rate. If it were not for the continued resilience of the automotive industry in the state and the sustained demand for industrial buildings in the construction sector the fastener industry in Victoria would be quite small and dominated by imports. As it is currently there is only a few fastener manufacturers in the state with companies such as Ajax Fasteners, ITW - Buildex and Ramset divisions, Unbrako, A.N. Cooke and Forgeform being the dominant players.

Although fasteners are sold into automotive, building, and industrial applications it is the automotive market that dominates with volume. Now that this industry is operating on a global sourcing, basis local fastener producers have to have the technology, skills and infrastructure to compete in such a marketplace. Only a small number, unfortunately, have the resources to compete in this environment.

The major change occurring within the automotive fastener business in recent times has been for the automotive producers – such as Ford Motor Company of Australia (Ford Australia), choosing to source all of their fastener requirements from a single source. In this case, that source is Ajax Fasteners in a 50/50 joint venture (called Facil) with UK automotive - Ramon. Under this scheme, Ajax will be responsible for supplying all of Ford Australia using both Ajax produced as well as other fastener suppliers for the contract.

The other major change has been the influx of imports into the Australia. Now all but only the most complex fasteners are brought into the country by local manufacturers supplementing their production or by distributors. This means that the majority of fasteners used in Australian manufacturing industries are now produced in countries such as China, Taiwan and India.

It appears that whilst the Australian fastener market is largely reliant on imports, some new technology products and fastening solutions are being developed in Victoria. For example, Ajax has invested several million dollars into a new fastener technology centre in Braeside. This facility has already developed, amongst other new products, new rail track fasteners for the transport industry globally.

The ITW Group is also bullish about the future for manufacturing in Victoria and are focused on further development of niche products for the industrial and building markets in Australia. These developments, despite the extensive local input, however are all the time under-pinned by the massive research and development activities of the overseas parent.

Issues for the Fastener Industry Sub-segment

Issues	Possible Alternatives Actions / Strategies
Auto OEMs encourage single sources	Vic Govt's Business Statement announced programs for supply chain management and value chain

Industry was missing on Government contracts	development. Local supply to infrastructure projects in Victoria (or Australia) should always be considered through mechanisms such as the VIPP before imported products.
Commercialising technical innovation and research and development is becoming much more expensive.	Investment incentives and commercialisation assistance
Growth and survival of smaller fastener companies in Victoria is of real concern	The industry needs assistance with development strategies. The industry should address this cooperatively, facilitated by Government.

6.3.4 Metal Coating and Finishing (ANZSIC C2764)

The metal coating and finishing segment of the metal fabrication industry has the following process and activity sectors ³⁵:

<u>Product</u>	<u>Share</u>
Painting	30%
Galvanising	25%
Powder coating	15%
Anodising	10%
Thermal spraying	10%
Electrostatic coating	5%
Electroplating	5%

In this segment there are also other processes such as polishing, buffing, grinding, dip coating, organic coating and some heat treatment processes.

This segment of metal fabrication is heavily reliant and influenced by the automotive component, fastener, building hardware and appliance industries. Both domestic and export activity of these industries is critical to the segment for demand volumes.

There have been recent developments in the European Union, such as the banning of hexavalent chromium coatings,³⁶ that has forced the auto industry to specify alternative organic and proprietary coatings. General Motors have adopted this protocol and now instruct that all their divisions globally use new coating systems or products such as non-electrolytically-applied zinc rich coatings. In Australia Holden have moved to the use of propriety finishes such as DeltaColTM to replace traditional zinc dichromate passivating finishes to comply with the EU protocol. This has produced opportunities for the local electroplating industry with businesses such as Parker Electroplating in Hoppers Crossing to obtain licenses for these new processes in order to produce these coatings in Victoria.

Specialist heat treatment firms such as Hardchrome are looking for new processes or opportunities to grow and expand their business – particularly in the low volume / high value, markets of aerospace and aeronautics. New technologies in the industry such as plasma cladding, that is the technique of applying a very hard, tough and wear resistance metal coatings to softer substrates is becoming an area of interest for the

³⁵ IBIS Industry Outlook C2764 Metal Coating and Finishing Vol 5 (Nov 99)

³⁶ Directive 2000/53/EC of the European Parliament, “On the End-life of Vehicles”, 18/9/2000

industry. Industry needs to find out technology that is already available commercially elsewhere in the world. If it is not available then they must develop the technology themselves or enlist the assistance of universities and CRCs to develop new technology.

Hence there is a real need for an accurate and complete database of technology and research activities currently being undertaken. This will enable the industry to target their scarce research and development spending on either new technology not being developed or available elsewhere or else to innovate and refine existing technology or research and development outcomes.

The concept of a database or information source for all metals manufacturing and engineering industries was also suggested by a number of companies within this segment. This would help SMEs better understand the capabilities of other members of the industry.

Dissemination of relevant industry information is also important. One member of the industry interviewed during the Audit claimed that a recent engineering show in Indonesia, and advertised in the November Newsletter of ManSA,³⁷ failed to have one Australian exhibitor! This is further evidence of ineffective communication channels. Attendance and exhibiting at international expositions and conferences highlighting new technology developments in processes and materials is expensive and ways have to be considered to do this on an industry-wide basis.

Issues for the Metal Coating and Finishing Industry

Issues	Possible Alternatives Actions / Strategies
Better information sources are need on where to find industry information and sources of products and services.	Develop an industry data base within the industry segment
SME viability detection is often too late.	There is a need for industry players to engage in regular monitoring of their “condition”.
The smaller industry segments have little voice in the community and are not adequately addressed within Government	Attention to this through industry bodies and government

6.3.5 Non-Ferrous Pipe Fitting Manufacturing (ANZSIC C2765)

This segment includes manufacturers of tapware, plumbing and gas fittings, strainers/traps and a large variety of industrial valves for steam, vacuum, fluid, gas and slurry applications.

The major groups of products and activities for the non-ferrous pipe fittings manufacturers is as follows ³⁸:

<i>Product</i>	<i>Share</i>
Tap ware	40%
Copper fittings	23%

³⁷ ManSA Newsletter, November 2000.

³⁸ IBIS Industry Outlook C2765 Non-ferrous Pipe Fitting Manufacturing Vol 4 (Nov 99)

Other fittings	25%
Valves	12%

It is further stated that almost 60% of the segment's Australian production is concentrated in Victoria, however this is now considerably less with the sale of Email Limited's Dorf Tapware business to GWA. These products are now made at GWA's tapware plant in Penrith in NSW with brands such as Dorf, Donson, Irwell and Caroma made in this same factory.

Tapware

It was claimed that at present there are over 80 tapware enterprises in Australia for a relatively small \$100 million market. However of these only 20 can claim to be manufacturers of some form of tapware product, the others are importers of product mainly from China, India, Japan, Korea, USA and Europe.

Tapware consists of basin, bath, shower and laundry tap sets and the Australian market is again unique in its use of the so-called "three hole" tap system. That is on a basin, bath or shower there is three holes one each for the spout, the hot and the cold water taps. In Europe, the USA and New Zealand most bathrooms use single lever mixer systems (like the kitchen mixer taps now commonplace on Australian kitchen sinks) rather than separate hot and cold taps.

The domestic market is segmented as follows:

- low-end (for first home buyers and budget accommodation),
- mid-range (premium builders and renovations) and
- high-end products (architect designed homes and commercial applications such as hotels).

The low-end market is dominated by cheap Chinese imported tapware, where quality and aesthetics are traded-off against low prices.

The mid-range sector of the tapware market is where the local manufacturers tend to sell most of their products because of higher selling margins and sustainable volumes. House-branded tapware for the major plumbing distributors such as Reece and Tradelink (Raymor brand) are an excellent source of volume for the local tapware industry. Despite these opportunities, importers are now looking at this part of the market for expansion and growth. This will also be aided by the steadily improving quality of Chinese product. The local mid-range tapware market will therefore be under even greater threat from imports in the near future.

The industry has concerns that there is a lack of compliance to Australian Standards of imported tapware and plumbing products from Asia. The region's tapware industry association, the Australian and New Zealand Tapware and Allied Fittings Manufacturers Association (AUSTAP), is committed to ensuring that only tested and approved tapware is sold in Australia and only qualified tradespeople install plumbing products. Despite this there remain concerns in the industry that there are non-conforming products entering the market.

In the high end of the market, although local producers have high-end products in their ranges, the European brands – where brand is critical in the buying decision, are dominant. In more recent times American brands such as Kohler and American Standard are starting to take market-share from the imports of Swedish and Italian brands. These makers are also able to offer suites of bathroom products – tapware, basin, bath and toilet pans which tends to preclude all but the larger Australian producers such as GWA from competing. This is another example of the local tapware manufacturers in Victoria being squeezed out of the market unless they can form strategic alliances with other bathroom product producers – for example shower screen and base manufacturers.

The local tapware market utilises a wide range of support industries – such as tooling, forging, die-casting, plastic injection moulding, polishing and linishing, powder coating and electroplating services. Therefore the need to maintain a manufacturing presence in tapware using local components and services is of considerable importance.

Fluid and gas fittings

Local SMEs as well as imports from Asia, Europe and the USA service both this market.

The local manufacturing industry converts either extruded brass rod or cast ingot into fittings, nuts and other components using forging, casting and machining technologies.

The local industry is focused on producing plumbing fittings for the domestic market both efficiently and economically. The Australian market is unique globally in terms of product design and raw material specification. Despite this however, more and more imported components continue to flood the Victorian market from several Asian countries and in particular China.

With little opportunity to broaden or to maintain unique features on these type of products, the local market, driven by the large plumbing trade distributors, buys purely on a price basis. Hence Victorian producers are facing an uphill battle to remain competitive.

A potentially significant opportunity emerging for the local industry is the development and exporting of brass fittings for the plastic plumbing systems markets in New Zealand, Singapore and Europe. Over the last five years in Australia the use of plastic plumbing systems in domestic applications has grown to the point where it commands a 20% market-share compared to traditional copper tube. These plastic plumbing systems use aluminium reinforced cross-linked polypropylene materials require brass fittings manufactured with a unique locking tail to join pipe sections together. These pipe fittings which are now starting to be made in Victoria could in the future be exported globally. Many of the major players now in the Australian market are internationally based firms and need supplies of these types of product for their international distribution operations.

Valves

Victoria has a number of non-ferrous valve manufacturers including Mack Valves in Bayswater.

Despite the workforce in the valve manufacturing business in Victoria shrinking significantly over the last 20 years they continue to maintain their presence in Victoria through product innovation. Imports from India and China have begun to dominate the more basic product designs. The quality of the basic designed product is often brought into question in the industry and there may be potential conflict of interest between certification and revenue generation of QAS in certifying overseas manufacturers of plumbing products.

Opportunities exist to market product or technology overseas. A good example of this is the product diversification strategy that Mack Valves, a 50 year old Victorian business now part of a US corporation, purchased for their strategic importance in the development of expertise in the global cryogenic valve market.

Again like most of the metal segments most high volume low value products such as gate and ball valves for commercial and industrial use are now fully imported from countries such as India and China. The more specialised items come from Japan, USA, Germany and Sweden. In these places the manufacturing volumes for these companies in their regional markets enables them to compete far more effectively than local Victorian producers.

Issues - Non-Ferrous Pipe Fitting Manufacturing Industry Sub-segment

Issues	Possible Alternatives Actions / Strategies
Regulation enforcement on imports	Possible industry body activity to see if more controls may be needed on the certification and regulation of imports.
Intense import competition	Investment incentives to develop niche products for the global marketplace.

6.3.6 Fabricated Metal Product Manufacturing n.e.c. (ANZSIC C2769)

This sub-segment is the largest one in the segment with sales of \$817 million and employment of over 6,250 people. It is also the largest exporter of all the sub-segments considered in the audit, but exports are only 9% of all sales. Fabricated metal product manufacturing in Victoria includes the following products or market sub-sectors: ³⁹

<i>Product</i>	<i>Share</i>
Boilers and plate work	18%
Door and window furniture	13%
Blinds and awnings	10%
Clothes hoists and antennae	5%
Other products	46%

Because the segment includes many products serving many market areas the audit team concentrated on the two largest sub-segments. The issues related to individual needs of the balance of the segment should be determined during the planning phase following the issue of this audit report.

³⁹ IBIS Industry Outlook, C27

Door and Window Furniture

Victoria features strongly in this segment with manufacturers of door and window hardware, locks and similar building products, with well-known businesses in the state such as Lockwood, Gainsborough and Lock Focus.

The door hardware and lock market in Australia consists of both residential and commercial markets with low-end segments such as D.I.Y and repair and renovation also apparent.

Victorian manufacturers in this segment appear to be quite successful. Lockwood, currently a joint venture between Email and Swedish group Assa Abloy is gaining market share and recognition in commercial developments in Asia. Gainsborough Hardware (with 250 employees and part of the GWA group) is also a successful exporter. Gainsborough's porcelain interior doorknob and handle range of products is considered world-class and is exported extensively to discerning markets such as the USA. This is a great testament to the local community of Kyneton in Victoria where these products are manufactured.

In other parts of this segment such as garage door, filing cabinet and other grade-one lock applications, Victorian SMEs such as GUD's Lock Focus business with 100 employees in Cheltenham are extremely competitive. This manufacturing business sees a bright future in Victoria with more capital investment planned in order to grow.

Boiler and Plate Work

This part of the fabricated metal products sector is concerned with the manufacture of steam boilers and boiler equipment, storage tanks, prefabricated silos and safes or vaults etc. Also considered has been the manufacture of furnaces and ovens for industrial applications such as heat treatment, galvanising, coating, etc.

Demand drivers in this industry include major capital works projects such as construction of oil refineries, smelters, major industrial installations, major building works and the mining industry. The automotive industry also is a very important market for this industry for capital equipment, modifications, refits, repairs and maintenance.

Despite the reasonable local demand a number of producers in the segment are finding it increasingly difficult to compete with competition from countries such as Singapore and Malaysia. Labour costs are relatively similar in those countries but it is claimed by the industry that the cost of steel and other raw materials are up to 40% higher in Australia. High transport costs out of Australia to foreign markets are also seen as an impediment to improving exports.

Other issues for this segment imparted to the audit team were:

- Protection of intellectual property. Seen by some as a deterrent to export investment
- IR climate
- The knowledge that other countries have a competitive advantage by way of very effective industry assistance for their capital investment and construction industries.

Issues for the Fabricated Metal Products Manufacturing Sub-segments

Issues	Possible Alternatives Actions / Strategies
Industry Zoning	Local government planning and zoning for sustained manufacturing in established areas of Melbourne needs clarification.
There seems to be a need for a new skill level workforce in this industry (between semi-skilled/process worker and trades)	Quantify the need to develop a specialisation for the type of employees required. Outsource the training and development programs
Lack of industry body to represent the lock and door hardware industry in Victoria.	Industry needs assistance from Government to form a body or join a relevant existing one.
Intellectual property protection	Determine what is currently available
High raw material costs for zinc die-casting alloys.	Collaborative ventures to diffuse costs
The need for the ability to tackle major projects	Segment coordination through Industry Body
Poor capability/capacity marketing	Need a major detailed capability / capacity study of the industry to answer requests on where to find information on “here to shop”.

7.0 Key Issues and Challenges

7.1 Process of Development

In order to develop a set of key issues which confront the overall metal fabrication sector, the Audit Team undertook extensive consultations, culminating in a major industry forum in December 2000 where 50 key industry leaders representing all the industry sub-segments came together for a one-day session. The major outcomes of this forum were as follows:

- The development of a set of key issues for the industry, and
- The development of a set of strategies or actions to start to address the key issues or concerns of the industry.

At the forum senior representatives from the following organisations were in attendance and presented their views:

- *Industry* – forging, foundry, tooling, machine tool, cutting tool and precision machining, heat treatment, fabrication, stamping, coating
- *Industry Associations* – Australian Die Casting Association (ADCA), Australian Foundry Institute (AFI), Australian Forging Group (AFG), Tooling Industry Forum of Australia (TIFA) and Australian Manufacturing Technology Institute Limited (AMTIL)
- *Research and development organisations* – CSIRO, Manufacturing Technology & Science Division – Casting and Alloys, Swinburne University – IRIS, CRC for Casting and Solidification Technologies (CAST)
- *Training organisations* – Victoria University of Technology
- *Other resource organisations* – Australian Productivity Council (APC) and Industrial Supplies Office (Victoria)
- *Government (Federal, State and Local)* – Department of Industry Science and Resources, Industry Victoria – Office of Manufacturing, Small Business Victoria and City of Greater Dandenong

The forum nominated a range of issues before developing through consensus a final list of key issues for the industry sectors represented. This output is detailed in the Table below.

7.2 Key Issues and Recommendations

These key issues for the metal fabrication sector were then tested in subsequent consultation with stakeholders as to whether in fact these were the most crucial issues for the industry in a holistic sense. This is given that there were more specific industry segment issues that also needed noting in this report. In all cases industry agreed that

the key issues defined at the forum were in fact the most important ones for the industry to address with actions and strategies.

Metals Fabrication Industry Issues derived from the Industry Forum held in December 2000

Initial Issues Raised	Agreed Key Issues
<ul style="list-style-type: none">• Export market development• Government Attitude – Commitment, Co-ordination by State and Federal Governments• Awareness of manufacturing (Education abilities)• Small local market size• Paperwork: Bureaucracy• Import replacement• Funding / Finance• Lack of skills: Training (Technical / Management)• Overall manufacturing plan for the state• Government policy: Need for manufacturing skill sets• Outdated apprentice training system, Training flexibility• Select and promote winners• Low machine utilisation• Image of manufacturing• Continued Government commitment to reduction of manufacturing imposts – payroll tax, Workcover, etc.• Need for more management skills especially in the area of strategic thinking and product commercialisation	<ul style="list-style-type: none"><input type="checkbox"/> Government response and commitment to manufacturing<input type="checkbox"/> Need to export more<input type="checkbox"/> Finance & funding<input type="checkbox"/> Image of manufacturing<input type="checkbox"/> Education and training

The key issues derived at the Forum were presented to the Industry Reference Group (IRG) that has been established by The Honourable Rob Hulls, Minister for Manufacturing Industry in Victoria to oversee the work of the Audit Team.

Detailed industry segment issues raised during the course of the audit team's comprehensive consultation process were able to be grouped within one of the key issues and elaborated relevant to the specific segment within the report.

- Government commitment, encouragement, coordination and assistance
- Image of manufacturing industry
- Exports and import replacement
- Finance, funding and investment incentive
- Education & training and emerging technologies

The audit process examined each of the issues raised during the very comprehensive consultations with stakeholders and during working group meetings and with the IRG and detailed the outcomes in the report. The challenges are to find the best strategies and actions required assisting in the resolution of these issues. From the audit information a set of recommendations and actions is presented. The recommendations relevant to each subsection of the issues are stated inside text boxes. Most of the recommendations require a combination of industry and government action.

1. Government commitment, encouragement, coordination and assistance

The depth of Government commitment to manufacturing will be demonstrated by continuous and pro-active nurturing, including through incentives and assistance, that enables industry to thrive in Victoria. This commitment needs constant proclamation and visibility to the whole community in recognition of how important manufacturing is to the state. Industry needs constant assurance that the commitment expressed is serious and ongoing.

The development of this strategic audit has shown the audit team there is strong interest from the MFI in doing something about itself in collaboration with the government and with other sectors of industry. There is also strong feeling that if this commitment was clear, sustained and constructive then the industry could progress significantly. Doubts continue to be expressed within the industry across Australia about the depth of commitment at a national level.

The MFI in Victoria as reported earlier accounts for around 3 % of the state domestic product with \$4.6 billion of industry turnover in 2000 and almost 30,000 employees. Over 2,600 businesses are involved in the sector, many in non-metropolitan regions. The industry supplies vital components and products to key industries within the state including automotive, building and construction, defence, aerospace, mining, food processing. The industry sector therefore has significant impact on the state economy.

R1. The formation or expansion of existing industry representative associations to cover all of the sub-segments of MFI should be facilitated and empowered by Government so that they can be involved in:

- The development of a detailed Metals Fabrication Industry plan,
- An industry study to determine the high growth potential industry segments within the MFI,
- Establishment of a committee with representatives of AFI/NCMC, AFG, FIMMA, ADCA and other proposed associations to determine the benefits of an “umbrella” industry body for the MFI and other related industries. Such a body should have representation on the MICC,
- Establishing that Product Standards and Regulations are being administered to the highest levels,
- Consideration of assistance to regional areas in the State to develop/enhance strategically placed centres for training, technology diffusion and materials supply and support to the MFI,

2. Image of Manufacturing Industry

The majority of industry representatives interviewed during the consultation phase made comment on the poor image that manufacturing industry has in the community. The general community appears to hold on to an image of what manufacturing was like forty or fifty years ago with the perception that manufacturing is uninteresting, often dirty and dangerous. The industry should portray an image of safety, environmental responsibility, leadership, and successful career path opportunity, which is very much the modern reality.

The importance of image in attracting school leavers, university graduates, venture capital and new investments must not be ignored or even underestimated. The industry image problem must be fixed permanently or the industry will become less and less competitive.

The Victorian Government's Manufacturing Industry Consultative Council (MICC), could play a leading role in this area to develop strategies that would address the improvement of the image of the metal fabrication industry in Victoria. Image issues are a key priority of OOM.

The adoption of a positive and co-operative approach to the conduct of industrial relations by all stakeholders would make a significant contribution to improving the viability of the metal fabrication industry in Victoria. In this context, stakeholders include companies, industry associations, employees and their unions. While it is recognised that the majority of manufacturing workplaces have harmonious industrial relations, the incidence of industrial disputation from time to time does have a real impact on the reliability of customer supply and community perceptions of manufacturing industry. The real challenge for the stakeholders is to create an environment where they all have an investment in the success of manufacturing enterprises in this state, and work together as partners to resolve workplace issues in a manner which avoids or minimises disputation.

R2. Establish an industry image marketing approach that includes:

- Referring to the MICC for direction for the state manufacturing marketing campaign/strategy and highlighting that the image marketing campaign for manufacturing needs to take into account the many segments in the MFI.
- The MFI and Government to establish "school to industry" links involving visits to industry and campus visits to promote career prospects within the industry.

3. Exports and Import Replacement

There is widespread agreement within all segments of the metal fabrication sector that Victorian manufacturers must aspire to export more products and services. The question that arises after this agreement is how to do it?

Many of the market segments in the metal fabrication sector are under increasingly strong attack from low cost Asian imports and much of the market in Victoria has been already or will inevitably be in the future lost to imports. Despite this the level of innovation and the tenacity of Victorian metal fabrication producers is such that they have over the years been able to develop a niche set of products or processes or else a sustainable competitive advantage that they feel they can exploit in overseas markets. The "how" question remains for many in the industry.

The Victorian Government has a range of export facilitation programs available in its current suite of business growth initiative programs including – export manager programs, network export manager programs and strategic trade missions to trade shows, exhibition and key customers overseas.

Programs that address the costs of exporting are important. It would be expected that some larger organisations could fund the costs of operating in overseas markets. Again the enormity of these costs combined with the high risk that they represent holds many of the larger firms from challenging overseas markets. Several of the Victorian Government's new export development programs, announced in the April 2002 Business Statement address these issues. In some of these programs, costs are borne first before refunds are made – usually up to 12 months after the expenses are incurred, so there are real cash flow considerations to be offset which tend to impinge more on the smaller entities than larger ones.

The metal fabrication sector is currently rated poor exporter, as compared to all of Australian manufacturing, less than 5% compared to 12% on average. This is in spite of the fact that some segments are already prolific exporters – for example the door and window hardware segment have export levels between 20-30% on average. One of the other factors to consider however is that a large proportion of the sector – particularly those related to the building trade have little if any opportunity to export due to the bulky nature of their products – for example window frames. If those segments where direct exports are limited or virtually impossible are ignored the sector export performance jumps to 8% overall, still well below the level for all industry in Australia.

Types of export assistance, the industry believes is required:

- Export managers
- Network facilitators
- Leaders / organisers for trade missions (there is no assistance currently available)
- Market researchers and analysts

Industry would like to better understand the role and objectives of the Victorian Government's overseas facilities.

Some in the industry regard Austrade as costly and ineffective and maintain that Austrade is not attuned to SME requirements. Others claim that Austrade is useful particularly when industry associations or groups or networks are able to provide direction and critical mass.

R3. Develop a growth strategy for the MFI taking into consideration:

- Extension of export success in high value niche markets using resources of the Victorian government's international bases to identify global opportunities in those sub-segments with real potential for growth,
- Expanding appropriate export assistance analogous to the Export Manager Program
- Training and familiarisation with Austrade assistance schemes,
- Cooperation with the ISO on developing an import replacement strategy and maximise the VIPP initiative.

4. Finance, Funding, Incentives

A substantial number of the industry stakeholders, particularly at the smaller end of the turnover spectrum, raised concerns about access to capital funding for expansion or for new equipment and technology and also about, in some cases, the time taken to obtain approval for such funding.

Most industry participants would be looking to utilise additional debt funding in their business in order to buy new equipment or to fund acquisitions for growth. The attraction of equity capital through the venture capital or other capital markets was also a key issue for some industry segments and again there appeared to be the same types of difficulties that were being experienced with debt financing.

It appears that in the metal fabrication industry, as was reported in the TCFL Audit Report⁴⁰, that some financial institutions are either withdrawing or reducing their exposure to this sector. This has been brought about by the experience of the major banks over the last 5 years of a number of defaults within the industry and in general the falling after tax profits and hence more unpredictable cash flows to pay interest and reduce debt.

Similarly in the area of venture capital funding the types of financial returns required by these providers usually precludes most metals manufacturing businesses from financing growth through such mechanisms. Financial returns of better than 25 %⁴¹ internal rate of return are common in the venture capital industry, as is the clear identification of the businesses' sustainable competitive advantage (SCA). Many of the businesses seeking additional capital do not have a business plan.

The major funding applications for the metal fabrication industry are detailed in the Table below as is the associated conventional sources of such funding. Despite this match of application and source, several applications do not in the current financial environment have either readily accessible or established lines of funding and finance. Therefore it is these applications, along with the issues raised above, that require further actions and strategies to be formulated.

The major areas where the funding gulf appears are in the area of commercialisation of research and development and innovation outcomes or in the area of funding extensive or prolonged prototyping or testing of new products materials and technologies.

One major industry stakeholder we spoke to during the consultation process said that they had received a substantial Federal Government R&D COMET grant to set up their own research and development facility and which involved a number of research students and scientists from local Melbourne universities. They now find that they cannot access any additional funds to put towards commercialising the significant outcomes from their research activities. Without this funding void being filled Victoria and Australia will potentially lose the opportunities that these new products will have in the global market place.

Table - Funding for Industry Sources and Applications

⁴⁰ <http://www.strategicaudit.DIIRD.vic.gov.au> accessed 7 February 2001, Page 12.

⁴¹ To put this into perspective BHP recently announced that it had achieved a massive turnaround in return on capital from an unacceptable 6% to a creditable 11% for the 1999/2000 financial year due to the restructuring and record profit levels achieved under CEO Paul Anderson

Application	Sources of Funds
New Plant and Equipment	<ul style="list-style-type: none"> • Debt finance • Leasing • Rental
New Buildings	<ul style="list-style-type: none"> • Debt finance • Leasing • Rental
Export (working capital) Export (market development)	<ul style="list-style-type: none"> • Debt finance (eg. EFIC) • Debt finance • Government assistance (eg. EMDG)
Acquisitions	<ul style="list-style-type: none"> • Debt finance • Equity finance
Research and Development	<ul style="list-style-type: none"> • Debt finance • Government grants (eg. COMET, START)
Commercialisation of R&D / Innovation	<ul style="list-style-type: none"> • No assistance available
Major pre-production trials, validation testing and prototyping	<ul style="list-style-type: none"> • No assistance available, use existing lines of credit
Start-up or purchase of existing business (eg. management buy-in)	<ul style="list-style-type: none"> • No assistance available, use existing business / personal equity to borrow against • Venture capital – if business case is strong enough and internal rate of return is significant (not usually possible in metals fabrication sector)

An innovative approach is needed in all areas of finance / funding for the metal fabrication industry so that major new projects and product commercialisation opportunities do not slip through our net. The industry needs a assistance in dealing between the financial institutions, the venture capitalists and other sources of finance and industry in order to develop either a plan or more innovative financial products and services to address the industry's concerns in these areas.

As an illustration of the lack of new capital investment in Australia, AMTIL⁴² has stated that the average age of machine tools in use in Australia is 14 years. In Japan, considered to be the benchmark country for machine tools, the average age is 7 years. It also has long established incentives for encouraging continuous re-investment in production equipment and partnership arrangements between industry and Government. Notwithstanding the capacity of Japan to continue this approach in the light of its economic difficulties, in Australia the industry and Government jointly need to find ways of investing in and maintaining the latest technologies. Now most players in the industry just cannot afford to purchase the latest and most up to date equipment for their businesses. This not only leads to a lack of global competitiveness but also a real reluctance to take up and diffuse new technology – for example high-speed machining in the tooling and production machining sectors where productivity improvements of over 160 % are typically claimed⁴³.

Industry is currently suffering from the discontinuation of accelerated depreciation schemes and machine tool bounties of past Federal Government regimes. The only relief for industry would be if they were eligible to make an ACIS claim⁴⁴.

Clearly if the Victorian manufacturing industry is to be competitive it needs access to the latest technology at affordable prices. Also needed is Governments and the finance

⁴² Quote by AMTIL at Industry Forum held on 6 December 2000.

⁴³ <http://www.mmsonline.com/articles/hsmgp/case2.html>, accessed 11 March 2001.

⁴⁴ See Appendix A1.8 for details on DISR's ASIS scheme.

and investment community to be supportive in the purchase of the latest equipment. This support needs to be financial in terms of tax concessions – spread to manufacturing at large and not only the automotive sector - as well as lending flexibility and a compassion from the banks as to the need to access better financing options for this latest technology equipment.

R4. A committee should be formed consisting of representatives of the MFI and government to:

- Promote existing commercialisation assistance programs to industry,
- Formulate ideas for new CRCs for development of the strong growth potential sub-segments of the MFI,
- Make a joint submission from the Government, industry leaders and unions to key lending institutions in Victoria for a more long-term industry development perspective in lending to the MFI in Victoria.

5. Education, Training and Emerging Technologies

Skills and training are a general issue raised at almost any opportunity or forum at any time. Despite the general nature of this issue, in the metals fabrication industry the skills and training issues usually takes into account the overall training needs of the industry in the following form:

- Industry segment and specific training (for example die-casting, foundry, welding, electroplating, heat treatment and metallurgy etc.)
- Some industry segments have insufficient numbers to achieve critical mass with the training providers but still need to obtain their industry's skills training.
- There is concern within the industry of the inability of the industry itself to attract para-technical and graduate engineers into the industry.
- Training, upskilling and the attraction of management and strategic thinkers / analysts and entrepreneurs into the industry.
- It was apparent to the audit team that there was some confusion and of misunderstanding on the available options of the current trade apprenticeship scheme and also on the extent of other training initiatives available to industry. For example, adult apprenticeships, trainee-ships and the VET system.

A submission to the audit team from an international engineer stated that he was astonished that in Australia, unlike most other advanced countries in the world, there were no obligatory engineering qualifications required for senior positions in the precision engineering industry. Elsewhere it is necessary to hold at least an undergraduate degree in industrial, manufacturing or precision engineering in order to enter the engineering sector in a para-technical role. It is a serious indictment of the manufacturing industry in this country that, with industry decline and shrinkage we now no longer offer manufacturing engineering degrees from any institution in Australia.

It is an essential requirement to have a high level of technical credibility in international markets. Although there may be just sufficient credibility for the present levels of global

supply from Australia, it is too fragile and will soon become insufficient to achieve the sustained growth needed to stay in the competition. More courses in engineering sciences, manufacturing and industrial and precision engineering are essential in order to increase the skill capital of industry and to be globally competitive. Industry itself has to drive this demand, governments have to assist and with the present small scale of industry this is a major issue to be solved.

R5. To determine future skilling needs and direction the MFI must:

- Conduct a skills audit of the industry in each of its sub-segments,
- Develop a database of short and long term skill requirements,
- Work cooperatively with the training providers,
- Determine methods to attract skilled employees such as graduate engineers, researchers and technicians,
- Seek information about how they can employ technicians, provide training, pay a training wage, and receive a federal subsidy,
- Undertake a study with Government to examine the role that secondary education plays in the demand for engineering and science places at Universities. The same applies to the demand for and the quality of the outcomes from the apprenticeship system.

R6. To improve the skills and technology training the MFI needs assistance from Government to:

- Through ESTB, determine the viability of skills training being carried out in-house utilising the web and virtual technologies for regional areas and for low demand industry segments,
- Develop more effective mechanisms to help disseminate existing education and also most recent technology training programs more effectively and to determine new training requirements,
- The MFI and Government to create programs to develop management, strategic and entrepreneurial skills specifically for each of the sub-segments.

8.0 Conclusions

The Metals Fabrication industry sector is made up of more than 2,600 entities, has many diverse products and serves many different market sectors. The common thread of the industry is the conversion or treatment of basic or raw metal product into other products or components. Although the levels of national economic growth and income generally drive the whole industry sector, there are some exceptions to this with regard to future opportunities.

At present almost 50% of the sector turnover is from the Basic Metal Product Manufacturing segment where two of its four sub-segments have achieved average annual turnover growth between 9 and 12% since 1993. Historically the best performing sub-segments in terms of increasing turnover were Steel Pipe and Tube Manufacturing, Structural Metal Product Manufacturing and Architectural Aluminium Product Manufacturing. The other sub-segments performing better than national average manufacturing growth are Sheet Metal Product Manufacturing, Metal Coating and Finishing and Fabricated Metal Product Manufacturing.

It is interesting that the growth in all these sub-segments has been almost entirely due to increasing domestic demand for metal products, including offsetting supply of products made from other materials; for example, aluminium instead of timber window frames. In these sub-segments there is very little growth in exports, but there is the stimulus of increasing competition from imports. Also to be noted is that some companies are managing to do very well while many others are struggling to sustain their levels of business.

The two sub-segments of Non-ferrous Metal Casting and Forging and Iron and Steel Casting and Forging are of particular interest. These sub-segments have shown little turnover performance improvement over the last seven years, but they still hold great promise and have immense opportunities. Anticipated growth in the use of cast and forged advanced alloys of ferrous and non-ferrous materials including stainless steels, aluminium, titanium and magnesium, foreshadowed by many years of research and development has been a long time in coming. The global vehicle and aerospace industry take-up of these advanced materials and new manufacturing processes is happening more and more rapidly and Victoria has a unique opportunity to take advantage of the local capabilities available.

The recommendations made in this audit report are put forward to the Metals Fabrication Industry and focus on the synergistic use of cooperation and joint collaboration to improve performance. The industry, with assistance from governments must endeavour to discover the best strategies and actions to develop continually enhanced whole of industry capability.

APPENDICES

1 - Key Submissions

A number of written submissions from key industry stakeholders were received during the course of the Audit process. The Audit Team would like to sincerely thank the input from these stakeholders and for their assistance in putting together this industry report. Details in the submissions received submissions are included in Table 7 below.

Written Submissions to the Metal Fabrication Strategic Audit

Stakeholder Type	Industry Segment	Organisation	Author	Position
Union		AMWU	Natasha Holmes	
R&D	Non Ferrous Metal Casting	CSIRO -	Warren Thorpe Brad Cowley	R&D Manager Marketing Manager
Industry	Fabricated metal products	E. Brockman & Son	D. J. Forbes	Managing Director
	Metal Packaging	Amcor Metal Packaging	Darryl Roberts	Group General Manager
	Iron and Steel Forging	Unidrive	John Fairlie	Managing Director
	Iron and Steel Forging	Alan Beckwith Macbro	Brendon Davies	General Manager
	Iron and Steel Forging	National Forge Ltd	Roger Sayers	Managing Director
	Hand Tools and Access.	Australian Saw Co.	Keith McLaughlin	Commercial Manager
	Iron and Steel Castings	Steel Castings Pty. Ltd.	Jim West	Managing Director
	Sheetmetal products	Roladuct Spiral Tubing	David Gowans	State Director
	Fabricated metal products	Caford Castors	Laurie Ford	Managing Director
Association	Non Ferrous Metal Casting	ADCA	Graham Wilson	President
	General	NIETL/NORTH Link	Mick Butera Paul Smarrelli	Executive Director Regional Exports Assistance Facilitator
	General	VECCI	Steven Wojtkiw	General Manager – Economics and Industry Policy

2 - Interviews with Key Stakeholders

Company / Organisation	Name	Position
A W Bell Australia Pty Ltd	Geoffrey Bell	Managing Director
ADI Ltd, (Heavy Engineering Division)	David Smith	Production Manager
Amcor Food Cans - Australasia	Malcolm McCubbin	Technical Services Manager
Amcor Food Cans - Australasia	Jim Brewer	Divisional Purchasing Manager
Australian Die Casting Association	Graham Wilson	President
Australian Foundry Institute	Douglas Maxwell	President
Australian Industry Group	Paul Fennelly	Director, Victoria
Australian Industry Group	Peter Nolan	Director, Workplace Relations
Australian Industry Group	Tony Pensabene	Manager - Economics
Australian Institute of Steel Construction	Leigh Wilson	State Manager
Australian Saw Company Pty Ltd	Kieth McLachlan	Commercial Manager
Automotive & Fabrication, VUT	Dennis Puiatti	Head of Department
B & D Roller Doors Pty Ltd	Ross Coates	Operations Manager
Ballarat Heat Treatment Pty Ltd	Chris O'Farrell	Manager
Bendix Mintex Pty Ltd	Paul Mracek	Group Director, Operations
Bendix Mintex Pty Ltd	Kevin Fogarty	Director of Manufacturing
BHP Steel, BHP Ltd	Nigel Glennie	Snr External Affairs Adviser
BHP Steel, BHP Ltd	Ross McDonald	Manager, Gov't & Investor Relations
Bradken - Wodonga (Smorgon Group)	Zeno Katschmarsky	Manufacturing Manager
Central Foundry (Geelong) Pty Ltd	Bob Marney	Managing Director
CMI Operations	John Bramley	Business Development Manager
CMI Operations	Bill Brookes	Site Manager
Engineering Skills Training Board	Paul Kennet	General Manager
Fabrication Studies, VUT	Richard Lewczuk	Program Manager
Ford Australia Casting Division	Allan Cooper	Area Manager
Forgecast Australia Pty Ltd	David Eldgridge	Ex Managing Director
Industrial Skills Training Centre, VUT	Dianne Williams	Associate Director
Industrial Supplies Office	Roy Lilley	Executive Director
Industrial Supplies Office	James Ewensen	Consultant
James Hardie Windows	Colin Sharples	General Manager
JohnValves Pty Ltd	Brian Parker	General Manager
Lockwood Security Products Pty Ltd	Geoffrey Norcott	Chief Executive Officer
Major Engineering Pty Ltd	Colin North	Managing Director
Manufacturing Science & Technology, CSIRO	Warren Thorpe	R&D Manager, Castings & Alloys
Manufacturing Science & Technology, CSIRO	Sam Tartaglia	Manager Light Metals, Castings & Alloys
Manufacturing Science & Technology, CSIRO	Brad Cowley	Marketing Manager, Castings & Alloys
MCK Pacific Pty Ltd (Regency)	Mike Stead	General Manager
Mechanical Manufacturing, VUT	Dennis Batiste	Head of Department
Milnes-Gatic - Bendigo	Stephen Day	Operations Manager
National Can Industries Ltd	Joe Stefano	Strategic Growth Executive
National Forge Ltd	Roger Sayers	Managing Director
Nissan Casting Australia Pty Ltd	Graeme Luxford	General Manager
Norton Villiers Australia Pty Ltd (Norvil)	Peter Veal	General Manager
Onesteel – Tube Division	Russell Marsden	Manager
Palmer Tube Mills	Robert Pless	HR Manager
Smorgon Steel Group Ltd	Peter Fraser	Corporate Affairs Mngr
Stainless Technology	Noel Benton	Managing Director
Steel Castings Pty Ltd	James West	Managing Director
Steele & Lincoln Foundry (Vic) Pty Ltd	Douglas Maxwell	Managing Director
Stegbar Australia Pty Ltd	Peter Williams	General Manager
Triton Manufacturing & Design Co. Pty Ltd	Greg Miles	General Manager

4 – Industry Reference Group

Name	Position	Company/Organisation
Graham Wilson	National President	Australian Die Casting Association
Peter Nolan	Director, Workplace Relations	Australian Industry Group
Gary Robb	Organiser, Sunshine Office	Australian Manufacturing Workers Union
Craig Milne	Director	Australian Productivity Council
Bill Shorten	State Secretary	Australian Workers Union
Paul Kennett	General Manager	Engineering Skills Training Board
Roy Lilley	Executive Director	Industrial Supplies Office (Victoria) Ltd.
Michael Davies	Group Vice President	ITW Australia
Colin Sharples	General Manager, Vic & S A	James Hardie Windows
Brad Cowley	Marketing Mngr, Casting & Alloys	Manufacturing Science & Technology, CSIRO
Tony French	Group Sales & Marketing Mngr	National Forge (Operations) Pty. Ltd.
Roger Sayers	Consultant	(Retired. MD, National Forge Ltd)
Graeme Luxford	General Manager	Nissan Casting Australia Pty. Ltd.

5 – Industry Working Group

Surname	Position	Company
Graham Wilson	National President	Australian Die Casting Association (ADCA)
Craig Milne	Director	Australian Productivity Council
Bill Shorten	State Secretary	Australian Workers Union
Paul Kennett	General Manager	Engineering Skills Training Board
Roy Lilley	Executive Director	Industrial Supplies Office (Victoria) Ltd.
Clin Sharples	General Manager, Vic & S A	James Hardie Windows
Brad Cowley	Marketing Mngr, Casting & Alloys	Manufacturing Science and Technology, CSIRO
Tony French	Group Sales & Marketing Mngr	National Forge (Operations) Pty. Ltd.
Roger Sayers	Industrial Consultant	
Graeme Luxford	General Manager	Nissan Casting Australia Pty. Ltd.

6 – Government Support

A breakdown of DIIRD’s 1999/2000 spending is detailed in the Table below. The figures show that industry subsidies are quite significant.

The Business Growth Initiatives implemented for both financial years ending June 2000 and 2001 by the Department of Innovation, Industry and Regional Development show that over 80 % of the funds spent in 1999/2000 financial year were for 13 key programs. The table below details the distribution of these funds.

Business Growth Initiatives - 1999/00

Program Funding Amount	Frequency	Aggregate Amount
0 - \$5,000	4	\$14,700
\$5,000 - \$10,000	7	\$45,951
\$10,000 - \$20,000	8	\$128,096
\$20,000 - \$50,000	26	\$738,033
>\$50,000	13	\$4,085,302
Total	58	\$5,012,082

The thirteen key programs funded in 1999/200 by DIIRD ranked in descending order of spending are detailed in the Table below.

Key Business Growth Programs - 2000

Key Program	2000	2001
Strategic Research Project	\$1,531,076	\$1,531,076
Generic Diagnostic	\$477,091	\$477,091
Group Programs – Marketing Group Services	\$442,400	\$442,400
Group Programs – Management Group	\$435,575	
Export Networks & Consortia – Feasibility Study & Business Plan	\$308,805	
Technology Program – Strategic Research Program	\$150,266	
Business Plan	\$114,943	
Strategic Training – Training Audit	\$105,675	
Export Manger Program	\$100,000	
Change Management – Human Resources Practices Audit	\$84,206	
Cleaner Production Planning Program – Waste/Environment Audit	\$61,285	
Cleaner Production Planning Program – Cleaner Production Review	\$58,730	
Total (13 Programs)	\$4,085,302	

7 - Output from Forums and Workshops

FORGING SECTOR

Government Attitude

Issue:

- Need for Government to further boost focus on manufacturing

Actions:

- Lack of direction (clearly stated vision for manufacturing in Victoria).
- Media campaign that supports manufacturing (cut out Workcover ads!).
- Bi-partisan approach to manufacturing.
- Ensure compliance to Australian standards by imports.
- Create non-tariff barriers to imports (easy to buy local – difficult to import).
- Much more effort spent on winning new business than retaining current business.
- Support manufacturers in workplace issues.
- Infrastructure support to manufacturers – non-differentiation between local / country.

Impact:

- Lift profile of manufacturing → viable Victorian manufacturing base.

Responsibility:

- State Government and Opposition.

Export Assistance

Issue:

- Relative costs of exporting from Australia.

Actions:

- Targeted support to businesses or sectors.
- Sponsoring trade delegations to visit Victoria.
- Education campaign for Government trade representatives.
- Payroll tax rebate against export business (or Workcover).

Impact:

- Increase sales and therefore employment.

Responsibility:

- Industry groups and State Government.

Finance / Funding

Issue:

- Inability to replace the capital base

Action:

- Government facilitates capital funding
- Tax concessions
- Working capital facilitation programs
- Low interest rate finance for capital.

Impact:

- Progressive replacement of the capital base to ensure continuous improvement and productivity. Thus increasing employment.

Responsibility:

- Peak industry bodies and State Government.

Image

Issue:

- Poor image

Actions:

- (As for Government Attitude above).

Impact:

- “Become the Centre of Manufacturing Excellence”

Responsibility:

- Industry bodies and Government.

Training / Education

Issue:

- Lack of trained personnel at every level.

Actions:

- Industry bodies setting curriculum content.
- Training programs within companies incentives.
- Subsidising top graduates into the manufacturing industry, other than majors – e.g. OEMs.
- Mandatory employment of trainees above a certain company size (> 100 employees).

Impact:

- Improve / enhance skill base.

Responsibility:

- Industry bodies and State Government.

NON-FERROUS CASTING SECTOR

Government Attitude to Manufacturing

- Need positive attitude from industry
- Need industry strategy development from within industry
- Develop better measures of manufacturing contribution
- Improved communication of Government assistance programs to industry
- Industry needs to lobby government

Export

- Co-ordination of suppliers on a project basis (eg. casting, machining, painting etc.)
- Assistance in identifying export opportunities
- Overcoming the problem of getting started
- Investigate models such as the Overseas Projects Corporation
- Awareness of existing assistance programs needed

Finance / Funding

- Low interest loans for prototypes / development models etc.
- Assistance for start-ups, developments, green field assessment and product development
- Rewarding network initiatives
- Better relationships with funding sources

Manufacturing Image Boost

- Need to lift awareness at secondary school level of skills and satisfaction in manufacturing
- Need to promote “culture” of manufacturing highlighting skills, achievement, national goals and aspirations

Training and Education

- Educate educators
- Focus on manufacturing management skills
- Arrest decline in technical training
- Refocus careers programs

FERROUS FOUNDRY SECTOR

Government Attitude

The Issue:

- Government has to be committed to manufacturing growth.

Recommended Actions:

- Develop on-going bipartisan policy
- Facilitate the promotion of manufacturing
- Create an industrial relations climate that encourages workforce flexibility and the employment of people. E.g. Workcover.
- Do not place manufacturing at a competitive disadvantage by having stricter laws than our global competitors. E.g. environmental.
- Develop a local industry plan.

Action:

- State Government

Market Development

Issue:

- How do we increase the market for our manufactured products? (More exports, Import Replacement, Product Development)

Actions:

- Develop networking groups between industry segments
- Gather and distribute more specific information on imports
- Government assistance with trade missions, overseas market surveys and international trade shows.
- Influence Federal Government to give manufactured items when providing foreign aid

Training / Education

Issue:

- Lack of skills at all levels of manufacturing, compounded by aging workforce and reluctance of employers to take on extra people and lack of training facilities

Actions:

- Industry to work with tertiary institutions and government to develop generic technical training for foundry employees. E.g. Manufacturing Technician – (Foundry or Metal Fabrication)
- Government to initiate a positive approach to manufacturing in the classroom. The role of manufacturing needs to be explained to teachers and students.
- Government to provide increased funding for manufacturing training.

8 - Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACIS	Automotive Competitiveness and Investment Scheme
ACS	Australian Customs Service
ADCA	Australian Die Casting Association
ADI	Austenitic ductile iron
AECM	Advanced Engineering Centre for Manufacturing
AFG	Australian Forging Group
AFI	Australian Foundry Institute
AIG	Australian Industry Group
AISC	Australian Institute of Steel Construction
AMC	Australian Magnesium Corporation
AMTIL	Advanced Manufacturing Technology
AMTIL	Australian Machine Tool Institute Limited
AMWU	Australian Metal Workers Union
ANZSIC	Australian and New Zealand Specialised Industry Codes
APC	Australian Productivity Council
AUSTAP	Australian and NZ Tapware & Allied Fittings Manufacturers Association
Austrade	Australian Trade Commission
AWU	Australian Workers Union
CAD/CAM	Computer Aided Design/Computer Aided Manufacture
CAE	Computer Aided Engineering
CAF	Computer Aided Fabrication
CAFÉ	Corporate average fuel economy regulation
CAST	CRC for Cast Metals Manufacturing
CIBM	Centre for Innovation Business and Manufacturing (was SACFM)
COMET	Commercialising Emerging Technologies
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific Industrial Research Organisation
DFAT	Department of Foreign Affairs and Trade
DITR	Department of Industry, Tourism and Resources
DIIRD	Department of Industry, Innovation and Regional Development
EBA	Enterprise Bargaining Agreement
EDI	Electronic Data Interchange
EMDG	Export Marketing Development Grant
ESTB	Engineering Skills Training Board
ETMs	Elaborately Transformed Manufactures
EU	European Union
FAPM	Federation of Automotive Products Manufacturers
FAI	Federal Chamber of Automotive Manufacturers
FDM	Fused Deposition Modelling
FIMMA	Food Industry Machinery Manufacturers Association of Australia
GDP	Gross Domestic Product
GIRD	Government Expenditure - Research & Development

Abbreviations continued

IBIS	IBIS Business Information
IMMA	Institute of Metals & Materials Australia
IMS	Intelligent Manufacturing Systems
IRG	Industry Reference Group
IRIS	Industrial Research Institute Swinburne
ISO	Industrial Supplies Office
ISO	International Standards Organisation
LTI	Lost time injury
ManSA	Manufacturers Society of Australia
MFI	Metals Fabrication Industry
MICC	Manufacturing Industry Council
MTI	Medical treated injury
NCMC	National Cast metals Council
NEITL	North Eastern
OoM	Office of Manufacturing (DIIRD)
R & D	Research & Development
RMIT	Royal Melbourne Institute of Technology University
SACFM	South Australian Centre For Manufacturing (now CIBM)
SCA	Sustainable Competitive Advantage
SLG	Light Metals Action Agenda Strategic Leaders Group
SME	Small to Medium sized Enterprises
START	Strategic Assistance for Research
STM's	Simply Transformed Manufactures
TCFL	Textile, Clothing, Footwear and Leather industry
TIFA	Tooling Industry Forum of Australia
UK	United Kingdom
USA	United States of America
VECCI	Victorian Employers Chamber of Commerce and Industry
VET	Vocational Education and Training
VHS	Very High Strength
VIPP	Victorian Industry Participation Policy

9 - Industry Statistics

Changes in Metal Fabrication Segments in Victoria - 1992/93 to 1999/2000

Source: ABS Manufacturing Industry Victoria, 8221.2, 1992/93 & 1999/00

Segments/Sub-segments	Actual Figures in 2000					Change in Period – 1993 and 2000				
	Sales (\$M)	Staff	Exports (\$M)	Imports (\$M)	Market (\$M)	Sales (\$M)	Staff	Exports (\$M)	Imports (\$M)	Market (\$M)
Iron and Steel Casting and Forging	226	1,931	4	12	234	12	-252	2	8	18
Steel Pipe and Tube Manufacturing	233	839	9	120	344	140	383	5	59	194
Non-ferrous Metal Casting	64	800	0	2	66	-7	285	0	1	-6
Total Casting + Forging Segment	523	3,570	13	134	644	145	416	7	68	206
Architectural aluminium product manufacturing	604	3,365	4	8	608	324	1,130	1	6	329
Structural metal product manufacturing n.e.c	207	1,707	11	1	197	93	959	8	1	86
Metal container manufacturing	542	1,339	8	29	563	-18	-405	-5	0	-13
Sheet metal product manufacturing	908	5,177	9	73	972	265	318	2	40	303
Total Basic Metal Product Manufacturing Segment	2,261	11,588	32	111	2,340	664	2,002	6	47	705
Hand tool and general hardware manufacturing	77	749	12	263	328	-29	-483	0	142	113
Spring and wire products	340	1,938	32	131	439	-22	-112	18	66	26
Nut, bolt, screw and rivet manufacturing	212	1,138	22	88	278	4	-78	7	17	14
Metal coating and finishing	208	1,913	0	0	208	52	153	-1	0	53
Non-ferrous pipe fitting manufacturing	150	960	8	236	378	-10	-376	-1	138	129
Fabricated metal product manufacturing	817	6,260	72	354	1,099	187	166	1	78	264
Total Manufactured Metal Products Segment	1,804	12,958	146	1,072	2,730	182	-730	24	441	599
Total Metal Fabrication Industry	4,588	28,116	191	1,317	5,714	991	1,688	37	556	1,510

Staff (Numbers): Units
 All values: \$ millions

