



**ENGINEERING & AUTOMOTIVE
TRAINING COUNCIL INC.**

Engineering and Automotive Industry Environmental Scan for Western Australia

2010

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EXECUTIVE SUMMARY

This Environmental Scan has been developed by the Engineering and Automotive Training Council Inc.

The purpose of this report is to capture the current industrial training and social issues impacting on the future workforce planning and skills requirements for the Engineering and Automotive industries. The Scan has a focus on specific issues impacting on the Engineering and Automotive industries, which will help to inform and shape strategies to address the workforce planning requirements of the industries.

The Environmental Scan has been designed to assist industry, training providers and training policy makers. The report will be updated periodically to reflect ongoing developments in the respective industries and should be seen as a “work in progress” document.

The Scan focuses broadly on all sectors of Engineering and Automotive Industries covering:

- **Engineering**

- Metal Product Manufacturing.
- Heavy Engineering.
- Iron and Steel.
- Machinery and Equipment and other Manufacturing sectors:
 - motor vehicles and parts
 - ship and boat construction and repair
 - railway rolling stock
 - aircraft production, repairs and servicing
- Engineering Maintenance and Services.
- Refrigeration and Airconditioning service and manufacturing.
- Foundry.

- **Automotive**

- Heavy Vehicle – Retail Service and Repair.
- Light Vehicle – Retail Service and Repair.
- Motorcycles – Retail Service and Repair.
- Automotive Vehicle Body Repair.
- Outdoor Power and Equipment.
- Bicycles.
- Marine (Recreational Boating).
- Vehicle Body Building.

The Scan identifies the emerging trends and the likely impacts of these trends on Engineering and Automotive industries. It is important to note that this report is an evidence-based document. EATC staff has gathered information and data through a variety of sources which include questionnaires, interviews with industry associations, industrial Unions but, more importantly, the findings have been obtained through an extensive on-site visit campaign undertaken by the Engineering and Automotive Training Council.

• Methodology

A comprehensive and structured process was applied to the gathering of evidence outlined in this report, including:

- An extensive on-site visit campaign by EATC staff, which involved face-to-face interviews with key enterprise stakeholders;
- Analysis of industry based reports such as AIG “Skilling Business in Tough Times”;
- Review of published and web-based information and data;
- Consultation with industry representatives of the various sectors for validation, this involved structured interviews with a standard questionnaire developed by the EATC;
- Comprehensive analysis of data supplied by the Australian Bureau of Statistics, Manufacturing Skills Australia (MSA), IBIS World, Australian Industry Group (AIG), CCIWA and other similar organisations.

The following points summarise the key messages raised in the research for the Manufacturing Skills Australia (MSA) Environmental Scan March 2010. EATC has a close and effective working relationship with MSA, the National Industry Skills Council for Engineering and Automotive.

- The impacts of the GFC are variable across MSA’s sectors and progress out of the downturn will differ between and within sectors. A variety of supports and strategies will need to be applied accordingly.
- Reduced orders, reduced profit and reduced access to credit are key challenges to enterprise viability.
- The anticipated impacts of a Carbon Pollution Reduction Scheme (CPRS) are still a major concern for industry and most are still waiting on details before engaging strategic responses (currently on hold by Federal Government).
- The need for sustainability appears to be much more widely accepted across industry.
- The GFC has reduced the urgency of skill shortages but not the growing concern of industry that skill shortages will again be a key limitation to growth in the near future.
- Apprenticeship commencements have been severely affected by the GFC over 2009 and need to be reinvigorated to avoid long-term skill shortages.
- Poor and declining apprenticeship completion rates continue to be of concern.

- Australian manufacturing relies on its skill in design, product development, specialist expertise, technology, supply chain management and lean processes in order to compete internationally.
- Management skills have emerged as a critical component to enterprise success and Australian enterprises do not rate well against international benchmarks.
- Government stimulus initiatives and funding were instrumental and effective in supporting enterprises through the GFC.
- Enterprises, industry and the VET system must embrace a holistic, workforce development model to address broad skilling and employment challenges.
- VET programs and funding mechanisms must be flexible enough to respond to a variety of industry workforce development needs.
- Workforce development initiatives must be demand driven and be directed by skills analysis activity.
- Implementation needs more focus, and trainers need professional development support to ensure the VET system is able to meet the needs of industry, the community and the economy.

ENGINEERING ENVIRONMENTAL SCAN

- Overview of the Industry

- Trends Analysis

Currently all Engineering Industry is in a position of “cautious optimism” and the past few years have seen many companies reviewing the way they do business, and despite the global financial crisis there have not been the devastating mass redundancies seen in other parts of the world and some parts of Australia.

There is strong evidence that many projects are being ramped up in the Resources sector with the flow on effect of work for local industries. Despite much of the manufacturing work for some of the heavy engineering components for construction being awarded to overseas companies, there is an increase in engineering work for local industry.

There are still labour shortages for a number of trades, particularly experienced and highly skilled Machinists, Electricians with instrumentation skills and Mechanical Fitters with hydraulic skills.

- Regulatory Requirements

Certain sectors of the Engineering Industry are highly regulated, these include; Electricians, Aircraft Maintenance Workers and people working in the industry with ozone depleting gases.

Licensed Trades:

- Licensed Aviation Maintenance Engineers (LAME)
- Aircraft Maintenance Engineers (licence and registration)
- Authority: Civil Aviation Safety Authority (CASA)
- Electrician - Engineering Tradesperson Electrical
- Refrigeration and Airconditioning tradesperson

Licences:

- “A” Grade Electrician previously Electrical Mechanic, Electrical Fitter
- “C” Grade Licence - issued to Engineering Tradesperson (Electrical) apprentices
- Restricted Electrical - Licence issued when demonstrated need for some electrical work as part of own trade or calling.
- Electrical Contractor’s Licence - electrical workers must have a current Certificate of Registration through the Electrical Licensing Board before legally carrying out electrical work.
- Authority: Electrical Licensing Board under the Electricity (Licensing) Regulations 1991. For details see “Licensing of Electrical Workers” booklet from Office of Energy.

- Refrigeration and Airconditioning Industry. The legislation amending the Ozone Protection and Synthetic Greenhouse Gas Management Act of 1989 has national agreement to ensure that all States follow the new national regulations. A full licence to work with ozone depleting gas can be obtained by completion of the Certificate III in Engineering, Mechanical Trade (Refrigeration, Airconditioning, and Restricted Electrical).

- **Demographics of the Workforce**

The primary activities of the Engineering Industry in Western Australia (WA) can be broken down into the following sectors of coverage; Manufacturing – Metal and Non-metal, Aeroskills (aircraft maintenance), Engineering/Fabrication, Transportation and Equipment Manufacture, Engineering Construction, Refrigeration and Airconditioning, Shipbuilding and Boatbuilding, Foundry, Mineral Processing (maintenance activities), Metal Machining, Surface Preparation and Surface Coating.

A significant component for WA is the water transport area (ship and boat building), accounting for over 70% of Australia's high speed vessel exports. This industry has become very export oriented due to its ability to supply niche markets with competitive, high quality products.

The Engineering Industry in WA is involved in the manufacturing, installation, repair and maintenance of products. Engineering tradespersons are employed in a wide range of industries in assorted occupations that manufacture, install, repair and maintain plant equipment. For example, large numbers of Mechanical Fitters and Metal Fabricators (Boilermakers), work in the Mining and Engineering Construction industries where machinery needs to be maintained or large metal structures need to be built. Though predominantly in the Mining, Manufacturing and Construction industries, tradespersons also work in other industries such as Agriculture, Health, Food and Hospitality as support and maintenance officers. The Manufacturing industry is the third largest employing industry in the Australian economy, employing 1,008,200 people or 9.3% of the total workforce as at February 2009. (MSA Environmental Scan 2010).

The Engineering Industry in WA is comprised predominantly of small to medium enterprises, having less than 20 employees. Approximately 15% are businesses with more than 50 employees. A diverse range of enterprises ensure that the career options for the industry are varied and can range from positions involved with manufacturing, servicing, research and development, marketing, robotics, quality control, hands on production, product design and many more.

- **Impact of Globalisation**

MSA reports that “Exposure to the international market has increased due in part to some relaxation of import restrictions. As the sector competes in the world market, it requires the use of more specialised skills that focus on improving business efficiencies. Around 70% of the companies in the manufacturing and engineering sector today are either direct exporters or suppliers to an export company.

The constantly evolving regulatory framework and global integration environment significantly impacts the direct and indirect costs imposed on these sectors. Further regulation as a result of carbon reduction initiatives are a key concern for enterprises.

Enterprises have experienced profit margins drained over the year by reduced orders and customer pressure to reduce prices. This has resulted in a significant slowdown in training budget expenditure.” (MSA Environmental Scan 2010).

Engineering services are being outsourced to other countries and work being sent online to the host companies. This is affecting employment of Engineers and Draftspersons in Australia and appears to be putting downward pressure on salaries offered to local engineers.

Competition from overseas companies is seen as a major threat to viability by engineering companies in WA. However, some companies are able to source components for their products overseas and integrate them into their locally made products and increasing profitability in the final product.

- **Impact of Government Policy/Decisions**

An increasing component of globalisation is the impact of skilled migration workers and their families here on temporary work visas. In areas such as the Pilbara a large majority of the workforce is employed on a fly-in, fly-out basis. It is becoming more difficult to find skilled workers to fill the increasing number of vacancies. The fly-in, fly-out workers are flying from increasing distances with a significant number flying in from New Zealand. Workers in high demand may come from anywhere in the world. This often leads to more pressure being put on the government to let them bring their families and become permanent residents.

In February 2010, the Australian government announced the outcomes of a review of the Migration Occupations in Demand List (MODL). The review found that the existing MODL needed to be revoked and replaced by a more targeted skilled occupations list to better meet the demands of Australia’s labour market. Also announced was the replacement of the current Skilled Occupation List (SOL) in the second half of 2010, with a new list of targeted occupations determined by the independent body, ‘Skills Australia’, the current Critical Skills List will be revoked.

The *Vocational Education and Training Act 1996* as amended in September 2009 has made widespread changes to the operation and administration of training in WA, particularly affecting trade training and issuing of trade papers. The shortening of some apprenticeship terms to three and a half years has not been met with universal approval of the Industry. Many respondents believe that the increasing complexity of some work skills require more time in training. Also the issuing of a Trade qualification and trade papers in one certificate by an RTO has raised concerns in industry that there may be a tendency by RTOs to not to follow all the assessment procedures to ensure an apprentice is competent to trades level. Previously this was a two-stage procedure where the RTO and the Apprenticentre issued two separate documents when all the assessments were completed and signed off by all parties.

- **Technological**

Technology is incremental in general terms, new processes are usually refinements of existing technology. Most production processes within the Engineering Industry are well established. There are an increasing number of production and jobbing enterprises turning to computer numerically controlled (CNC) machinery to manufacture products or, in many cases, upgrading their existing machines. Computer based technologies have two main benefits over traditional manual labour; they are much more accurate than manually controlled techniques and they reduce labour costs.

- **Economic Drivers**

The biggest economic driver in the Engineering sector is the oil and gas and mining industries. Whenever there is an upturn in construction in the resource sector anywhere in Australia, there is a ripple effect in the supply and demand of skilled labour. The following report from IBISWorld shows the extent of the current and future construction that will affect the supply of skilled labour:

The relatively buoyant demand prospects in the engineering infrastructure market reflect the ongoing investment planned for several large scale resource developments (notably iron ore mines in Western Australia, and offshore oil and gas fields), the boost in investment into water and sewerage infrastructure to service the major capital cities, and the construction of accompanying pipeline infrastructure. Demand conditions are projected to soften early in the outlook period, associated with the scaling back of work on several current mining projects, and the minor softening in investment trends in railway and harbour infrastructure, before recovering with strong investment into water supply, pipeline, telecommunications and electric power projects. Despite the downward trend projected in investment into oil and mineral infrastructure projects early in the outlook period, activity is expected to rebound strongly and remain well above the levels of the early 2000s.

Outlook for Heavy Industrial Infrastructure:

Construction in the total heavy industrial infrastructure market (including mainly the construction of oil and mineral infrastructure along with refineries, chemical plants, paper mills, and other industrial processing plants) is forecast to continue to contract sharply with the completion of several large-scale energy development projects and the impact on future investment by the softer demand conditions in the developed economies. The coming on-stream of investment into other big-ticket export-oriented resource projects towards the end of the forecast period (particularly oil and gas developments) will ensure that despite the short term contraction, investment in this market remains at near-record levels.

Major projects in this market over the outlook period include: the Hope Downs iron ore project in Newman, WA (valued at \$1.5 billion); the Alumina Australia upgrade to stage 3 of the Wagerup Alumina Refinery in Western Australia (valued at \$1.5 billion); a proposed methanol plant in Dampier, WA, valued at \$630 million, which is awaiting financing and development approval from state government; the Fortescue Metal Group mining and processing facility in Pilbara, WA (valued at \$550 million), which was originally planned to begin early 2005 but stalled due to financing difficulties associated with Chinese buyers; and the Swanbank Paper Mill in Queensland, valued at \$800 million, which is currently in the feasibility stage.

Activity in this market will also be subject to the advancement of planned projects, such as: the \$5 billion Austeel iron and steel project at Karratha, WA, using hot briquetted iron, producing steel pellets (delayed since 2001); and the \$5 billion North Rankin Gas Compression project to deliver high-value gas supply from the North West Shelf for another 25 years. IBISWorld Dec 2009

The number of resource developments and construction projects competing for skilled labour will increase a skills shortage problem, as large projects draw the skilled labour force from the rest of the state's labour market by offering much higher wages. This trend has been cyclical over the past decades with some fairly sharp highs and lows. Currently the skilled labour shortage seems to be in balance. If a number of the proposed projects prove viable, this high level of activity and associated demand for labour will continue well beyond 2010.

- **Size and Distribution**

The Engineering Industry can be broken down into the following sectors of coverage. These include:

- Manufacturing – metal and non-metal
- Aeroskills (aircraft maintenance)
- Engineering/Fabrication

- Transportation and Equipment Manufacture
- Construction (Engineering)
- Refrigeration and Airconditioning
- Shipbuilding and Boatbuilding
- Foundry
- Mineral Processing (maintenance activities)
- Metal Machining
- Surface Preparation and Surface Coating

The Engineering Industry is an occupational industry sector covering all industries in a service capacity.

Occupations within the Engineering Industry include Engineers, Shipwrights, Boat Builders, Welders, Marine Engineers, Aluminium Fabricators, Boilermakers, Mechanical Fitters, Machinists, Electricians, Drafters, Sheet Metal Workers, Locksmiths, Jewellers, Engravers, Materials Handlers, Blast Coaters, Metal Polishers.

The Manufacturing Industry, in which Engineering plays a major role, overall employs nearly a million people nationally (993,000 persons) and is the second largest employer in Australia and amongst the top twenty paying industries.

993,000	Full time 850,000 (85.6%)	Part time 143,000 (16.6%)
Males 721,000 (72.6%)	Full time 665,000 (92.2%)	Part time 56,000 (7.8%)
Females 272,000 (27.4%)	Full time 185,000 (68%)	Part time 87,000 (32%)

The composition of the Engineering Industry is characterised by (93%) full-time and (7%) part-time workers. Most of the occupations in this industry are “traditional trades” that have historically been full-time employment based.

The industry has a male dominated workforce. The Engineering sector has always been perceived as a physically demanding and dirty environment, with the tendency to attract more male and less female workers. This perception is slowly changing in modern workplaces, as the nature of the trades is becoming more technical with the use of computerised equipment and less physical.

In addition to a resistance to enter the Engineering trades, there is also a high attrition rate from the industry. The nature of the work is generally of a physical nature that takes its toll on the body which older workers find they cannot sustain. Even the lure of high wages on major projects does not encourage people to stay in the industry. The notion of an ageing workforce and staying longer in the industry is unrealistic.

The industry operates in a rapidly changing environment and uses new technology and modern work practices to maintain a competitive position in world markets. Engineering companies in WA are improving their production processes by modernising their equipment to more automated computer controlled systems to increase the quality and output of their products.

As a result of the increasing activity in the resources and construction sectors, there will need to be an increase in training delivery, particularly with apprenticeships in traditional trade areas and in para-professional studies related to Mechanical Engineering.

The Engineering Industry is of considerable importance to the Western Australian economy.

Whilst employment has slowed somewhat, the overall level of real output continues to increase. Measured on economic growth and productivity performance, the Engineering Industry supporting the mining and resources sectors is becoming increasingly more important to the national economy than ever before.

The industry relies upon assorted occupations that install, repair and maintain plant equipment in most industries.

The sector is comprised of mainly small to medium enterprises involved in the manufacturing, service and repair and maintenance of products.

Such a diverse range of enterprises ensures that the career options for the industry are also varied and can range from positions involved with research and development, marketing, robotics, quality control, hands-on production, product design and many more.

It is important to note, that people with Engineering skills also work in many other areas outside the Metals, Manufacturing and Engineering Industry, including Building and Construction, Mining, Health, the Food and Hospitality Industries and the Training sector.

For example, large numbers of Fitters and Metal fabricators, such as Boilermakers work in the Mining and Engineering Construction Industries, where machinery needs to be maintained or large metal structures need to be built.

The Engineering Industry operates in a steadily changing environment and uses new technologies and modern work practices to maintain a competitive position in world markets. This requires employees to constantly develop and maintain a high level of skills.

The main concentration of business operations and employment for the industry in this State is located in the metropolitan area (75%) with (25%) in the regional areas. Engineering workers are employed in all industries throughout the State, however, most of the central offices and factories are located in the metropolitan area, supporting regional mining and resource projects.

Engineering trade persons support the mining and resources industries predominantly in the North West, but are also in the Goldfields, Peel and South West region. The major trades supporting these industries are Electricians, Fabricators, Mechanical and Mobile Plant Fitters, and Welders. They are predominantly engaged in construction and maintenance services on fixed and mobile equipment.

There are a number of small, medium and large engineering works in the Midland, Welshpool, Kewdale, Maddington, Forrestfield, Bassendean and Bayswater districts, covering heavy engineering, rolling stock and railway manufacturing and service, heavy duty earthmoving, foundry and jobbing work.

The Kwinana area from Fremantle to Rockingham strip has a number of heavy engineering works including foundries, alumina and nickel refineries and pig iron production. This area has some of Australia's largest ship and boat building companies, as well as defence industries at Garden Island (RAN). There are also numerous smaller engineering and service companies who support and complement the larger companies.

Canning Vale has heavy and light engineering and service companies including South Guildford domestic and international airports, Jandakot Airport and regional airfields are all supported by aircraft maintenance engineers. Major airlines such as Qantas and Virgin employ aerospace engineers and there are numerous small aircraft maintenance engineering companies in the Jandakot area.

The Peel region is home to Alcoa bauxite mines at Willowdale and Huntley and alumina smelters at Pinjarra and Wagerup supported by many maintenance and service contractors.

The South West, particularly Bunbury, Collie and Boddington have bauxite mines, coal mines, alumina refinery, wood chipping, dairy production, timber products, port facilities, power generation and related service contractors who support these industries. Companies include Alcoa, BHP Billiton Worsley Alumina, Premier and Griffin Coal and Verve Energy.

The Goldfields district has one of Australia's most important gold and nickel mining industries with a large number of mine support industries covering mechanical, plant, earthmoving, electrical and fabrication companies.

The Geraldton/Central West district mainly supports the farming industry and has a substantial port facility. Industries include talcum, mineral sands and iron ore mining, synthetic rutile production. The area requires the usual service industry trades, such as Electricians, Metal Fabricators, air conditioning service people and Mechanical Trades people. There are skills shortages in all of these trades. Proposed steel production plants in this region have not materialised.

The Pilbara is the source of most of WA iron ore exports. The major mining and oil and gas industries are supported by Engineering Industry trades people. During construction phases of new and upgraded resource projects, there are requirements for Metal Fabricators, Coded Welders and Pipe Fitters, Mechanical and Heavy Duty Fitters and Licensed Electricians. Post construction requires lesser numbers, but the same trades are needed for maintenance and production.

IBISWorld (February 2010) reports the last five years ending June 2009-10 has been problematic for Australian manufacturers operating on the industry sectors "Boilers, Plate Work and Other Fabricated Metal Product Manufacturing industry", which encompasses a large part of the Engineering Industry. The downturn in the global economy negatively impacted the Australian market's appetite for industry products, so much so that annualised demand for the period decreased at 1.9%. In addition, expanding import penetration, particularly from China and other Asia-Pacific markets, exacerbated the impact of softening domestic demand. These two factors combined to see the industry revenue contract by 4.6% per annum for the period.

Under these conditions, many foreign manufacturers benefit from lower production costs compared with the industry's domestic manufacturers, resulting in the increasing tide of imports. In 2009-10, the appreciation of the Australian dollar further fuelled an import explosion, seeing a sharp 9.0% year-on-year increase.

In addition to encroaching on domestic manufacturer's market share, cheaper imports have also impacted domestic manufacturers' profitability. In order to compete with the influx of cheaper imports, domestic manufacturers have had to absorb any input production cost increases instead of passing them on to consumers. During the last five years, dominant production costs (primarily iron ore) have increased in line with the rising price of commodities brought about by strong global demand.

- [Sustainability](#)

The Engineering Industry has an ageing workforce. In comparison to the number of new entrants, the majority of workers fall within the older age groups. Attributing factors include the image of the industry, traditionally perceived as being hot, dirty and physically demanding, being non inviting to new entrants, as well as a decrease in major training sources for apprentices, due to the privatisation of many government trading enterprises.

The Engineering Industry has been active in reshaping itself over the last decade and has embraced new technologies and innovation, with more efficient production practices and becoming increasingly export focussed.

The Engineering Industry in general, is beginning an increase in activity and continues to be vibrant and innovative. Its success is heavily dependent on current and upcoming activity in resource developments and construction projects. Future demand on the industry's labour market in the Engineering trades will depend to a large extent on whether new resource, infrastructure and commercial engineering and building construction projects continue to come on stream after current projects are completed and what proportion of the associated work flows through to the local manufacturing industry.

The Engineering Industry in Western Australia can be volatile. The industry is cyclical in nature and is strongly influenced by national and international economic factors including:

- Economic conditions with Australia's major trading partners, which are mostly in the Asia Pacific area, particularly China.
- Demand for domestically produced consumer goods such as cars and appliances are mainly driven by prices which are sensitive to input prices and exchange rates affecting prices of competing imports.
- Demand for services and domestically produced industrial products such as fabricated metal products, is determined primarily by the level of activity in the mining, construction and resources sector which is influenced by economic conditions nationally and internationally.
- Tariffs, export markets, exchange rates.

- [Qualifications Profile of the Workforce](#)

The majority of qualifications in the Engineering Industry are in the Certificate III and Certificate IV Trades areas:

- Certificate I in Engineering – suitable for VET in schools and pre vocational programs
- Certificate II in Engineering – suitable for pre apprentice programs and areas that need skills but not to full trade level
- Certificate III in Engineering - Production Systems – this is a non-trade qualification
- Certificate III in Engineering - Mechanical Trade
- Certificate III in Engineering - Fabrication Trade
- Certificate III in Engineering - Electrical/Electronic Trade
- Certificate III in Marine Craft Construction
- Certificate III in Locksmithing
- Certificate IV in Aeroskills (Avionics)

- Certificate IV in Aeroskills (Mechanical)
- Certificate IV in Engineering – post trade qualification
- Diploma of Engineering – Advanced Trade– post trade qualification
- Diploma of Engineering – Technical
- Advanced Diploma of Engineering

- **Social Impact**

There are a number of social issues in the Engineering Industry that impact on workers in the industry and general society.

- The common practice of fly in fly out mainly to the Pilbara. This has a number of facets:
 - Disruption of family life, workers not having contact with their children, many of them in their formative years
 - Living conditions that are not conducive to a healthy lifestyle, such as working long hours and little opportunity to pursue hobbies.
 - Family break up due to spouses finding other pursuits and partners.
- The high wages paid to many construction and resource industry workers causes an imbalance in the workforce in general causing a division of the “haves and have nots”.
- Pressure put on smaller employers to pay higher wages to keep staff.
- Difficulty for industry to employ apprentices in the fly in fly out environment.
- Labour shortages tending to increase immigration and the consequential strain on the government to increase services.

- **Industry Occupational Overview**

- **Supply and Demand of Training**

In the twelve months to June last year, there was a big drop in new apprentice enrolments. Nationally, apprentice numbers have dropped by 27%.

In Western Australia in December 2009, there was a 43% drop in enrolments in fabrication apprenticeships from 2008, 28% drop in mechanical and a 22% drop in electrical.

Interviews with the relevant departments in TAFE colleges indicate anecdotal information that there is an increase in enrolments in the above trades compared to the same time last year but, at this time, there are no complete figures to verify this.

Aeroskills mechanical trades, there was a 100% increase in the same period. However, our research indicates that this increase will not continue in 2010.

The post trade Certificate IV in Engineering increased by 6% and the new Diploma of Engineering Advanced Trade had an initial enrolment of 21 students.

The Diploma of Engineering - Technical showed a significant drop of 49%.

Note: A table of commencements and completions can be seen in Appendix 1.

- **Current and Emerging Skill/Labour Gaps**

MSA in the 2010 Environmental Scan quote Australian Industry Group and Deloitte, National CEO Survey October 2009, Skilling Business in Tough Times who identify the following skill shortages:

- Fabrication trades and advanced trades
- Boilermakers
- Sheetmetal Workers
- Welders
- Induction Furnace Operators
- Casting Dressers
- Foundry tradespeople, including Moulders and Pattern Makers
- Metallurgists at advanced trade and technician levels
- Mechanical trades and advanced trades:
- Maintenance Fitters
- Mechanical Fitters
- Advanced trades in hydraulics and pneumatics
- Plant and Heavy Transport Mechanics
- Machinists
- Locksmiths
- Refrigeration and Airconditioning
- Instrument Technicians
- Electrical trades and advanced trades:
- Electricians including HV/DC
- Motor control
- Operators, setters and programmers for advanced manufacturing systems
- Process Control Specialists
- Engineering Designers, including 3D CAD
- Draftspeople
- Engineering Technical Officers
- Architectural hardware specifiers
- Engineering Managers
- Toolmakers

MSA have identified key growth areas:

- Advanced manufacturing
- Advanced fabrication techniques
- Welding
- International technical standards and trading requirements
- Integrated systems
- Alternative energy
- Green products
- Nanotechnology
- Defence
- Online technology
- Project management
- International benchmarking
- Equipment/technology
- Automatic machining
- Robot programming

MSA also identify that “There is an increasing need for skills across areas such as Mechanics, electrics, fitting, machining, welding and heavy fabrication (boiler making). Higher level skills across the board are also in high demand to work with increasing sophistication of materials, processes technologies and compliance issues, and there is growing interest in post-trade training to meet this need. Further long-term effects of globalisation and enterprise specialisation are expected to result in more job losses and intensify labour challenges”.

There does not seem to be an easy way to remedy these shortages as there is a very long period of training for trades people, a three and a half year apprenticeship is considered the industry standard.

- **Barriers to Employment and Training**

- The general lack of understanding by many in the teaching profession on what trades skills are and career opportunities that exist, particularly knowledge of the Engineering Industry. This is one of the major impediments to engagement with prospective candidates in the Industry.
- The VET in Schools program is putting a greater emphasis on the Trades areas but there still appears to be some resistance by parents and consequently students to pursue a Trades career. Much more needs to be achieved in the way of promotion of the benefits of a Trades career and to abolish the negative image of Trades in general. There is a need to expand the VET in Schools program to ensure a meaningful mix of school-based VET programmes with suitable structured workplace learning.

- Poor reading and numeracy skills are a major barrier to employment, particularly school leavers. The biggest complaint from employers is the lack of basic literacy and numeracy skills in school leavers who apply for apprenticeships. The perception that Trades are a low achievers destination for school leavers is one that seems to be perpetuated by many in the teaching profession. Engineering is a profession that requires very high applied numeracy skills, all engineering tasks require, to some extent, measurement and computations. Being able to read and understand complex instructions is fundamental to productivity.
- Overseas qualified engineers need knowledge of Australian Standards (Engineering), by enrolling in suitable courses to increase their knowledge would also be a vehicle to developing their English skills, particularly technical English. Overseas engineers are often lacking in Computer Assisted Drafting (CAD) skills, this is a barrier to them entering the industry.
- Indigenous participation in the Engineering, Construction and Mining industries has been increasing over the last decade. Mining companies, particularly in regional areas, have dedicated programs of employment for indigenous people. Also with the increase in resource activity, more Indigenous people are being attracted to the industry. However, Indigenous participation in Engineering training is still very low in WA, factors attributing to this include: the lack of culturally sensitive indigenous training needs based support programs (including effective literacy support), failure to recognise the need to employ more flexible, non-traditional modes of delivery, limited access to computer usage and ongoing practical experience of technology and, in certain situations, inappropriate placement of training facilities in relation to industry concentration and work placement opportunities.
- As a result of the increasing activity in the resources sector, there will be a need for an increase in training delivery, particularly with apprenticeships in traditional trade areas and in para-professional studies related to Mechanical Engineering. These increases are likely to take place over the next two to three years. The difficulty of the training providers in the Pilbara and the Kimberley to attract suitable teaching staff is a huge barrier to effective training of apprentices and post trade programs.
- Historically, the Engineering and Mining industries have had a commitment and preference for employment-based training through apprenticeships, as both industries require “skilled” people and considers that a three and a half or four year training period through apprenticeships allows sufficient time for skills development. This lengthy period of training is often a disincentive for smaller employers who cannot guarantee continuity of work over the whole training period. This is a particular problem when there is a downturn in business activity.

- Enterprises often need to be able to source fully skilled workers when they win contracts, with “boom” conditions the pool of skilled workers is not available and the training time is too long for the instant labour requirement.
- Demand for skills is very much dependent on project-type development of the States’ natural resources, with a lesser emphasis on upgrading skills for those people employed in maintenance activities. This factor in itself presents a problem in identifying training priorities and issues for the stakeholders. Knowing what skills and skill levels are required to work on projects is usually not determined until the supply is tested in the workforce market place, presenting a dilemma for the Industry.
- Companies who require the skilled labour often consider personnel in their workforce as possibly benefiting from up-skilling training. These workers are usually working long hours, which restrict their ability to attend structured training courses. This is a major barrier to increasing the higher level skills in the workforce. Cost is also a prohibitive factor and consideration for many training providers in delivering flexible and appropriate training to meet the requirements of industry to personnel working on remote work sites.
- The businesses most affected by skill shortages are not the large construction or engineering companies, but the small to medium sized organisations. These businesses are down the line as far as their ability to attract large-scale work and therefore experience difficulty competing with the higher salaries offered to the more highly skilled people of the larger companies. The smaller employers are often loath to spend money on training as they believe that when the level of skill of their employees rises, the employees will be “poached” by larger companies who may be able to pay higher wages or offer better career pathways.
- There is a serious shortage of younger people entering the training/TAFE sector as trainers; the issue of an ageing TAFE lecturer population is probably more serious than in the industry workforce. Unless these soon to retire trainers and teachers are replaced, we will have no-one to teach the few that we are attracting into the industry.
- Employers are seeking more flexible and responsive solutions to their training needs. An improvement in lean and agile manufacturing concepts has led to a focus on skills and modes of training that improve the viability and economic prospects of the firm. Registered Training Organisations need to recruit new staff to replace an ageing workforce in the Engineering training delivery area. Without this constant renewal of training staff they will be even less able to deliver to the needs of the Industry.

- There are many experienced engineering workers in various positions and enterprises who have no formal qualifications. In many cases attention to minor skills gaps by way of skills assessment could bring these workers up to trade level. There is a need for the continued promotion of the FastTrack Apprenticeship system for experienced mature aged workers.
- The cyclical nature of the Engineering Industry in Western Australia has been a feature for many years and does not look as if it will change in the foreseeable future. Every time there is a higher world demand for minerals or resources there is surge in activity in Australia. The resources industry in the North West is the major contributor to Australia's wealth. It is also one of the major users of skilled engineering labour. New mining enterprises in Queensland will also put pressure on the market for skilled labour. It is becoming more difficult to find skilled workers to fill the increasing number of vacancies. The fly-in fly-out workers have significant pressures put on their family life with the constant disruption due to work demands. Workers are expected to work long hours in very trying and difficult conditions, particularly on construction work. This not only puts a strain on their health but also tends to shorten the effective working life of workers. This, in the long term, is a significant barrier to employment in the Engineering Industry.
- Employers have difficulty in maintaining a stable set of employees due to the highly competitive "bidding" in wages. This situation is worse in times of skilled labour shortages.

- **Emerging Occupations**

The major occupational coverage is in the "Declared Trades" areas. However, there is a strong push from industry to declare a new trade of Engineering Tradesperson – Instrument Electrical. EATC is currently in negotiations with all interested parties to bring this to fruition.

Trade occupations in a number of areas are requiring a higher level of skill but are not new occupations:

- Coded Welders
- Fitters with fluid power skill
- Machinists with CNC and higher level "traditional" skills such as screw cutting and gear cutting

- **Declining Occupations**

- Watch and Clock Making
- Optical Mechanics

AUTOMOTIVE ENVIRONMENTAL SCAN

- Overview of the Industry

The Automotive Industry within Western Australia (WA) plays a major part in the economy of the State and is part of a Federal wide industry employing more than 320,000 people, with an annual turnover in excess of \$6.0 billion.

The industry is made up of approximately nine thousand Small to Medium-sized Enterprises (SMEs) within Western Australia (WA).

- Trends Analysis

The automotive sector is a constantly changing landscape and due to the constant demands on vehicle manufacturers to conform to ever-changing emission, safety regulations and fashion trends, the automotive sector has now become a hot bed of new technologies such as, dual fuel vehicles, the use of carbon composite construction technologies, water-based paint systems and a heavy emphasis upon computer-based diagnostic technologies.

With the advent of these new technologies, new methods of training and skill sets will need to be developed. The automotive sector is now becoming a very high-tech industry, thus creating the need for highly qualified employees.

- Regulatory Requirements

Regulatory requirements within the automotive sector in WA involving Retail Service and Repair businesses, require that all businesses be licensed with the Department of Commerce. Further licensing requirements apply to individual business owners or persons involved in the application or supervision of vehicle repair work and also requires certification. Other regulatory requirements are based around OH&S (Occupational Health and Safety) and Environmental Regulations with regard to the handling and disposal of waste products (oils, fluids, tyres, vehicle components, noxious emissions from Smash Repair shops). Licensing is also required for service and repair work on LPG (Liquid Petroleum Gas) equipped vehicles and vehicle airconditioning, which require that the business and the person working with these systems be individually licensed.

The recreational vehicle sector also has to be licensed for electrical work (disconnect/reconnect) for both the business and the individual working on these systems.

- **Demographics of the Workforce**

The main sectors involved within the Automotive Industry in WA are:

- Automotive Manufacturing
- Automotive Retail Service and Repair
- Automotive Vehicle Body Repair
- Recreational Vehicles
- Outdoor Power Equipment
- Vehicle Body Building
- Marine (Light)
- Motorcycles
- Bicycles

Automotive Manufacturing consists of mainly large manufacturing plants that produce vehicles or vehicle components and the majority of the work is engineering based. WA does not play a major role within this sector and has only a handful of companies that are small to medium enterprises.

Automotive Retail Service and Repair is the largest sector within this group and accounts for 80% of the automotive sector within WA. It comprises of more than nine thousand small to medium enterprises to large multi franchise companies, and covers a wide spectrum of the Automotive Industry from Light Vehicle, Heavy Vehicle, Dealerships, Sole Repairers and Franchise Outlets.

- Light Vehicle – Sales, Service and Repair of Motor Vehicles, Light Passenger Vehicles, Light Trucks and Vans
- Heavy Vehicle – Sales, Service and Repair of Trucks, Trailers, Heavy Mobile Equipment and Buses
- Agricultural/Machinery – Sales, Service and Repair of Trucks, Trailers, Tractors and associated farm equipment

This sector comprises of varied skill requirements within the workplace ranging from low skill requirements and qualifications to high skill requirements and qualifications. Each subsector, for example Light Vehicle, has its own set of requirements, but most of the base skill requirements of the industry are transferable between subsectors enabling the workforce to diversify into the different subsectors with minimal retraining if the need arises.

With the application of more electronic components across the sectors, more emphasis will be placed upon highly skilled diagnostic technicians and automotive training packages will need to be regularly updated to meet industry needs.

With the impending resource surge, the Light, Heavy and Agricultural sectors are bracing themselves for a potential skills shortage. Historically, the resource sector targets the Light, Heavy and Agricultural workforce when looking for employees because of the easily transferable skills they possess. The metropolitan and regional based businesses cannot match the pay

incentives the resource sector can offer which, in turn, leads to a major syphoning of skilled workers.

Automotive Vehicle Body Repair, the Automotive Vehicle Body Repair sector mainly comprises of approximately 320 small to medium enterprises in Western Australia. Nationally there are 9,143 establishments that specialise in vehicle body repair. Most of the work is generated by the major vehicle insurance companies. The skill requirements within this sector are very high and the technologies used are constantly changing. Currently there is a severe shortage of skilled workers to service the thousands of vehicles damaged in the recent hail storms. The industry has indicated there will be long waiting lists for customers to get their cars assessed and repaired. Vehicle Body Repair companies are importing workers from regional areas and interstate to cope with the work load, many workers are working excessive overtime to cut the back log of repairs.

Recreational Vehicles, WA has one of Australia's largest recreational vehicle manufacturers, Coromal Caravans. They are part of the Fleetwood Corporation group, which is a nationwide company. The recreational vehicle sector is the fastest growing sector within the Automotive Industry, with 96% of all vehicles produced being sold within Australia (see MSA 10-02-2010 "Recreational Vehicles Project Report"). Skill requirements within this sector range from low skill requirement (assembly of caravan structure) to high skill requirement (fit out) encompassing varied trades.

The EATC was instrumental in registering a Certificate II and a Certificate III Traineeship for Coromal Caravans, the first of its kind within the recreational vehicle industry to recognise the skill sets involved within recreational vehicle construction.

Outdoor Power Equipment is an often overlooked sector of the Automotive Industry but with the advent of more technologically advanced mowers, cutters and chain saws, new skill requirements are beginning to emerge and the need for specialists within this sector will become more prevalent.

Vehicle Body Building, this sector specialises in:

- Boat trailer manufacturing
- Caravan manufacturing
- Horse float manufacturing
- Motor vehicle conversion
- Stock crate manufacturing
- Trailer manufacturing
- Car, truck, bus body manufacturing

There are 1,490 establishments nationally that specialise in Vehicle Body Building. In Western Australia there are 20 major manufacturers and approximately 50 small to medium repairers; two significant manufacturers in Western Australia are Volgren, who are a major producer of buses throughout

Australia, and Howard Porter, who produce large trailers and large bulk carriers. The skill sets within this sector are varied and range from low skill levels to high skill levels. There is a crossover of skills with heavy and light fabricators, (Boilermakers and Sheet metal Workers). As well as manufacturing there are a number of large and small companies that carry out repairs and maintenance on buses, trucks and associated vehicles.

Marine Light mechanics and technicians specialise in inboard and outboard motors and engines for the boating industry. This is mainly in the recreational boating industry but commercial boats such as fishing vessels and tourist vessels are serviced and repaired by marine light mechanics. This sector of the automotive industry is currently experiencing a surge in demand for marine repair mechanics/technicians.

Motor Cycles, Motorcycle popularity in Australia continued to grow at a faster rate than any other vehicle type in the 12 months to March 2009, with registrations up by 10.0 per cent, according to figures released today by the Australian Bureau of Statistics (ABS). The latest motor vehicle census (ABS 9309.0, 31 Mar 2009) shows that registrations are up by 10 per cent during that period, while registrations (including scooter) have increased by 57.5 per cent over the five years to 2009.

This popularity saw motorcycles earn a four per cent fleet share of all vehicles registered in Australia, rising from 2.9 per cent in 2004. This compares with passenger vehicles, which have dropped from a 78.5 percent to 76.7 per cent during the same period.

Increases in motorcycle registrations over this five-year period have been observed in all states and territories, with Western Australia recording the largest percentage increase (75.9), followed by the Northern Territory (70.2), with Victoria (44.1) the lowest.

At March 31 this year, the average age of all vehicles registered in Australia was 9.9 years. Light rigid trucks and motorcycles showed the largest decreases in average age, both dropping 1.1 years.

Data from the census shows that 15.7 million vehicles were registered in Australia in 2009. This equated to 72 vehicles for every 100 Australian residents. In the 12 months to March 2009 the total number of vehicle registrations grew by 2.5 per cent. (Source Bikesales.com.au)

This continuing increase in motorcycles, including scooters will mean an increased need for more motor cycle service and repair trades people.

Most retailers specialise in the repair and maintenance of the products they sell. There are a number of smaller repair shops that are run by motorcycle enthusiasts with little or no formal training. However as with the motor car sector there are more sophisticated diagnostic requirements needed for service and repair. Dealers will conduct in house product specific training that tends to preclude the small generalist workshops from carrying out those

repairs. There is not a big take up of formal institutional training and qualifications.

Bicycles, cycling are a growing pastime across the Country, particularly in Western Australia, Bicycle Industries Australia Ltd report that Western Australia has 10% of the population but over 14% of the market, again reflecting recent investment and encouragement by the WA government. Cycling is the 4th most popular physical activity for people 15 years and older. More popular than golf or fishing, according to the Exercise, Recreation and Sport Survey (ERASS 2005).

	NSW & ACT	VIC & TAS	QLD	SA, NT BROKEN HILL	WA	TOTAL
All Bicycles Total	363,344	348,974	229,325	93,898	173,459	1,209,000

Source Bicycle Industries Australia Ltd

Australian bicycle sales have soared to record numbers in recent years. Figures from the Australian Bureau of Statistics show that Australians purchased 1.2 million bicycles in 2008. This is the ninth consecutive year in which Australians have bought more bicycles than cars. The trend of soaring bicycle sales is a global phenomenon. In 2007, 130 million bicycles were sold worldwide (Earth Policy Institute, 2007).

WA has 189 retail outlets selling bicycles. ABS reports that independent specialist bicycle retailers sell the vast majority of parts and accessories and hold virtually 100% of the bicycle service market. The bicycle service market has seen considerable growth in recent years due to the increase in cycling participation and the considerable growth in cycling for transport, particularly in urban centres around Australia.

Despite the number of outlets doing repairs and maintenance there is almost no interest in formal institutional training and qualifications. Most training is done in-house at enterprise level.

- **The Impact of Globalisation**

The impact of globalisation upon the Automotive Industry within WA has created two very different effects.

The first being the recent Global Financial Crises (GFC) which created a fear of uncertainty amongst employers and a general downturn in trade demand which quickly spread across all the associated automotive industries. The GFC generally halted employment demands and stalled any urgent requirement for training, which will have a knock-on effect when the economy starts to recover and may create skills shortages. Further damaging effects of the GFC were tempered by the Government's stimulus spending and tax incentives which helped the Automotive Industry remain buoyant.

In 2009 car sales were down by only 7.4% against the 2008 figures. This was a direct result of the government's stimulus initiatives. Work related vehicle sales grew by 40% in the year to November as business took advantage of the government's tax incentives.

With the advent of the GFC, the mining and resource sectors scaled down or completely closed down some of their operations within WA. This had the adverse effect of returning many skilled people back into the job market and creating an oversupply of skilled labour within the automotive sector.

The second effect of globalisation on the Automotive Industry within WA will take place when the projected Mining and Resource surge re-emerges during middle to late 2010. Following research carried out by the EATC, it has been identified that the Mining and Resource sectors will be "gearing up" for the demand on commodities especially from China, Japan and other industrialised countries.

The Mining and Resource surge will produce a syphoning effect of skilled workers from other industries based in the Perth Metropolitan and Regional areas which will, in turn, lead to a skills shortage similar to the one experienced during 2005-2008.

- [The Impact of Government Policy and Decisions](#)

The Automotive Industry has to shoulder the full impact of government policy with government initiatives such as "New Car Plan for a Greener Future" and the proposed implementation of Euro 5 (from 2012) and Euro 6 (from 2016) emission standards:

The Green Car Plan will feature an expanded \$1.3 billion which will provide Australian car companies with the opportunity to receive Government funding to design and sell environmentally friendly cars.

The Innovation Fund will see the Australian Government match industry investment in green cars on a \$1 dollar to \$3 dollar basis over a ten year period from 2009.

This is another chapter in the Rudd Government's green investment strategy to transform Australia's economy into a low-carbon emission, internationally-competitive economy of the future.

This is decisive and strong action to protect the Australian economy during the global financial crisis.

The 13-year New Car Plan for a Greener Future is about manufacturing competitive, low-emission, fuel-efficient vehicles in Australia. It will create well-paid, highly-skilled green jobs for the future.

The plan is expected to generate \$16 billion in investment in the Australian automotive industry over the life of the plan.

Further, the overall Green Car Plan will provide:

- A better-targeted, greener, \$3.4 billion assistance program, the Automotive Transformation Scheme (ATS), running from 2011 to 2020;*
- Changes to the Automotive Competitiveness and Investment Scheme in 2010, consistent with the Bracks Review proposals, to smooth the transition to the ATS (\$79.6 million);*
- \$116.3 million to promote structural adjustment through consolidation in the components sector and to facilitate labour market adjustment;*
- \$20 million from 2009–10 to help suppliers improve their capabilities and their integration in complex national and global supply chains;*
- \$6.3 million from 2009–10 for an enhanced market access program;*
- A new Automotive Industry Innovation Council, bringing key decision makers together to drive innovation and reform; and*
- A \$10.5 million expansion of the LPG vehicle scheme to start immediately, that doubles payments to purchasers of new vehicles using LPG technology. The plan implements the recommendations of the Review of the Automotive Industry, including a reformed Automotive Transformation Scheme, an expanded Green Car Innovation Fund, and measures to promote industry competitiveness.*

Automotive tariffs will be cut to 5 per cent, giving Australia the third-lowest tariff regime amongst economies with a well-developed Automotive Industry.

Australia will continue to pursue a free trade agenda because the future of the industry lies in innovation and global integration, not industry protection with old fashioned quotas and tariffs. The \$7.7 billion Automotive Industry is critical to Australia's economic future because it employs over 60,000 Australians, and is critical to national R&D and exports.

Automotive manufacturing sits at the core the nation's manufacturing effort, because building a modern car involves almost every advanced technology we use, from microchips to light metals.

Only fifteen or so countries in the world can design, engineer and build a car from scratch and we are determined to maintain that capacity. The plan has a high level of support at the beginning to accelerate reform and renewal, eventually tapering down to zero. The plan works in four key areas. It will:

- *Attract new investment in long-term, sustainable vehicle production;*
- *Green the industry – improving fuel efficiency and reducing carbon emissions;*
- *Strengthen the local supply chain and boost skills; and*
- *Link to international supply chains and improve market access for Australian manufacturers.*

A New Car Plan for a Greener Future provides the investment certainty the industry needs as it adjusts to significant new challenges.

(Source - Australian Government Media Release 10-11-08

www.innovation.gov.au)

In order to limit pollution caused by road vehicles, this Regulation introduces new common requirements for emissions from motor vehicles and their specific replacement parts (Euro 5 and Euro 6 standards). It also lays down measures improving access to information on vehicle repairs and promoting the rapid production of vehicles in compliance with the provisions of the Regulation.

Euro 6 Standard:

All vehicles equipped with a diesel engine will be required to substantially reduce their emissions of nitrogen oxides as soon as the Euro 6 standard enters into force. For example, emissions from cars and other vehicles intended to be used for transport will be capped at 80 mg/km (an additional reduction of more than 50% compared to the Euro 5 standard). Combined emissions of hydrocarbons and nitrogen oxides from diesel vehicles will also be capped at 170 mg/km. In order to limit pollution caused by road vehicles, this Regulation introduces new common requirements for emissions from motor vehicles and their specific replacement parts (Euro 5 and Euro 6 standards). It also lays down measures improving access to information on vehicle repairs and promoting the rapid production of vehicles in compliance with the provisions of the Regulation. These will be capped at, for example, 170 mg/km for cars and other vehicles intended to be used for transport.

Implementation of the Standards:

As soon as the Euro 5 and Euro 6 standards enter into force, member States must refuse the approval, registration, sale and introduction of vehicles that do not comply with these emission limits. An additional delay of one year is allowed for goods transport vehicles and vehicles designed to fulfil specific social needs (category N1, classes II and III, and category N2).

Timeframe:

- *The Euro 5 standard will come into force on 1 September 2009 for the approval of vehicles, and from 1 January 2011 for the registration and sale of new types of cars;*
- *The Euro 6 standard will come into force on 1 September 2014 for the approval of vehicles, and from 1 January 2015 for the registration and sale of new types of cars. (Source – www.europa.eu)*

These proposals and the advent of local government policy decisions with regard to waste management and business emissions and the use of less toxic paint technologies, particularly within the Automotive Smash Repair Sector, will have an impact upon how businesses operate in the future, with tighter legislation forcing companies to invest in newer and greener technologies.

- **Technological Changes**

The Automotive Industry has changed considerably over the last ten years with the application of sophisticated computer systems becoming more prevalent in the manufacture of motor vehicles, trucks and heavy mobile equipment, also the use of new construction materials such as carbon composites, plastics, high tensile steels and light alloys are now becoming commonplace within all vehicle manufacturing.

This places considerable emphasis upon the Service and Repair sector to select and train suitable employees for these new technologies, this can create problems for the aftermarket or independent operators who cannot gain access to the technical software information required to service or maintain the newer vehicles. Further issues are arising particularly with the use of gas only and hybrid electric vehicles relative to licensing of individuals and companies to perform maintenance on these vehicles.

Training is also becoming an issue with regard to new technologies with the reluctance of the OEMs (Original Equipment Manufacturers) to release information.

Government and environmental policies are the main factors that drive the Automotive Industry's use of new technologies. The reliance on fossil fuels as a means of propulsion cannot be maintained indefinitely and the production of alternative fuel and propulsion systems, such as hybrid vehicles (mechanical/electric), totally electric vehicles and hydrogen vehicles, will become more commonplace in the near future.

- **Economic Drivers**

With the cost of fuel increasing, more fuel efficient and smaller vehicles will become the choice of the consumer. The sale of diesel powered vehicles will also increase along with gas powered vehicles (Holden and Ford are now producing a gas-only vehicle). Transperth, the Perth Metropolitan Bus Authority, are phasing out older style diesel buses and replacing them with new diesel technology buses and Compressed Natural Gas (CNG) buses, see below.

Diesel buses:

- Transperth diesel buses run on low sulphur diesel, which is the fourth cleanest fuel in the world.
- Diesel buses produce fewer emissions than an average family car.

Natural gas buses:

- Transperth introduced its first Compressed Natural Gas (CNG) fuelled bus in 1982.
- CNG buses save nine tonnes of greenhouse gas emissions per year.
- Out of the 1,100 Transperth buses in service, 27 per cent are fuelled by CNG.
- Transperth has already started changing all its buses with CNG vehicles (Source - www.wa.gov.au)
- Transperth has also tested hydrogen fuel cell buses, running a long term test of three buses in 2004.

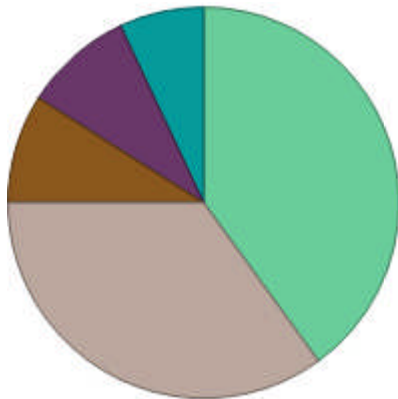
- **Size and Distribution**

The Automotive sector within WA has approximately nine thousand SMEs (Small to Medium Enterprises) with a market share of 11.5% throughout the state specialising in the Retail Service and Repair sectors. A major issue that faces workshops throughout Western Australia (WA) is parts supply. Due to the isolated nature of WA, spare parts have to be transported from mainly the Eastern States, this adds time and cost implications to even the simplest of tasks.

See the following tables for industry segments and employment data sourced from *IBISWorld*.

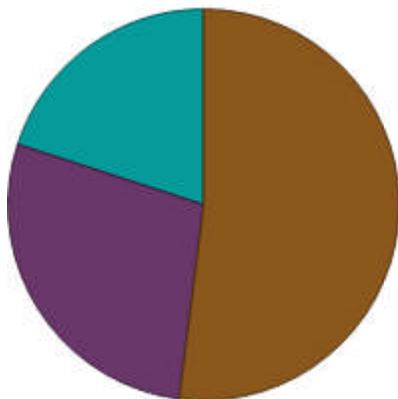
Industry Segmentation

Products and Service Segmentation



Product/Services	Share
Motor vehicle servicing and tuning	40.0%
Muffler, engine and all other repairs	35.0%
LPG and steering conversions	9.0%
Transmission repairs	9.0%
Air conditioning and brake repairs	7.0%

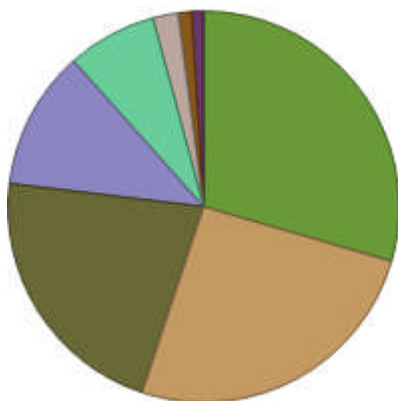
MAJOR MARKET SEGMENTS



Market Segment	Share
Households	52.0%
Corporate Passenger Fleet Managers	28.0%
Road passenger and freight transport.	20.0%

GEOGRAPHIC SPREAD

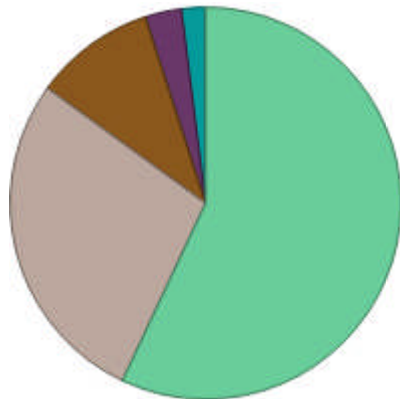
Year: 2009
Establishments



Region	Percentage
NSW	29.5
VIC	25.6
QLD	21.8
WA	11.5
SA	7.4
TAS	2.1
ACT	1.1
NT	1.0

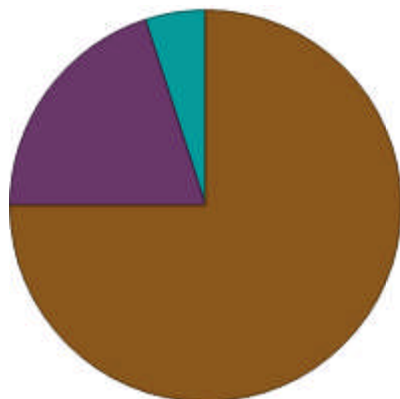
Mechanics do not thrive during periods of economic turbulence, but they are certainly well poised to gain from a slowdown. IBISWorld forecasts that industry revenue will rise by 1.4% annually to \$12.47 billion over the five years to 2009-10. The world economy ailed throughout 2008 and Australia was fairly sheltered from these global woes until later in the year. When the Australian dollar crashed and employers started losing money, job losses became more common. Consumers started feeling the brunt of the crisis and income levels fell. With less money at their disposal and growing uncertainty about the future of their finances, consumers were reluctant to spend money. New car sales started plummeting in July 2008 and are only just starting to recover. In October 2009, new car sales rose by 3.2% on the same month in 2008, marking the first positive result in 16 months. New vehicle sales contracted by 14.7% in 2008-09 compared with the previous financial year.

PRODUCTS AND SERVICE SEGMENTATION



Product/Services	Share
Vehicle body repair	57.0%
Vehicle painting	28.0%
Vehicle towing	10.0%
Vehicle trimming	3.0%
Other operations	2.0%

MAJOR MARKET SEGMENTS

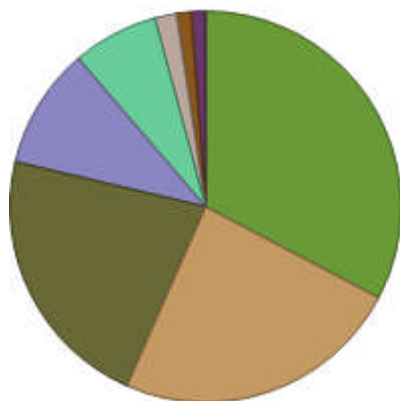


Market Segment	Share
Insurance companies	75.0%
Households	20.0%
Other	5.0%

GEOGRAPHIC SPREAD

Year: 2010

Share of Establishments by State & Territory



Region	Percentage
NSW	32.7
VIC	23.9
QLD	22.1
WA	10.0
SA	7.1
TAS	1.8
ACT	1.2
NT	1.2

RECENT INDUSTRY PERFORMANCE

	Revenue AUD million	Growth %
2005	5,055.1	N/A
2006	5,074.2	0.4
2007	5,150.3	1.5
2008	5,031.8	-2.3
2009	4,962.3	-1.4

Industry revenue depends primarily on motor vehicle accidents, which are outside of the control of companies in this industry, and are random events. There are however, factors that affect motor vehicle accident rates, including: weather, vehicle technology, police presence, vehicle fleet age and driver age. In addition, uncertain economic conditions in 2008-09 lowered consumer confidence. This combined with high petrol prices, meant Australians drove less and lowered accident rates. Over the past five years, a combination of these factors has led to fewer crashes, which in turn has negatively affected industry revenue. However, the number of motor vehicles on the road has risen and will contribute to collision probabilities. IBISWorld believes that industry revenue will decline by 0.1% annually over the five years to 2009-10.

Area Profile:

- Working Age Population (15-64) : 1 535 200
- Employment Rate (15-64) : 75.6%
- Unemployment Rate : 5.1%
- Participation Rate : 68.4%
- Teenage Full-Time UE Rate (15-19) : 15.3%
- Teenage Full-Time UE to Population Ratio : 3.8%

Area Profile Source: ABS Labour Force Survey. The working age population and employment rate are December 2009 data, the unemployment rate and participation rate are seasonally adjusted December 2009 data and the teenage full-time unemployment rate and teenage full-time unemployment to population ratio are 12 month average data to December 2009.

Source IBISWorld G5329 11 Feb 2010 Automotive maintenance and servicing in Australia

- Sustainability

The Automotive Industry within WA managed to ride out the effects of the Global Financial Crisis (GFC) and unemployment was kept to a minimum. This has left the industry in a fairly strong position, but the industry faces a new challenge from the Mining and Resource Sectors as they compete for qualified trades people, and following on from the GFC when very few apprentices were employed, this will undoubtedly cause a skill shortage within the industry when the expected mining and resource surge starts to syphon off skilled workers from the Automotive sector.

The Automotive Industry will constantly evolve over the foreseeable future, changing to meet the needs of environmental demands and Government policy decisions. New technologies will play a major role in the future development of the Automotive Industry with a major emphasis upon green technologies such as electric cars (The University of Western Australia are currently conducting a feasibility test on ten electrically powered vehicles). See below.

Wednesday, 10 March 2010

An Australian-first trial that will monitor the performance, environmental benefits, policy and practical implications for electric vehicle fleets will be launched at The University of Western Australia by State Minister for Transport Simon O'Brien. The University, the private sector and State and local governments will join forces to help demonstrate the potential for widespread use of electric vehicles.

Trial will involve UWA's Renewable Energy Vehicle Project. Around 10 vehicles from government and industry fleets have been converted for the trial. (Source – www.uwa.edu.au)

The Automotive sector will face further challenges with the increasing use of hybrid vehicles and fuel cell technology. The same issues and technologies will also impact upon the Heavy Vehicle, Marine, Motorcycle and Outdoor Power Equipment sectors as manufacturers strive to meet stringent green targets and produce vehicles and systems that comply with legislation and the consumer.

- The Qualification Profile of the Workforce

The Automotive Industry was historically a male dominated industry, but with the advent of new technologies this situation has now changed and the industry has started to attract more female employees. The qualification profile of the workforce consists of mainly trade qualifications and can be summarised as follows:

Automotive Light and Heavy Vehicle:

- Clerical Certificate II through to Certificate III Level
- Workshop Personnel Certificate II through to Certificate IV level
- Middle Management Certificate III through to Certificate IV level
- Upper Management Certificate III through to Diploma Level

Automotive Smash Repair:

- Clerical Certificate II through to Certificate III level
- Workshop Personnel Certificate II Through to Certificate III level
- Management Certificate III through to Certificate IV level

Motorcycles:

- Clerical Certificate II through to Certificate III level
- Workshop Personnel Certificate II through to Certificate III level
- Management Certificate II through to Certificate III level

Outdoor Power Equipment:

- Clerical Certificate II through to Certificate III level
- Workshop Personnel Certificate II through to Certificate III level
- Management Certificate II through to Certificate III level

Vehicle Body Building:

- Clerical Certificate II through to Certificate III level
- Workshop Personnel Certificate II through to Certificate III level
- Management Certificate III through to Certificate IV level

Marine (Recreational Boating):

- Clerical Certificate II through to Certificate III level
- Workshop Personnel Certificate II through to Certificate III level
- Management Certificate II through to Certificate III level

Bicycles:

- Clerical Certificate II through to Certificate III Level
- Workshop Personnel Certificate II through to Certificate III level

The varying Industry sectors have different qualification profiles, the Light and Heavy Vehicle sector vary between sole operator businesses through to larger franchised dealerships, consequently the qualification profile will vary with the size and staffing level of the business concerned, this also applies to the Smash Repair and Vehicle Body building Sectors.

The Marine, Motorcycles and Outdoor Power and Equipment Qualification Profiles are similar to the Light Vehicle sector, but mainly consist of small enterprises with low staffing numbers.

The Bicycle sector on the whole consists of small retail outlets requiring minimal staffing. This sector shows very little demand for institutional training, as most of the training requirements are delivered in-house.

- **Social Impact**

The social impact of the Automotive Industry within WA is fairly positive. The industry provides regular and skilled employment, with employment readily available within easy access thus negating the need to travel long distances for work. This enables a good life balance to be achieved

- **Industry Occupational Overview**

The Automotive Industry occupations (including Motorcycles, Outdoor Power Equipment and Bicycles) consist of mainly trade related Occupations, with the bulk of employment within the Light Vehicle, Heavy Vehicle and Smash Repair sectors.

With the changing nature of the industry due to technological advancement key areas of growth within the Industry are:

- Hybrid and Electric Vehicles
- Alternative Fuels
- High Strength Steels
- Composites
- Electronic Vehicle Controls and Fuel Management
- Analytical and Diagnostic Skills
- Technological Upgrades
- Gas Technology
- Dual fuel Technology
- Heavy vehicle Maintenance

The Automotive Industry will need to adapt to the training and employment needs of these new technologies and systems, to create a workforce ready for these new emerging technologies.

- **Supply and Demand of Training**

The demand for training within WA is currently well catered for, but as the demand for more technological and eco friendly training is becoming more prevalent, then Registered Training Organisations (RTOs) will need to become more active in developing the delivery of training in newer technologies. Areas of particular growth will be with electrical fault diagnosis, water based paint application, composite vehicle panel repairs, high strength steel repair techniques, hybrid vehicle systems and alternative fuel systems.

Higher level training and qualifications will be in demand within the near future as skill requirements rise within the Industry.

Training that is currently being delivered for the automotive sector and areas where training is not currently being delivered, is listed below:

Certificate I Automotive Mechanical L/V (AUR10105):

- Polytechnic West
- West Coast Institute of Training
- Durack Institute
- Challenger Institute
- Morley Senior High School
- Christian Aboriginal Parent Directed School
- Pilbara TAFE
- WestTrac Institute
- Motor Industry Training Association (MITA)

Certificate I Mechanical Vehicle Servicing (AUR10105) Heavy Vehicle:

- Polytechnic West
- West Trac Institute

Certificate I Vehicle Body Vehicle Painting (AUR10105):

- Polytechnic West
- MITA

Certificate I Vehicle Body Panel Beating (AUR10105):

- Polytechnic West
- MITA

Certificate II Automotive Vehicle Servicing (AUR20505):

- Durack Institute
- Polytechnic West
- West Coast Institute of Training
- Challenger Institute
- College of Automotive learning
- Pilbara TAFE
- Motor Trade Association of WA (MTAWA)
- MITA

Certificate II Automotive Mechanical (AUR2075):

- Polytechnic West
- Challenger Institute
- CY O'Connor TAFE
- WestTrac Institute
- College of Automotive Learning
- MTAWA
- MITA
- West Coast Institute of Training

Certificate II Automotive Mechanical Tyre Fitting and Repair Heavy (AUR21499)

- West Trac Institute

Certificate II Automotive Vehicle Body (AUR20905):

- Polytechnic West
- Challenger Institute

Certificate II Automotive Electrical Technology (AUR20408):

- West Coast Institute of Training (from 2010)
- Polytechnic West

Certificate II Motorsport (AUR21005):

- West Coast Institute of Training

Certificate II Automotive Administration (AUR20105):

- College of Automotive Learning
- MTAWA

Certificate II Automotive Sales (AUR21105):

- College of Automotive Learning
- MTAWA

Certificate II Automotive Sales Vehicle (AUR22299)

- MTAWA

Certificate III Automotive Mechanical Technology Light Vehicle (AUR30405):

- Polytechnic West
- MITA
- West Coast Institute of Training
- Challenger Institute
- College of Automotive Learning
- MTAWA
- Westrac Institute

Certificate III Automotive Mechanical Technology Heavy Vehicle (AUR30405)

- Polytechnic West
- CJD Equipment

Certificate III Automotive Mechanical Technology Motor Cycle (AUR30405):

- Polytechnic West

Certificate III Outdoor Power Equipment (AUR30705):

- Polytechnic West

Certificate III Automotive Electrical (AUR30305):

- Polytechnic West

Certificate III Automotive Electrical Technology (AUR30308):

- West Coast Institute of Training (from 2010)

- **Current and Emerging Skill/Labour Gaps**

As we emerge from the Global Financial Crisis (GFC), WA is moving towards a new Mining and Resource surge. *The Weekend Australian, January 16-17 2010*, reported that the “*Chamber of Commerce and Industry is now predicting growth to be a strong 4.5% this financial year. A survey of its members showed that more than half expected their businesses to be harmed by labour shortages within the year*”. This will have a major impact upon the labour force within the Automotive Industry. A large proportion of skilled labour will be attracted by the large pay incentives that the Mining and Resource Industry can offer, which will, in turn, create large skill and labour gaps not only within the city but also within regional communities.

The skill shortages that will follow will not only put a strain on businesses ability to perform and compete, it will also create a wage and salary war within the Automotive sector as businesses compete for a diminishing skill pool (as witnessed in the last Mining and Resource Boom of 2004-2008).

The trades that will be affected mostly will be:

- Heavy Duty Mechanics
- Light Vehicle Mechanics
- Auto Electricians
- Panel Beaters
- Spray Painters.

- **Barriers to Employment and Training**

The Automotive Sector covers a variety of trades and skills such as:

- Automotive Manufacturing
- Automotive Retail Service and Repair
- Recreational Vehicles
- Automotive Vehicle Body Repairs
- Outdoor Power Equipment
- Vehicle Body Building
- Motorcycles
- Marine (Light)
- Bicycles

The main barriers to employment and training within these sectors are:

- The perception of the automotive and associated industries as a dirty and greasy profession.
- The perception that the industry has no career pathway.

- The perception that only low academic achievers work in the Automotive sectors.
- The industry is not seen as attractive enough, particularly by the young.
- Schools do not promote careers within the Automotive Industry.
- The image that some businesses portray to the public.
- Lack of promotion by the Automotive Industry.
- Indigenous participation.
- Lack of training for mature aged skilled workers.

The main and underlying perception of the Automotive Industry is that it is a dirty and greasy profession. This perception is fostered by the general public who view the industry as a “non-profession” and is promoted by parents to their offspring, thus placing a permanent disenchantment with the industry.

This view is far from the truth as the Automotive Industry is now one of the fastest growing sectors using new technologies.

The perception that the industry has “no career pathways” is a complete misnomer as the Automotive Industry has ample career pathways, but is simply not given enough promotion.

The perception that the industry is mainly staffed by academically low achievers is borne from the old image of the Automotive Mechanic working out of a dark and dirty workshop. This image is “out of tune” with the modern, clean and technically advanced workshops of today where the majority of work is conducted by highly skilled technicians using computer and diagnostic technology on a daily basis.

The industry has a major image problem relative to attracting and retaining workers. The historically low pay rates are a major issue but in recent years, due to the skill requirements, wages are, in most cases, comparable with other industries. Apprentice pay rates is still an issue with the first-year rate being so low that the apprentices are eligible for Centre Link payments as the wage is below the poverty line. This is a major disincentive for a young person to consider a career within the industry, and is further compounded by the other industry perceptions to the point that a young person does not see the Automotive Industry as a viable career path.

The school and VET system also plays a part in discouraging students who are academically bright from looking at a career in the automotive or associated industries, with teachers perpetuating the perception that “the Trades” are for the under achieving students. The Automotive Industry requires high levels of literacy and numeracy skills, employers are reporting a very high percentage of school leavers are lacking these basic skills.

School and careers advisors need to understand the industries before advising students of career pathways. This is a fundamental requirement to steer students to the appropriate career choice.

The perceived image of the Automotive Industry being a dirty and greasy profession is further enhanced in people's minds by the lack of presentation of some independent workshops and a lack of a professional approach when dealing with customers. Thankfully, the majority of independent and franchised outlets are now adopting a more professional presentation of their respective businesses, but it will take a massive sea change to alter the long held view of the Automotive Industry.

The Automotive Industry does not effectively portray itself as a viable career option unlike, for example, the Building and Construction Industry who successfully promote their trades as a career path using the media. Promotion of the Automotive Industry is of paramount importance for the industry to effectively compete for the right applicants in an increasingly diverse job market.

Indigenous participation within the automotive and associated industries is low throughout WA. School programs currently in place rarely translate to real employment outcomes; other industries also experience this same effect.

Mature skilled workers are often overlooked and find it difficult to access training to up-skill to learn new technologies and techniques. This, in turn, leads to disenchantment and this valuable skill base ends up leaving the industry.

- **Emerging Occupations**

With the ever-increasing complexity of motor vehicles, trucks and buses, new occupations are emerging such as Diagnostic Technicians (workers with the skills necessary to read and interpret diagnostic computer data). Another area that will experience growth in the future will be workers with the ability to work on hybrid vehicles (this may lead to a dual trade outcome - Mechanical/Electrical)

- **Declining Occupations**

- Carburettor Specialists
- Light Vehicle Engine Reconditioning

APPENDIX 1

APPRENTICES AND TRAINEES FOR SELECTED QUALIFICATIONS IN AUTOMOTIVE AND METALS – 2006 TO 2009
SOURCE: TRS CUBE AS AT DECEMBER 2009

	APPRENTICES AND TRAINEES							
	Commenced				Completed			
	2006	2007	2008	2009	2006	2007	2008	2009
MEM20105 – Certificate II in Engineering	44	120	137	60	0	18	52	45
MEM30105 – Certificate III in Engineering – Production Systems	1	8	3	1	0	0	5	2
MEM30505 – Certificate III in Engineering – Technical	1	1	1	2	0	0	1	2
MEM40105 – Certificate IV in Engineering	0	0	62	66	0	0	0	29
MEM50105 – Diploma in engineering – Advanced Trade	0	0	0	21	0	0	0	0
MEM50205 – Diploma of Engineering – Technical	7	44	51	26	0	0	15	15
MEM60105 – Advanced Diploma of Engineering	0	0	2	3	0	0	0	0
MEA40607 – Certificate IV in Aeroskills (Avionics)	0	0	4	4	0	0	0	0
MEA40707 – Certificate IV in Aeroskills (Mechanical)	0	0	10	20	0	0	0	0

APPENDIX 2

APPRENTICES AND TRAINEES FOR SELECTED QUALIFICATIONS IN AUTOMOTIVE AND METALS – 2006 TO 2009 SOURCE: TRS CUBE AS AT DECEMBER 2009

	APPRENTICES AND TRAINEES							
	Commenced				Completed			
	2006	2007	2008	2009	2006	2007	2008	2009
AUR30305 – Certificate III in Automotive Electrical Technology	63	106	127	61	0	1	0	27
AUR30308 – Certificate III in Automotive Electrical Technology	0	0	0	25	0	0	0	0
AUR30405 – Certificate III in Automotive Mechanical Technology	766	1046	970	759	0	12	49	254
AUR30805 – Certificate III in Automotive Vehicle Body	152	210	210	200	0	0	3	36
AUR30505 – Certificate III in Marine	11	17	23	18	0	0	2	3
AUR20405 – Certificate II in Automotive Electrical Technology	15	15	13	1	0	4	3	8
AUR20408 – Certificate II in Automotive Electrical Technology	0	0	0	3	0	0	0	0
AUR20705 – Certificate II in Automotive Mechanical	57	82	140	67	0	12	23	46
AUR20905 – Certificate II in Automotive Vehicle Body	40	38	22	9	2	15	21	3
AUR20505 – Certificate II in Automotive Vehicle Servicing	120	53	59	22	13	14	18	8
AUR20605 – Certificate II in Marine	0	1	0	0	0	0	0	0
AUR31205 – Certificate III in Automotive Retail, Service and Repair	0	41	58	44	0	0	0	4
MEM30305 – Certificate III in Engineering – Fabrication Trade	308	797	903	516	0	3	46	177
MEM30205 – Certificate III in Engineering – Mechanical Trade	313	853	874	631	0	7	29	156
MEM30405 – Certificate III in Engineering – Electrical/Electronic Trade	90	254	202	138	0	1	15	61
MEM30805 – Certificate III in Locksmithing	5	21	26	21	0	0	0	1
MEM30705 – Certificate III in Marine Craft Construction	7	34	25	14	0	0	4	3