



# Addressing the complexity of current and next generation vehicles 2015

**Todd Finney**

**An International Specialised Skills Fellowship**

Sponsored by Perpetual Foundation – Eddy Dunn Endowment





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# i. EXECUTIVE SUMMARY

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This report has been produced with the intent of creating awareness of the knowledge and capability gap that currently exists in the vehicle collision and maintenance industry across Australia. It is the Fellow's belief that this will become an increasing issue as advancement in global vehicle technology becomes obvious on showroom floors in Australia. This report is not intended to be a critique of the current state of industry, rather it holistically identifies many of the challenges that all stakeholders in the collision and vehicle repair industry must face and address if they are to survive.

In addition this report explores whether the motor Collision Repair Industry is positioned to repair current and next generation vehicles entering the Australian market. Furthermore we need to establish what best practice looks like in vehicle repairs, who is the authority on vehicle repair process and methodology, what information is available, what equipment levels are required to complete vehicle repairs, and at what cost to collision repairers? Everyone involved in the industry must also understand the current and future expectations of what we can assume will be a more informed and safety conscious customer and how the Australian Collision Repair Industry is positioned to manage well informed customers and their expectations on repair standards.

Anyone who is remotely involved in vehicle manufacturing, consumerism, vehicle indemnity, collision repairs will concede change is happening and businesses are adapting to this change however the rate of change being driven by global industry forces is challenging all business involved in the motor vehicle trade. Additionally industries such as financial services, collision repairers and training organisations must continue to innovate in order to stay ahead of the technology curve. This will be a monumental yet critical task.

Globally, in excess of 1.2 million people die on the roads each year with a further additional 20+ million sustaining injury and disability.<sup>1</sup> Whilst this is occurring we are seeing ongoing growth in the global middle class and demands for motor vehicles increasing accordingly. As such Manufacturers are producing more motor vehicle models and derivatives throughout the global manufacturing network. Countries throughout Asia and the Middle East are now challenging traditional manufacturers in the West in terms of both competition and favourable production partners. Additionally Australian vehicle manufacturing is on its last legs and the recent Volkswagen and now Mitsubishi emissions scandal emphasises the global pressure and competitive tension that exists across the global vehicle-manufacturing sector.

Technological advancements are seeing vehicle manufacturers partnering with technology companies where creature comforts and safety systems are developed to meet the demands of the consumer. Additional features in vehicle technology see manufacturers developing vehicles that offer increased power and greater efficiency. Vehicle safety in structural design is also at the fore with the use of advanced steel technology and other materials such as carbon fibre, all designed to be stronger than materials used in the past and creating a lighter car that delivers more power and greater fuel efficiency.

Consumers now more than ever demand more for less. The options of and on vehicles has never been greater, and the demands of securing vehicle sales is also challenged by the enormous amount of information that can be accessed by consumers, and consumers are proving to research in great detail before making purchase decisions all of which is changing the face of vehicle distribution and marketing across the globe.

With the ongoing development of vehicle technologies the Collision Repair Industry, and its associated stakeholders must address these technological challenges and subsequent knowledge gap. Now more than ever it is critical as there is significantly increased sensitivity in vehicle structures and material. Failure to follow appropriate repair methodology doesn't just result in a substandard repair, rather it can undermine the structural integrity of the vehicle and make the car significantly more unsafe than it was pre-accident.

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<sup>1</sup> Statistics Provided by Euro NCAP.

## I. EXECUTIVE SUMMARY

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You will read in the recommendations to industry stakeholders about their own exposures and opportunities, issues include:

### **Government-State and Federal**

- Industry/Employment
- Infrastructure
- Training Services
- Environmental
- Social

### **Industry**

- Collision Repairers
  - » Vehicle Complexity
  - » Information on repair methods and practices
  - » Accident Frequency and working volumes
  - » Vehicle Manufacturers engagement/expansion
  - » Industry consolidation
  - » Industry sustainability
  - » Staffing attraction/retention
- Financial Services /Insurers
  - » Vehicle complexity, cost and exposure
  - » Accident Frequency
  - » Risk Assessment /Evaluation
  - » Consumer knowledge /demand

### **Consumers**

- Market choice options
- Safety and performance
- Information
- Vehicle indemnity
- Driver v's Autonomy

### **Education and Training**

- Current position
- Knowledge gap
- Infrastructure
- Funding

## i. EXECUTIVE SUMMARY

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The readers of this Fellowship Report will also have the opportunity to ponder the global advancement towards vehicle autonomy. This part of the report is somewhat speculative, however there is already considerable evidence beyond this report that clearly demonstrates vehicle manufacturers and technology companies are driven to be the first to deliver a fully autonomous to the market on roadways where governments have supported and facilitated the concept. The only real debate, or argument, in relation to vehicle autonomy is when?

Whether it for the sake of your business, your customers or road users more broadly the Fellow encourages stakeholders to plan, research, challenge the norm and explore and implement best practice. As this Report highlights, the industry is a rapidly evolving beast.

*All views and expressions in this report are that of the Fellow and in no way represent the views of the Fellow's employer. All facts and opinions were compiled whilst the Fellow engaged in a private study trip as part of the International Specialised Skill Institute Fellowship program.*



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## ii. ABBREVIATIONS/ACRONYMS

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<b>ABS</b>	Anti-Lock Braking System
<b>ACC</b>	Adaptive Cruise Control
<b>ANCAP</b>	Australasian New Car Assessment Program
<b>ANZIIF</b>	Australian and New Zealand Institute of Insurance and Finance
<b>CeBR</b>	Centre for Economic and Business Research
<b>EU</b>	European Union
<b>ISS</b>	International Specialised Skills Institute
<b>Co2</b>	Carbon Dioxide
<b>NCAP</b>	New Car Assessment Program
<b>NGO</b>	Non Governmental Organisations
<b>OEM</b>	Original Equipment Manufacturer
<b>OLEV</b>	Office for Low Emission Vehicles
<b>PA</b>	Per Annum
<b>PDS</b>	Product Disclosure Statement
<b>RTO</b>	Registered Training Organisation
<b>SMM</b>	Society of Manufacturers and Traders
<b>UHSS</b>	Ultra High Strength Steel
<b>UK</b>	United Kingdom
<b>V2V</b>	Vehicle to Vehicle
<b>VED</b>	Vehicle Excise Duty



## iii. DEFINITIONS

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### **Aesthetics**

A set of principles concerned with the nature and appreciation of beauty.

### **Audience**

The persons reached by a book, radio or television broadcast, (e.g. the public).

### **Capital**

Money or other assets owned by a person or organisation or available for a purpose (such as starting a company or investing).

### **Car Park**

The customer's motor vehicle base that an insurer indemnifies also can be referred to as the insurer's exposure.

### **Condition(ing)**

Have a significant influence on or determine the manner or outcome of something.

### **Derivatives**

Something which is based on another operation or source.

### **Distribution**

The marketing, transporting, merchandising, and selling of any item.

### **Due diligence**

Reasonable steps taken by a person to avoid committing a tort or offence.

### **Emissions**

The production and discharge of something, specifically gas and radiation.

### **Generation**

The production or creation of something.

The process by which businesses or other organisations develop international influence or start operating on an international scale.

### **Governance**

The action or manner of governing a state, organisation or operation.

### **Indemnify**

Compensation for harm or loss.

### **Indemnity**

### iii. DEFINITIONS

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Security or protection against a loss or other financial burden.

**Industry Practice**

Common and best known practice in the repairing of motor vehicles.

**Market**

An area or arena in which commercial dealings are conducted.

**Objectives**

Something aimed at or sought; a goal.

**Prestige**

Something that arouses widespread respect or admiration.

**Repair Methodology**

Defined or prescribed data and information in appropriate or best known practice in vehicle repairs.

**Risk**

A situation involving exposure to danger

**Stakeholder**

A person with an interest or concern in something, especially a business.

**Sustainability**

Able to be maintained at a certain rate or level.

**Warranty**

A written guarantee issued to the purchaser of an article by its manufacturer, promising to repair or replace it if necessary within a specified period of time:

**Work Provider**

For the purpose of this report individual and companies that allocate work to the Collision Repair Industry.

# 1. ACKNOWLEDGEMENTS

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Todd Finney thanks the following individuals and organisations that have generously given of their time and their expertise to assist, advise and guide him throughout this Fellowship program.

## **Awarding Body – International Specialised Skills Institute (ISS Institute)**

The International Specialised Skills Institute (ISS Institute) is an independent, national organisation. In 2015 it is celebrating twenty-five (25) years working with Australian governments, industry education institutions and individuals to enable them to gain enhanced skills, knowledge and experience in traditional trades, professions and leading edge technologies.

At the heart of the ISS Institute are our individual Fellows. Under the Overseas Applied Research Fellowship Program the Fellows travel overseas. Upon their return, they are required to pass on what they have learnt by:

- Preparing a detailed report for distribution to government departments, industry and educational institutions
- Recommending improvements to accredited educational courses
- Delivering training activities including workshops, conferences and forums.

Over 300 Australians have received Fellowships, across many industry sectors. In addition, recognised experts from overseas conduct training activities and events. To date, 25 leaders in their field have shared their expertise in Australia.

According to Skills Australia's 'Australian Workforce Futures: A National Workforce Development Strategy 2010'.

*Australia requires a highly skilled population to maintain and improve our economic position in the face of increasing global competition, and to have the skills to adapt to the introduction of new technology and rapid change. International and Australian research indicates we need a deeper level of skills than currently exists in the Australian labour market to lift productivity. We need a workforce in which more people have skills and knowledge, but also multiple and higher level skills and qualifications. Deepening skills and knowledge across all occupations is crucial to achieving long-term productivity growth. It also reflects the recent trend for jobs to become more complex and the consequent increased demand for higher-level skills. This trend is projected to continue regardless of whether we experience strong or weak economic growth in the future. Future environmental challenges will also create demand for more sustainability related skills and knowledge across a range of industries and occupations.*

In this context, the ISS Institute works with our Fellows, industry and government to identify specific skills and knowledge in Australia that require enhancing, where accredited courses are not available through Australian higher education institutions or other Registered Training Organisations. The Fellows' overseas experience sees them broadening and deepening their own professional knowledge, which they then share with their peers, industry and government upon their return. This is the focus of the ISS Institute's work.

For further information on our Fellows and our work see <http://www.issinstitute.org.au>.

The Fellow also warmly thanks the CEO (Lou Ellum) and staff (Ken Greenhill, Paul Sumner, Danielle Cull and Fiona Waugh) of ISS Institute for their assistance in the planning and development of the Fellowship and completion of this report.

## 1. ACKNOWLEDGEMENTS

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In 1998 the Perpetual Foundation (the 'Foundation') was established to provide a way for benefactors to contribute to improving the lives of others. The Foundation is structured in a way that enables specific endowments to be established in their own name. While the Foundation supports a range of charities and causes, a key objective is to direct funds towards projects that focus on preventative measures and education. In addition, to projects that address the root cause of problems, rather than providing short-term remedies.

The Eddy Dunn Endowment Fellowships aim to promote the acquisition of higher-level skills and an appreciation of international best practice in the traditional trade fields, with a particular interest in mechanics. These Fellowships are intended to examine innovative approaches that demonstrate potential benefits for the Fellow and for Australian industry and enterprises.

## 2. ABOUT THE FELLOW

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**Name:** Todd Finney  
**Employment:** Suncorp Group  
**Qualifications:** ANZIIF Diploma of Financial Services (General Insurance)  
ANZIIF Cert IV Financial Services (General Insurance)  
**Associations:** ANZIIF (Snr Assoc)

The Fellow has worked in the Insurance Industry for the past 17 years.

In this time Finney has worked in numerous leadership and management roles of which most have been orientated in the Motor Claims business. The Fellow has held positions such as Repairer Development Manager and Supplier Manager (SA, WA, NT, TAS), Manager Joint Venture and Key Supplier Optimisation and currently holds the role of National Manager, Specialist Motor Claims. These roles have provided Finney with great insight into the strategic functions of many stakeholders across the broader repair and supply industry, whilst managing the inter-relationship between the financial services and motor industry.

Finney is passionate about service delivery and quality repairs for the mutual customers that sit between financial services and the motor repair industry. When given the opportunity to apply for this Fellowship it was Finney's immediate intention to investigate the changing face of vehicle technology and the complexity that comes with it. Finney's personal objective in completing this report is to create awareness and ensure the customer at the end of the repair cycle continues to drive a safe and skilfully repaired vehicle.

The Fellow has great appreciation for the unique and robust Collision Repair Industry, and has befriended, admired and worked alongside many business owners who are innovating to overcome many challenges and be in a position to pass on a thriving business to the next generation. While recognising the global forces affecting the local industry, Finney would like to see the Collision Repair Industry and the many family businesses within it remain sustainable through emerging challenging times.

The Fellow is currently employed by Suncorp and is currently studying for a Masters of Business Administration with the University of South Australia.



### 3. AIM OF THE FELLOWSHIP PROGRAM

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The objective of this research project was to determine if the Australian Motor Collision Repair Industry is positioned to meet demands in the execution of safe and sustainable repairs to current and next generation vehicles entering the Australian market. To competently respond to this question an understanding of the current gaps in knowledge and skill level, balanced with market expectations and source/s of truth in best practice, was required. Whilst all these factors are recognised as current industry issues, the Fellow's primary objective in constructing this report was to convey some of the learning from his travel to the UK. A second and equally important objective was to provide the audience with insight into vehicle manufacturer's advancements in the next generation vehicle technology that will be distributed into the Australia market. There are some very clear current objectives that need to be realised, specifically ensuring repairs are undertaken in a manner that does not compromise the structural integrity of the vehicle, and that the vehicle is return to the same pre-accident ANCAP rating as it was when originally purchased. To address issues of safe and sustainable practice we must address these issues with the broad range of global stakeholders across the motor vehicle industry, all of whom have a varying influence and relevance on the Australian Collision Repair Industry.

The industry must not lose sight of the fact that the overall story is very positive for the motor vehicle consumer, as there is much to be gained in vehicle advancements in the global battle for dominance in vehicle sales and distribution. As such we are witnessing fast pace advancements from vehicle manufacturers with current and next generation vehicle technology. Such advancements include (but are not limited to): vehicle autonomy; safety; increased efficiency; mechanical advancements and telematics; and, connectivity. Such advancements provide the average consumer with faster, stronger, cost efficient, safer and intelligent vehicles on a mass-produced scale. Thus it is critical to respond to the question; how do we attend to the repairing of these vehicles when subjected to damage in the form of the ordinary motor vehicle collision?

The Fellow also discusses industry sustainability in terms of the next generation of trades staff, collision industry training and matters of industry sustainability. In particular the projected effect autonomous vehicles with accident avoidance systems will have on working volumes throughout the Collision Repair Industry. The investigation also places significant focus on the issues of stakeholder influence, sustainability, governance and ethics that commence at the vehicles design stage through to manufacturing, reparability, safety and commerciality across all stakeholder groups.



## 4. THE AUSTRALIAN CONTEXT

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Traditionally the Collision Repair Industry has been made up of small to medium family businesses that, in many instances, were into their second or third generation of family ownership. These 'shops' have proven to be sustainable for decades as a result of consistent and predictable supply or work provider arrangements. In reflecting on the state of the Collision Repair Industry from when Finney commenced his industry engagement roles to the current state of the industry Finney finds it astounded to think that so many collision repairers managed to operate in a successful manner whilst making similar margins, balancing similar booking volumes and customer wait times, whilst needing to administer their business handling salaries, expenses and capital investment. After spending time in hundreds of repair shops across the greater geographical part of Australia Finney can attest to the fact that this cottage industry operated remarkably like a chain of franchise operations.

In more contemporary times it is clear that the state of the Collision Repair Industry is significantly different. In fact many would consider that the industry has already seen significant change, including:

- Multi-site operators who continue to make business acquisitions in the collision repair industry, using scale to deliver greater efficiencies and commercially attractive outcomes.
- Lean, specialised small-to-medium and rapid-repair shops
- Fewer accidents and claims, driven by accident avoidance technology such as: ABS, AEB, ACC (More references in report)
- Increased prominence of manufacturer recommended repair facilities outside of prestige vehicles
- Automated and evidenced based quoting/tendering models
- Increasing need to obtain vehicle repair methodology vehicle repair methodology
- Increased professional governance, transparency, compliance requirements and standards driven by public sector and work providers
- Repair facility quality and capability grading
- Empowered consumers and integration of new technology, applications and expectations changing the way consumers interact with businesses
- Lack of skilled labour-resources lost due to alternate industry demand (e.g. Mining Industry)
- Insurers adapting to the above local and global trends by adjusting their preferred repairer panels.

The exponential changes being experienced by the industry will become the new norm into the future. Indeed, it would not be an understatement to suggest that many businesses in the Australian Collision Repair Industry of tomorrow will need to be far more responsive to change and as such dramatically different from its current form.

The one common factor across all stakeholders in the Collision Repair Industry is fierce competition. The consumer has, and always will, drive competition but arguably not as aggressively as we have witnessed in the past decade. This competitive drive begins at the point of motor vehicle purchase and, in Australia today, we have never seen so many vehicles entering the market place from what is a truly global perspective. The surge in foreign vehicle manufacturers entering the Australian market should not be a surprise due to Australia's proximity to Asian manufacturing hubs, and the Australian market's reliance on motor vehicle. Testament of this demand is Australian Bureau of Statistics reporting a 2.4 per cent average annual growth in vehicle registrations from 2010-2015.<sup>1</sup> Furthermore the spike in the Australian dollar has provided global vehicle manufacturers with a significant opportunity to leverage more competitive production and distribution cost thus enabling their organisation to create never before seen competitive advantage. Whilst this is not the sole reason for the demise of the Australian automotive manufacturing industry it undoubtedly is a contributing factor.

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<sup>1</sup> Motor Vehicle Census Australia, <[www.abs.gov.au/ausstats/abs@.nsf/mf/9309.0 9309.3](http://www.abs.gov.au/ausstats/abs@.nsf/mf/9309.0%209309.3)> accessed 31 January 2015

## 4. THE AUSTRALIAN CONTEXT

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As the automotive industry has significantly evolved into a global market place and Australians have maintained their reliance on the motor vehicle, financial services companies operating in Australia continue to aggressively compete for the opportunity to indemnify the increasing volume of global vehicles and the various derivatives on offer. In the quest for growth and market share, insurers look to develop compelling insurance products supported by an underwriting model and pricing structure which accurately calculates risk and costs – ultimately delivering a competitive premium, outstanding customer service (driving retention), and a return for shareholders.

As technology develops at a rapid rate, there is a demand for greater transparency and governance relating to safe vehicles repairs and the sourcing of data prescribing the appropriate method of repair. Accessing repair methodology continues to be a challenge:

- Quick access to information from an authorised source, normally considered to be the manufacturer, can prove to be an impost on key-to-key time (if accessible at all)
- Other repair methods may be costly
- When manufacturer's specifications are unavailable it is up to the repairer to determine best industry standard.

However, having the right repair methods is simply not enough. In order to perform a high quality repair, repairers must also have the appropriate equipment serviced, maintained and calibrated, as well as staff trained and qualified to use the equipment safely.

In recent years the Fellow has seen global industry and technology changes drive the need for businesses to adapt. One specific area of high risk to all stakeholders is the diminishing numbers of qualified trade staff across both panel and paint functions, with the industry finding the acquisition of apprentices, and training and retention of staff difficult amidst a wider backdrop of economic change.

The Collision Repair Industry in Australia is at a point where reflection on the past and desires to maintain or to return to such times will be a redundant thought. Business conditions are challenging due to numerous macro and micro forces. Industry must weather this change and forge forward to position itself for the future of business. The Industry should look to embrace change, just as other global industries have in recent years, and acknowledge that consumers often seek change as a positive move forward.

# 5. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

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There are examples of areas in Australian industries where there are weaknesses in innovation, skills, knowledge, experience, policies and/or formal organisational structures to support the ongoing successful development and recognition of individuals and the particular sector.

The focus of all ISS Institute Fellowships is on applied research and investigation overseas by Australians. The main objective is to enable enhancement and improvement in skills and practice not currently available or implemented in Australia and the subsequent dissemination and sharing of those skills and recommendations throughout the relevant Australian industry, education, government bodies and the community.

The key questions sought to be responded to via this Fellowship were:

- a) How should cars be repaired in Australia?
- b) How are skill and knowledge gaps and opportunities identified?

## **Approach:**

To help answer these questions the Fellow looked broadly and obtained a globalised perspective fundamentally built on the European Union (EU) market place. This assisted the Fellow to acquire a perspective of a market that has many variances in its demographical, environmental and commercial composition; particularly in light of the demising vehicle manufacturing industry in Australia.

## **Background:**

In the seventeen years the Fellow has been involved in the Australian Collision Repair Industry there has been a distinct movement from the Holden Commodore (the 'Red' team) and Ford Falcon (the 'Blue' team) dominating new car sales with consumers' biggest decision being the choice of sedan or wagon, and whether to choose a six or eight cylinder vehicle (although inflated global oil prices certainly assisted the consumer make that decision). The next most significant consumer decision was related to colour preference (red or...?). Over that time a significant advancement was the movement from cassette to compact discs in car stereos, and the introduction of airbags.

## **Current State:**

In 2015 the Australian car market has been inundated with a variety of vehicle options from all corners of the globe. These cars are fitted with extraordinary technical advancements. Fuel efficiency is now a significant consideration, however the consumer generally doesn't want to sacrifice power (in fact they often want more power) and, as such, vehicles are now lighter yet stronger as they are constructed with numerous varieties of steel and other materials (such as carbon fibre for high end models). Vehicles are now safer than ever before and manufacturers strive to achieve the highest Australasian New Car Assessment Program (ANCAP) rating, which has evolved due to the awareness of safety from today's far more astute consumer. This Fellow is not suggesting people are all of a sudden more intelligent, however the information that is now widely accessible via the internet provides the consumer with a significant amount of information, and often more than is required, regarding vehicle capabilities. More often than not this is overlaid with some very clear and well-executed marketing campaigns. One thing that hasn't changed is the Australian need and passion for their motor vehicles. However, and perhaps surprisingly, Australians have moved from the 'red team' or 'blue team' (in part as result of the reduction and closure of local vehicle manufacturing) and now embrace many new vehicle entrants in the market place. Global media has also contributed, with high rating programs such as the long running UK Top Gear television program extending consumer awareness of global motor vehicle offerings.

## 5. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

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Times have changed and done so at a swift pace, and through this Fellowship Finney provides a globalised perspective on current requirements placed on the Australian Collision Repair Industry, as well as the broader implications on stakeholders who rely on a high performing vehicle repair industry. Through this report Finney also articulates and emphasises the progression of global change and provides industry stakeholders with insight into to next generation of global vehicles to be shortly released, whilst exploring the challenges, demands and implications that future generations of global vehicles will have on the Australian motor trade.

### Specific Skill Enhancements:

This Fellowship allowed for the exploration of seven specific skill enhancement areas: understanding the market; collision repair techniques; repair facility equipment levels; repair methodology; training; industry sustainability; and, stakeholder engagement.

#### a) Understanding the market:

Finney has identified a fundamental knowledge gap that sees the Australian Collision Repair Industry interpret their customer base on either what a work provider is offering at that immediate moment, or what a consumer negotiates in to obtain a repair quote. Through his professional experience, Finney has observed that only a mere few collision repairers are looking at their own micro demographical structures and overlaying that with the 'Australian Car Park' and its associated future projections. Although there are many sources and much speculation of future state (as Finney identifies in a latter part of this report) there is an abundance of useful data from a variety of sources. However collision repairers need to improve their own analytical skills and interpret their own data to understand what their market is doing and where their area of focus needs to be in order to manage a truly optimised operation that is structured for current and next generational vehicles.

Collision repair facility owners would significantly benefit from investing in the defining of short to medium term market objectives, in terms of work provider and market opportunity.

#### b) Collision repair techniques:

The Fellow has identified that collision repair companies have an opportunity to optimise their business based on improving their own interpretation of their businesses supply base. The time invested in acquiring this information will provide the collision repairer with insight into layers of information relating to the primary supply, or customer base, which would consequently lead to enhanced operational execution and business performance and the ability to project and forecast results in a more accurate and rewarding manner. Finney suggests collision repairers should no longer operate on a 'job by job' basis, particularly in light of the need for correct repair methods and procedures. As such the collision repair companies must develop a complete and concise understanding of the repair methods and techniques for the common vehicles they attend to in their own market place. This will drive both enhanced levels of repair quality and optimised operational practice, in addition to enhanced commercial outcomes.

The pursuit of acquiring, implementing and maintaining repair techniques is an industry gap. Very few Registered Training Organisations (RTOs) have enough access to contemporary information of particular benefit to collision repairers and when appropriate training is provided collision repairers rarely search for and/or are aware of these offerings. As such there is a distinct training gap in terms of the understanding and application of opportunities to advance or enhance repair techniques.

There are very few vehicle collision repairs that can be attended to without investing time in researching the safest and least intrusive repair techniques; making this is a critical component of best repair practice.

## 5. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

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### **c) Repair facility equipment levels:**

The previous points identify the need to have a contemporary understanding of the collision repairers market and technical execution of the common vehicle types the collision repairer is attending to. Finney notes that adding these two components together will provide the business owner with a fundamental understanding of how their repair facility should best be structured in terms of having the appropriate equipment levels; be that on-site or easily accessible off-site. Finney also highlights that investment in collision repair equipment is costly and can prove difficult in terms of delivering a satisfactory return on capital; however a sustainable business model should provide the business owner with clarity on the need to invest in particular types and levels of equipment. Finney notes that it is important for the collision repairer to understand their work provider's offerings and volumes, allowing for this to be overlaid with the business' existing market and its associated forces.

The collision repairer needs to have their repair facility configured to meet current demands, however the business must be cognisant of their market in order to remain relevant and significant.

### **d) Repair methodology:**

Finney recommends that collision repair businesses create well-defined and articulated Work Plans. Such Work Plans are superior to the days of the cottage industry approach where a simple estimate model was applied offering little more than a speculative guess at the repair process and cost, whilst trying to offer the often time poor customer an approximated timeline as to how long he or she will be inconvenienced without the car whilst it is repaired. Finney suggests there is a best practice alternative, one that eliminates the descriptor of an estimate and moves towards the creation of a job plan. The job plan is all encompassing addressing all aspects of cost, quality, compliance and efficiency. Essentially the creation of a Work Plan proves to be the first and most critical aspect of an overarching skills gap in the industry.

The Fellow has identified that rarely (if ever) can a collision repairer now solely rely on industry practice as a means in creating a Work Plan. Perhaps the only exception is on vehicles over 10 years old, however with advancements in technology this segment of the 'Australian Car Park' is greatly diminishing. Industry practice is rarely anything more than best assumption and when you overlay this with the broad Australian Car Park where there is such a large range of vehicles, making it very difficult for collision repairers to have a detailed enough understanding to be able to apply reasonable industry practice.

The Fellow suggests that collision repairers must complete the appropriate due diligence in sourcing appropriate repair methodology in the construction of a Work Plan. Furthermore the Fellow notes that many work providers have the requirement that vehicle repairs as authorised by the work provider will be completed in line with the Original Equipment Manufacturer (OEM) or by an authorised agency that provides vehicle repair methodology written into their Product Disclosure Statement (PDS). In addition to the standards and obligations that are written into each PDS, which also covers warranties for repairs that do not meet an acceptable standard. The insurance industry is also subject to the General Insurance Code of Practice.<sup>1</sup> The researching and application of the appropriate repair methodology along with a vehicle Repair Plan will ensure collision repairers are not exposed to breaching any of the mentioned documents.

The collision repairer is ultimately accountable for safe and quality vehicle repairs irrespective of the work provider/customer. All repairers must have the appropriate governance relating to Safety and Quality.

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<sup>1</sup> General Insurance Code of Practice 2014, <[www.codeofpractice.com.au](http://www.codeofpractice.com.au)>

## 5. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

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### e) Training:

The Fellow has identified repair techniques, equipment levels and repair methodology as required skill enhancement areas. However the most critical component in the delivery of best practice is the consolidated rolling out of all components which are also aligned to a well-planned, structured and executed training model. Finney has observed a distinct lack of training participation from Australian Collision Repair Industry members; something which is accentuated by limited relevant training programs offered to the Collision Repair Industry. Finney has observed that many training programs are primarily theoretical and have limitations around timeliness, regularity and geographical accessibility. In addition, Finney has identified a gap in relation to industry training whereby practical training, specifically in relation to the execution of repair techniques aligned to repair methodology, is limited to non-existent.

The Fellow has also observed a gap in the contemporary knowledge base of Registered Training Organisations (RTO) across Australia. Many of the RTOs have limited access to the current repair methods and techniques required to repair current and future generation vehicles. For an RTO to be capable of appropriately designing and facilitating training modules and courses they must be structured in a way that they are highly proficient in repair techniques, equipment levels and methodologies. All of this comes at a significantly high capital outlay.

Training providers and programs must ensure they address the vehicle technology gap in the repairing of current and next generational vehicle technology.

### f) Industry sustainability:

The Fellow's report is designed to highlight to all industry stakeholders the risks and exposures to the broader Collision Repair Industry. Issues relating to vehicle technology in both current and future generations have been raised, specifically in terms of information, training infrastructure and knowledge gaps that align to best practice in practical execution. All of these components challenge the sustainability of many collision repairers in the Australian market.

Finney highlights what is probably the most consistent and difficult issues to overcome in terms of industry sustainability, that being development of apprentices. The generalised summary of the status of new trade staff entering the Collision Repair Industry can be described as:

- Difficult to attract
- Difficult to retain
- Come as a large direct and indirect investment
- Always subject to attrition
- Encounter similar training challenges as post trade qualified.

To summarise, the key sustainability issue facing the Collision Repair Industry is that the industry entry-to-exit ratio is heavily weighted towards trade staff exiting the industry. Mining and other prominent and higher salary offering trades have had an impact in recent years, however the fundamental issue remains and that is the attraction of apprentices into an industry with an increasingly aging workforce.

When considering the next generation of vehicle technology, finally, to quote Andrew Hooper, from Thatcham Research UK, when referencing the next generation of vehicle technology says that "the apprentice of tomorrow will be more like an aerospace engineer".<sup>2</sup>

The current skill shortage and attrition of trade staff sees the Collision Repair Industry at the crossroads of industry sustainability. The industry must come together to lobby and drive change.

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2 Thatcham Research UK, Industry Information Video, Narrated by Andrew Hooker; Advanced Repair Studies Manager.

## 5. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

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**Stakeholder Engagement:** The final area identified by the Fellow for skill enhancement pertains to the management of stakeholders. In many ways this is an expansion of point 1 (Understanding the market). Collision repairers have multiple stakeholders at various ends of the service and operational cycle. All stakeholders should be evaluated based on their own individual worth to the collision repair business. A program of work that offers a value based structured approach to the management of business stakeholders should be constructed. This will assist in enabling the business to realise its potential for improved results in terms of a sustainable, high performing, reputable and most critically, a profitable business.

Finney has witnessed many business owners performing both operational and management roles; something that has undoubtedly assisted in production performance. However such demands often leave a gap in the ability of the business owners to manage and work with many valued stakeholders. A saying that Finney has heard from many operators and has resonated with him is “collision repair shop owners spend more time working in their businesses and not on their businesses”.

The Fellow believes the management of stakeholders and respective influences on a collision repair business is the most critical component in ensuring that all seven skill enhancement areas can be suitably addressed. Finney also asserts that addressing these will provide enhanced opportunities for owners to optimise their business and drive best practice in current and future generations of vehicle technology.

The identification, evaluation and engagement of key stakeholders are critical to the collision repairer.



## 6. THE INTERNATIONAL EXPERIENCE

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The research the Fellow undertook in the UK further validated his fundamental understanding of the significant variances, advancements and rationales for the construction and distribution of vehicles from the UK and Europe. To say the vehicle manufacturing industry throughout Europe is competitive would be quite an understatement.

Indeed, this was even evident at the very beginning of Finney's research where, upon arrival at his hotel in the UK, his attention was drawn to Land Rover, Range Rover, Audi A3/A4, Volkswagen, Volvo, Citroen, Renault, Skoda, BMW, Mercedes Benz and even Aston Martin cars parked in the hotel car park. This alone highlights two points, firstly the diverse range of late model cars being distributed in the UK and secondly that the cars were almost all exclusively late models with each possessing significant levels of complexity in their structural composition. All of the vehicle makes visible in the car park are now prominent in the Australian market. Finney's visit to the UK enabled him to research and investigate how the diverse and advanced UK market is likely to precede the Australian Collision Repair Industry and ultimately the consumer.

Whilst in the UK, Finney had the opportunity to spend time with various industry organisations and stakeholders. The stakeholders Finney met with provided great insight into the globalised approach of current and next generation vehicle technology, and these meetings facilitated him with increased understanding of this quite complex and detailed topic.

As part of his exploration of this topic in the UK the Fellow was able to spend time with, and gain insight from, representatives from the following organisations:

- Thatcham Research - Colthrop Way, Thatcham, Berkshire, UK
- MINI BMW - Eastern Bypass Road, Cowley, Oxford, UK
- McLaren Technology Centre - Working, Surrey UK
- Royal Academy of Engineering - Prince Philip House, London, UK. Innovation Autonomous Systems Seminar

In this section of the report Finney introduces several examples and case studies of certain technological advancements that have already, or may present future, challenges to the Australian Collision Repair Industry. Finney's findings are based on his international travel experience and review of the UK vehicle manufacturing, testing and Collision Repair Industry.

The Fellow provides stakeholders with various examples of challenges that the increasing complexity in the current and future global vehicle distribution industry are posing. It is important to acknowledge that the advancements in vehicle technology involving safety, connectivity, aesthetics and performance are occurring at a pace that is impossible to incorporate in a report such as this. However, the Fellow intendeds that this report be one that offers the audience an opportunity to advance their knowledge and interest and enable them to focus their own research in accordance with their own industry needs and objectives.

As part of his international experience research, the Fellow presents an overview of 'Fundamental Practice'. Six 'Case Studies and Specific Examples' involving the 2015 Volkswagen Golf, 2015 Volvo XC 90, Hyundai i20 Comparison 2012 – 2015, BMW 7 Series Body Shell, Mercedes Benz S3 AMG Coupe and BMW I3 are also presented. 'Rationalising the Manufacturer's Need for Structural and Technical Change (UK)' is also examined, a section which also incorporates an overview of Vehicle Excise Duty (VED) and Block Exemption Regulation in the EU. 'Autonomous Vehicles. When, What and How?' is examined in depth with specific exploration into vehicle technology (Autonomous Emergency Braking (AEB); Adaptive Cruise Control (ACC); Vehicle Connectivity; Lane Departure Warning Systems; Fatigue Warning Systems; Blind Spot Detection; and, Reversing Collision Warning and Visibility Systems) as well as considerations that road safety; social; environmental, ethical; and, liability/litigation/warranties present.

## 6. THE INTERNATIONAL EXPERIENCE

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### Fundamental Practice

Whilst the thought of next generation vehicles comes at a significant degree and pace of change Finney's research suggests that Australian collision repairs must accommodate some fundamental practice changes in order to position themselves for this change. Despite rapid advances in automotive technology and complexity, Australian collision repairers must continue to invest time and effort in fully researching vehicle that they have been charged with the responsibility of repairing.

To do this successfully it is recommended that Australian collision repairers:

- Apply their learning from the research completed
- Construct a scope of work
- Create an evidence-based Repair Plan.

Finney suggests that then, and only then, is a vehicle ready to have a cost estimate applied to the repair of the damaged vehicle; and all of this must occur before a tool strikes the vehicle.

The Repair Plan will often need to be validated and authorised by the work provider and there may be some subjectivity about the superficial nature of the repair, however all parties need to align with the structural Work Plan ensuring all due diligence has been applied, and that there will be no compromise to the structural integrity, or the vehicle's existing safety rating. It is quite apparent that there is still quite an amount of work to do across industry to ensure best practice is common practice. There are often many reasons, excuses or simply just old world conditioning that withholds the collision repairer's ability to deliver best, or even safe, business practice that ensures a vehicle is returned to the customer with the same vehicle safety rating it held prior to the collision.

### Case Studies and Specific Examples

During his Fellowship, Finney had the opportunity to spend time with key industry stakeholders in the UK who shared their significant insight into and appreciation of current and next generation vehicle technology. Through this experience Finney was able to garner much knowledge and in this report introduces some fundamental examples of vehicle technology. These case studies and examples are not intended to be all encompassing, rather they are designed to be stimulating and provide the reader with some examples and material to consider and further explore.

### Case Study 1 – 2015 Volkswagen Golf:

The following video (courtesy of Thatcham Research UK) on the 2015 Volkswagen Golf highlights the difference between a good repair, whereby the appropriate research and job plan was constructed, and lesser quality repair that can be described as 'common practice'. Both examples may be considered as ascetically satisfactory, however when tested for damage and the subsequent safety of the passengers, the outcome is dramatically different.



*Video filmed at Thatcham Research (Thatcham UK) April 2015*

The above example of a 2015 Volkswagen Golf 'good repair' verses 'bad repair' video is one of a number of such videos across different car makes produced by Thatcham Research. The benefit of viewing this video, in particular, is the fact that sales of the Volkswagen Golf have increased to now be the top selling European branded vehicles in Australia. The Fellow does acknowledge Volkswagen's recent fuel emission scandal, which is currently under investigation and will undoubtedly result in ongoing ramifications to the organisation and something that, at this time, has unquantifiable implications.

This video provides one repair method executed incorrectly, however there are numerous exposures in the execution of incorrect repair methods on this particular vehicle and the increasing variety of vehicles and their subsequent derivatives entering the Australian market. As already established the proud days of the Australian vehicle manufacturing industry are drawing to an abrupt close. As such the Fellow aims to provide Australian Collision Repair Industry stakeholders with some insight as to what the UK and European Collision Repair Industry have experienced, and continue to experience.



*Image courtesy of Thatcham Research (Thatcham UK) April 2015*

## 6. THE INTERNATIONAL EXPERIENCE

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### Case Study 2 - 2015 Volvo XC 90:



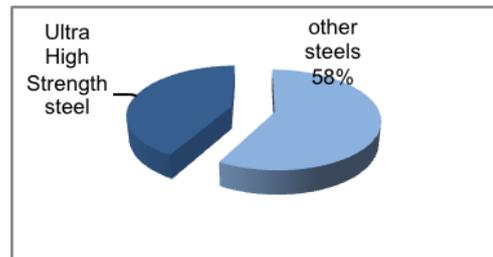
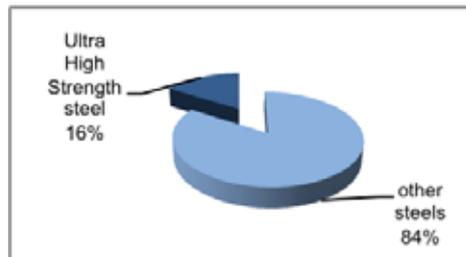
*Highly complex vehicle composition made up from six steel variants, in turn demanding highly specific and detailed repair methodology. (Image Courtesy of Thatcham Research UK)*

Appropriate research on repair methodology on the 2015 Volvo XC 90 is mandatory. Post an incident the vehicle needs to be diagnosed in order to determine if any, and what, damage has been sustained in its structural body.

Damages to one or more of the six steel variants will each require different considerations as to what method of repair must be applied. Varying degrees of heat and manipulation can be applied to the vehicle based on the steel composition.

Failure to apply the appropriate method will result in a repair that fails to uphold the manufacturer's safety rating and compromises the safety of passengers.

### Case Study 3: Hyundai i20 Comparison 2012 – 2015:



*Images courtesy of Thatcham Research UK*

In the examples of the Hyundai vehicles above there are two clear points that come from advancements in vehicle composition and structure.

The first being the increase in Ultra High Strength Steel (UHSS), and secondly the amount of steel variants in the composition of a vehicle body shell.

The advancements experienced in the structural make up and composition of all ranges, forms and derivatives of current vehicles manufacturers are now exploring and testing other materials that can be used in the construction of vehicle body shells. One material that is being viewed favourably by vehicle manufacturers and seen as an alternative to steel, based on reductions in the once cost prohibitive production costs, is carbon fibre.

This material has been used now for decades in the construction of vehicles, however it is now coming into production as a structural body component. An example of this was BMW 7 series model, released in late 2015.

## 6. THE INTERNATIONAL EXPERIENCE

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### Case Study 4 - BMW 7 Series Body Shell:



<http://autoweek.com/article/car-news/carbon-core-2016-bmw-7-series-gets-carbon-fiber-implants>

<http://autoweek.com/article/car-news/carbon-core-2016-bmw-7-series-gets-carbon-fiber-implants>



The new BMW Seven Series released in Europe in late 2015 has a totally new cabin body structure. As Finney highlighted with the Volvo XC90, the BMW Seven series has a cabin frame that is made of carbon fibre. Carbon Fibre has historically been used in the most elite of racing and high-end performance vehicles. BMW are about to bring carbon fibre into their new top of the range of passenger vehicles and based on historical technical evolutions this can only be expected to cascade into BMW's future five, three and one series. Throughout Europe BMW are considered to be closer to the ordinary family passenger vehicle than a prestige vehicle, whereas in Australia they are defined by most as prestige. Whether we categorise BMW as prestige or more mainstream, one thing is for certain, the ability to repair carbon fibre is a challenge, no matter what type of repairer you are in any corner of the globe.

Many view vehicles, like the Volvo XC90, pose a significant repair challenge with its six steel variants, however arguably the BMW carbon fibre body shell takes collision repair requirements to even a higher level of complexity.

### Case Study 5 - Mercedes Benz S63 AMG Coupe:



*Images courtesy of Google Images*

The world's oldest vehicle manufacturer, Mercedes Benz, has now released its new S63 AMG coupe. This vehicle boasts its customary key attributes in the 5.5 litre V8, 430kw twin turbo that offers fuel economy of 10.2 litre/100kms and 0-100km/h in a very quick 4.2 seconds. However, the assumed vehicle performance metrics aside, the 2015 model offers what has been described as 'Jetsons' like technological advancement with an automated ability to lean into corners based on the interrelationship of cameras, sensors and its computer controlled hydraulic plungers that comprise its Magic Body Control Suspension System. Although this is a vehicle that only a few percent of the population will ever own, it differentiates itself from many other current and next generation of vehicles as the computer and sensory systems are also developed to deliver an automated responsive vehicle handling outcome by scanning ahead and adjusting to changes in road surface and degree of the road curvature. As such this vehicle will automate its cornering 'lean angle' by providing an enhanced vehicle handling experience.

All said, the Mercedes AMG Coupe also incorporates all the now expected safety enhancements with its suite of sensors, radar systems, cameras. This vehicle also includes computers that monitor anything from other vehicles, pedestrians and animals straying onto the road, and if such an event is to occur the driver will experience interior and exterior warnings alerting the driver and the automated emergency braking and steering will then address the issue. The vehicle offers automated steering corrections by observing the road markings and holding its position within its laneway, and the adaptive cruise control function ensures that the driver is never too close to the vehicle in front by measuring the distance and calculating the speed recognising any imminent collision. Locking brakes and automatically tightening seatbelts are designed to reduce risk of whiplash injury.

Whilst the technology described references the latest Mercedes S63 AMG Coupe, one that can be described as a high end Mercedes Benz production vehicle, it can be anticipated that technology of this nature will permeate broadly across all models in the coming years. Indeed, this has been a regular trend across multiple manufacturers throughout recent history.

## 6. THE INTERNATIONAL EXPERIENCE

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### Case Study 6 - BMW I3:



*Images Courtesy of Thatcham Research UK*

Whilst at the Thatcham Research facility in the UK, the Fellow was introduced to the BMW I3 by the assigned vehicle engineers attending to the group rating of this vehicle. This fully electric vehicle was introduced back in 2011 as a concept car and has now become a highly desired luxury option for the environmentally conscious consumer, or at least one that looks to mitigate their VED exposure in the UK. BMW commenced their global launch of the I3 in 2014 with, as you would expect, a well calculated and planned sales model. As such, the I3 is landing on shores across the world, including Australia a country often considered to be known for its slow uptake on electric vehicles.

Finney was particularly interested in this vehicle's fully carbon fibre body shell and lack of 'B' pillar (or centre pillar) which is very much a structural component on all vehicles. The Fellow was told this had been sacrificed for greater vehicle accessibility without increasing the safety risks, given that carbon fibre is an exceptionally strong substitute even when compared to high and ultra-high strength steel. Based on the fully carbon fibre body the BMW I3 weighs in at a low 1195kg and is powered by a 125kw electric engine delivering an admirable 0-100kph in 7.2seconds.<sup>1</sup>

The BMW I3 retails from \$60,000 AUD.

The Fellow was fortunate to observe an example of a BMW I3 that had sustained front damage as a result of hitting into another vehicle in that car's rear. As this car was privately owned, there are limitations on publishing full images of the damage to this vehicle (the images above depict a comparable model). The damage was described as mid-range and not drivable. The vehicle had sustained bar, reinforcement, bonnet lights and some front quarter panel damage. In addition it also sustained minor mechanical damage, predominately to its cooling system. The issue with this car and why it was delivered to Thatcham was to determine a method of repair. The insurer had attempted to send the car to several appropriately accredited collision repairers, however none were able or confident in being able to satisfactorily repair this complex vehicle.

In this instance, the insurer decided to pay the customer the vehicle value and deem it to be a total loss. If this vehicle had been a standard BMW 3 or 5 series the comparable repair cost would have been in the range of \$12,000 - \$15,000 AUD. The insurer settled with the customer somewhere in the currency-converted range of \$50,000 AUD.

The BMW I3 accident and repair situation clearly highlighted to the Fellow the challenges that the next generation of vehicles will present to a broad cross section of stakeholder in Australia. It is possibly the perfect technical insurance and vehicle repairer storm. High risk in terms of costs to indemnify vehicles of this type for the consumer, high claims cost for all scope of repairs for indemnifiers and challenges

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<sup>1</sup> BMW, <[www.bmw.co.uk/en\\_GB/new-vehicles/bmw-i/i3/2013/technicaldata.html](http://www.bmw.co.uk/en_GB/new-vehicles/bmw-i/i3/2013/technicaldata.html): 3 November 2015>

## 6. THE INTERNATIONAL EXPERIENCE

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in safe and high quality repairs for the Collision Repair Industry .

On the other hand if the repair industry had a greater capability to fix cars of this nature the opportunities would significantly improve for all stakeholders. Finney is not suggesting the cars of this complexity will be in any way cheap to repair. However, knowing that there is a consistent capability to undertake repairs on such vehicles changes the collective mindset and approach to welcoming these vehicles to our shores. This change in mindset and approach would enable stakeholders in Australia to confidently address their highly technical demands adequately, maintain the structural integrity and safety of the vehicle, and offer consumer confidence across all aspects and stakeholders in the vehicle lifecycle.

Whilst Finney was at Thatcham Research he was presented with a media release boldly articulating that the current model Volkswagen Golf fitted with Auto Emergency Braking (AEB) has a 45 per cent less exposure to whiplash claims when compared to vehicles in the same class not fitted with (AEB).<sup>2</sup> It is worth noting that in 2012 the UK whiplash claims exceeded 500,000 at an insurance cost of \$3.35b PA.<sup>3</sup>

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2 Thatcham Research, <<http://news.thatcham.org/pressreleases/golf-drives-down-personal-injury-1274406>>,

3 Thatcham Research, <<http://news.thatcham.org/pressreleases/golf-drives-down-personal-injury-1274406>>,



# 7. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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## Rationalising Manufacturer's Need for Structural and Technical Change (UK)

Vehicle manufacturers have limited, but significant, considerations in determining what materials will comprise both the structural and non-structural composition of their vehicles. The considerations are based on:

- Structural integrity, in other words vehicles performance whereby the structure complements and delivers the performance in line with all other design and engineering requirements
- Safety requirements of the vehicle's occupants and other road users, in particular the demands of meeting vehicles safety ratings adjudicators such as ANCAP.
- Efficiency, which is achieved by ensuring vehicles are at an optimum weight whereby fuel consumption is kept to a minimum without compromising vehicle performance.

Customers have unequivocally demonstrated a preference for vehicles that offer a reduction in the overall cost of running and maintaining their vehicle. In fact customer demands have increased across all facets of the current generation of vehicles - ranging from cost and efficiency, state of the art creature comforts, power and safety. Vehicle manufacturers understand their current and targeted market and are thus in a constant and fierce battle for market supremacy that can only be achieved by meeting the demands of the customer and exceeding their competitors' market place offering.

In the UK, other factors such as Vehicle Excise Duty and EU Block Exemption Regulation also play a role.

### Vehicle Excise Duty (VED):

In the UK VED has proved to be a highly effective policy serving a dual purpose of raising revenue in excess of \$12b FY14;<sup>1</sup> however the other marked effect this policy has had on the motor industry is the rapidly increasing demand for greener vehicles, or vehicles that emit low Co2. The UK is currently outperforming their European peers, surpassing the EU 2015 emission targets two years ahead of demand.<sup>2</sup>

In a report commissioned by The Society of Motor Manufacturers and Traders (SMMT) from the Centre for Economics and Business Research (CeBR) there were some very pointed findings based on customer demands for newer, more efficient and alternatively fuelled vehicles, in particular due to the continued expansion of the VED tax base for new and used vehicles. The EU drive to reduce emissions has (as demonstrated in the image below) and will continue to change the face of the EU and subsequent global car park.

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<sup>1</sup> Society of Motor Manufacturers and Traders, <[www.smmt.co.uk/wp-content/uploads/sites/2/101924\\_SMMT-CO2-Report-FINAL-270415.pdf](http://www.smmt.co.uk/wp-content/uploads/sites/2/101924_SMMT-CO2-Report-FINAL-270415.pdf)>: 9 July 2015

<sup>2</sup> Society of Motor Manufacturers and Traders, <[www.smmt.co.uk/wp-content/uploads/sites/2/101924\\_SMMT-CO2-Report-FINAL-270415.pdf](http://www.smmt.co.uk/wp-content/uploads/sites/2/101924_SMMT-CO2-Report-FINAL-270415.pdf)>: 3 November 2015

## 7. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

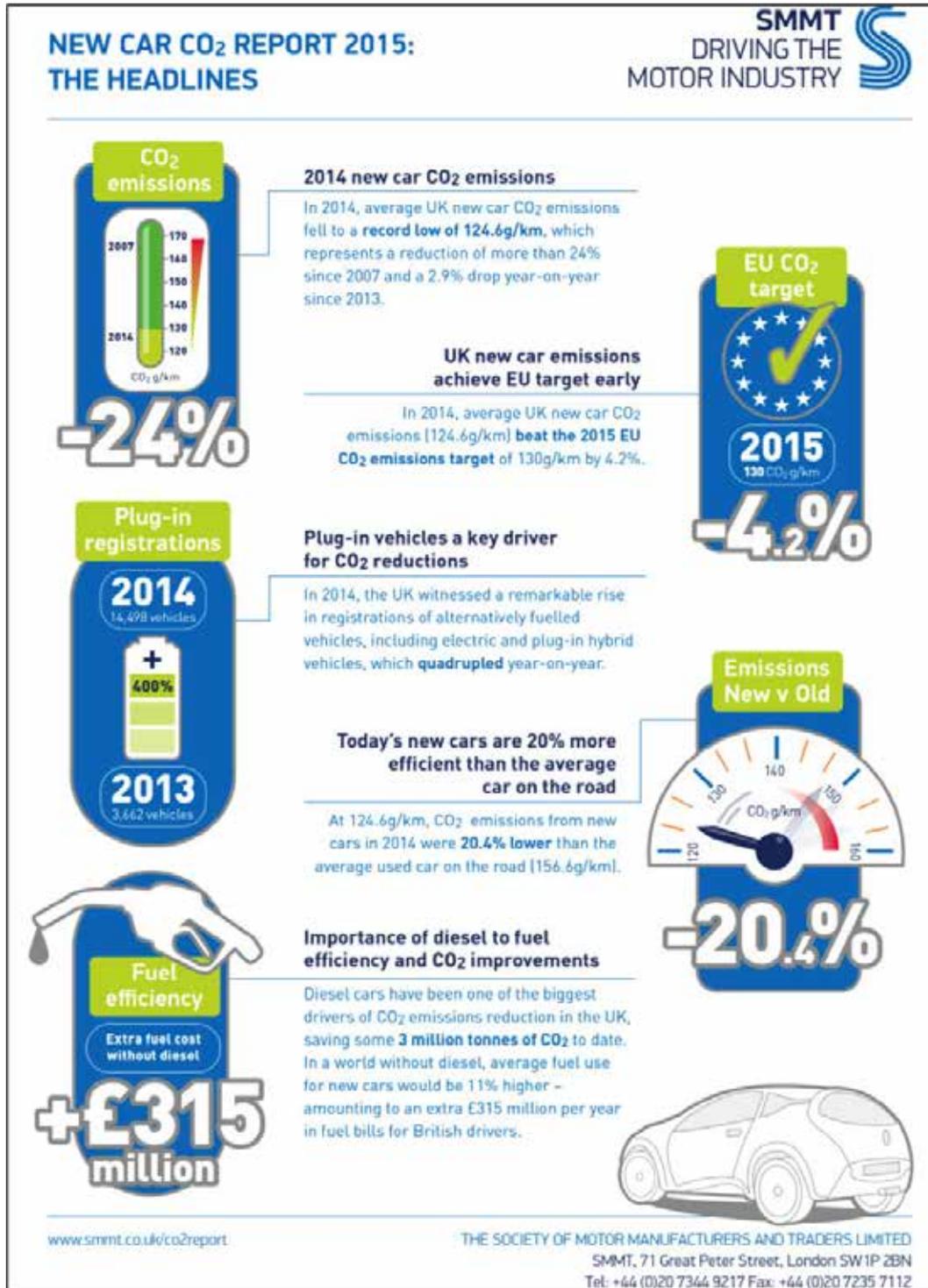


Image: SMMT, New Car CO<sub>2</sub> Report 2015

## 7. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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In the SMMT New Car CO2 Report 2015<sup>3</sup> the Centre for Economics and Business Research (CeBR) discuss industrial strategy and state continued progressive development in automotive design will continue to realise improvements in engine power and powertrains to realise Co2 emission and that this, combined with regenerative braking technologies, will allow for improved fuel consumption and Co2 emissions providing improved environmental outcomes. The UKH2 Mobility Consortium Partnership supports hydrogen as a sustainable and viable transport fuel that encourages diversification in energy supply; however such a solution currently comes at significantly high set up costs.

This report also references KPMG's report on 'Connected and Autonomous Vehicles', a report which notes that these vehicles are an economic opportunity for the UK and that the UK has expanded its growth in connected technologies enabling autonomous vehicles to help shape the future of transport and sustain the growth of the UK automotive sector. The UK is well advanced in the ensuing phases of vehicle intelligence, an example of this being the inclusion of connectivity whereby vehicles can determine and navigate the best routes with consideration to traffic congestion, road works and emergency services. This connectivity technology also has an overall benefit for road congestion and, by creating more efficient journeys, has a knock on environmental effect.

The transition to low-carbon vehicles addresses two important aims in the UK and across the EU. Firstly it enables the UK to reach future EU Co2 emissions targets, which include average new car emissions of 95g/km by 2020, whilst supporting high value manufacturing and engineering in the UK, in particular in technologies such as hybrid, plug in vehicles, battery and hydrogen technology. The UK government has established an Office for Low Emissions Vehicles (OLEV) leading initiatives in alternatively fuelled vehicles. As part of this initiative the government has committed to installing rapid charging points at approximately every 20 miles on 95 per cent of the strategic road network; something which is further testament to the intention of the UK government and the sustainable approach being taken in the expansion of alternately fuelled vehicles.

So all this said what implications could such an initiative have on other downstream stakeholders in the motor industry?

### **Block Exemption Regulation EU:**

In October 2002 legislative regulation was passed whereby many EU countries enforced what is deemed to be a fairer and more competitive platform to trade in motor vehicle part sales, repair and maintenance. This legislation was brought about by vehicle manufacturers' control distribution of vehicle parts and the associated information in the application of the associated parts and labour. Put simply, the law prevents manufacturers from withholding information for the exclusive use of the manufacturers own recommended suppliers.

What could we expect if similar Block Exemption legislation was introduced in Australia, when could we expect it and is anyone lobbying for change of this nature?

Seemingly, and as identified during one of the Fellow's UK meetings, manufacturer's specifications will play a significant role in such legislation being introduced in Australia.

The Fellow's final meeting occurred with the McLaren organisation at their construction facility in Surrey UK. The Fellow recognised it as being one of the most extraordinary multi-perspective manufacturing facilities he has ever visited; from the 'James Bond style' architecture and design, the organisational philosophies regarding best and optimised practice, the organisational focus on employee morale, to the pride in the history of the organisation (including the incredible McLaren Museum and opportunity of access to every Formula 1 car ever raced as well as several other notable racing classics covering the expanse of this company's existence). Coupled with all this is the fact that McLaren produce what

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3 SMMT New Car CO2 Report 2015

## 7. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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is arguably the most sought after and prestigious road car in the AP1 model, and that this facility is also where they make, manufacture and maintain their F1 fleet.

As the Fellow walked through the manufacturing plant (which incidentally would be as equally as clean as any multiple Michelin star restaurant), the question posed by the McLaren representative was “So Todd who in Australia would be able to repair our vehicles?” A long pause and a typical Australian response of “dunno” ensued.

McLaren vehicles are phenomenal and mainly comprised of carbon fibre, including the whole chassis. The Fellow genuinely had no immediate response to the McLaren posited question without further exploration. However, when Finney advised his generous McLaren host that Australian does not have Block Exception legislation his host seemed both relieved and very keen on pursuing opportunities in broadening the Australian distribution of McLaren vehicles. It is worth highlighting the uniqueness of indemnifying these vehicles that range from a minimum showroom value of \$300,000 AUD up to \$3.5 million AUD. It would take some very well considered underwriting to indemnify such vehicles, although the Fellow doubts such vehicle owners would have too much trouble putting up the money for the premium. Repairing damage on such vehicles, the other hand, would be a whole other issue.

Finney realises this is a most extreme case however it is an example of a manufacturer that values their product so much they are looking to acquire an immediate solution in having their vehicles repaired in Australia, given that right now they simply do not have one. McLaren are not the first, and won't be the last, example of foreign vehicle manufacturers at a loss as to who should repair their vehicles.

### Autonomous Vehicles - When, What and How?

Since the Fellow returned from the UK the amount of commentary and opinion surrounding vehicle autonomy has increased and is rapidly gaining momentum.

Finney has witnessed many polarising thoughts, opinions and speculation on self-drive vehicles' perceived entry into the global market place. In fact, the only consistency the Fellow has identified in his research on this topic is that everyone has an opinion and few are shy about sharing it.

Finney has chosen not to engage in speculation on whether driverless vehicles in their absolute end state will occur, or the specific pathway on how the varying degrees of vehicle autonomy will evolve. Rather Finney has decided to identify the current advancements in vehicle technology that will generically challenge collision repairers and industry stakeholders in the safe and efficient repairing and maintaining of these highly complex automobiles that will become more prevalent in the Australian market.

The Fellow has already provided certain examples of specific vehicles with advanced technology, however in this section he will define and articulate key and specific details of vehicle technology, safety, performance and varying degrees of autonomy. More specifically this section explores: Autonomous Emergency Braking (AEB); Adaptive Cruise Control (ACC); Vehicle Connectivity; Lane Departure Warning Systems; Fatigue Warning Systems; Blind Spot Detection; and, Reversing Collision Warning and Visibility Systems. The examples and summary provided on this componentry are designed to provide the reader with certain types of vehicle technical advancements, as well as to highlight the volume and scope of such advancements. These are but a few examples for the reader to consider.

In this section the Fellow also examines the issues and hurdles facing the development of autonomous vehicles. In addition, Finney also explores the considerations that road safety; social; environmental, ethical; and, liability/litigation/warranties present.

## 7. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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### **Autonomous Emergency Braking (AEB):**

Normally fitted in the windscreen, behind or as part of the review mirror this laser detection system interprets irregular obstacles that may include such things as other vehicles, pedestrians, cyclists. There is data emerging to demonstrate that vehicles fitted with AEB have a significant reduction in accident frequency and the extent of damage that can be sustained in a collision.

Repairs to vehicles with this technology fitted can incur high replacement cost, in particular in the event of a damaged windscreen, where the AEB is fitted. Furthermore, the associated cost of re-calibrating such systems are quite expensive and are really only able to be attended to by the vehicle manufacturer.

### **Adaptive Cruise Control (ACC):**

Using a similar camera laser system as AEB, ACC is able to monitor and calculate speed and distance to enable the vehicle to operate in cruise control. However unlike common cruise control functions ACC is able to constantly adjust the acceleration of the vehicle and subsequent speed thus ensuring the vehicle maintains a safe distance to vehicles that present in front of the ACC fitted vehicle.

ACC is another example of technology that is used in the varying advancements and phases of vehicle autonomy, in particular the use of cameras and lasers to interpret other road users delivers an autonomous function as the vehicles can self-accelerate and control speed.

### **Vehicle Connectivity:**

Vehicles are now being fitted with new technologies that enable them to identify and connect with each other and other road signage and various other traffic related infrastructure (eg. road signs, speed limits as well as being alert to warnings that the vehicle to traffic congestion and provide alternate routes to expedite the journey). Finney observed the benefits of this technology in mitigating road traffic congestion. Vehicles fitted with this technology provide significant benefits to governments across the EU in traffic congestion reductions. This again has a positive, but difficult to quantify, benefit on accident frequency.

Further to the vehicle to vehicle (V2V) and road infrastructure connectivity, vehicles fitted with these systems are also able to identify vehicle accidents and trauma. If a vehicle is involved in a motor vehicle collision it will identify and contact the driver by calling the driver's mobile phone. If the driver fails to respond the vehicle will immediately contact emergency services notifying them of an incident and pass on the vehicle location for the first response team to attend.

Additionally vehicle connectivity enables direct contact with the vehicle dealer/manufacturer. This enables the vehicle to be given systems updates through the 'cloud', meaning the owner doesn't then have to attend the dealer for such updates. Furthermore if a vehicle has been damaged the vehicle can connect directly with the dealer to diagnose any issues and in many cases can be corrected without the vehicle having to leave the repairer.

### **Lane Departure Warning Systems:**

This advancement is very much self-explanatory and a significantly progressive element towards vehicle autonomy. Using a similar, or same, system as AEB that links the vehicle's computer system the camera is able to read the road lines and laneways and provide an audible and/or visual warning that the vehicle is departing the lane and alert the driver to correct the direction of the vehicle and avoid accidents.

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In Case Study 5 (Mercedes Benz S3 AMG Coupe) Finney raised the Mercedes Benz s 63 AMG Coupe as an example of advanced current generation vehicle technology. This vehicle is fitted with lane departure warning system that offers automated steering control when the vehicle system identifies it has departed the lane. The steering technology is the same as what is being trialled in fully autonomous vehicles.

### **Fatigue Warning Systems:**

These systems, now fitted in current generation vehicles, measure the driver's level of alertness. Essentially a camera fitted above the driver's eye line measures fatigue levels by identifying eyelid and retina movement. This will ordinarily operate over a longer vehicle journey. As with the Lane Departure Warning System an audible alarm is triggered to alert the driver that their fatigue levels are potentially higher than what would be considered a safe level. It is ultimately the driver's responsibility to respond to the Fatigue Warning System, and it is also worth noting that the system can be disengaged at the discretion of the driver.

### **Blind Spot Detection:**

This is a fairly self-explanatory function that detects vehicles entering the vehicle's blind spots, using sensors situated on either side of the vehicle. The vehicle is fitted with motion detection sensors, and often a camera, to provide the driver with a warning for any pre-emptive accident that may occur if either the vehicle fitted with this technology or another vehicle merges, or is appearing to merge, into the pathway/lane. This technology proves to both reduce accident severity as well as avoid collisions.

### **Reversing Collision Warning and Visibility Systems:**

This technology has been fitted on vehicles in some form for over a decade now, and can be attributed to having significant effects on reducing reversing accidents and the severity of these accidents. It is the typical 'car park' collision where a wayward shopping trolley can be seen, or two cars reversing at opposing angles collide. However the most marked effect of this technology is the reduction in bodily injury, in particular the reduction of reversing into pedestrians and small children who cannot be seen walking or playing behind cars.

There have been certain lobbyists that have called for the compulsory installation of reverse sensors in all vehicles for the purpose of reducing/eliminating accidents where vehicles reverse into small children, as this is considered to be the most effective solution in the reduction of these incidents.

The componentry that is now fitted in current generation vehicles has created a pathway towards vehicle autonomy. The current generation of vehicles using varying degrees of this technology are being categorised in some instances as semi-autonomous. An example that Finney experienced during his time in the UK was the Volvo XC90. This vehicle is fitted with a vast array of componentry that offers genuine levels of autonomy and made it clear to Finney that total autonomy is some way off.

The autonomous vehicle concept, of being able to sit in the back and read the digitally uploaded morning paper from the cloud enabled vehicle whilst sipping on your coffee that the autonomous vehicle has already collected for you from your favourite café as you sit back and get driven to the office, seems quite distant. That said, there is undoubtable momentum being gained in the race to develop the first fully autonomous road vehicle. The pace is certainly on and everyone from traditional vehicle manufacturers to technological global powerhouses and backyard start-ups are also having a go, however this is but one step in the advancement towards autonomous vehicles. There are still several matters of enormous significance that need to be overcome before we can freely drive our

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autonomous vehicle throughout the global roadways. Some of those matters include (but are not limited to):

- Government legislation
- Infrastructure
- Liability
- Demographics
- Philosophies

Finney has observed numerous government and non-government organisations (NGO) stakeholders who are looking to adopt a progressive approach in finding solutions that enable various states, territories and countries to be in a globally advanced position in terms of opening their roadways to autonomous and semi-autonomous vehicles. These stakeholders have the foresight, appetite and (in some case) the need to trial the perceived benefits of autonomous vehicle technology.

The fellow has formed an opinion of what he believes autonomous vehicles can offer at positive and negative levels, if proven to be the technological pathway forward. Such considerations include road safety; social; environmental, ethical; and, liability/litigation/warranties ones.

### **Road safety considerations:**

Finney is first to acknowledge that autonomous and semi-autonomous vehicle safety is not yet close to be proven. However, if autonomous vehicle manufacturers are proven to be correct in their global ambitions to progress this technology it would be reasonable to expect that the global road toll should see significant improvements as autonomous vehicle expansion mitigates the volume and severity of vehicle collisions. In fact it is reasonable to think that, if society moved to have fully autonomous vehicles operating exclusively on their roadways vehicle collisions should never occur with the exception of mechanical and technical failure, for which the manufacturer would be accountable for.

Finney relays a comment raised by an audience participant at a recent conference who stated that “best practice looks like the need for driver’s licences to become redundant”.

Putting best practice aside a tangible and expedient reduction in city, state, territory and country road tolls will be unanimously well received.

### **Social considerations:**

Finney is of the belief that there is an incredibly powerful opportunity to change the lives of people across the globe with the implementation and expansion of vehicle autonomy. An example is aged people who rely heavily on other means of transport to take them to medical and social appointments. Older drivers are also statistically higher risk drivers, however an end state vehicle autonomy solution would keep aged members of society mobile and safer. It is also worth noting that Australia is an aging population and the benefits autonomous cars can deliver to the elderly can be expected to grow exponentially. In addition to benefits to the elderly, vehicle autonomy can dramatically improve the lives of diverse people across many communities in the delivery of mobility solutions that have been non-existent or limited in the past. Finney raises opportunities where sight impaired people can be independently mobile, in fact car owners in their own right. The ability to improve the lives of disadvantaged people is an opportunity that cannot be overlooked in the races for autonomous vehicle supremacy, in fact arguably the credibility gained from targeting this part of the market could progress the advancement in introducing these vehicles to the global roadways.

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The Fellow also identifies varying other social benefits vehicle autonomy brings to certain cities. For year's trains, planes and some buses have played key roles in transporting people around cities and across the globe, however with automated vehicles we could be on the verge of significant change in relation to how people are moved around in heavily populated cities of the world. Indeed, France is currently trialling an autonomous bus. Though it is worth questioning what autonomous driving will do to our skills as drivers should we be called upon to take control of a vehicle. The aviation industry has had to overcome such challenges in maintaining pilots' capabilities to take back total control of planes. Since aviation autonomy was introduced there was a distinct gap in some pilots' ability to reassume their skills in controlling and landing their aircraft. This skills gap was quickly identified by the aviation industry and has been addressed with targeted and ongoing training.

Finney also raised the benefit that many Governments throughout the world have clearly considered; that being the productivity benefits of autonomous vehicles. There is a significant argument that reduced travel times can be used far more productively than having a driver clutching the wheel in congested peak hour traffic. The resulting payback could then be used to assist governments, businesses and communities become more productive through the mitigation and usage of the commute time. This will be an opportunity to explore in detail as vehicle autonomy becomes more prolific.

An example of the productivity and social benefits being derived from the introduction of autonomous vehicles is the trialling of self-drive vehicles in some of the busiest and space-poor European cities. These trials are seeing self-drive vehicles drop the passenger off at the office and then go and park themselves. The ability for cars to park themselves has multiple benefits. It firstly assists in de-cluttering parts of the city, it assists in driving efficiencies by reducing the need for drivers to extend their journey by having to park their car and also creates a significant amount of space as driverless cars can park millimetres from one another creating greater amounts of parking space in heavily congested cities.

### **Environmental considerations:**

The Fellow has presented examples of environmental policy that provide significant incentives for the purchase of low emitting vehicles by way of reduced taxes and levies. The subsequent effect such policies have on vehicle manufacturers is wide ranging. However, with consideration of the recent Volkswagen controversy in mind, it further highlights the demand for vehicle manufacturers to ruthlessly (and in some cases illegally) design, manufacture, market and sell vehicles into the global market place so as to provide the consumer or tax payer with optimum environmental performance and limited cost exposures. Vehicle manufacturers are arguably only as good as their next sketch that sits in the vast design offices.

The Fellow also wonders is the world really better off with low emitting vehicles such as hybrids and electric cars? Furthermore, in today's society where people have a tendency to replace old for new far quicker than ever before, such an example is the consistent increase in global vehicles sales whilst being in the midst of the 2009 Global Financial Crisis. Incredibly global vehicle manufacturers sold more cars throughout this period than ever before and with car depreciation is significant, expedited end of the vehicle's life is contributing to enormous global waste. Furthermore the world has experienced an increase in vehicle waste through motor vehicle collisions and cars being written off due to repair complexity. As any insurer will attest more vehicles are written off, or total loss proportions have never been higher and the proportion is on a constant on the increase.

Finney also notes that a further environmental exposure in new vehicle technology is the disposal of vehicle waste and the direct and indirect effect this has on the environment. The materials vehicles are now constructed with add complexity to the manner in which vehicles are salvaged. Finney specifically questions the waste management of materials such as batteries in electronic vehicles and he also queries the relationship between electric vehicles and coal production versus fuel emitting vehicles.

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### **Ethical considerations:**

The Fellow has heard many discussions in relation to the perceived benefits of partial and fully autonomous vehicles entering the market place, however one must consider the ethics of establishing a holistic view of the perceived fast paced movement towards vehicle autonomy.

Finney questions the resultant demographical implications if vehicle autonomy is introduced into the world's cities, in particular what could become a quickly evolving dependence on these vehicles. Whilst there will undoubtedly be safety benefits, in terms of accident avoidance, as well as potential environmental and efficiency benefits the Fellow questions the broader effect and implications for industry and downstream employment of the many drivers of public and private sector vehicles. Other queries relate to dependence on autonomous vehicles and the unintended creation of skills gaps, such as those experienced in the aviation industry. The Fellow acknowledges the vastly expansive technological boom of the early 21st century, how critically dependent we are on current technology and how the broader global population crave more. However, Finney also acknowledges that the social wealth gap is ever widening and thus queries whether the introduction of autonomous vehicles accentuate or mitigate this social divide and to what degree society must consider the social implications of this factor.

As noted by Finney all the specific technical advancements that have been identified will provide the collision repairer with varying degrees of challenges as they are required to attend to the servicing and maintaining of vehicles fitted with this technology, however the Fellow would also like collision repairers and industry stakeholders to consider the effect of such advancements in technology. The UK has already identified a decline in both accident frequency and accident severity, which can be attributed to the advancements in safety componentry in current generation vehicles. It is difficult to speculate and quantify the current and forecasted implications that vehicles fitted with these componentry will have on collision repairers, however the trend of reduction in accident frequency and severity is anticipated to see a decline in the industry.

Whilst in the UK the Fellow investigated the progression towards autonomous vehicle technology and quickly realised there is much conjecture in terms of the when, where, what and how. However Finney, in taking a holistic view of the wide spread information that was presented to him, believes that the advancements in autonomous vehicle technology will occur quicker than most people expect. The concept of the autonomous is not new. Vehicle manufacturers have been experimenting with concepts and prototypes for close to a decade now, however the prototypes have been kept as top secret and considered to be technology the motoring world is not ready for, and thus hidden behind lock gates and rarely even ventured onto the testing track. This is now changing and doing so at a fast pace, with the imminent release of the totally autonomous vehicle gaining global media attention with many trials about to commence on ordinary roadways throughout the world.

Finney attended The International Driverless Car Conference that was held in Adelaide (Australia), as a South Australian Government initiative to attract driverless vehicle technology to the Roads of Adelaide. The conference included an autonomous vehicle drive where the Southern Expressway in Adelaide was closed for half a day to enable the autonomous Volvo XC90 to drive certain conference participants along the 15-minute expressway. What struck Finney about this conference and event is the highly proactive intent of Governments, such as the South Australian one, to help facilitate the advancement of autonomous vehicle technology and realise the broader benefits and opportunities that come with progressing this technology into regions.

### **Liability/Litigation/Warranties:**

The Fellow, throughout his research and exposure in the conceptual progression towards a society where vehicle autonomy is explored, has not seen a specific determination or ownership of liability in

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terms of who is accountable for incidents (collisions) involving autonomous vehicles. Thus, the question in generic terms seemingly remains unanswered when considering the ownership and definition between personal and product liability.

This fundamental issue requires clarity and thorough industry debate. Product liabilities and warranties attributed to vehicle manufacturers need to be evaluated and agreed as the risk and scale of incidents involving autonomous vehicles will dramatically shift and with less to no driver involvement and error the exposure to vehicle manufacturers will significantly increase.

Further to the warranties and liabilities that will be carried by vehicle manufacturers, insurers need to review and consider their own place in the vehicle indemnity market place. The relationship to cost of repair is always critical when evaluating the consumer and investor benefits. Finney summarises that the existing speculation and issues relating to warranties, liabilities and indemnity will surely increase in terms of industry noise and urgency as the growth in vehicle technology and autonomy continues and broadens globally. As such, industry stakeholders, governments and legislators need to source a solution and definition that enables autonomous vehicles growth to continue, and not at the expense or disadvantage of consumers.

A risk that many seem to have overlooked when considering the benefits and advancements in autonomous vehicle technology is the risk or threat of cyber security, one of the fastest growing insurance categories in the UK. There is a significant focus on the depth and quality of code being written as a security process and mechanism to mitigate any cyber exposures. That said, cyber-crime remains a real risk and, as we have learned from other online products, there is an ongoing need to develop products that are cyber-crime adverse. However as the technology develops so does the capability of criminals in this field and the extent of damage that can be done to one's phone or computer will seem insignificant to what could occur if one's connected vehicle has its security and functionality compromised.

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### Industry Stakeholders

This report has been designed and targeted as a thought-provoking document that may entice industry stakeholders to consider how vehicle technology changes may influence their businesses in the short, medium and longer term. The Fellow's report encourages industry stakeholders to consider how they can position their business to meet the demands of current and future vehicle technology. Finney has provided examples of certain specific technical advancements that will provide the collision repairer with varying degrees of challenges as they are required to attend to the servicing and maintaining of vehicles fitted with this technology. However Finney would also like collision repairers and industry stakeholders to consider the effect of such advancements in technology. The UK has already identified a decline in both accident frequency and accident severity, which can be attributed to the advancements in safety componentry in the current generation of vehicles. It is difficult to speculate, quantify and forecast the effects vehicles fitted with these this componentry will have on collision repairers. However the downward trend of accident frequency and severity reduction cannot be ignored and as vehicle technology advances the exponential decline in frequency cannot be ignored as this translates directly into working volumes for collision repairers.

Collision repairers in the future need to strongly consider a shift from high volumes of work completed with little investment in research and technical application, where work is based on large scale at low volume and margins, to a future with less volume and lower severity of repairs but with significantly more complex requirements in the execution of repairs on the vehicles of (the not too distant) tomorrow. Finney notes the need to research each and every repair method to ensure a Work Plan is created before any repairs commence. The Work Plan needs to consider all aspects of the vehicle repair, as the primary measure of a successful repair is the maintaining of the vehicle's pre-accident condition. Furthermore, there is the need to restore what the technical componentry does and will continue to require dealer and/or manufacturer intervention where much of this can be completed remotely with Bluetooth updates coming from 'the cloud'.

### Public Sector – Federal and State

The Fellow has attended several conferences and seminars that have either been hosted by Government, and or had Government participation, and although there is quite advanced discussion and speculation regarding fully autonomous vehicles on roadways that only facilitate vehicles of this type there is quite clearly an extremely large amount of legislation, design, development and consumer and public support required to even get trials underway (such as with project Gothenburg).

### Environmental

Government across the globe are using current vehicle technology as a significant driver in the delivery of reduced Co2 emissions and as such assisting Governments in meeting their commitment to environmental policy. There is an opportunity for government to continue the review of Environmental Policy in terms of intensifying consumers who purchase vehicles with low omissions. Currently Australian policy on vehicle omissions hasn't evolved to what is being practiced across European Union countries. However it is worth recognising there are significant demographic considerations in the review and restructuring of Australian State and Federal policy that said Finney believes future developments and iterations of vehicle technology will only help to improve Government's ability to achieve their environmental policy objectives.

## 8. RECOMMENDATIONS

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### **Social**

Finally, the Fellow acknowledges the social benefits that can be achieved from future generation vehicle technology and it is his opinion that the Government's drive to deliver best practice in leveraging vehicle technology comes in the form of advance vehicle autonomy. The ability for Governments to be able to mobilise more people in driverless cars cannot be underestimated, in particular the ability for socially disadvantaged people to exponentially improve their own mobility is revolutionary. Additional benefits are the creation of less congested cities and the significant reduction in required parking space. Whilst the social benefits are far from limited to what the Fellow has articulated, the net benefit can include greater mobility for the socially disadvantaged, less road congestion for the vast mass of commuters and increased city space creation in terms of smaller parking spaces for self-parking vehicles. All benefits require Government cost analysis, including an understanding that future generation vehicles can also lead to far fewer collisions and a subsequent reduction in road trauma. Overall, there is certainly a compelling argument for both State and Federal Government to support and help facilitate future generation vehicle technology into their electorates.

### **Industry – Financial Services / Insurance**

Examples such as improved braking in the form of ABS and reverse sensors had quite profound effects on insurer's claims frequency and cost. Reverse sensors have significantly reduced the classic car park collision, or the "I forgot it was bin night last night" accident. Accidents of this nature have always been some of the most prolific from a claims frequency perspective and they are also ones that insurers are able to leverage scale from to assist in the delivery of cost targets as claims of this nature are by in large the preference of collision repairers. It is common to hear of examples where technology has driven a shift in the commercial outcomes of insurers and although things may look rosy for insurers, their stakeholders and investors there are always risks and opportunities that come with changes in technological advancements.

Finney also identifies the immediate exposure of insurers in terms of current and next generation vehicle reparability exposures. Whilst insurers realise some benefits in frequency and accident scale reduction as each new vehicle is released into the market, on the flip-side the complexity of repairs is increased leading to repair costs that would have been deemed as 'low end' becoming significantly higher than what has historically been experienced. It is important to note, that this is based on the assumption that insurers are leveraging their repairer relationships for repairers with a capability to research and repair vehicles to a standard that upholds their vehicle safety rating.

There will be challenges as noted earlier in this report on the reparability of the existing and next generation of vehicles. This challenge is shared across many various stakeholders, including manufacturers, insurers, and collision repairers. There is a clear opportunity for a greater level of collaboration across all stakeholders ensuring the customer is provided with a safe and quality vehicle repair.

### **The Consumer**

Consumer needs and expectations are constantly evolving. As such this report has raised the evolution and progression of change in the new vehicle market. Finney believes that the consumer is the true winner in the advancements in vehicle technology. This is driven by a highly competitive global market place that is offering the consumer vehicles with greater performance, efficiency, motoring simplicity and safety; all at a price that enables the manufacturer to compete in multiple markets throughout the world. Advancements in vehicle technology are no longer only available in the prestige market, rather this technology now is available at the lowest end of the market and available to any consumer looking to purchase a new vehicle anywhere in the world.

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The Fellow also acknowledges the enormous amount of vehicle information that is now available to the consumer. Information on vehicles is widely available through the internet, and with fast pace advancements in vehicle autonomy the media are quick to explore, discuss and review vehicle of current and future generations. As such, consumers are very well informed before entering the new car dealership. Brand loyalty is thing of the past as consumers do their research and have often decided what they are going to purchase before setting foot in a dealership, in fact some consumers now totally bypass this step and transact online with very limited dealer intervention. Hyundai's 'kiosk model' in the UK is an example of this.

Finney encourages consumers of current generation vehicles to be equally as astute in the management of any repairs and maintenance to their vehicles. As the Fellow discussed in his recommendation to the industry stakeholders and collision repairers, Finney recommends that vehicle owners pursue and be satisfied that any vehicle work to be attended is done so in a manner that in no way undermines the structural integrity of the vehicle, or compromises the vehicle's pre-accident condition. Just as vehicles are far more complex, exposures to unsafe repair practices have never been greater. The consumer needs to be satisfied that repairs and maintenance attended to their vehicle be done so correctly and with the appropriate information and certification validating this. Insurers or other third parties facilitating repairs can play an important role as they can provide consumers with peace of mind through supplier standards and quality audits.

### **Workforce Development, Skills and Education**

Currently there is a significant gap in the ability of Australian Registered Training Organisation (RTO's) to meet the demands in training both pre and post certified vehicle repairers to deliver best practice global repair of current and future generation vehicles.

Collision repairers throughout Australia regularly discuss the challenges in training staff on the required practices in repairing vehicles correctly. The need to have advanced and ongoing training in the current generation of vehicles is driven by collision repairers own operating integrity and the insistence of work providers to meet these demands to meet their own good business governance. However, the knowledge gap is pronounced when it comes to RTOs. Finney doesn't wish to infer that RTOs are solely to blame, in fact far from it. The issue of training the broad range of collision repairers on the widespread vehicles in the market place and having the foresight to consider the next generation that will imminently flood the industry cannot be and isn't the sole responsibility of the RTOs. Addressing the issue can only be resolved if ALL industry stakeholders come together to develop training programs for per and post qualified trades staff. A further consideration for all of industry is the enormous amount of investment in equipment required to develop and deliver the training programs discussed by the Fellow.

The issues associated with education of the Collision Repair Industry are widespread. Finney recommends the immediate formation of either state-based and/or national committees that bring together key stakeholders to drive advancements in the progression of RTOs across the country. Industry stakeholders must work with Government and NGO training providers to advance their training programs and facilities in order to meet the needs of the current and future vehicle technological challenges. Issues of competitive tension and information withholding must be set aside and a collaborative approach to improving training programs must be achieved in an environment of increasing technology.

The Fellow considers education to be the biggest risk to all stakeholders, and in particular to road users across Australia and if one thing can be achieved from the publishing of this report is the need for drastically improved training throughout the Collision Repair Industry.

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### Industry Sustainability

Having provided some observations and recommendations in relation to educating the Collision Repair Industry there is also a notable gap in the number of apprentices entering and remaining in the Collision Repair Industry.

With this issue at hand the downstream implications are pronounced and the apprentice gap is being identified in the overall knowledge gap throughout the industry. This is noted in there being fewer trades staff to replace the older ones exiting the industry, fewer (expert) trades staff moving into training and educational roles, and there generally being a knowledge gap across the industry when it is needed most. Most worryingly, this gap is in light of today's standards and doesn't incorporate the future gaps that lie around the corner.

Finney recommends and highlights the needs for all industry stakeholders to collaborate and share information that any formation of a committee(s) to address the knowledge/training gap need to also work on the attraction and retention of collision repair trades staff. One cannot be sustained without the other, and without either Australia will simply not be able to attend to the repairing of the future generation of vehicles.

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