



Australian Government
Productivity Commission

Right to Repair

Productivity Commission Inquiry Report

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The Productivity Commission

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website (www.pc.gov.au).



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29 October 2021

The Hon Josh Frydenberg MP
Treasurer
Parliament House
CANBERRA ACT 2600

Dear Treasurer

In accordance with section 11 of the *Productivity Commission Act 1998*, we have pleasure in submitting to you the Commission's final report into Right to Repair.

Yours sincerely

A stylized, handwritten signature of Paul Lindwall.

Paul Lindwall
Presiding Commissioner

A handwritten signature of Julie Abramson.

Julie Abramson
Commissioner

Terms of reference

I, the Hon Josh Frydenberg MP, Treasurer, pursuant to Parts 2 and 3 of the *Productivity Commission Act 1998*, hereby request that the Productivity Commission undertake an inquiry into the Right to Repair within Australia.

Background

The term ‘right to repair’ describes a consumer’s ability to repair faulty goods, or access repair services, at a competitive price. This can relate to a range of product faults, including those for which the consumer is responsible. It may include a repair by a manufacturer, a third-party, or a self-repair option through available replacement parts and repair information.

The *Competition and Consumer Act 2010* (CCA) prohibits anti-competitive behaviour such as exclusive dealing (section 47); however, many right to repair issues are the result of conduct that is not being captured by the prohibition. In many cases, suppliers do not impose any such restrictions on consumers with respect to the repair of products they supply. Instead, consumers or third parties are prevented from being able to repair the products due to a lack of access to necessary tools, parts or diagnostic software.

For these reasons, existing provisions amount to some limited rights or protections in relation to repair facilities in Australia, but do not amount to a full ‘right to repair’. As such, premature product obsolescence and a lack of competition in repair markets remain. The expense of repair and product design accelerate the transfer of consumer goods into waste.

Scope of the inquiry

The Productivity Commission should examine the potential benefits and costs associated with ‘right to repair’ in the Australian context, including current and potential legislative, regulatory and non-regulatory frameworks and their impact on consumers’ ability to repair products that develop faults or require maintenance. In examining the Australian context, the Productivity Commission should identify evidence of the impact of relevant international approaches.

In undertaking the inquiry, the Commission should consider:

1. The legislative arrangements that govern repairs of goods and services, and whether regulatory barriers exist that prevent consumers from sourcing competitive repairs;
2. The barriers and enablers to competition in repair markets, including analysing any manufacturer-imposed barriers, and the costs and benefits associated with broader

application of regulated approaches to right of repair and facilitating legal access to embedded software in consumer and other goods;

3. The impact of digital rights management on third-party repairers and consumers, and how intellectual property rights or commercially-sensitive knowledge would interact with a right to repair;
4. The effectiveness of current arrangements for preventing premature or planned product obsolescence and the proliferation of e-waste, and further means of reducing e-waste through improved access to repairs and increased competition in repair markets; and
5. The impact on market offerings, should firms have their control over repair removed.

Process

In undertaking this inquiry, the Commission should consult broadly, including with state and territory consumer affairs regulators. The Commission should undertake an appropriate public consultation process including by holding public hearings, inviting public submissions and releasing a draft report to the public.

A final report should be provided to the Government within 12 months of the receipt of these terms of reference.

The Hon Josh Frydenberg MP
Treasurer

[Received 29 October 2020]

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The Commissioners would like to thank the staff who worked on the inquiry. The team was led by Ana Markulev and Paul Loke, and included Bonnie Nguyen, Aaron Mollross, Paulene McCalman, Roger Hassan, Lisa Tarzia, Max Gillespie, Caroline Nguyen-Kim, Sophie Harwood, Holly Creek and James Thiris, with administrative assistance from Yvette Goss.

Abbreviations

ABF	Australian Border Force
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACL	Australian Consumer Law
AIIA	Australian Information Industry Association
ALRC	Australian Law Reform Commission
ANZSIC	Australian and New Zealand Standard Industrial Classification
AT	assistive technology
AUSFTA	Australia-United States Free Trade Agreement
BLADE	Business Longitudinal Analysis Data Environment
CCA	<i>Competition and Consumer Act 2010</i> (Cth)
COVID-19	coronavirus disease 2019
CPI	consumer price index
DAWE	Department of Agriculture, Water and the Environment
DIY	do it yourself
EC	European Commission
EU	European Union
EULA	end-user licence agreement
FTC	United States Federal Trade Commission
GDP	gross domestic product
GST	goods and services tax
GPS	global positioning system
HHI	Herfindahl-Hirschman Index
HP	Hewlett Packard
IP	intellectual property
IT	information technology
MAS	Massachusetts ‘right to repair’ legislation

MOU	memorandum of understanding
NTCRS	National Television and Computer Recycling Scheme
OECD	Organisation for Economic Co-operation and Development
OEM	original equipment manufacturer
PBDES	polybrominated diphenyl ethers
PC	Productivity Commission
SLC	substantial lessening of competition
TPM	access control technological protection measure
UK	United Kingdom
US	United States
UCPD	Unfair Commercial Practices Directive
WRA	<i>Recycling and Waste Reduction Act 2020 (Cth)</i>
WTP	willingness to pay

OVERVIEW

Key points

- This report finds that there are significant and unnecessary barriers to repair for some products. It proposes a suite of measures that aim to enhance consumers' right to repair while providing net benefits to the community.
- A 'right to repair' is the ability of consumers to have their products repaired at a competitive price using a repairer of their choice. Realising this aspiration in a practical way involves a range of policies, including consumer and competition law, intellectual property protections, product labelling, and environmental and resource management.
- Consumers already have rights to have their products repaired, replaced or refunded, and to access spare parts and repair facilities, under consumer guarantees in the Australian Consumer Law. These guarantees are reasonably comprehensive and generally work well, but they should be improved by:
 - introducing a new guarantee for manufacturers to provide software updates for a reasonable time period after the product has been purchased, to reflect the increasing dependence of consumer products on embedded software
 - expanding options for ensuring compliance with, and enforcement of, the guarantees to assist individual consumers to resolve their claims and for the Australian Competition and Consumer Commission to address systemic breaches of consumer guarantees
 - requiring manufacturer warranties to include text stating that entitlements to a remedy under the consumer guarantees do not require consumers to have previously used authorised repair services or spare parts, so that consumers are more aware of their rights.
- There are several opportunities to give independent repairers greater access to repair supplies, and increase competition for repair services, without compromising public safety or discouraging innovation. To this end, the Australian Government should:
 - require suppliers of agricultural machinery to provide access to certain repair supplies to reduce the harm of the pervasive barriers to accessing these inputs
 - undertake more detailed investigations into specific product markets (including mobile phones and tablets, and medical devices) to better understand the extent of harm and examine whether additional regulation would yield net benefits.
 - amend copyright laws to facilitate the accessing and sharing of repair information (such repair manuals, and repair data hidden behind digital locks).
- A lack of consumer information about a product's repairability or durability is likely to make it difficult for some consumers to select more repairable and durable products based on their preferences, while reducing manufacturers' incentives to develop such products. To address this issue:
 - the Australian Government (in consultation with consumer, environmental, and industry groups) should introduce a product labelling scheme that provides repairability and/or durability information for consumers. A pilot scheme should target a limited number of white goods and consumer electronics products.
- There is also scope to improve the way products are managed over their life, to reduce e-waste ending up in landfill. In particular, the Government should amend product stewardship schemes to allow for reused e-waste to be counted in scheme targets. Further, the use of electronic trackers within product stewardship schemes should increase, to improve awareness of the end-of-life location of e-waste and ensure it is being sent to environmentally-sound facilities.

1 The ‘right to repair’ is a multifaceted policy issue

There are growing concerns in Australia and overseas that repairs of consumer products are becoming progressively more difficult (sometimes impossible), resulting in costly and wasteful outcomes for consumers and the broader community.

The difficulty of repair, at least in part, reflects growth in the number of products that incorporate sophisticated technology. It is now commonplace for cars, fridges, and even coffee machines to have embedded software in them. These technological advances have provided many benefits to consumers, but can also increase the cost and complexity of repairs. The rise in tech-enabled products means that much of the information required to diagnose a fault is digital, embedded into the product itself and held behind ‘digital locks’, requiring passwords or special tools to bypass.

Increasing product complexity means that consumers often have to rely on the manufacturer of the product (or the manufacturer’s authorised repairer) to fix or maintain their product. Manufacturers are typically the main and sometimes only provider of repairs for their products. This has contributed to widespread concerns that some manufacturers are using their strong position in repair markets to restrict competition. Many participants made claims of manufacturers refusing to supply independent repairers with the parts, tools and information they need to do repairs.

Relatedly, there are concerns that the lifespans of everyday products are becoming unnecessarily short and that products are being discarded prematurely, contributing to wasted resources and the proliferation of ‘e-waste’. Some groups also claim that manufacturers are intentionally shortening product life through software updates and design strategies that force consumers into buying new products (‘planned obsolescence’). Such claims are often made with respect to consumer electronics, particularly smart phones.

These concerns have led to calls across the globe for governments to introduce a ‘right to repair’. The ACT Minister for Consumer Affairs, Shane Rattenbury, noted that ‘the right to repair movement has been gaining momentum around the world. Legislative reforms are being introduced and strategies are being prepared’. Although there is no universal definition of a right to repair (box 1), in essence it is about the ability of consumers to have their products repaired at a competitive price using a repairer of their choice.

The Commission is supportive of this desire to make repair easier and less costly. Much of this can be driven by the actions of consumers and manufacturers. For example, good product design, the reuse of materials that would otherwise end up in landfill, and greater awareness of consumer rights and responsibilities, can all play a part in reducing harm to the environment caused by the needless disposal of products that are no longer desired.

For governments though, there is no single policy that enables a right to repair. The Commission has examined a broad range of policies, covering consumer and competition law, intellectual property protections, product design and labelling standards, and environmental and resource management.

Box 1 **What is a ‘right to repair’?**

There was no single view of a ‘right to repair’ presented in submissions to this inquiry. Participants most commonly associated a right to repair with:

- independent repairers and consumers having access to the necessary parts, information and equipment needed to repair products, including access to embedded software in products
- consumers having the choice of repairer, with price competition in the repair market
- consumers being able to buy products that are repairable and durable
- repair/reuse of products to reduce e-waste and encourage the growth of the circular economy.

These differing views on what a right to repair entails were reflected in the broad range of policy proposals that were put forward, which included: legal obligations on manufacturers to provide access to repair supplies; strengthening of the consumer guarantees under the Australian Consumer Law; changes to intellectual property protections to facilitate sharing of repair information and access to embedded software; introduction of unfair conduct provisions to address behaviours of manufacturers; and use of minimum product standards and labelling.

A wide range of reforms have also been connected to right to repair policies around the world. Many of these changes have been concentrated in the United States and the European Union.

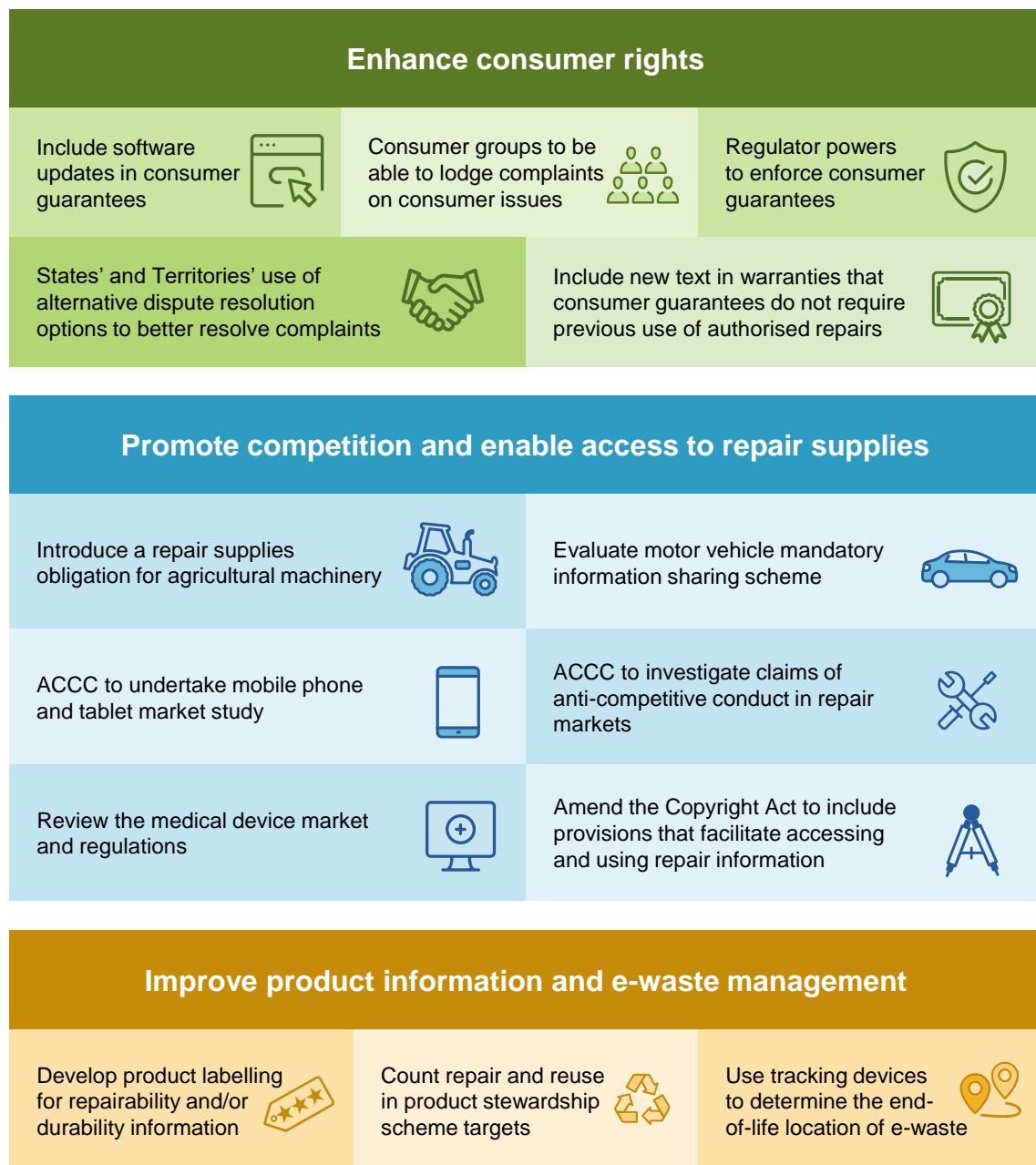
- In the United States, much of the debate has focused on consumer and competition issues, particularly access to needed spare parts, tools and information, and tensions with intellectual property rights. The term ‘right to repair’ originated from legislation in Massachusetts requiring motor vehicle manufacturers to provide access to diagnostic tools and repair information to independent repairers — an industry agreement then led to nationwide adoption of this approach. Over 30 US states have also been considering wider right to repair legislation for digital products, such as consumer electronics and agricultural machinery, with the New York State Senate passing a version of this legislation in June 2021. And in 2021, the US Federal Trade Commission board voted ‘to ramp up law enforcement against repair restrictions’ in response to an executive order issued by the Biden administration.
- In Europe, a right to repair is more commonly associated with product design and resource management, and is generally pursued through environmental regulations. For example, under the EU Ecodesign Directive, from March 2021 some household appliances are required to have selected spare parts available to professional repairers (and some parts for end-users) for up to ten years, as well as repair and maintenance information. The United Kingdom has similar regulations due to commitments prior to Brexit, while Europe also plans to expand these regulations to cover more products in the future. The European Union has also had similar requirements to the Massachusetts ‘right to repair’ law for motor vehicles since 2010.

Implementing or amending policies in any of these areas requires careful consideration, balancing the (sometimes competing) interests of consumers, manufacturers, suppliers and repairers. In weighing up the costs and benefits of potential right to repair reforms, the Commission has been mindful that it is not always preferable or cost effective for consumers to repair their products, or to keep them going for as long as possible. Consumers make choices to repair their products by weighing up the cost and convenience of repair, their preferences for newer products, and concerns about the environmental impacts of their consumption choices. Further, it is not reasonable or efficient to require a manufacturer to support a product for an indefinite amount of time; at some point it becomes prohibitively

costly for manufacturers to repair older products. Thus, the inquiry's focus has been on identifying if there are any unnecessary barriers to repair that are leading to adverse outcomes for the community as a whole, and if so, what policy responses may be needed.

Overall, this report finds that there are barriers to repair for some products that policy reforms could reduce. The proposed reforms fall into three broad categories that collectively support consumers' ability to get their products repaired (where they choose to do so) (figure 1).

Figure 1 **Reforms to overcome barriers to repair**



2 Enhancing consumer rights

Under the Australian Consumer Law (ACL), when someone buys a product it automatically comes with a range of consumer guarantees, including guarantees that the product will work as expected and that spare parts and repair facilities will be available for a reasonable time after purchase (unless notified otherwise). If the product fails to meet these expectations, the purchaser has rights to a repair, refund or replacement, although they may not be able to choose which of these remedies they receive.

The consumer guarantees are reasonably comprehensive

Although the consumer guarantees are reasonably comprehensive, many participants identified instances in which they felt unable to get the outcome they were entitled to following the failure of a product. The Commission considered several options to improve the way the consumer guarantees are working in practice.

Is further guidance about durability needed?

A guarantee that products will be of acceptable quality is at the heart of the consumer guarantees under the ACL. This includes that the durability of the product will be acceptable to a ‘reasonable consumer’. There is currently limited specificity in the ACL as to what reasonable durability is for various product classes — it is largely left up to the consumer and the product’s supplier or manufacturer to determine and negotiate an outcome. This uncertainty can lead to disagreement about whether a guarantee applies at all, or result in some consumers not seeking (or being offered) a remedy under the ACL.

Some participants said more clarity was needed about how long products could be expected to last, and some advocated for the Australian Competition and Consumer Commission (ACCC) to develop and provide guidance to that effect. Consumer groups argued that such guidance would benefit individual cases, as well as help re-centre the ACL as a mechanism for seeking a remedy (rather than consumers relying on warranties).

However, the ACCC highlighted the practical difficulties and costliness of developing and maintaining guidance, owing to the range of factors that influence durability — including the type of product, the materials used, and how the product is used. Developing useful guidance would likely also necessitate information gathering powers that ACL regulators currently do not have in relation to producing guidelines.

Participants also questioned the value of such guidance in resolving disputes. In particular, guidance that is non-binding, includes broad time estimates or is heavily caveated would have limited effectiveness in helping consumers obtain a remedy or in driving meaningful systemic change. Indeed, many of those who advocated for more information about product durability said that the information would be more valuable at the point of purchase (to help decide between products), rather than at the point of product failure (to help resolve disputes). Some participants also highlighted the risks that the guidance could become a

de facto standard, or that manufacturers would be disincentivised to improve the durability of their products beyond the timeframes set out in the guidance.

For these reasons, the Commission concluded additional regulator guidance on durability — as a means of assisting consumers better access their rights to a remedy under consumer guarantees — would be unlikely to have net benefits. Instead, greater benefits are likely to be achieved through improvements to how the consumer guarantees are enforced (discussed below).

Are changes to the spare parts guarantee needed?

The spare parts guarantee establishes that the manufacturer will take reasonable action to ensure that facilities for repair and parts for a product are reasonably available for a reasonable period, after the product is supplied. What is reasonable depends on a range of factors — this could include the nature of the product, the cost to manufacturers of holding parts, how long a product has been out of production and supply chain practicalities.

The Commission heard from multiple consumers about difficulties in accessing spare parts. For example, one participant said:

My daughter dropped an electronic tablet onto my open oven door and smashed the internal layer of glass in the oven door ... I phoned the oven company and they told me parts were no longer being manufactured for that model.

And another said:

I have a broken coffee machine ... [I] discovered that it needed a small plastic tube with a brass fitting which was available from JURA, the Swiss manufacturer. When I contacted them they refused to supply me direct but would only supply me through a recommended repair outlet.

But there did not appear to be a single underlying reason for why access to spare parts was difficult: in some cases, it appears that spare parts are not produced or held at all, whereas in others it appears that access is the issue. In particular, it did not appear that these experiences were due to systemic deficiencies in the consumer guarantees. Indeed, even participants who expressed dissatisfaction about spare part availability did not advocate for changes that could be implemented through the spare parts guarantee.

Include a new guarantee for software updates

The ACL was drafted over a decade ago — since then, an increasing number of internet-connected products with embedded software have come to market. As a result, there is uncertainty about whether the consumer guarantees cover the provision of updates for embedded software. Given the changing nature of consumer products, many participants saw a need to amend the ACL so there is an explicit requirement for manufacturers to provide software updates for a reasonable period of time — and even those who expressed concerns about such a requirement generally understood the case for its introduction.

To provide clarity, the ACL should be amended to include a new consumer guarantee that manufacturers will provide reasonable software updates for a reasonable period of time, similar to the spare parts guarantee. The purpose of this amendment is to provide access to software updates that are critical to maintaining the quality (functionality, security and safety) of software enabled products, for a reasonable time. For this reason, the Commission considers that the guarantee could, at minimum, cover updates that correct operating problems and address security vulnerabilities — but should also, like the other consumer guarantees, rely on what is ‘reasonable’ as a standard.

However, unlike the spare parts guarantee, the new provision should not permit manufacturers to opt out of providing software updates. This is because, whereas the ‘need’ to access spare parts may only affect a small proportion of the consumer base (such as where a part has broken), the need for software updates is likely to be a systemic issue that affects the functionality or operation of an entire product line.

Compliance and enforcement options should be expanded

A well-functioning consumer redress system is essential for the effective operation of the consumer guarantees. It underpins consumer confidence to seek a remedy and sends a signal to businesses about the need to comply with consumer laws. But in practice, consumers often find it difficult to exercise their rights under guarantees, particularly for higher-value products such as cars, electronics and white goods. Commonwealth and State and Territory regulators receive thousands of complaints each year about consumer guarantees.

It is largely left up to consumers to be aware of their rights and to be willing and able to pursue a remedy, such as repair of a broken or faulty product. But, for many, pursuing claims through courts and tribunals can be costly, time consuming and complex, deterring many from seeking redress this way. In many cases, the cost and effort involved in commencing legal action in either a court or tribunal will be greater than the value of the product in question.

Reforms to improve complaint and enforcement options would improve the practical functioning of the consumer guarantees and provide consumers with increased access to remedies.

Enable designated consumer groups to lodge super complaints

To enhance how consumers can exercise their rights, the Australian Government should enable designated consumer groups to lodge ‘super complaints’ with the ACCC, on systemic issues associated with access to consumer guarantees. Once a complaint is lodged by the consumer group, it would be fast tracked by the ACCC, who would be required to provide a response within a certain period (such as 90 days). The response would state how the regulator proposes to deal with the complaint and whether any action will be taken.

The United Kingdom has operated a super complaints process for almost two decades. A super complaints process was also trialled in New South Wales between 2011–2013. The

NSW trial did not lead to a super complaints regime in New South Wales — this was not due to its failure, but rather a finding that such a scheme would best reside with a national regulator, given the nationally significant issues that super complaints tend to elicit.

A further benefit of a super complaints process is that it provides regulators with an additional source of intelligence and improves transparency around how regulators respond to major consumer issues. On this point, CHOICE said that the super complaints lodged with NSW Fair Trading were escalated to wider, national processes, resulting in outcomes that would not have been achieved without the super complaints mechanism.

One criticism raised was that a super complaints mechanism would divert regulator resources away from other priorities. However, there is no indication that well-established consumer groups are likely to use super complaints processes inappropriately or to derail regulatory priorities. Indeed, the eligibility requirements to be a designated consumer group, such as having a willingness to co-operate with the regulator, would limit the likelihood of frivolous or vexatious super complaints. The experience in the United Kingdom indicates that such complaints are unlikely, with just under 20 complaints in as many years.

Nonetheless, a super complaints process in Australia would need to be supported by operational guidance and principles, to ensure that the process is effective and efficient. This should include requirements for designating (and removing) consumer bodies, evidentiary requirements to support a claim, and the process by which the ACCC would respond.

Enhance alternative dispute resolution mechanisms

As an alternative to tribunal or court actions, consumers may seek assistance from their State and Territory ACL regulator to help them and businesses come to a solution through alternative dispute resolution (ADR). These are considered preferable to going to court or tribunals as they are generally low cost, flexible and informal.

While State and Territory ACL regulators use a range of ADR methods, such as negotiating and facilitating for consumers, most regulators are unable to compel businesses to participate in a conciliation process or to make enforceable decisions. The exceptions are:

- compulsory conciliation in South Australia — Consumer and Business Services can compel businesses to participate in conciliation processes
- enforceable directions in New South Wales — the Commissioner for Fair Trading can issue a consumer guarantee direction requiring the business to repair, replace or refund certain products (up to the value of \$3000 within six months of the date of purchase), which is enforceable by courts.

There is an opportunity to improve dispute resolution options for consumers seeking to resolve ACL issues. Several participants supported enhancing the ADR powers of State and Territory ACL regulators — for example, the Consumer Action Law Centre proposed that all State and Territory regulators be empowered to make enforceable decisions on

low-valued claims to provide better access to remedies for faulty products. To achieve this, State and Territory Governments should work together to identify opportunities to enhance alternative dispute resolution options in each jurisdiction, with an emphasis on dispute resolution processes that can result in enforceable outcomes.

Empower the ACCC to enforce consumer guarantees

At present, there are limits to how the ACCC can take enforcement action in relation to the consumer guarantees, which in turn limits its ability to take action on systemic issues. Currently there are two ways in which the ACCC can take such enforcement action.

- The ACCC could undertake **representative action** on behalf of consumers. However, this power is not well suited to addressing systemic complaints. In part, this is because such cases are akin to individual action, which means that any outcomes achieved are likely to set a weaker precedent for future cases, if any precedent is set at all. Moreover, because the available remedies are limited (repair, replacement or refund), the ACCC is unable to seek penalties or other court orders that are necessary to achieve a deterrent effect.
- The ACCC could rely on **existing contravention provisions** — such as those relating to false, misleading or deceptive conduct or representations. These allow the ACCC to act unilaterally and pursue pecuniary penalties, but stop short of enabling the direct enforcement of the consumer guarantees. For this reason, while some cases have been successfully prosecuted in this way, this option will not always be available for consumer guarantee matters.

As a result of these limits on the ACCC, the consumer guarantees can only be enforced in a piecemeal way. To address this shortcoming, the ACL should be amended to make it a contravention for suppliers and manufacturers to fail to provide a remedy to consumers when legally obliged to do so under the consumer guarantees. This would allow the ACCC (or other ACL regulators) to unilaterally commence court proceedings in relation to the consumer guarantees, without the need to obtain consent from each affected consumer. It would also allow ACL regulators to seek pecuniary penalties from offending suppliers and manufacturers, in addition to obtaining redress for affected consumers. Such an amendment could significantly improve the efficacy of the consumer guarantees.

Manufacturer warranty terms can discourage repair

Most goods also come with a voluntary time-limited manufacturer warranty (or ‘warranty against defects’), outlining available remedies if the product develops a fault (which typically includes repair). In some cases, consumers may not be aware of the difference between manufacturer warranties and the consumer guarantees. This confusion may cause consumers to fail to seek a remedy when it is within their rights to do so. For example, if consumers use the manufacturer warranty as the main point of reference when deciding whether to seek a remedy for a faulty product, they may be unaware that the consumer guarantees can provide more expansive or longer-lasting rights, which cannot be overridden

by warranty terms and conditions. Consumers may also not understand a product's warranty terms, which may cause them to make decisions contrary to what they might have otherwise.

A specific issue with consumer awareness is when manufacturer warranties include terms that automatically void the warranty if repairs are undertaken by a non-authorised repairer or use non-authorised parts (even where those repairs or parts are unrelated to a subsequent fault covered by the warranty). The Commission found examples of these terms in warranties for a range of products, including mobile phones, video game consoles, small electronic appliances and watches. Further, even when warranties do not contain these voiding clauses, they often use dense and difficult to understand language, which may lead consumers to incorrectly believe that their warranty would be void if they sought non-authorised repairs. For example, despite the Tractor and Machinery Association noting that non-critical repairs will generally not void their members' warranties, the Commission's survey of agricultural machinery owners found that 53 per cent of respondents that used dealer repair services reported that maintaining their warranty coverage was an 'important' or 'very important' factor influencing their choice of repairer. Research from the United States also found that customer service representatives may be telling consumers their warranty is void, even if the warranty does not explicitly contain such a term (the Commission was unable to test the extent to which this occurs in Australia).

Several participants raised concerns that these warranty voiding clauses are restricting competition in the repair market by discouraging consumers from using third-party repairs during the warranty period without sound justification. The effect of such clauses appear to be compounded by many consumers being unaware that warranty terms and conditions cannot displace their entitlements to a remedy under the consumer guarantees. In particular, a recent court case confirmed that previous use of non-authorised repairs or spare parts does not extinguish a consumer's right to a remedy under the guarantees for any subsequent product fault (as long as the earlier repair has not damaged the product).

Suppliers also have no obligation to mention a consumer's rights under the consumer guarantees when discussing remedies. This can mean that consumers with products with identical defects can have very different outcomes, depending on whether they seek a remedy under the warranty or the guarantees.

Improving awareness of the consumer guarantees would reduce the deterrent effect of warranty voiding terms

Poor consumer understanding of warranties and consumer guarantees is likely to be limiting their capacity to exercise their rights when a product fails. To help address this issue, the Government should amend the existing ACL regulations that require all manufacturer warranties to contain text about the guarantees, and add additional text stating that entitlements to a remedy under the consumer guarantees do not require consumers to have previously used authorised repair services or spare parts. This would prevent situations where consumers avoid using a repairer of their choice because they incorrectly assume that doing so would extinguish their rights to a remedy if the product subsequently fails (even

where those repairs or parts are unrelated to the subsequent defect). While changing the required warranty text would create some implementation costs for manufacturers — as their warranties would need to be updated and their customer service staff trained on the new requirements — these should be minimal.

During the course of the inquiry, several participants raised concerns that this proposal for additional warranty text could be interpreted as creating new consumer rights. That is, consumers could interpret the text as giving them the right to take their product to a third-party repairer for a defect covered by a warranty or the consumer guarantees, and then claim compensation for the cost of the repair from the manufacturer. This is not intent of the mandatory text — in most instances, consumers with a faulty or defective product should first approach the manufacturer or supplier for a remedy under the warranty or consumer guarantees. That said, manufacturers should not have a monopoly on *all* repairs during the entire warranty period, particularly as warranties seldom cover accidental damage, making third-party repair a viable source of competition. The government could also ensure the new regulations do not lead to any misunderstandings by undertaking further stakeholder consultation on the final wording of the additional text.

Such improvements to awareness of the consumer guarantees — as well as enforcement of those guarantees (through the introduction of pecuniary penalties) — will go some way towards reducing the deterrent effect of manufacturer warranty terms that void the warranty if any non-authorised repairs occur.

3 Enabling access to repair supplies

To conduct repairs effectively, repairers need access to specific supplies, including:

- spare parts
- tools and equipment (such as special tools, diagnostic software and calibration codes)
- repair information (such as repair manuals, technical specifications or circuit diagrams).

Actions of manufacturers can impede access to repair supplies

A number of inquiry participants raised concerns that product manufacturers are using their strong position in the repair markets for their products to impede access to these repair supplies.

- Of the concerns raised in submissions, 82 per cent related to a ‘refusal to deal’, where manufacturers refused to provide repair supplies to anyone outside their authorised network. For example, a medical equipment supplier said that it ‘has made many attempts to purchase parts, components and equipment from [manufacturers] and these have been flatly rejected’.
- While less common, other inquiry participants noted that some manufacturers will sell repair supplies to any purchaser, but set their prices prohibitively high (‘margin or price

squeezing’) or only sell the necessary repair supplies with other repair services or products (‘tying’ or ‘bundling’). For example, an independent phone repairer said that Samsung sets its prices for replacement mobile phone parts at the same level as the cost of parts *and* services in its authorised repair network.

Impediments to accessing repair supplies were commonly reported for consumer electronics (including mobile phones and tablets), agricultural machinery, motor vehicles, domestic appliances and prestige watches.

Are restrictions on repair supplies harming competition and consumers?

One of the main ways that restrictions on repair supplies can generate harm to consumers is through higher-priced repairs. However, the strength of this effect depends on the characteristics of the individual product market. There are some features of repair markets that can indicate when a product manufacturer may be more likely to restrict competition — including where consumers are ‘locked in’ to using authorised repairers or face difficulties estimating repair costs, as well as where manufacturers are able to generate significant revenues from repair (figure 2).

The strength of competition in the market for the original product (the primary market) is also critical to considering consumer harm. Where product markets are highly competitive, manufacturers may ‘compete away’ the profits they earn in the repair market by lowering prices for the original product, thus compensating consumers for higher repair prices. As such, the consumer harm from limits to third-party repair is likely to be lower than suggested by many inquiry participants. The Commission conducted some empirical analysis to test the extent to which this effect exists, using a natural experiment created by a policy intervention in the United States (that mandated sharing of repair information and tools for motor vehicles). By comparing new car prices and repair prices in the United States and Australia around the time of policy change, the analysis found evidence that some of the gains for consumers seeking repair after the policy change were at least partially offset by higher new car prices.

Beyond changes in prices, repair barriers can also lead to other adverse outcomes for consumers, such as reduced repair access or choice, and increased time and travel costs for repairs (particularly for people living in regional and remote areas). Higher repair prices (and lower primary product prices due to any offsetting price changes) may also tilt consumer decisions towards replacement rather than repair, leading to an increase in product disposal.

Manufacturers often justify restrictions on access to repair supplies as a means of reducing risks from poor-quality third-party repairs, including risks to public safety, cyber security, brand reputation and environmental standards. Although these risks are real, they can be overstated for many products and types of repair. For example, many common, low-risk repairs (such as replacements of smart phone screens or batteries) do not require extensive expertise. Further, many higher-risk repairs are already governed by regulations to prevent adverse outcomes — such as occupational licensing requirements for the repair of most

installed electrical appliances and motor vehicles, or regulations limiting modifications to vehicle emission controls.

Figure 2 **Approach to identifying competition issues in repair markets**

A. Is there evidence that competition in repair markets is restricted?

☐ High-level measures indicate a lack of competition (concentration, barriers to entry, profit margins)

☐ Specific cases of manufacturers restricting competition (limits on third-party access to repair supplies)

B. Is there harm to consumers?

☐ Consumers are 'locked-in' to the repair market (high switching costs)

☐ Consumers face difficulties estimating repair costs (lack of information, complexity)

☐ The repair market is large (relative to the primary market)

☐ Manufacturers have financial ties to the repair market (in-house repair, contracts)

☐ Consumers are not compensated by lower prices in the primary market

☐ Adverse non-price outcomes for consumers (reduced choice, inconvenience)

☐ Risk from third-party repair (to safety, security, quality or innovation) are limited

Harm varies by product market, so the Commission examined several markets

Consumer harm due to restrictions on repair supplies varies between product markets, based on the characteristics of both the repair market and primary market for each product. To determine whether barriers to repair are generating harm, the Commission considered the issues raised during the inquiry and applied its framework to specific product markets. Given data limitations and the range of product markets in scope for this inquiry, the Commission took a largely qualitative approach, supported with data where possible, to arrive at a judgment about whether it is likely that competition is being restricted, and consumers (or broader society) are being harmed by higher repair prices, greater inconvenience or reduced choice.

Harm from restrictions on repair supplies was most evident and acute for **agricultural machinery**. Timely repairs are critical for farmers and other owners of agricultural machinery, particularly during harvest periods when downed equipment can result in thousands of dollars in lost production. Undertaking self-repair or using the local independent repairer is therefore often the preferred option.

However, the market for machinery repairs is often dominated by the authorised dealer networks of leading machinery brands. Some farmers claim that these dealers and manufacturers limit access to repair supplies (including diagnostic software tools) for machinery owners and independent repairers. This can lead to higher repair prices, additional effort and inconvenience (such as having to develop workarounds or undertake manual diagnosis due to lack of specialised diagnostic tools) and longer repair delays (creating avoidable financial losses from lost production). The high cost of switching between machinery brands (due to the high cost and durable nature of agricultural machinery) also means owners are often 'locked in' to their repair market.

The Commission considers there is sufficient evidence of harm to recommend that access to repair supplies should be expanded (box 2). Although the industry has recently committed to improve access for farmers, a similar commitment in the United States has been criticised as ineffective. As such, there is a strong case for additional government intervention to increase third party access, particularly through a ‘repair supplies obligation’ (discussed further below).

Box 2

Evidence that manufacturer restrictions on access to agricultural repair supplies are causing harm

Agricultural machinery was one of the most commonly-cited products of concern among inquiry participants, particularly due to restrictions on third-party access to repair supplies (information, tools and parts). To gauge the extent of the concerns, the Commission conducted an online survey of agricultural machinery owners. Among other things, the survey found that:

- respondents reported problems accessing diagnostic software tools (40 per cent), calibration/activation codes (32 per cent), spare parts (32 per cent) and repair manuals (28 per cent). Difficulties accessing diagnostic software tools and calibration/activation codes were higher for machines less than 5 years old (52 per cent and 43 per cent, respectively)
- the majority of respondents that used an authorised repairer would have opted for a third-party repair provider if they had access to the necessary repair supplies (71 per cent).

There are several characteristics of the agricultural machinery market that together indicate that these restrictions are likely to be harming machinery owners through higher repair prices:

- profit margins on spare parts and repair services appear high, suggesting limited competition
- agricultural machinery (plus attachments and accessories) is expensive and durable — 69 per cent of machinery in the Commission’s survey cost over \$100 000 — making it difficult to switch between brands. Interbrand data portability and operability is also constrained
- a few prominent players account for more than half the market for new machinery, with concentration likely much higher in some regions and for specific products, making it unlikely that owners are compensated through lower purchase prices.

Where owners use authorised dealers, the Commission’s survey also found they tended to experience greater repair delays, leading to significant financial losses — 18 per cent of associated losses exceeded \$25 000, compared with 5 per cent for third-party repairers. The Commission also analysed the geographic distribution of authorised and independent repairers in a sample state (New South Wales) and found that independent repairers had a broader geographic spread, covering a number of areas that dealers did not, suggesting that better access to repair supplies could reduce travel costs and repair delays for farmers.

In May 2021, an Australian Competition and Consumer Commission (ACCC) market study on agricultural machinery — which involved consultation with purchasers, manufacturers and the retailing and repair industry, including a survey of purchasers — also concluded that restricted access to repair supplies can limit competition. The ACCC recommended that agricultural machinery be included in any broader right to repair scheme introduced in Australia.

For some other products, there is credible evidence that manufacturer restrictions on repair supplies may be leading to consumer harm. However, further work is required to determine whether such harm is sufficient to warrant policy or regulatory interventions, and what form that intervention might take.

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- For **mobile phones and tablets**, concerns relate to manufacturers of well-known brands, such as Apple, restricting access to specialised tools and information required to repair their devices (such as calibration tools for serialised parts). The harm from these restrictions, such as higher repair prices, is likely to be greater given a highly concentrated market for new devices. Some customers are also unable to easily switch to alternative devices or operating systems in response to higher repair prices, due to ‘ecosystem lock-in’ (that is, switching could result in learning costs, content loss, and product incompatibility). Although the harm from higher prices may be small per consumer, these costs could add up to be significant across the economy given the ubiquity of the devices. However, data limitations and some countervailing considerations (for example, high product turnover that can lessen consumer lock-in) mean that the evidence on the extent of harm is not yet strong enough to justify specific policy interventions at this time.
 - The ACCC is well placed to conduct a market study to further investigate competition issues in this complex and important market.
 - For **medical devices**, the Therapeutic Goods Administration (under the essential principles) requires that manufacturers demonstrate that the design and construction of certain medical devices ‘eliminate or reduce risks as far as possible’ before they can supply them in Australia. Although the essential principles do not explicitly discourage repair, the Department of Health has pointed out that the responsibility for the ongoing safety and efficacy of their medical devices can encourage manufacturers to ‘limit, restrict or prohibit the repair of the medical device’. This approach to regulation fails to account for the potential harm from reduced access to repair services (such as delays in medical treatment and additional costs), particularly for time-sensitive procedures, or users that are highly dependent on their devices. In addition, risks are likely to be low for some devices, or for repairs by highly-qualified independent repairers (including those employed by hospitals).
 - The Commission is therefore recommending an independent public review of existing medical device regulations, to ensure they strike a balance between repair access and device safety that maximises community wellbeing.
 - For **watches**, small independent repairers have been raising concerns for many years that overseas manufacturers are refusing to supply watch repair equipment and components across multiple brands, affecting a significant share of the watch market. Although the aggregate harm to consumers from these restrictions is likely to be limited — due to the small size of the watch repair market in Australia — they can still be damaging, particularly to the viability of small independent watch repair businesses (run by artisan watchmakers), and so may contravene laws against anti-competitive conduct.

The Commission also examined several other product markets, but did not recommend specific policy changes or further action. For example, although several participants raised concerns about the domestic appliance repair market, other recommendations in this report are likely to remedy some of these issues, such as product labelling and improved enforcement of the consumer guarantees. Similarly, the imminent commencement of a

‘repair supplies obligation’ for motor vehicles (discussed below) means that further policy changes to address consumer harm in the motor vehicle repair market would be premature.

Facilitating a repair case under the Competition and Consumer Act

Where a lack of repair market competition is causing harm, Part IV of the *Competition and Consumer Act 2010* (CCA) contains provisions to address any anti-competitive behaviour, such as provisions against the misuse of market power or exclusive dealing. However, it can be difficult for a third-party repairer (many of which are small businesses) to pursue a case against a manufacturer, as the evidentiary bar can be high and legal action is costly and time consuming. Notwithstanding these potential barriers, the ACCC is also empowered to investigate anti-competitive conduct and to institute court proceedings.

In the Commission’s view, there would be considerable merit in the ACCC investigating whether conduct in repair markets is contravening the existing provisions, with a view to commencing proceedings. This would also test the impact of recent legislative changes and global repair market developments, as well as provide an educative or deterrent effect to the broader repair market. The ACCC’s initial investigations should focus on the repair market for watches. In particular, there are credible arguments that manufacturer restrictions on the supply of watch repair equipment and components may constitute a misuse of market power under Part IV of the CCA. Specifically, there is a plausible case that the watch repair market might be defined narrowly, that some manufacturers may have substantial market power, and that their conduct may substantially lessen competition by impacting the viability of Australian watch repairers. These arguments have as yet never been tested in an Australian court.

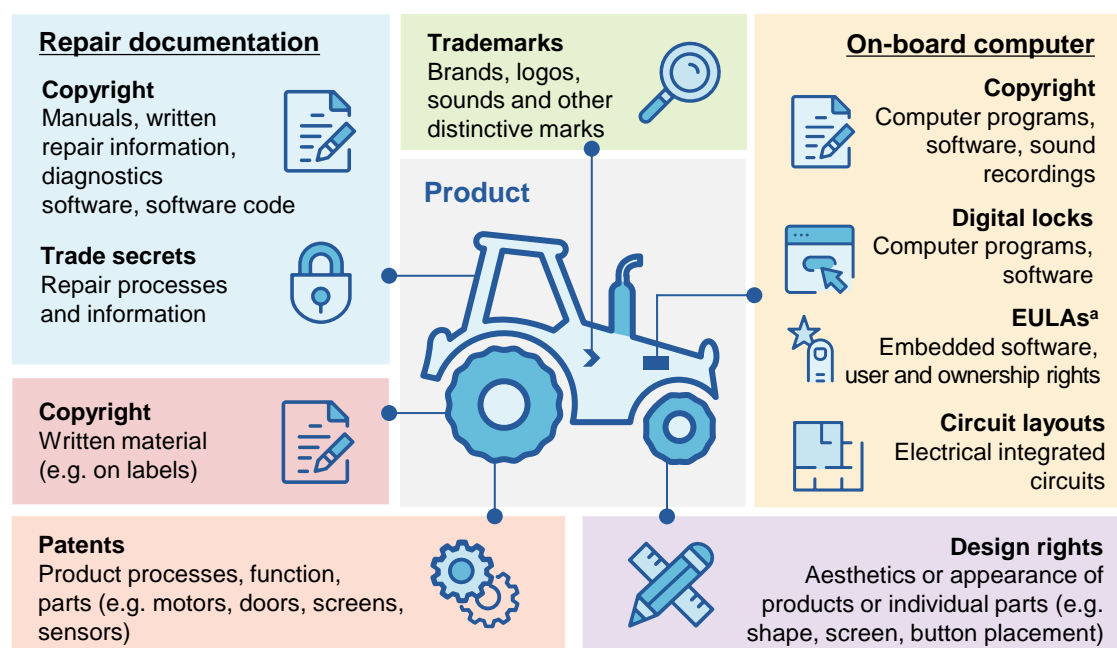
Intellectual property protections can impede access to repair information

Various concerns have been raised during this inquiry that intellectual property (IP) protections are being used to unnecessarily restrict repairs. Different IP rights provide different forms of protection and manufacturers may use multiple IP rights to protect a single product (figure 3).

The most significant of these barriers are copyright laws that prevent third-party repairers from accessing repair information. Two types of repair information are particularly affected:

- *manuals and schematics* — manufacturers can use copyright protections to restrict access to and distribution of information on how to repair products — for example, iFixit raised issues with some product manufacturers exerting their copyright and using legal threats to prevent retransmission of service schematics
- *diagnostic and software tools* — manufacturers can also use ‘digital locks’ that protect embedded software and computer code to prevent third parties from accessing embedded repair data (such as diagnostic data, and consumer and product-use information that would be important to know when troubleshooting and debugging problems).

Figure 3 A single product may be covered by multiple IP protections



^a End-user licence agreements.

Introduce a new ‘use’ exception to the copyright regime

At present, copyright laws inhibit the reproduction of copyrighted materials — including repair information such as manuals and schematics. In the Commission’s view, this does not strike the right balance between the interest of rights holders and of others seeking to access and use those materials for the purpose of undertaking repairs — and thus unnecessarily limits the ways in which repair information can be used. To address this, the *Copyright Act 1968* should be amended to include a new ‘use’ exception that allows for the reproduction and sharing of repair information under certain circumstances.

Participants were split on whether the new ‘use’ exception should be implemented via a specific exception for the reproduction and sharing of information for the purpose of repair (a **fair dealing** exception), or a general copyright exception (a **fair use** exception). In either case, any use of the copyrighted material would need to be considered ‘fair’ to be permissible.

- Some participants favoured a repair-specific fair dealing exception because it would provide greater certainty to independent repairers that use of the information for repair purposes is lawful. This is because it would allow lawmakers to explicitly state the circumstances under which third parties may (or may not) use and share copyright information for the purposes of repair. The Australian copyright regime currently takes this approach for other exceptions — including where copyright material is used for research or study; criticism or review; parody or satire; or reporting news.

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- Other participants favoured a general fair use exception because they considered it to be more flexible and technology-neutral, and applicable to any potential use of copyright material, including currently non-existent or unforeseen uses and contexts. This approach is used in the United States and has been previously recommended for adoption by the Productivity Commission in 2016 and the Australian Law Reform Commission in 2013.

In light of the Australian Government's current reform directions to copyright law, the Commission recommends the introduction of a new fair dealing exception that allows for the reproduction and sharing of repair information. This would allow repair activities to be explicitly and immediately embedded in the copyright exception regime.

That said, the case for a broader and principles-based approach to copyright exceptions is likely to grow over time, as new digital technologies emerge. For this reason, the Commission also recommends that, in the medium to long term, the Australian Government should pursue a more flexible copyright exception regime, including a principles-based 'fair use' exception.

Enable the circumvention of digital locks for repair purposes

Another barrier to repair is the uncertainty around when it is permissible for repairers to circumvent digital locks that block access to repair information (including diagnostic information and software tools). In the copyright regime, the provisions relating to technological protection measures protect only some types of digital locks from circumvention. And, even then, those provisions exhibit a clear intention to permit circumvention for repair purposes, by way of exception. But the ambiguity stems from the way the law has been drafted: it is unclear what preconditions need to be met to fall within the scope of permitted repair activities. To address this uncertainty, the copyright regime should be amended to clarify the circumstances under which repairers may legally circumvent digital locks.

Moreover, to improve consistency in the regime, the prohibition on repairers sharing or obtaining tools for circumventing digital locks should be removed. In particular, the Copyright Act should be amended to permit circumvention devices to be distributed for the purpose of facilitating a permitted act of circumvention. Some participants expressed concern that increasing access to circumvention devices generally could increase the scope for people to use such devices for illegal activities. However, it should be noted that this proposed amendment would not legalise circumvention activities that are currently illegal, nor would it change the existing incentives (set out in the penalty provisions) to engage in illegal activities under the Copyright Act.

Prohibit contracting out of exceptions

To complement the above reforms, the Copyright Act should be amended to include a 'contracting out prohibition' — that is, a provision that deems any agreement, or provision

of an agreement, that excludes or limits (or has the effect of excluding or limiting) the operation of certain copyright law provisions to have no effect.

Without such a provision, it is likely that some manufacturers would change the way they write contracts, so as to circumvent the new exceptions aimed at facilitating repair. While such practices are not universal, there is clear evidence that some manufacturers do engage in such behaviour. For example, many end-user licensing agreements contain terms that prohibit certain repair-related activities — and some specify that these restrictions operate even where such acts may be permitted under law (including copyright law exceptions). For this reason, a new contracting out prohibition will be crucial to fully realising the benefits of copyright exceptions, including those relating to repair.

Are broader right to repair laws needed?

Several jurisdictions overseas have introduced laws that impose obligations on manufacturers to provide professional repairers (and in some cases product owners) access to repair supplies — including spare parts, tools and repair information. These ‘repair supplies obligations’ typically relate to motor vehicle repair information, and spare parts for some household appliances, but there are proposals to introduce similar obligations on other products, such as consumer electronics and agricultural machinery (box 1).

In 2021, the Australian Government established a repair supplies obligation (due to commence in July 2022) which aims to expand access to repair information for motor vehicles — the *Motor Vehicle Service and Repair Information Sharing Scheme* (MV scheme). The scheme’s objective is to help improve competition in motor vehicle repairs, by requiring manufacturers to share vehicle diagnostic, service and repair information on fair and reasonable commercial terms.

Many participants to this inquiry supported the further adoption of repair supply obligations in Australia. In some cases, they proposed extending obligations to many other products and types of repairs supplies.

While the Commission sees a role for repair supplies obligations, their adoption should be targeted to areas where there is evidence that they are needed. In particular, given that repair markets for different products have varying characteristics and issues, a broad repair supplies obligation would not be a cost-effective or proportionate response to the problems identified. A targeted obligation for specific repair supplies in identified industries is preferable.

Review the motor vehicle scheme

It is still too early to assess how effective the MV scheme will be, but there is an opportunity to learn from how it has been implemented. For this reason, the MV scheme should be independently evaluated once it has been in operation for three years. The evaluation report should be made public. The evaluation should assess whether the scheme is effectively

meeting its objectives to improve competition and choice, whether the benefits outweigh the costs, and whether any changes are required.

Introduce new obligations for agricultural machinery

As noted above, there is strong evidence that manufacturers and dealers are restricting access to repair supplies for agricultural machinery (including repair manuals, diagnostic software tools and spare parts). This is causing material harm to farmers and other machinery owners through higher repair prices, reduced access and choice, and greater financial risks from repair delays. The characteristics of the agricultural machinery repair market mean that other mechanisms are unlikely to fully resolve issues with access to repair supplies. In particular, while an individual business' conduct may not necessarily contravene competition law (Part IV of the CCA), the actions of multiple agricultural machinery businesses to restrict access to repair supplies can potentially lead to poor competition in the market overall. And smaller businesses (such as farmers) can find it hard to take action given the considerable costs and high evidentiary bar. Further, bringing agricultural machinery within the scope of consumer laws would also likely fall short in practice — for example, remedies are not necessarily targeted towards repairs (as opposed to refund or replacement).

The Commission is therefore recommending that the Australian Government introduce a repair supplies obligation for agricultural machinery to overcome these issues. The proposed scheme would require manufacturers to provide access to repair information and diagnostic software tools to machinery owners and independent repairers on fair and reasonable commercial terms. This coverage of supplies reflects that repair information and diagnostic software tools are particularly difficult to access for both farmers and independent repairers. The Commission has not recommended the inclusion of spare parts in the initial rollout. Although some access to spare parts has been raised as a concern, an obligation to require access to spare parts would likely considerably increase the complexity of implementation, as well as compliance costs to manufacturers. In addition, there is a possibility that the availability of spare parts could be improved by a scheme that covers information and diagnostic software tools only, such as by increasing the viability of using generic parts. To this end, the decision about whether to include spare parts in the scheme should be reconsidered in the future, including as part of the scheme's evaluation.

In recognition of manufacturers' and dealers' concerns that such an obligation may lead to unintended risks, such as to safety, the scheme should be designed in a way that manages these risks. For example, it could limit some types of information to appropriately credentialled users (as is the case in the MV scheme).

Design of the scheme should commence by the end of 2022. This will provide time for the industry to progress voluntary information-sharing initiatives, which could potentially reduce the scope of a repair supplies obligation. And, like the MV scheme, this scheme should also be evaluated once it has been in operation for three years.

4 Improving product information and e-waste management

There is growing concern in Australia and overseas that the lifespans of everyday products are becoming unnecessarily short ('premature obsolescence') with detrimental impacts on consumers and the environment (including by contributing to the proliferation of e-waste). Some people claim that manufacturers are intentionally shortening the lifespan of products, such as consumer electronics and white goods, to force consumers to purchase new products ('planned obsolescence'). This view is based on the premise that the product had not reached the end of its technical lifespan and that consumers would have preferred to use the product for longer. Claimed planned obsolescence strategies include:

- designing products with structural weak points so they fail after limited use (for example, designing fans with poor quality metal components)
- software that reduces a product's performance (for example, software updates that slow down older models of smart phones)
- designing products in a way that prevents repair or upgrade (for example, using glue instead of screws or soldering components together to construct a device can make it difficult to disassemble for repair).

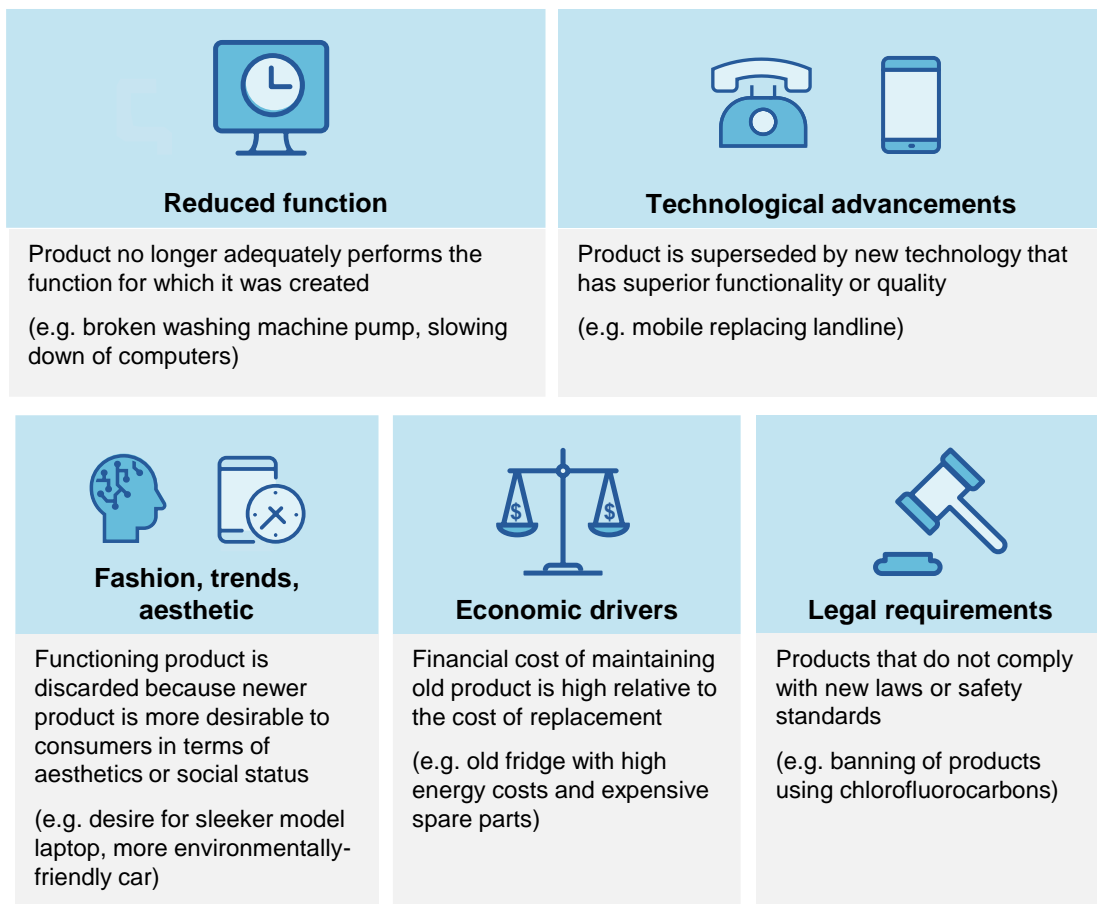
Such strategies, if they occur, could be frustrating for consumers if it means that product repairs are more difficult or they have to replace their products sooner than expected. The Consumer Action Law Centre argued that these strategies could be particularly harmful for vulnerable consumers who can either take on debt to purchase an essential good or try to live without it. However, product obsolescence does not always result in negative outcomes for consumers. It may simply reflect that a product that better meets consumer preferences has replaced an older 'obsolete' product. Indeed, a variety of factors contribute to product obsolescence, including changes in product function, technology, fashion, regulatory standards, and the relative cost of maintenance and repair (figure 4).

Various arguments have been made for governments and regulators to step in and prevent premature obsolescence (whether due to an intentional strategy by the manufacturer or some other reason). These arguments include: protecting consumers from unfair or misleading conduct; overcoming information gaps regarding product qualities (such as durability and repairability) that prevent consumers from making informed purchasing decisions; and reducing the unaccounted environmental impacts associated with short-lived products.

While it is not possible to exclude that some manufacturers engage in strategies to intentionally reduce product lifespans, the Commission has not found evidence to suggest that such practices are widespread. The ACCC submitted that it has seen little evidence of manufacturers designing a product to fail, and that competitive pressures and reputational risk will often mitigate incentives for such behaviour. Although a recent German study found evidence that the average period that consumers held onto some products (such as washing machines, televisions, and notebook laptops) is becoming shorter, this is often driven by

consumers choosing to replace their products with newer ones rather than the products breaking. There is also evidence that some products are becoming more durable. For example, data from surveys conducted by Consumer NZ reveal that product reliability of a range of white goods (such as dishwashers) increased between 2009 and 2018.

Figure 4 **Mind, matter, money: factors contributing to obsolescence**



Further, Australian consumer and competition laws contain provisions that provide some protection against behaviours commonly associated with planned obsolescence (such as prohibitions on misleading conduct). For example, in 2018 the ACCC required HP PPS Australia to compensate customers for misleading information and conduct, for failing to disclose at the time of sale that a subsequent firmware update would cause the printer to reject non-HP printer cartridges (at the time of purchase the printer accepted non-HP printer cartridges). Similar cases have been filed overseas against large tech companies (box 3).

Box 3 Legal cases relating to ‘big tech’ and software

There have been several cases filed against large technology companies internationally in response to concerns they were using software or other technical devices to deliberately reduce product performance. In 2017, for example, the French environmental association ‘Halte à l’obsolescence programmée’ (HOP) filed a complaint to the DGCCRF (French regulator) that printer companies including Epson, Hewlett Packard, Brother and Canon were inserting sensors into their printer cartridges to stop them working before they were actually empty. The outcome of this case is still pending. In 2017, HOP filed another complaint against Apple for software updates that were slowing down the performance of older smart phone models. Although the French regulator did not find that Apple intentionally reduced the lifespan of the product, it fined Apple for not informing iPhone owners that the updates would likely cause their device to slow down.

In Italy in 2018, the AGCM (Competition Authority) investigated claims that Samsung and Apple had deliberately used software updates to slow down the performance of their older smart phones. The AGCM subsequently found that the software updates were misleading to consumers and fined both companies €5 million. The AGCM also fined Apple an additional €5 million for inadequately informing consumers about the essential characteristics of lithium batteries (such as average duration and deterioration factors).

In the United States, Apple settled a class action lawsuit in 2020 for software updates that slowed down devices. A lawsuit was also issued against Tesla in 2019 alleging that software updates had reduced the battery capacity of Model S and X cars.

With respect to environmental concerns relating to premature obsolescence, there is a clear role for government to reduce the unaccounted environmental impacts associated with the production, consumption and disposal of goods. However, studies used to support policies to reduce environmental impacts by extending product lifespans (such as mandatory product design standards) often omit or do not fully consider other impacts that matter to the community (such as the effect of new policy measures on business costs and product prices). And in many cases, there are more effective and efficient ways (other than mandatory product design standards) to address environmental concerns.

Some inquiry participants suggested that tax incentives or subsidies for repair could reduce the environmental impacts of high rates of product replacement (such as waste to landfill) by reducing the price of repair relative to replacement in order to encourage repair. However, evidence from Europe suggests that these policies are not necessarily effective at influencing additional consumers to undertake repair. And there can be a high cost to achieve this limited additional demand for repair because it is necessary to subsidise all of the consumers who would have repaired their products anyway. Further, like mandatory product design standards, there are more direct ways available to address environmental concerns.

Therefore, additional policies to prevent premature product obsolescence — in the form of mandatory product design standards, tax incentives and subsidies, or expanded consumer protection laws to address planned obsolescence — are unlikely to have net benefits for the community. Existing consumer protection laws, combined with this inquiry’s recommendations — to increase the ability for consumers to access their rights and a new

product labelling scheme — are likely to address some of the behaviours associated with premature obsolescence.

A product labelling scheme for repairability and durability

For certain products, such as white goods and consumer electronics, many consumers are likely to value information about product durability (such as the average number of years before fault under normal use) or repairability (such as the availability of spare parts) when making purchasing decisions. For example, a recent German study found that consumers considered aspects of durability to be the most important characteristic when purchasing washing machines and smart phones.

Although there are already some sources of information on product durability and repairability available, such as on comparison websites, these do not cover all the types of products or aspects of durability or repairability that are likely to be relevant to consumers. Other sources of information, such as price, do not necessarily provide a good indication of product repairability or durability.

These information gaps could make it difficult for consumers to select more repairable and durable products based on their preferences, while reducing manufacturers' incentives to develop such products. The extent of the market distortion, however, is difficult to gauge and will vary by product.

A product labelling scheme that aggregates relevant information on product repairability and durability in a comparable format would help address these gaps. France recently introduced such a scheme for certain consumer electronic products and white goods. The idea also received support from many inquiry participants. Some participants expressed concerns that a scheme could lead to unnecessary costs (for example, by requiring labels for products for which consumers either already have access to relevant information or would not use the information) and have practical difficulties (for example, differences in climate and consumer behaviour make it difficult to estimate product life). That said, the experience in France on developing and implementing its labelling scheme (which is likely to be applied more broadly throughout the European Union) will be helpful to the development of an Australian scheme.

The Commission therefore recommends that the Australian Government (in consultation with consumer, environmental, and industry groups) introduce a product labelling scheme that provides repairability and/or durability information for consumers. As part of its development, the government should design and implement a pilot scheme (supported by consumer research) for a limited number of products where the benefits are likely to be greatest (such as white goods and consumer electronics). This would help build up the evidence base on the benefits and costs of labelling. The pilot scheme should then be reviewed to assess its effectiveness and whether it should be modified or expanded to include additional products in the formal labelling scheme.

Improving the management of e-waste in Australia

Australia's generation of e-waste is growing relatively quickly compared with other forms of waste (more than doubling over the past decade). E-waste from solar panels and lithium-ion batteries is also expected to grow particularly quickly over the next decade. However, e-waste remains less than one per cent of total waste generation (box 4). Key drivers of growth in e-waste include population and economic growth and changing consumer preferences. The electrification and computerisation of previously simple or analogue products (such as toothbrushes) has also been a contributing factor.

The relatively fast growth in e-waste has led to growing community concerns that valuable resources are lost when e-waste is landfilled (roughly half of Australia's e-waste is landfilled, with the remainder recycled). However, markets typically provide strong incentives to prevent the loss of valuable materials contained within e-waste (such as copper, zinc and rare earth metals) when their value exceeds the costs of extraction. Other materials in e-waste can be hazardous (such as mercury, lithium and brominated flame retardants) creating risks to the environment and human health and justifying government intervention.

The main way that the Australian Government has sought to address concerns about e-waste in Australia is through product stewardship schemes under the *Recycling and Waste Reduction Act 2020*. Product stewardship aims to manage the environmental, health and safety impacts of products, including electrical and electronic products that become e-waste. It promotes the shared responsibility of these impacts between consumers, manufacturers and retailers, across the full life cycle of a product.

Existing Australian product stewardship schemes collect and recycle a range of products, including televisions, printers, computers, mobile phones, printer cartridges and some lighting units, while a new battery recycling scheme is about to be launched. These are mostly voluntary industry schemes, although there is one co-regulatory scheme — the National Television and Computer Recycling Scheme (NTCRS), which covers televisions, computers, printers and computer parts. Manufacturers and importers of NTCRS products are required to fund the scheme through a levy payable to one of four co-regulatory bodies, which are responsible for recycling the products (to a minimum standard), based on targets set by government.

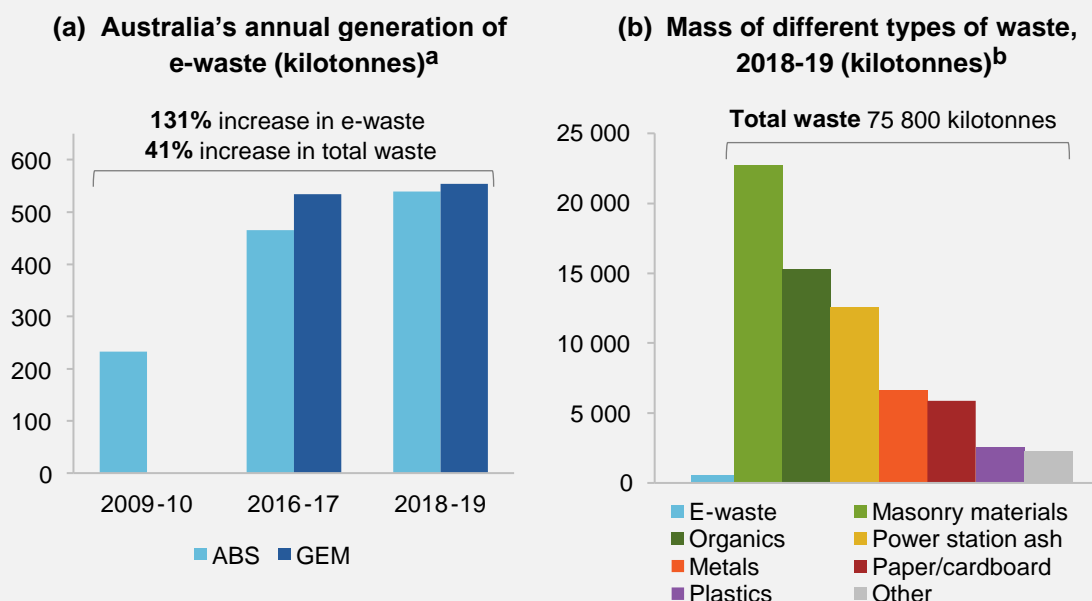
Products stewardship schemes could better facilitate repair and reuse of e-waste

Product stewardship schemes have had some success. In particular, the NTCRS has recycled more than 400 000 tonnes of televisions, computers and printers since 2012-13. However, the current design of product stewardship schemes like the NTCRS may be generating adverse incentives that limit their capacity to provide net benefits to the community.

Box 4 E-waste growth in Australia and potential impacts

‘E-waste’ refers to a broad range of electrical and electronic products (including batteries and all products with plugs or cords) that become waste once they are discarded. Australia’s annual generation of e-waste has grown relatively quickly over the past decade, compared with other types of waste. Between 2009-10 and 2018-19, the weight of e-waste generated annually has more than doubled (a 131 per cent increase), while total waste increased by 41 per cent (figure).

E-waste generation has grown but is a small share of total waste



^a GEM refers to the Global E-waste Monitor estimates of Australia’s annual e-waste generation.

^b E-waste figures are double counted, as e-waste is not a formal waste stream. ‘Other’ includes glass, textiles, leather and rubber, and other wastes.

The relative hazardousness of e-waste is difficult to measure. Everyday use of electrical and electronic products is unlikely to cause harm, with risks mostly arising during disposal and varying both by disposal method and product materials. Many materials (such as aluminium and gold) are relatively inert and recyclable, others (such as lead and lithium) can be hazardous but are recyclable, and some (such as arsenic and brominated flame retardants) are hazardous and cannot be recycled.

When disposed to landfill, e-waste can affect the environment and human health. For example, heavy metals used in e-waste products and brominated flame retardants (used to coat plastics in a range of products to reduce flammability) can be toxic to humans, plants and aquatic organisms. However, Australian landfills are generally well-regulated and well-managed, making risks to the environment and human health relatively low. That said, landfill quality can vary, particularly in regional and remote areas, generating increased risks from e-waste in some sites.

For one, the NTCRS was designed to be a recycling scheme only, with minimal incentives for co-regulatory bodies to repair and reuse collected e-waste. This results in some otherwise functional or repairable products being dismantled and destroyed for their component materials, rather than being put to higher-valued uses. Reuse of e-waste would help to extend product lifetimes and potentially lead to better environmental outcomes than recycling.

As such, the Australian Government should remove the disincentives against repair and reuse in the NTCRS, by amending the scheme’s annual recycling targets to also count reused e-waste products. This would allow NTCRS co-regulatory bodies to determine the best outcome for collected e-waste, instead of requiring all of it to be recycled. Any future product stewardship schemes should also include repair and reuse as options within their targets, where practical. As part of these changes to product stewardship scheme targets, ‘reuse’ would also need to be clearly defined, to reduce opportunities for manipulation or ‘gaming’.

Due to limited domestic recycling capacity — driven in part by insufficient scale for cost-effective mechanical recycling and a highly dispersed population — Australia also exports much of its e-waste for recycling. Although this can be a cost-effective and environmentally responsible solution, some overseas recycling facilities lack adequate infrastructure, regulation and local government safety nets to prevent adverse environmental and health outcomes. As such, permitting reuse within product stewardship schemes also requires careful implementation to reduce the risk of more products ending up in poor-quality recycling facilities overseas, generating worse health and environmental outcomes.

In addition, the Australian Government should make better use of electronic tracking devices to monitor the end-of-life locations for Australian e-waste. Given constraints on the use of surveillance devices in some states and territories, this could start with an increased use of electronic tracking devices in the NTCRS.

Findings and recommendations

The Australian repair sector

FINDING 2.1 THE AUSTRALIAN REPAIR SECTOR

A consumer's decision to repair or replace a broken product is primarily driven by price. The inconvenience of repair and consumer preferences for up-to-date products are also likely to make repair less appealing.

The repair sector accounts for about one per cent of all business revenue in Australia and has grown modestly over the past decade.

- Most repair activity (revenue, number of businesses and workers) comes from industries with more expensive products, such as motor vehicles and machinery, that require regular maintenance and where repair is often more cost-effective than replacement.
- There was less activity in repair industries for relatively less expensive products, such as electronics and appliances, where replacement tends to be more attractive. This is likely due to the relatively low and falling prices of these products over time, rapid technological development, and consumer preferences for new and up-to-date products.

Existing consumer rights under consumer law

FINDING 3.1 CONSUMERS SOMETIMES LACK THE ABILITY TO EXERCISE EXISTING RIGHTS

The Australian Consumer Law provides consumers with rights to obtain a remedy (repair, replacement or refund) for defective products through consumer guarantees.

These guarantees are reasonably comprehensive but consumers' ability to access their rights could be enhanced by:

- clarifying existing rights by explicitly requiring manufacturers to provide software updates for a reasonable period
- enabling a super complaints process to complement the existing Australian Consumer and Competition Commission's (ACCC) practices for identifying and dealing with potential systemic breaches of guarantees
- enhancing relevant State and Territory regulators' alternative dispute resolution options for individual cases, through options that can result in enforceable outcomes
- empowering the ACCC to seek pecuniary penalties on suppliers and manufacturers that fail to provide a remedy when required to do so, in addition to obtaining redress for affected consumers.

RECOMMENDATION 3.1 REQUIRE SOFTWARE UPDATES FOR A REASONABLE PERIOD

The Australian Government should amend the Australian Consumer Law to include a new consumer guarantee for manufacturers to provide reasonable software updates for a reasonable time period after the product has been purchased, with no option to limit or exclude that guarantee.

RECOMMENDATION 3.2 ENABLE A SUPER COMPLAINTS PROCESS

The Australian Government should enable designated consumer groups to lodge 'super complaints' on systemic issues associated with access to consumer guarantees, with the complaints to be fast tracked and responded to by the Australian Competition and Consumer Commission (ACCC).

The Australian Government should design the super complaints system in consultation with the ACCC, relevant State and Territory regulators, and consumer and industry groups. The system should be underpinned by operational principles — including criteria for the assignment (or removal) of designated consumer bodies, evidentiary requirements to support a complaint, and the process and time period by which the ACCC should respond.

RECOMMENDATION 3.3 ENHANCE ALTERNATIVE DISPUTE RESOLUTION POWERS

The State and Territory Governments should work together to identify opportunities to enhance alternative dispute resolution options in each jurisdiction to better resolve complaints about the consumer guarantees. In examining such opportunities, governments should consider:

- the extent to which consumers in some jurisdictions face less comprehensive access to alternative dispute resolution and whether this is consistent with a national consumer framework
- funding options to adequately resource enhanced alternative dispute resolutions
- the net benefit of options that enable regulators to make enforceable decisions or facilitate enforceable outcomes
- as an alternative, the net benefit of certain product markets (such as motor vehicles) having an ombudsman to make enforceable decisions or facilitate enforceable outcomes.

The outcomes of this activity should be published.

RECOMMENDATION 3.4 ENHANCE REGULATOR POWERS TO ENFORCE GUARANTEES

The Australian Government should, in consultation with State and Territory Governments, amend the Australian Consumer Law to make it a contravention for suppliers and manufacturers to fail to provide a remedy to consumers when legally obliged to do so under the consumer guarantees. This would empower the Australian Consumer and Competition Commission to seek pecuniary penalties, in addition to redress for affected consumers.

Competition in repair markets

FINDING 4.2 SOME LIMITS ON ACCESS TO REPAIR SUPPLIES LACK SOUND JUSTIFICATION

There is no evidence of a systemic competition problem across all repair markets. For some products, however, manufacturers are limiting third-party access to repair supplies (such as information, tools and parts).

While manufacturers often justify these limits as a way to safeguard against risks from poor-quality repair (particularly for safety and security), these risks can be overstated for many products and types of repair. Where manufacturers have genuine reasons to restrict access to third-party repair, they should show clear and verifiable evidence of the associated risks.

FINDING 4.3 LIMITS ON REPAIR SUPPLIES FOR AGRICULTURAL MACHINERY ARE CAUSING HARM

Manufacturer and dealer restrictions on repair supplies for agricultural machinery (including repair manuals, diagnostic software tools and spare parts) are causing material harm to farmers and other machinery owners through higher repair prices, reduced access and choice, and greater financial risks from repair delays. There is a strong case for additional measures to increase third-party access to repair supplies (recommendation 8.2).

FINDING 4.4 EXTENT OF HARM IN MOBILE PHONE AND TABLET REPAIR MARKETS IS UNCERTAIN

Manufacturer restrictions on repair supplies for mobile phones and tablets are likely to be resulting in some consumer harm (through higher repair prices and reduced choice of repairer), which could be material in aggregate, given the ubiquitous nature of such goods and the concentrated market for new devices. However, data limitations and some countervailing market characteristics (such as high product turnover) mean that the evidence base is insufficient to justify specific policy interventions at this time.

RECOMMENDATION 4.1 UNDERTAKE MOBILE PHONE AND TABLET MARKET STUDY

The Australian Competition and Consumer Commission should undertake a market study of the mobile phone and tablet market, to further examine the nature of the market, the magnitude of harm from repair barriers, and the merits of different policy responses (such as a repair supplies obligation on manufacturers).

FINDING 4.5 MEDICAL DEVICE REGULATIONS DO NOT CONSIDER REPAIR ACCESS

Current regulations of medical devices — such as the ‘essential principles’ in the Therapeutic Goods (Medical Devices) Regulations 2002 — aim to minimise safety risks to patients and device users, which has the effect of encouraging manufacturers to restrict access to repair. The regulations do not appear to account for the potential harm from reduced access to repair services (such as medical delays and additional costs), or that risks are likely to be low for some devices or for repairs completed by highly-qualified independent repairers.

RECOMMENDATION 4.2 REVIEW THE MEDICAL DEVICE MARKET AND REGULATIONS

The Australian Government should conduct an independent public review of existing medical device regulations to assess whether they strike a balance between repair access and device safety that maximises community wellbeing. The review should consider whether current regulations create incentives for manufacturers to restrict repair, and examine potential ways to improve repair access for low-risk medical devices or for highly-qualified independent repair technicians.

FINDING 4.6 HARM FROM RESTRICTIONS ON WATCH REPAIR SUPPLIES IS SMALL

The high degree of market concentration and consumer lock-in in the prestige watch market in Australia suggests manufacturer restrictions on the supply of watch repair equipment and components to small independent repairers are resulting in consumer harm. In aggregate, this harm is likely to be limited due to the small size of the prestige watch repair market in Australia.

Nonetheless, there are credible arguments that these restrictions may constitute a misuse of market power under Australian competition law (s. 46 of the *Competition and Consumer Act 2010*) that substantially lessens competition in the watch repair market by affecting the viability of local watch repairers. Such arguments have never been tested in an Australian court.

FINDING 4.7 ACCC ACTION COULD ADDRESS CONCERNS ABOUT ENFORCEMENT

There are considerable costs and a high evidentiary threshold for bringing cases under the existing competition provisions in Part IV of the *Competition and Consumer Act 2010* — such as the misuse of market power, exclusive dealing and anti-competitive agreement provisions. This is likely to discourage third-party repairers (particularly smaller businesses, such as watch repairers) from taking action against manufacturers and authorised dealers.

However, the Australian Competition and Consumer Commission already has powers to investigate credible cases of anti-competitive conduct in repair markets and, if warranted, institute court proceedings. New cases could test the impact of recent legislative changes and other global repair market developments, as well as provide an educative or deterrent effect for broader repair market conduct.

RECOMMENDATION 4.3 FURTHER INVESTIGATE CONDUCT IN WATCH REPAIR MARKETS

The Australian Competition and Consumer Commission (ACCC) should investigate whether manufacturer conduct in repair markets is contravening the restrictive trade practices provisions of the *Competition and Consumer Act 2010*, with a view to commencing proceedings. The ACCC's investigation should initially focus on whether the alleged conduct of watch manufacturers is breaching the misuse of market power (s. 46) provisions.

FINDING 4.1 MANUFACTURER WARRANTIES CAN DISCOURAGE INDEPENDENT REPAIR

Some manufacturer warranties include terms that automatically void the warranty if repairs are undertaken by a non-authorised repairer or use non-authorised parts. Other warranties often contain dense and difficult to understand language, which can lead consumers to mistakenly believe that such terms exist. These voiding clauses can deter consumers from using third-party repairs during the warranty period, limiting their choice of repairer and reducing competition in repair markets.

Many consumers are also not aware that consumer guarantees under the Australian Consumer Law cannot be displaced by terms in warranties, and the guarantees are not extinguished if consumers have previously used non-authorised repair services or spare parts (as long as those services have not caused any damage to the product).

RECOMMENDATION 4.4 ADD NEW MANDATORY WARRANTY TEXT

The Australian Government should amend r. 90 of the Competition and Consumer Regulations 2010, to require manufacturer warranties ('warranties against defect') on goods to include text (located in a prominent position in the warranty) stating that entitlements to a remedy under the consumer guarantees do not require consumers to have previously used authorised repair services or spare parts. The final wording of the text should be subject to consultation with industry and consumer groups.

FINDING 4.8 A PROHIBITION ON WARRANTY VOIDING CLAUSES IS NOT JUSTIFIED AT THIS TIME

Improvements to awareness of the consumer guarantees (through mandatory warranty text — recommendation 4.4) and the enforcement of those guarantees (through the introduction of pecuniary penalties — recommendation 3.4) will go some way towards reducing the deterrent effect of manufacturer warranty terms that void the warranty if any non-authorised repairs occur. Although a prohibition on such terms may have some additional benefits — through simplifying differences between warranties and the guarantees, clarifying ambiguous warranty language and covering non-consumer purchases — it may also increase costs for manufacturers and consumers, so is not justified at this time.

Intellectual property protections and repair

FINDING 5.1 COPYRIGHT LAWS ARE AN IMPEDIMENT TO ACCESSING REPAIR INFORMATION

Copyright laws that prevent third-party repairers from accessing repair information (such as repair manuals and diagnostic data) are the most significant unnecessary intellectual property-related barrier to repair in Australia.

RECOMMENDATION 5.1 AMEND THE TECHNOLOGICAL PROTECTION MEASURES REGIME

The Australian Government should amend the technological protection measures (TPM) regime in the *Copyright Act 1968* and Copyright Regulations 2017 to better facilitate repairers' access to embedded information protected by TPMs necessary for issue diagnosis and repair. To do this, the Government should:

- amend the existing TPM circumvention exception for repair in regulation 40(2)(d) of the Copyright Regulations 2017, to clarify its scope and application to permit circumvention in order to access information necessary to perform repairs to the product in which the TPM is installed
- amend section 116AO of the *Copyright Act 1968*, to permit the distribution of TPM circumvention devices for the purpose of facilitating a permitted act of circumvention (such as circumvention for the purpose of repairing a product in regulation 40(2)(d) of the Copyright Regulations 2017).

RECOMMENDATION 5.2 INTRODUCE A NEW 'USE' EXCEPTION IN THE COPYRIGHT ACT

The Australian Government should amend the *Copyright Act 1968* to include an exception that allows for the reproduction and sharing of repair information. In the immediate term, this exception should be included through the existing fair dealing framework in the Copyright Act.

In the medium to long term, the Australian Government should pursue a more flexible copyright exception regime, including a principles-based 'fair use' exception.

RECOMMENDATION 5.3 PROHIBIT CONTRACTING OUT OF COPYRIGHT EXCEPTIONS

To give full effect to copyright exceptions, including those relating to repair, the Australian Government should amend the *Copyright Act 1968* to make unenforceable any part of an agreement restricting or preventing a use of copyright material permitted by copyright exceptions.

Product obsolescence

FINDING 6.1 EVIDENCE ON PREMATURE OBSOLESCENCE IS MIXED

There is growing community concern in Australia and overseas that product lifespans are becoming unnecessarily short ('premature obsolescence'), with detrimental impacts on consumers and the environment.

However, the evidence is mixed on whether premature obsolescence is a significant problem.

- While it is not possible to exclude that some manufacturers engage in strategies to intentionally reduce product lifespans, such practices are unlikely to be widespread.
- The lifespans of some products are becoming shorter, but this is often driven by consumers choosing to replace their products with newer ones rather than the products breaking; indeed, some products are becoming more durable.
- For certain types of products (such as white goods and consumer electronics), some consumers find it difficult to access relevant information about product repairability and durability when making purchasing decisions. Such information gaps could contribute to premature obsolescence by preventing consumers from selecting more repairable and durable products based on their preferences, and reducing manufacturers' incentives to develop these products.

FINDING 6.2 INTERVENTIONIST RESPONSES TO PREMATURE OBSOLESCENCE ARE NOT NEEDED

Additional policies to prevent premature product obsolescence — in the form of mandatory product design standards, tax incentives and subsidies, or expanded consumer protection laws — are unlikely to have net benefits for the community. The Commission does not support such proposals.

Mandatory product design standards, as well as tax incentives and subsidies for repair, are costly and unlikely to be an effective way of addressing concerns about the environmental costs associated with premature obsolescence.

Existing consumer protection laws, combined with this inquiry's recommendations — to increase the ability for consumers to access their rights and a new product labelling scheme (recommendation 6.1) — are likely to address some of the behaviours associated with premature obsolescence.

FINDING 6.3 BETTER CONSUMER INFORMATION COULD LEAD TO LONGER-LIVED PRODUCTS

Product labelling is likely to help address information gaps in product repairability and durability for certain products, such as white goods and consumer electronics (finding 6.1). This can assist consumers to purchase more repairable and durable products that align with their preferences and encourage manufacturers to develop these types of products.

RECOMMENDATION 6.1 DEVELOP AND INTRODUCE A PRODUCT LABELLING SCHEME

The Australian Government should develop a product labelling scheme that provides consumer information about product repairability and/or durability. It should develop the scheme in three key stages.

1. Commit to introducing a product labelling scheme within five years and establish a working group (comprising relevant government agencies) to steer its development in consultation with consumer, industry and environmental groups.
2. Design and implement a pilot scheme for products where it is likely to have the most benefits (such as white goods and consumer electronics).
3. Review the pilot scheme within two years of commencement to assess its effectiveness and whether it should be modified or expanded to include additional products in the formal scheme.

Managing e-waste

FINDING 7.1 E-WASTE IS A SMALL BUT GROWING WASTE STREAM

Annual e-waste generation is growing relatively quickly compared to other waste streams (more than doubling by weight between 2009-10 and 2018-19), but is a small share (less than one per cent by weight) of total waste generated in Australia.

Information on e-waste is limited, but available data suggest that:

- the main sources of e-waste (by weight) over the past decade were tools, washing machines, air conditioners, small domestic appliances (such as adapters, irons and clocks), cooking appliances (such as food processors and grills), and cathode ray tube televisions
- solar panels and lithium-ion batteries are expected to generate growing quantities of e-waste over the coming decade.

FINDING 7.2 RISKS FROM E-WASTE IN LANDFILL ARE RELATIVELY LOW

Australia's landfills are generally well-regulated and well-managed, such that risks to the environment and human health from hazardous materials in e-waste are relatively low. That said, landfill quality varies, particularly among smaller and older landfill sites in regional and remote areas, generating increased risks from e-waste in some sites.

RECOMMENDATION 7.1 INCLUDE REUSE WITHIN NTCRS ANNUAL RECYCLING TARGETS

The Australian Government should amend the Recycling and Waste Reduction (Product Stewardship — Televisions and Computers) Rules 2021 to count e-waste products that have been repaired and reused towards the annual targets of the National Television and Computer Recycling Scheme (NTCRS) co-regulatory bodies.

The exact design features that need to be incorporated into the NTCRS to enable reuse options should be determined in consultation with the scheme's liable parties and co-regulatory bodies. The changes should be designed in a way that minimise any adverse incentives, including risks from:

- manipulating (or 'gaming' of) scheme targets, when the same products cycle through the scheme without legitimately being reused
- unlawful exports for reuse that result in more products in the informal recycling sector, generating worse health and environmental outcomes
- consumer concerns about data security for repaired and reused products.

Any future product stewardship schemes should also include repair and reuse as options within their targets, where practical.

RECOMMENDATION 7.2 USE TRACKING DEVICES TO MONITOR E-WASTE EXPORTS

The Australian Government should make greater use of electronic tracking devices to determine the end-of-life outcomes of Australian e-waste collected for recycling.

- At a minimum, the Government should increase the National Television and Computer Recycling Scheme's use of tracking devices, to better monitor co-regulatory bodies and their downstream recyclers and logistic providers.
- The Department of Agriculture, Water and the Environment should also examine different ways to use tracking devices in e-waste products outside the scope of product stewardship schemes, taking into account constraints on the use of surveillance devices in some states and territories.

Where possible, tracking should be conducted by independent third-party auditors, using risk-based sampling that focuses on the types of products and supply chains that present the highest risk of unlawful export or disposal of e-waste.

Are broader right to repair laws needed?

RECOMMENDATION 8.1 EVALUATE THE MOTOR VEHICLE INFORMATION SHARING SCHEME

The Australian Government should establish an independent evaluation of the Motor Vehicle Service and Repair Information Sharing Scheme, once it has been in operation for three years. The report of the evaluation should be made public.

The evaluation should assess whether the scheme is effectively meeting its objectives to improve competition and choice, whether the benefits outweigh the costs, and whether any changes are required.

RECOMMENDATION 8.2 INTRODUCE A REPAIR SUPPLIES OBLIGATION ON AGRICULTURAL MACHINERY

The Australian Government should introduce a repair supplies obligation on agricultural machinery that requires manufacturers to provide access to repair information and diagnostic software tools to machinery owners and independent repairers on fair and reasonable commercial terms.

Design of the scheme should commence by the end of 2022. To inform scheme design and implementation, the Australian Government should:

- monitor developments in the Motor Vehicle Service and Repair Information Sharing Scheme, as well as voluntary information sharing within the agricultural machinery industry, to determine the scope of the information to be included
- consider whether this obligation should be implemented through an extension of the Motor Vehicle Scheme or through a separate scheme.

The scheme should be evaluated after it has been in operation for three years, to assess its effectiveness and determine whether any changes are required, including extending the scheme to cover spare parts.

1 About this inquiry

Given enough time, most consumer products eventually stop functioning — they may break or fail, develop a defect, require maintenance (such as a replacement battery) or need a software update. At that point, repairing these products could enable their reuse, extending their lives and postponing their replacement.

In recent years, however, there have been growing concerns in Australia and overseas that repairs of consumer products are becoming progressively more difficult, resulting in costly and wasteful outcomes for both consumers and broader society. The difficulty of repair may partly reflect growth in the number of products that incorporate sophisticated (and miniaturised) technology — it is now commonplace for cars, fridges, and even coffee machines to have firmware and software embedded in them (as part of the ‘Internet of Things’). These technological advances have provided many benefits to consumers, but in some cases have also increased the complexity of repairs. Other products have always been complex or required a high degree of technical skill to repair, such as mechanical watches.

Partly as a result of this complexity, consumers often have to rely on the original manufacturer to fix or maintain their product, either directly or indirectly through a manufacturer-authorised repairer. Manufacturers are typically the main (and sometimes the only) provider of repair services for their products. This has contributed to widespread concerns that some manufacturers are using their strong position in repair markets to restrict competition, including by refusing to supply independent repairers (or owners) with the parts, tools and information they need to do repairs.

A related concern is that the lifespans of everyday products are becoming unnecessarily short and products are being discarded prematurely, contributing to wasted resources and the proliferation of ‘e-waste’. Some consumer groups claim that manufacturers are intentionally shortening product lives through software updates and design strategies that force consumers into buying new products (‘planned obsolescence’). Such claims are often made with respect to consumer electronics, particularly smartphones.

As a result of such concerns, there have been numerous calls for governments around the world to introduce a ‘right to repair’. In Australia, the ACT Minister for Consumer Affairs, Shane Rattenbury, noted that ‘the right to repair movement has been gaining momentum around the world. Legislative reforms are being introduced and strategies are being prepared’ (sub. 133, attach. A, p. 11).

1.1 The Commission's task

The terms of reference for this inquiry asked the Commission to ‘examine the potential benefits and costs associated with “right to repair” in the Australian context’ through a number of different frameworks. The Commission has also been asked to consider several specific issues during the course of the inquiry, including:

- regulatory barriers that prevent consumers from sourcing competitive repairs
- barriers and enablers to competition in repair markets
- the costs and benefits associated with regulated ‘right to repair’ approaches
- how intellectual property (IP) rights or commercially-sensitive knowledge interact with a right to repair
- the effectiveness of current arrangements for preventing product obsolescence and the proliferation of e-waste
- the impact on market offerings from any policy changes.

What is a ‘right to repair’?

Although there is no universal definition of a ‘right to repair’ (box 1.1), it typically relates to the ability of consumers to have their products repaired at a competitive price, by the repairer of their choice. No single policy alone would enable a right to repair, however — it involves a broad range of policies, including competition and consumer policies, IP protections, and product design and labelling standards.

The differing views on what a right to repair entails were reflected in the wide variety of policy proposals put forward by inquiry participants, including:

- regulatory obligations on manufacturers to provide access to repair inputs (Abbas, sub. 34, p. 3; Marriott, sub. 16, p. 1)
- strengthening the consumer guarantees under the Australian Consumer Law or similar warranty protections (GPA, sub. 27, pp. 7–8, 15–16; NFF, sub. 55, pp. 1, 5)
- changes to IP protections to facilitate information sharing and access to embedded software (McGrath, sub. 15, pp. 2, 11; Pirate Party, sub. 74, pp. 10–11)
- prohibiting unfair trading practices to address manufacturer behaviours associated with planned and premature product obsolescence (ACCC, sub. 106, p. 5)
- minimum product design standards to improve durability and repairability (Barwon South West Group, sub. 33, p. 2; Scallan and Gertsakis, sub. 125, p. 16)
- product labelling for improved information about durability and repairability (Buckingham, sub. 22, p. 4; Norris, sub. 89, p. 1)
- tax incentives for consumers or subsidies for repairers (Horan, sub. 11, p. 1; Lewis-Fitzgerald, sub. 75, p. 2; Transition Town Sunshine Coast, sub. 28, p. 1).

Box 1.1 Participants' views on a 'right to repair'

Several participants agreed with the Commission's definition that a 'right to repair' relates to a consumer's ability to have their products repaired at a competitive price by the repairer of their choice (AAAA, sub. DR206, p. 1; DRC, sub. 69, p. 1; GAMAA, sub. 58, p. 2; RA and AREMA, sub. 62, p. 5).

Other participants viewed the right to repair as a focus on the removal of unnecessary barriers to repair, such as by ensuring that independent repairers and consumers have access to the spare parts, information and equipment needed to repair products, including access to embedded software in products. For example, the National Farmers Federation stated that the right to repair:

... should serve a single purpose: to make illegal any barriers which prevent the owner of a product making repairs to that product themselves or using a contractor of their choice, where these barriers are not necessary to protect the legitimate commercial interests of the manufacturer or supplier. (sub. 55, p. 4)

A number of other stakeholders framed the right to repair in environmental and ecological terms, where repairing and reusing products is a necessary ingredient for reducing waste and moving towards a 'circular economy'. For example, one submission noted that it 'should be defined as a consumer getting an economic incentive to shift behaviour towards repairing an item, away from wastefully disposing and purchasing new' (Hamilton, sub. 57, p. 2). Similarly, Karl May stated:

The concept of the right to repair has at its heart the widely agreed need to reduce the environmental damage being caused by our 'throw away' society, damage that begins at the raw material extraction stage, proceeds through the basic processing and manufacturing stages, and finally into the marketing, consumption and disposal stages, with all of the attendant wasteful packaging, transport, and energy costs. (sub. 129, p. 1)

Relatedly, some inquiry participants viewed the right to repair as being about the ability of consumers to purchase products that are repairable and durable.

This right is a proxy for the planet we depend on, its health underpins all life. That needs to be the starting point as this is causal in the need for, not just repair but superior product design overall. It should be a right to not have shit products that degrade the Earth's natural capital, which we all depend on. (Scallan and Gertsakis, sub. 125, p. 3)

Other submissions took a broader approach, defining 'right to repair' to touch on several of these objectives at once. For example, the Australian Democrats suggested that the right to repair is:

... the right for a consumer, on their own or through a third party, to repair or upgrade the product they own with ease, for a fair price and with access to components required to undertake a work — with an emphasis of repair or upgrade over replacement. (sub. 100, part 1, p. 5)

Similarly, Professor Wiseman and Dr Kariyawasam took an overarching approach to the definition, putting the right to repair movement within an historical context:

... put simply, at the heart of the right to repair movement is recognition of the fact that legal, regulatory and policy reform is needed to rebalance the relationship between global and national manufacturers of digital (or smart) goods and machinery and the customers who buy those goods, to ensure that those consumers have reasonable access to the repair information and services, spare parts and tools that are necessary to keep those goods in good working order for reasonable product life spans. It also recognises that the inability to repair that consumers are currently experiencing is increasingly and globally important as countries transition to circular economies. (sub. 105, p. 3)

Some participants also encouraged the Commission to avoid defining a 'right to repair' at all, and to 'instead define the problems that most urgently need addressing and then look at best fit solutions, which may go beyond a "right to repair" in other countries' (CHOICE, sub. 126, p. 5).

Around the world, a wide range of reforms have also been connected to right to repair policies. Many of these changes have been concentrated in the United States (US) and the European Union (EU), which have taken different approaches — with the US focusing on consumer rights and competition issues, whereas the EU approach focuses more on resource management (box 1.2).

Repair rights are not unlimited or unconstrained

Like most other rights, a right to repair is not unlimited or unconstrained. As the Australian Law Reform Commission (ALRC) noted in its 2015 report *Traditional Rights and Freedoms — Encroachments by Commonwealth Laws*, ‘it is widely recognised that there are reasonable limits even to fundamental rights’ (2015, p. 43).

One such limit is that a right to repair is not necessarily the same as an *obligation* to repair. Although more repairs may be beneficial to the environment, consumers make choices to repair their products by weighing up a range of other factors, including their preferences for newer products. Newer products may also contain fewer hazardous materials and have lower energy requirements, making the environmental consequences more ambiguous.

A right to repair will also be constrained by the cost of providing repairs, whether to manufacturers, consumers or others. As such, it is not always preferable or cost-effective for consumers to repair their products or to keep them going for as long as possible, nor desirable to require a manufacturer to provide repairs and support at *any* cost. As the ACCC noted:

In many circumstances it will not be reasonable or efficient to require a manufacturer to support a product for an indefinite amount of time. At some point it may be cost prohibitive for manufacturers to continue to support older products. What is ‘reasonable’ will be circumstance-specific and depend on a number factors such as what a reasonable consumer would expect for goods of that kind. (sub. 106, p. 4)

Relatedly, a right to repair may create tensions with other rights — as the ALRC noted, ‘important rights often clash with each other, so that some must necessarily give way, at least partly, to others’ (ALRC 2015, p. 43). For example, one consumer’s right to repair may conflict with another consumer’s ‘right’ to affordable products, such as if product design standards increase the cost of the original product (chapter 6). Similarly, a consumer’s right to repair their goods could infringe on a manufacturer’s right over their IP (chapter 5), or their right to not be held liable for the unreasonable actions of others (such as through claims under the warranty or consumer guarantees).

Some constraints on a right to repair may also be justified on other grounds. For example, it may be reasonable to limit a right to repair for those without adequate training or skills to repair products with a high safety risk, such as for gasfitters servicing hot water systems (chapter 4). Indeed, some inquiry participants suggested that a right to repair should be contingent on the quality of the repairer (for example, AIIA, sub. 127, p. 4).

Box 1.2 The ‘right to repair’ in the United States and Europe

United States (US)

In the US, much of the debate has focused on consumer and competition issues, particularly access to needed spare parts, tools and information, and tensions with intellectual property rights.

The term ‘right to repair’ originated in Massachusetts, when it enacted legislation for a motor vehicle right to repair in July 2012, followed by a ballot initiative to strengthen the law later that year, which passed with overwhelming (86 per cent) support (Boston Globe 2012). The legislation required manufacturers to give independent repairers the same diagnostic and repair information made available to dealers and authorised repairers, including diagnostic tools (Commonwealth of Massachusetts, *An Act Relative To Automotive Repair*, 2013, ch. 165).

In 2014, with multiple states considering similar legislation, a coalition of organisations representing motor vehicle manufacturers and repairers introduced a nationwide memorandum of understanding, effectively replicating the Massachusetts policy across the US (Wiens 2014). In 2020, almost 75 per cent of the Massachusetts electorate voted in favour of a subsequent ballot initiative, expanding the state’s scheme to cover telematic systems that collect and wirelessly transmit mechanical and repair data (Galvin 2020, p. 4; Robertson 2020).

More broadly, over 30 US states have also been considering right to repair legislation for all digital products (The Repair Association 2021), with the New York State Senate passing a version of the legislation in June 2021 (New York State Senate 2021). And in July 2021, the Biden administration issued an executive order encouraging the Federal Trade Commission (FTC) to limit agricultural machinery manufacturers from restricting repairs and to issue rules against anti-competitive behaviour in the repair of consumer electronics (The White House 2021). The FTC board subsequently voted ‘to ramp up law enforcement against repair restrictions ... that violate antitrust or consumer protection laws’ (FTC 2021a).

European Union (EU)

In Europe, a right to repair is more commonly associated with product design (both for repairability and durability) under the EU’s Ecodesign Directives, as well as resource management through the European Commission’s (EC) Circular Economy Action Plans. For example, from March 2021, some household appliances are required to have selected spare parts available to professional repairers (and some parts for end-users) for a minimum period of seven or ten years (depending on the part), as well as repair and maintenance information. The requirements cover washing machines and washer-dryers (EU Regulations 2019/2023), dishwashers (2019/2022), refrigerators (2019/2019), and televisions and other electronic displays (2019/2021).

In March 2020, the New Circular Economy Action Plan committed the EC to ‘work towards establishing a new “right to repair” and consider new horizontal material rights for consumers’, such as access to spare parts, repairs and upgrading services (EC 2020b, p. 8). Much of the focus is on consumer electronics, including a right to update obsolete software, regulatory requirements for a common mobile phone charger, and expanded e-waste recycling schemes (EC 2020b, p. 10).

Since 2010, the EU has also had similar requirements to the Massachusetts right to repair law (under EC and EU Regulations 715/2007, 692/2008, 595/2009 and 566/2011), providing ‘unrestricted and standardised access to vehicle repair and maintenance information to independent operators ... in a manner which is non-discriminatory compared to ... authorised dealers and repairers’ (art. 6(1), EC Regulation 715/2007).

However, this relationship works both ways — a manufacturer’s actions may similarly (and sometimes disproportionately) infringe on a consumer’s right to repair their products. The Northern Sydney Regional Organisation of Councils noted that an Australian right to repair:

... will need to balance the delicate relationships between consumer rights and producer requirements, for example IP, warranties, safety, performance. (sub. 117, p. 3)

Moreover, none of the constraints necessarily undermine the basic concept of a right to repair as a consumer’s ability to repair faulty goods, or access repair services, at a competitive price. And as the ALRC noted in its report, ‘much of the value of calling something a right will be lost if the right is too easily qualified or diluted’ (2015, p. 44).

1.2 The Commission’s approach

In assessing the case for a right to repair in Australia, the Commission has taken a community-wide view, balancing the (sometimes competing) interests of consumers, manufacturers, retailers and repairers, to achieve the greatest benefits for the community as a whole (including the environment). This includes considering the effects of policy interventions over time, such as incentives for product innovation and the effect on international trade. Where the Commission has established that a regulatory response to enable a right to repair may have merit, it has also endeavoured to demonstrate that any potential new regulation will deliver net benefits to the community.

A focus on unnecessary barriers to repair

As part of this community-wide approach, the Commission’s focus has been on whether there are any barriers to repair that may require a policy response. Not all impediments to repair require government intervention. For instance, high repair costs may discourage some consumers from repairing their products. Similarly, consumer attitudes and preferences for new products are likely to reduce the number of repairs. But neither of these automatically imply a role for government.

The Commission’s focus has instead been on any *unnecessary* regulatory or manufacturer-imposed barriers to repair that arise due to market failures or poor regulatory design. For example, market power, such as when a manufacturer has a monopoly over the repair of a product, can impede competition in repair markets and distort consumer decisions about whether to repair or replace their products. That said, strong competition in the primary market for the product may offset higher prices from a lack of competition in repair markets (chapter 4). Other forms of market failure relate to difficulties that consumers can face when seeking information — for example, in relation to the durability or repairability of products (chapter 6). Regulations can also pose a barrier to repair where they are poorly targeted or there are gaps in the arrangements.

The scope of products considered

Some inquiry participants suggested that the Commission should examine the concept of a right to repair for *all* products (LGNSW, sub. 97, p. 4), seeking to encourage additional repair across the entire economy. Other submissions listed broad categories that would, in effect, encompass almost all products, such as anything with a circuit board or made of plastic (ZWV, sub. 90, p. 2), or all consumer durables and devices with a power cord (ALGA, sub. 79, p. 2).

However, barriers to repair are not necessarily present across every product market. As one stakeholder noted, a right to repair is ‘likely to have different connotations in different industries and market segments’ (MD Solutions, sub. 41, p. 1), due to the unique circumstances of each market.

As such, the Commission has focused on some products and repair markets more than others, depending on where there appear to be barriers to repair and based on views raised during meetings and in submissions.

Overall, the Commission has focused primarily on repair services for *physical* products, given the inherent difficulty of ‘repairing’ intangible goods or services. To further narrow the scope of potential product markets to examine, the Commission sought views from inquiry participants, and also suggested a number of common characteristics that may be of most concern, which a number of participants agreed with.

- High-cost durable goods (such as motor vehicles, agricultural machinery and mechanical watches) require a significant and infrequent outlay to replace, making the consequences of barriers to repair costly and salient to consumers (AIIA, sub. 127, p. 6; Barwon South West Group, sub. 33, p. 2; NSROC, sub. 117, p. 4).
- Goods with proprietary technology, embedded software (or firmware) or that collect data (such as telematics), can blur the line between a physical product and an intangible good or service, adding repair complexities and justifying a particular focus on these types of products (GEOTAB Australia, sub. 61, p. 2; iFixit, sub. 107, pp. 10–11; LAQ, sub. 68, p. 4; McGrath, sub. 15, p. 3; Wiseman and Kariyawasam, sub. 105, p. 4).
- The proliferation and ubiquity of consumer electronics (including mobile phones and computers) mean that barriers to repair can generate broad-based harm, even if only minor in their individual impact (Australian Democrats, sub. 100, part 1, p. 5; CALC, sub. 119, pp. 4–5; East Waste, sub. 18, p. 3; iFixit, sub. 107, pp. 10–11).

Other participants suggested that, rather than focus on durable items with established (though possibly imperfect) repair markets, the Commission should instead focus on products that lack such a market at all, such as the ‘low-cost, short-life electrical and electronic products such as solar garden lights, power tools, toys, small appliances and portable consumer electronic devices (for example cameras, wearables)’ (NSROC, sub. 117, p. 5). A number of other submissions agreed that these kinds of small domestic electrical appliances should

be a focus for the inquiry (LG Electronics, sub. 38, p. 8; Repair Cafe Woolloongabba, sub. 42, p. 1; SA Repair Café Coordinators, sub. 46, p. 6).

A number of stakeholders suggested that the Commission should also focus on the right to repair environmentally-damaging products, particularly those with hazardous materials, made from non-renewable or finite resources, or that contribute to the growth of solid waste or e-waste (Barwon South West Group, sub. 33, p. 2; City of Melbourne, sub. 20, p. 2; LGNSW, sub. 97, p. 5; WALGA, sub. 86, p. 2). For example, the Waste Management and Resource Recovery Association suggested that priority products for a right to repair should be those covered by a current or prospective product stewardship scheme (sub. 85, pp. 4–5). Another participant suggested that the Commission ‘should focus on consumer items that one sees in a typical local council clean-up’ (Hamilton, sub. 57, p. 2). And the Centre for a Waste-Free World proposed including clothing and textiles (sub. DR172, p. 17).

Rather than focus on products within scope for the inquiry, some participants instead focused on products that should *not* be in scope, for a number of reasons.

- Some manufacturers and industry associations suggested that their products’ repair markets have no issues, so should not be in scope. Examples included gaming consoles (IGEA, sub. 103, p. 8), fridges and air conditioning units (RA and AREMA, sub. 62, p. 5), gas appliances (GAMAA, sub. 58, p. 2), and water heaters (AWHF, sub. 94, p. 2; Dux Hot Water, sub. 21, p. 2).
- Other participants stated that motor vehicles should not be covered by the inquiry, as there is already a proposed information sharing scheme (chapter 8) (AADA, sub. 98, p. 5; Toyota Australia, sub. 118, p. 2; Wiseman and Kariyawasam, sub. 105, p. 4).
- Some stakeholders also suggested that safety concerns from repairs mean that some products should be excluded — such as medical and assistive equipment (ATSA, sub. 23, p. 89; Medtronic, sub. DR186, p. 3; Stryker, sub. 87, p. 2).

However, the Commission did not exclude any particular product market from its analysis, and instead considered the veracity of concerns put forward in submissions with respect to particular products, as well as the appropriateness of different policy responses in individual product markets.

A guide to this report

The remainder of this report sets out the Commission’s findings and recommendations on a right to repair in Australia.

The next chapter looks at the nature of repair markets and how consumers make repair decisions, while chapter 3 examines the scope and limitations of existing rights to repair in the consumer guarantees under the Australian Consumer Law.

Chapter 4 looks at the state of competition in different repair markets, including the nature of barriers to competition in repair markets and their justifications, and regulatory options to

address specific issues. Chapter 5 then explores the ways that IP can act as a barrier to repair, the evidence for this in Australia, and what the Government could do to address these barriers.

Chapter 6 looks at claims of, and evidence for, premature or planned product obsolescence, including potential policy responses, before chapter 7 examines current systems for managing Australia's e-waste generation, including the design of product stewardship schemes.

Chapter 8 then concludes, by examining the case for broader right to repair laws in Australia (and outlining a decision-making framework), particularly through different ways to design a 'repair supplies obligation' on manufacturers.

1.3 Conduct of the inquiry and consultation

In conducting this inquiry, the Commission met with a range of individuals and groups across the country and around the world, representing manufacturers, retailers, consumers, repairers (both independent and authorised by manufacturers), waste managers, environmental groups, and a number of government agencies and policy experts.

Following the release of an issues paper on 7 December 2020 that outlined the scope of the inquiry and areas where the Commission was seeking information, the Commission received 146 submissions from a wide range of interested parties, including numerous groups and individuals.

To seek additional public feedback on its approach and draft findings and recommendations, the Commission released a draft report on 11 June 2021, and received another 97 submissions from inquiry participants. The Commission also received 243 brief comments from interested parties throughout the inquiry.

After the release of the draft report, the Commission conducted public hearings from 19 to 21 July 2021, both in-person (in Canberra) and virtually. Submissions and transcripts of the public hearings are available on the Commission's website.

The Commission also hosted or attended several roundtables, workshops, seminars, summits and committee meetings, to receive stakeholder feedback on a right to repair in Australia. For example, the Commission hosted a consumer goods roundtable on 19 August 2021, bringing together a number of consumer groups, industry bodies, regulators and policy experts to discuss issues including durability guidance, product labelling, availability of software updates and access to spare parts.

The Commission greatly appreciates the contributions of everyone who provided input to the inquiry (appendix A).

2 The Australian repair sector

Key points

- Many factors influence a person's decision to repair or replace a product.
 - The relative price of repair and replacement is generally the most important factor. It tends to be more cost-effective to repair (rather than replace) more expensive products, such as cars, when they break. For less expensive items, such as small household appliances, it is often cheaper to replace them.
 - Other factors, such as the convenience of repair, the type of product and the type of consumer, can influence the likelihood of repair. For example, products that people see as an investment are more likely to be repaired than products that have a fashion role. And people's preference for new technologies and features can make replacement more appealing, whereas people who are more concerned about the environment may prefer to repair.
- Australia's repair sector experienced steady growth in revenue, the number of businesses and employment over the past decade, although the rate of growth varied by industry.
 - Repairs of expensive products, such as motor vehicles and machinery, dominate the sector. This is likely because these products tend to require ongoing maintenance, and repair is often cheaper than replacement. These repair industries have grown over the past decade, reflecting greater demand for motor vehicles as well as mining and construction activity.
 - Repairs of relatively less expensive products, such as appliances and electronics, make up a smaller portion of the sector. In particular, the electronics repair industry has shrunk over the past decade. This likely reflects that replacement has become more attractive than repair due to falling prices for new electronics, rapid technological development, and consumer preferences for the latest technology.
- There are challenges across some repair industries that make repair less appealing.
 - Some repair industries face difficulties finding appropriately skilled workers, which likely reflects broader skills shortages across many trades in Australia.
 - Repair is becoming more complex and expensive, largely due to the increasing computerisation of products as well as the cost of labour, specialist tools and spare parts.
 - The price of new products is declining in some industries, such as appliances and electronics.

Advocates of a right to repair often emphasise the potential benefits of policies that unlock greater repair activity in Australia. While later chapters address specific repair barriers in Australia, this chapter provides context on the factors that influence consumers' decisions to seek repair, and the size of different repair industries in Australia. The analysis illustrates that, even in the absence of legal or regulatory barriers to repair, repair activity generally varies due to the relative price of repair and replacement, the convenience of repair, the nature and function of the product, and consumer preferences. This means that

indicators — such as the rate of repair and the size of repair industries — alone may not give a clear picture of whether there are unnecessary barriers to repair.

Section 2.1 provides a framework to examine the repair–replace decision faced by consumers and identifies some of the key factors influencing their decisions. Section 2.2 provides a snapshot of the Australian repair sector by industry and identifies the drivers of industry trends.

2.1 To repair or replace, that is the question

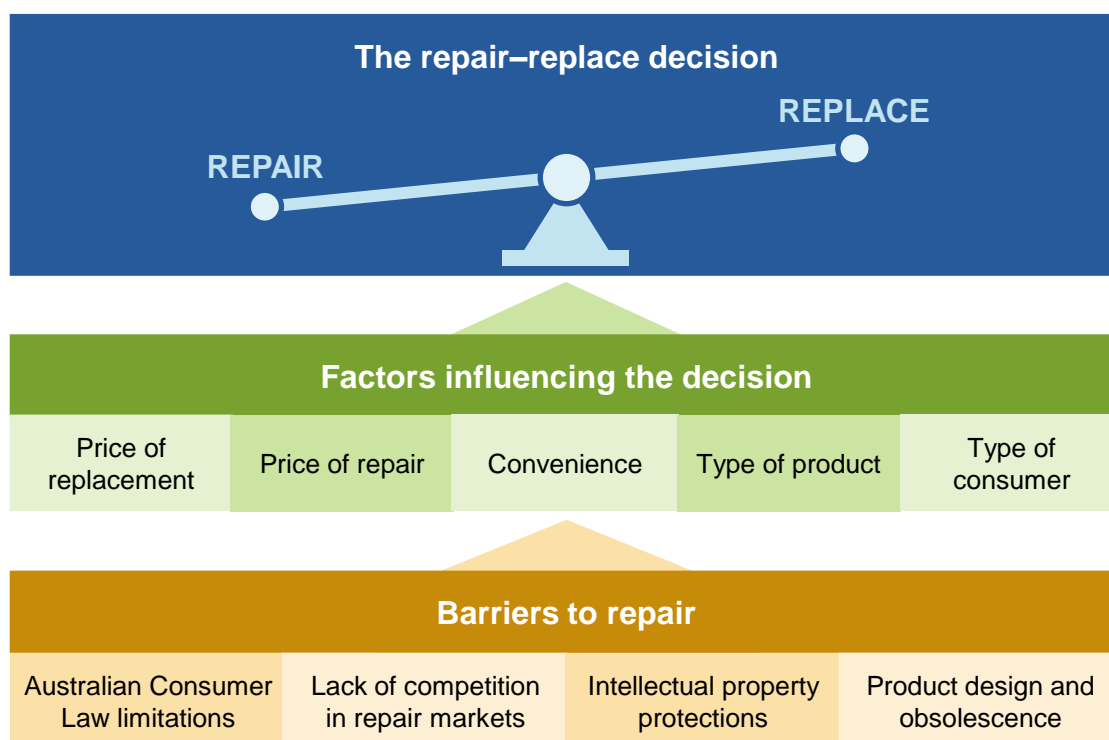
When a consumer (or business) has a broken product, they can usually choose to either repair and reuse, or discard and replace it.¹ This decision can be simple in some instances — such as replacing an old, broken fridge with a newer, more energy efficient one. In other instances, it can be more difficult, such as for a three-year-old mobile phone that could be repaired affordably, but would need to be shipped away to a repairer for several weeks.

When a consumer is weighing up whether to repair or replace a product, there are many factors that may affect their decision, and these factors will likely vary depending on the situation and the type of product and consumer (figure 2.1). The relative price of repair and replacement tends to be important. Other factors, such as convenience and the type of product and consumer, can also affect the repair–replace decision.

There are also potential barriers to repair that can influence the decision (figure 2.1). For example, if a consumer finds it difficult to enforce their consumer rights to have a product repaired or cannot access repair supplies, this can increase the cost and inconvenience of seeking repair.

¹ Sometimes, the decision is made by an insurer (as part of an insurance claim), or by the supplier or manufacturer (under a warranty or the consumer guarantees under the Australian Consumer Law (chapter 3)). In other instances, such as when a consumer deems a product obsolete, they may not replace it at all.

Figure 2.1 Framework for the repair decision



The relative price of repair and replacement is often the most important determinant of repair

Consumers often compare the price of repair and replacement when deciding what to do with a broken product. The price of repair may be influenced by:

- labour costs (or the leisure or income foregone by a self-repairer)
- the complexity of the product, the nature of the fault and the time needed to repair
- the cost of spare parts
- shipping or travel costs
- call-out and quote fees.

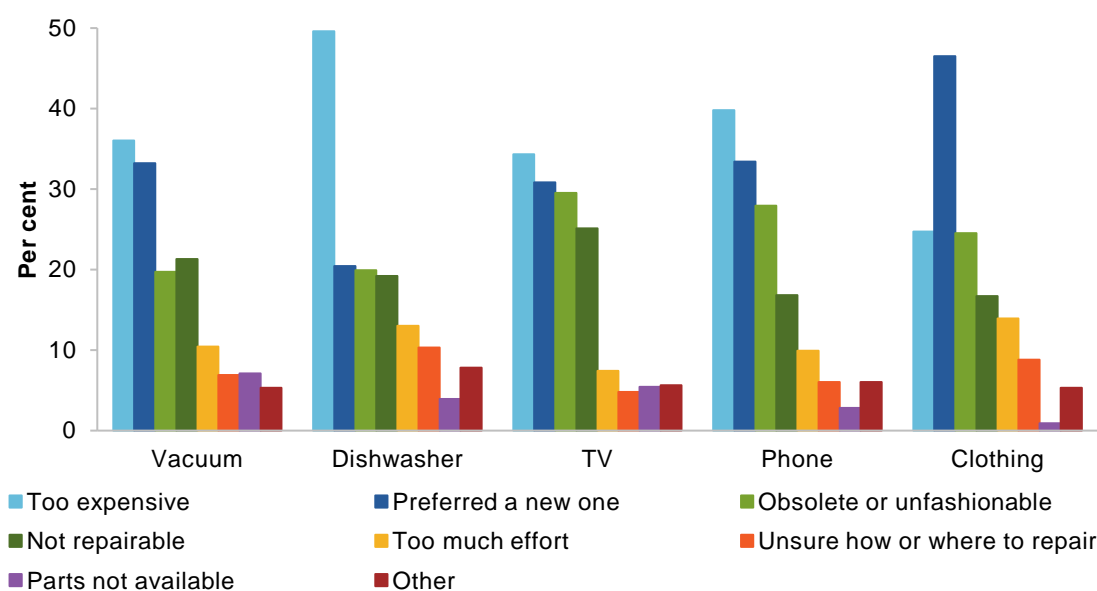
Similarly, the price of a replacement product can include:

- the purchase price of the product ‘off the shelf’
- shipping costs
- installation costs, as well as costs to remove and dispose of the old product.

While there are limited data on the rate of repair in Australia, studies of consumers in Australia and overseas suggest that the price of repair relative to replacement is often the most important

consideration (EC 2018, p. 11; Sabbaghi et al. 2017, p. 137). For example, in a European study examining reasons why consumers decided to replace rather than repair, the most common response was that repair was ‘too expensive’ (figure 2.2). In a separate Australian study, some common reasons consumers gave for replacing rather than repairing household products were also related to the price of repair (42 per cent) or because replacement was inexpensive (28 per cent). Other reasons included not having the skills to conduct repair (29 per cent) and lack of time to repair (12 per cent) (CHOICE, sub. DR232, p. 8).

Figure 2.2 Replacement is often driven by cost and preferences for new products
Reasons not to repair by product type^a



^a Participants who indicated that they had decided not to have a broken product repaired were asked to select their two most important reasons for replacing, rather than repairing the product.

Source: EC (2018, p. 86).

Consumers appear to be more sensitive to the price of repair for lower-value goods (such as small appliances) than for higher-value goods (such as a car), as the price of repair tends to be high relative to the price of replacement. Many repairs to a new car will likely be considerably less expensive than replacing the car, whereas the price of repairing a toaster can be greater than the price of replacing it (table 2.1).

Similarly, consumers are more likely to opt to repair a product if the price of repair falls relative to replacement. For example, Apple noted that iPhone sales were lower than anticipated in

2019 partly due to ‘some customers taking advantage of significantly reduced pricing for iPhone battery replacements’ (2019d).

... the case of [the] Apple iPhone 6 battery replacement program suggests that, given a choice between a low-cost repair and buying a new mobile phone, many consumers will opt for the low cost repair. (QUT Centre for a Waste-Free World, sub. DR172, p. 12)

Table 2.1 Examples of the relative price of repair and replacement

<i>Product</i>	<i>Repair price</i>	<i>Replacement price</i>	<i>Repair price as a per cent of replacement</i>
Two-slice toaster with a broken toasting lever.	One-hour repair may cost \$45 ^a (plus the cost of parts) if taken to a repairer.	Several popular toasters retail for \$50–70. ^b Kmart sells a toaster for \$7. ^c	64–643
iPhone 8 with a broken screen.	Screen repairs cost \$249 from an authorised Apple repairer ^d or \$110–139 from an independent repairer ^e .	A refurbished secondhand iPhone 8 costs about \$300. ^f	37–83
		An upgrade to an iPhone 13 costs \$1199 (minimum storage option of 128GB). ^g	9–21
2010 Toyota Corolla sedan with a damaged front.	The cost of panel beating may be \$2000–5000 plus the cost of parts. ^h	The market value is about \$5400–7100. ⁱ	28–93
2020 Toyota Corolla sedan with a damaged front.	As above.	The new price for a base automatic model is about \$29 000. ^j	7–17

Sources: ^a Schneider (2020). ^b The Good Guys (2021). ^c Kmart (2021). ^d Apple (2021h). ^e Aussie Mobile Phone Repairs (2021). ^f Dick Smith (2021). ^g Apple (2021g). ^h ServiceSeeking (2019). ⁱ Automotive Data Services (2021). ^j Toyota Australia (2021).

Because repair services are often labour-intensive, the cost of labour can be a key driver of the repair price (section 2.2).

... the general consensus is that for large home appliances, for instance, nearly half of the cost of the service of defective products goes to the repairman. The figures further show that for large appliances, such as fridges and washing machines, 37% of the average price for repair is the cost of spare parts; 16% goes to transport and 5% are listed as other costs. (CESA, sub. 25, p. 2)

The labour costs for repair services reflect how the repairer values their time and the amount of time spent on the repair. In the case of self-repair, the individual’s cost of labour will be the value of any wages or leisure that they forego while conducting repairs. This means that the repair cost is higher when repair is time consuming. This may reflect:

- product complexity — for products with software or complex components (such as electronics, vehicles and machinery) it can be more difficult to identify faults and undertake repairs (iFixit, sub. DR236, pp. 2-11; Wieser and Troeger 2017, p. 18). This may increase the time taken to repair (and therefore increases the labour cost) (World’s Biggest Garage Sale, sub. 45, p. 2). Complex repairs may also be more costly if they have required the repairer to invest in specialist skills, which demand a higher wage

-
- limited access to repair supplies — difficulty accessing repair supplies (such as information and tools) can also make repair difficult and time consuming (Fusinato, sub. 6, p. 1; Stuart, sub. 29, p. 1). This is more typically a challenge for independent and self-repairers as lack of information and tools can require reverse engineering and other processes to fix the problem, whereas authorised repairers generally have access to these supplies (section 2.2; Shaw, sub. 4, p. 1; TCO Development, sub. 137, p. 3; Witherby, sub. 134, pp. 1–3). This can increase the time and therefore labour costs of repair, particularly for products that are complex or difficult to repair because of their design
 - product design — aspects of product design can increase the difficulty of repair (chapter 6). For example, products can be difficult to take apart or their design can prevent components from being separated out for repair (DRC, sub. 69, p. 2; iFixit, sub. 107, p. 12; Lewis-Fitzgerald, sub. 75, p. 3; Repair Café Redcliffe Peninsula, sub. DR184, p. 1).² This can make repair more time-consuming and labour-intensive, leading to increased cost of repair.

The availability of spare parts (and their price) can affect whether repair is worthwhile, or even possible (Brunswick Tool Library, sub. 77, p. 1; DRC, sub. 69, p. 1; Mend It, Australia, sub. 101, p. 5). For example, a lack of available spare parts is a common reason for unsuccessful repair in community repair organisations (Postma, de Boer and van Zeeland 2020, p. 3). The availability of spare parts depends on the cost to manufacturers to make and store them, which can be high and not cost-effective for uncommon parts and older products (Liu et al. 2014, p. 1170). The Western Australian Local Government Association, for example, noted that it is difficult to source spare parts for older products (sub. 86, p. 2).

The accessibility of repair services can also influence the cost of repair and whether it is considered worthwhile (Witherby, sub. 134, p. 1). For consumers who live in regional areas, repair services can be limited (or non-existent), making repair more expensive (or impossible). When large products (such as cars, agricultural machinery, or white goods) break down in regional areas, they typically require transporting the product long distances to a repairer or getting a technician to travel to the product. This travel distance may be reflected in the repair price (or consumer’s fuel cost) and means that people in remote areas can often expect to pay much higher prices for repairs.

Upon calling insurance and Suzuki they both informed me that the car must be taken to a Suzuki dealership to reset the lane camera after window replacement, or the car will show warning lights and is unsafe to drive. The nearest dealership is 1000km away in Geraldton. (comment DR227)

As our farm operations are 120 kms from our nearest dealer networks it becomes uneconomic to keep getting them up to make adjustments over an extended period of time ... (comment 118)

And in many cases, smaller products (such as mobile phones) need to be shipped to major cities for repair (Held, sub. DR157, p. 1), increasing the price. Further, a repair will

² Even when consumers prefer repair, not all products are repairable. For example, van den Berge and Thysen found that, after price, one of the most common reasons for replacing products (such as washing machines, televisions, vacuum cleaners and mobile phones) was because repair was not possible or spare parts were unavailable (2020, pp. 17–26).

sometimes require several trips by the repairer, such as a first trip to diagnose the problem and a second trip to collect the necessary spare parts, which makes repair more costly.

Technician travelled 130km to repair the component only to realise that the genuine part provided was faulty. The mechanic had to drive another 260km to return to the warehouse to get another part and to return to the farm to fix the problem. This cost \$800 in travel costs charged to the producers ... (GPA, sub. 27, p. 8)

Consumers can be deterred from repair if it is inconvenient

In addition to the financial costs incurred from repair or replacement, the time and effort involved in arranging a repair can influence consumers' decisions (CPRC, sub. DR212, p. 3; EC 2018, pp. 10–11; Perez-Belis et al. 2017, p. 268). It may take a large amount of effort to select a repairer or a suitable replacement product, and some consumers may be unsure of how or where to get a product repaired (figure 2.2).

It can also take time and effort to get a product to and from the repairer, which may be a deterrent. Consumers who opt to repair their own product will also use their own time and effort to complete the repair. And while a product is being repaired, consumers often have to make do without it. This delay can be inconvenient if the product is used frequently (such as a washing machine) and costly when a product is relied upon for work (such as a car or laptop).

Unless one lives in a major city and has a phone from Apple or Samsung official repair [centres] offering same day repairs are usually not available. Sending in your device usually means parting from it for days or more likely weeks, which is unacceptable for most people. (Held, sub. DR157, p. 1)

In a study of New Zealand consumers, for example, only 29 per cent of participants thought that repair was usually worth the effort, and just over half knew how to get an appliance repaired (Consumer NZ, pers. comm., 10 December 2020). In contrast, it may be more convenient (and less costly) to simply buy a new product.

Some types of products are more likely to be repaired than others

The type of product can also affect the likelihood that a consumer will seek to repair it when it breaks. For example, Brook Lyndhurst found that consumers tend to categorise products depending on whether the product had an 'up-to-date', 'workhorse' or 'investment' function (table 2.2).

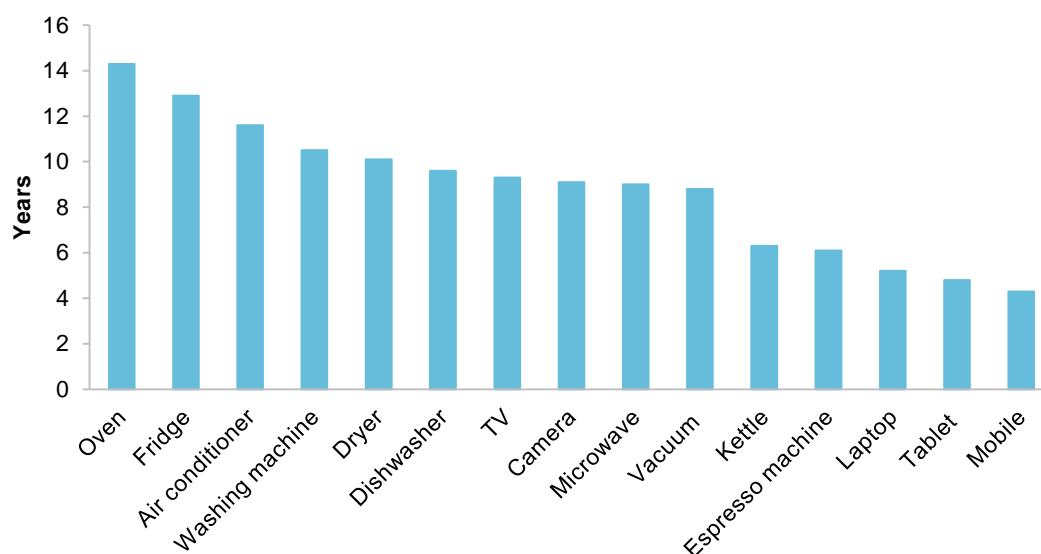
Consumers are typically less likely to consider repairing up-to-date products (such as mobile phones and clothing) than workhorse or investment products. Consumers tend to replace up-to-date products more frequently (regardless of whether they are broken) because they consider replacements to be more technologically advanced, more fashionable, or have newer features (Wieser and Troeger 2017, p. 4). Indeed, consumers tend to expect shorter lifespans from up-to-date products compared with other product types (figure 2.3).

Table 2.2 Categorisation of consumer products

<i>Product category</i>	<i>Description</i>	<i>Examples</i>
Up-to-date	The product has important technological and/or fashionable features.	<ul style="list-style-type: none"> • Smart phones • Clothing and footwear • Housing décor
Workhorse	Purchased for functionality and reliability.	<ul style="list-style-type: none"> • Washing machines • Vacuum cleaners • Dishwashers
Investment	Products that are expensive, high quality, and purchased with an 'investment' mindset. This may mean that consumers expect the product to appreciate over time or that they plan to keep it for a long time.	<ul style="list-style-type: none"> • Higher-price appliances such as air conditioning units • High-end electric guitars • Prestige mechanical watches • Dining furniture

Source: Based on Brook Lyndhurst (2011, p. 4).

Figure 2.3 Up-to-date products often have shorter expected lifespans
Average expected lifespan of household products^a



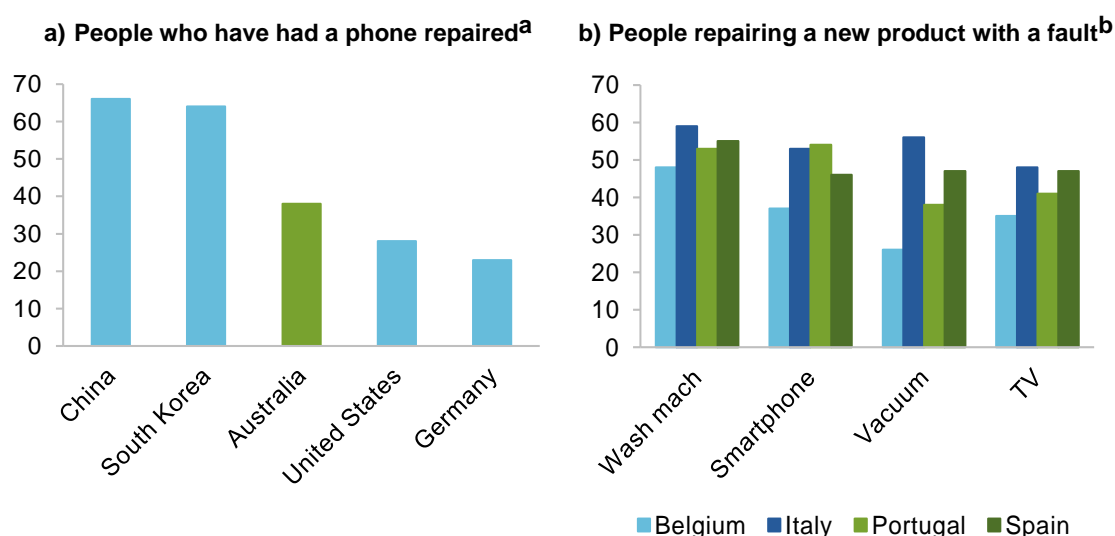
^a Consumers were asked how long they would expect each product to last without a major problem or needing repair, if they bought it new today (assuming typical, daily use).

Source: Based on CHOICE (2015).

However, the rate of repair for up-to-date products varies across countries. For example, one study of Australian consumers found that about 38 per cent of participants had repaired a mobile phone, significantly higher than some countries and lower than others (figure 2.4, panel a). The rate of repair for different types of products appears to be more comparable when the products are new, though it also varies across countries (figure 2.4, panel b).

Up-to-date products are more likely than other product types to be replaced before they stop working. This can occur if consumers are no longer satisfied with the product’s features (such as performance or storage capacity) or they want a ‘better one’ (van den Berge and Thysen 2020, pp. 22–26; Islam, Dias and Huda 2021, p. 9). For example, a German study found that nearly one third of laptop and television owners discarded those products because they no longer liked them or were not satisfied with their features — this was substantially greater than owners of washing machines, kettles and hand mixers (Hennies and Stamminger 2016, p. 77). This may partly reflect the rapid technological development of electronics over time, which has created significant benefits from replacing these products (section 2.2). Although, consumers also frequently replace appliances that are still working. For example, a New Zealand study found that only half of participants replaced an appliance because it was broken, while others chose replacement because the appliance was ‘getting old and tired’ (34 per cent) or it ‘didn’t work as well as it used to’ (22 per cent) (Consumer NZ, pers. comm., 10 December 2020).

Figure 2.4 Rates of repair vary by country and product type
Per cent



^a Greenpeace survey of 1000 adults in each country. Data for Australia come from a Mobile Muster survey that asked respondents: ‘have you ever repaired a mobile phone?’ ^b Survey asked respondents that had acquired a new product and had a problem with it, whether they repaired it.

Sources: Greenpeace (2016, p. 2); Mobile Muster (2020b, p. 15); van den Berge and Thysen (2020, pp. 17–26).

Many consumers appear to be more open to repairing high-value workhorse products (such as washing machines and dishwashers) than for up-to-date products (Brook Lyndhurst 2011, p. 4; EC 2018, p. 10). For example, an Australian survey found that more people wanted a washing machine repaired than a television or microwave (CHOICE, sub. DR232, p. 9). Consumers tend to repair workhorse products to extend the product’s lifetime (Brook Lyndhurst 2011, p. 4), such as when it stops working earlier than expected. It can be more cost-effective to repair these products than replace them, and calling out a repair technician

may be more convenient due to the size of large appliances. There are also installation costs for fixed products such as ovens, which add to the cost of replacement. However, once workhorse products break down at the end of their expected useful life, many consumers find replacement more economical (Brook Lyndhurst 2011, p. 72).

Investment products (such as air conditioning units) are typically more likely to be considered for repair as they are often relatively expensive to purchase, with long expected lifespans (Brook Lyndhurst 2011, p. 6), and expensive installation costs. Some investment products (such as prestige mechanical watches) may even increase in value over time, making repair particularly appealing.

As an older product gets closer to reaching its expected lifespan, it becomes relatively more appealing to replace it with a newer product when it breaks. New products offer additional features, energy efficiency, improved aesthetics and ‘fashion status’. They also tend to come with a new warranty and effectively ‘reset’ the product’s expected lifespan, reducing the risk of the product breaking down in the future. These improvements create additional benefits from replacement such that even if it is cheaper to repair, consumers may weigh up the benefits of upgrading (Islam, Dias and Huda 2021, p. 9). In contrast, an older product may be outside of the warranty period, or too old for the consumer to consider pursuing a remedy under the Australian Consumer Law. Some consumers also lack confidence in the quality of repairs and how much further use they can expect from a repaired older product (Wieser and Troeger 2017, pp. 17–18).³ Indeed, some research suggests that consumers tend to be willing to pay less for repairs as products become older (van den Berge and Thysen 2020, p. 17; Sabbaghi and Behdad 2018, p. 106).

Certain types of consumers are more likely to repair

Consumers have different thresholds in deciding when a product should be repaired or replaced (van den Berge and Thysen 2020, pp. 7–8). For example, some consumers will continue to use a microwave with a broken light whereas others will not. And consumers may exhibit behavioural biases that affect their consumption decisions (box 2.1).

Some types of consumers may be more likely to repair than others.

- Consumers who place sentimental value on certain products can be more willing to repair them. For example, one study found that clothes would only be repaired if they had sentimental value, were very expensive or unique (EC 2018, p. 115).
- Consumers that have had a previous positive repair experience with a smart phone were more likely to consider repair again next time in a survey of European consumers (Wieser and Troeger 2017, p. 18).

³ If a repair is performed poorly, the consumer may be eligible to seek a remedy under the consumer guarantees. However, it is possible that even well-performed repairs may not greatly extend the lifespan of broken products if general wear and tear or the design of the product make recurring faults more likely (Stuart, sub. 29, p. 1).

- For some products such as mobile phones, younger consumers are more likely to use repair services compared with older consumers in Australia (Mobile Muster 2020b, p. 15).⁴
- There is some evidence that consumers with pro-environmental attitudes are more likely to opt for environmentally-friendly choices, such as repairing or buying secondhand products (EC 2018, p. 10).
- Consumers with lower incomes tend to be more likely to have their products repaired, whereas consumers with higher incomes tend to be less motivated by the relative price of repair and replacement (especially for smaller, cheaper products) (McCollough 2007, p. 217, 2010, p. 198). Several participants to this inquiry raised concerns that consumers that cannot afford to replace a product have little choice but to repair, which can be a major expense (comment 8; comment 37; DRW and EFA, sub. DR230, p. 51).

When vulnerable consumers are effectively cut out of a market due to planned obsolescence and an inability to afford an upgrade, they can either try to live without an essential good or they can turn to loans for these essential items, which may cause a debt spiral and much further financial loss. (CALC, sub. 119, p. 12)

Box 2.1 Behavioural biases can affect consumer decisions

When consumers decide whether to repair or replace a product, there are several potential biases that can affect this process.

- **Present bias:** consumers often prefer to receive a benefit now and discount benefits received in the future. This can be rational if the benefits now outweigh the discounted future benefits (O'Donoghue and Rabin 1999, p. 103). However, present bias occurs when a consumer prefers a smaller benefit in the present than a larger discounted benefit in the future, to the detriment of their wellbeing in the future. For example, consumers may prefer to replace a product even if repair is more cost-effective in the long term.
- **Avoidable losses perceived as gains:** some consumers perceive repair as a loss because paying for repair only restores a product to its previous function. In contrast, the cost of repair may be avoided if consumers choose to replace the product. There is some evidence to suggest that the avoided repair price can be perceived as a gain, increasing willingness to pay for the replacement (Gershoff and Pereira 2010, pp. 804–805).
- **Framing biases:** the way that options are framed can impact consumer decisions. A study by Gershoff and Pereira (2010, pp. 804–805) found that when consumers were first asked whether they would repair a broken product, before being asked to select a replacement, they were willing to pay more for a replacement. In contrast, consumers who were given a range of repair and replacement options at the same time were willing to pay less for replacement, because it had been framed as one of many options rather than as a loss to be avoided.

⁴ However, the mobile phones that older consumers buy and the way in which they use them may decrease the likelihood of the product breaking and requiring repair (Mobile Muster 2020b, p. 14).

2.2 Snapshot of the Australian repair sector

The repair sector consists of several types of repairers. Repairs can be conducted:

- in-house by a manufacturer
- by an ‘authorised repairer’ — a business that is authorised on behalf of the manufacturer
- by an ‘independent repairer’ — a business that is not explicitly authorised by a manufacturer — including community repair organisations, such as repair cafés (box 2.2)
- by ‘do it yourself’ (DIY) repairers — consumers repairing their own products — including DIY repair in a repair café.

Authorised repairers typically have contractual arrangements with a manufacturer that specifies how repair must be carried out and provides access to necessary repair supplies, such as repair information, tools and spare parts.⁵ For example, car dealerships often repair and service cars as part of their franchise agreements with a manufacturer (ACCC 2017b, p. 32) and are provided with training, tools and parts needed for repair and maintenance (AADA, sub. 98, p. 8).

Independent repairers compete with authorised repairers to provide repair and maintenance services. In contrast to authorised repairers, independent repairers typically have no contractual arrangements with a manufacturer, and may source repair supplies from authorised repairers (ACCC 2020b, p. 5).

Many manufacturers prefer that their products are repaired in-house or through an authorised repairer, and claim this is necessary to protect product quality because staff are trained appropriately and use manufacturer-specified repair supplies (chapter 4).

During the short warranty period, manufacturers seek to reduce their risk and the complexity of administration and verification by ensuring only authorised repairers who have undertaken factory provided training perform the repairs and servicing. (McIntosh and Sons, sub. 24, p. 2)

Franchised new car [d]ealers receive ongoing factory training and are contractually obliged to use the latest [original equipment manufacturer] specified special tools, equipment and genuine parts. (AADA, sub. 98, p. 8)

Community repair organisations, such as repair cafés, also offer repair services (often free of charge or for a donation) (box 2.2), but tend to focus on repairing older products that would otherwise be discarded (Repair Cafe Foundation 2021a).

Many consumers have had experience repairing a product themselves or through their personal network. For example, a study of Australian households found that over half had either repaired or maintained a product themselves or using a personal contact in the last year; about one third had used a paid service; and about one tenth had received free repair or maintenance from the product manufacturer (DELWP, pers. comm., 29 August 2021).

⁵ Manufacturers may use authorised repairer networks to service more customers in more areas. Some repair businesses are also authorised to conduct repairs on behalf of multiple manufacturers.

Box 2.2 **Community repairers are becoming more prevalent**

Community repair organisations include both not-for-profit and for-profit organisations where consumers can take their broken products to be repaired (such as repair cafés and community workshops) or where donated products can be repaired and sold. For example, Mend It, Australia consists of volunteer ‘roving repairers’ who attend community repair events (sub. 101, p. 1). Another organisation, World’s Biggest Garage Sale, has established a ‘Circular Economy Precinct’ (sub. 45, p. 1) through which it repairs and sells donated products, and hosts educational events. Tool libraries are another organisation which loans consumers the tools needed for self-repair.

Community repairers are becoming more prevalent across Australia. For example, the first repair café opened in Sydney in 2014, and there are now about 50 repair cafés nation-wide (Harari 2019; Repair Cafe Foundation 2021b). And a recent study suggested that more Australians are considering using a repair café than in the past (McCabe 2020).

Several organisations have reported high rates of repair success. For example, the Campbelltown Repair Café and the Darebin Repair Café reported success rates of 80 and 70 per cent, respectively (DRC, sub. 69, p. 1; South Australian Repair Café Coordinators, sub. 46, p. 10). Although, this largely depends on the type of products that are brought in (Mend It, Australia, sub. DR227, p. 2). Some participants have suggested that electrical products can be less repairable than other items. For example, Repair Café Hobart reported that 77 per cent of the unrepairable items presented to their café were electrical (sub. 14, p. 2) and the Darebin Repair Café noted that:

In our experience, electrical items outnumber others in demand — and sadly also in inability to repair. This stems to some extent from item design (planned obsolescence) but also from lack of availability of skilled repairers in this field. (sub. 69, p. 2)

Analysis by the Repair Café International Foundation found that computers and laptops had a relatively low repair success rate (45 per cent) compared with other products, such as clothing (89-96 per cent) and vacuum cleaners (63 per cent) (Postma, de Boer and van Zeeland 2020, p. 16).

Some community repairers have noted that they face several barriers to repair. Some products are difficult to repair due to their design, inability to be dismantled, or because they require specialist tools and spare parts that are unavailable or prohibitively expensive (DRC, sub. 69, p. 1; South Australian Repair Café Coordinators, sub. 46, p. 7). Other challenges include sourcing appropriately skilled volunteers to perform repairs, as well as arranging insurance and suitable premises for community repair events (Mend It, Australia, sub. 101, p. 2). Several organisations have also suggested that the benefits of community repairers justify more government support in the form of funding for repair sheds, repair cafes, makerspaces and tool libraries (Mend It, Australia, sub. DR227, p. 3; South Australian Repair Café Coordinators, sub. DR187, p. 1). Chapter 6 examines the case for tax incentives and subsidies for repair.

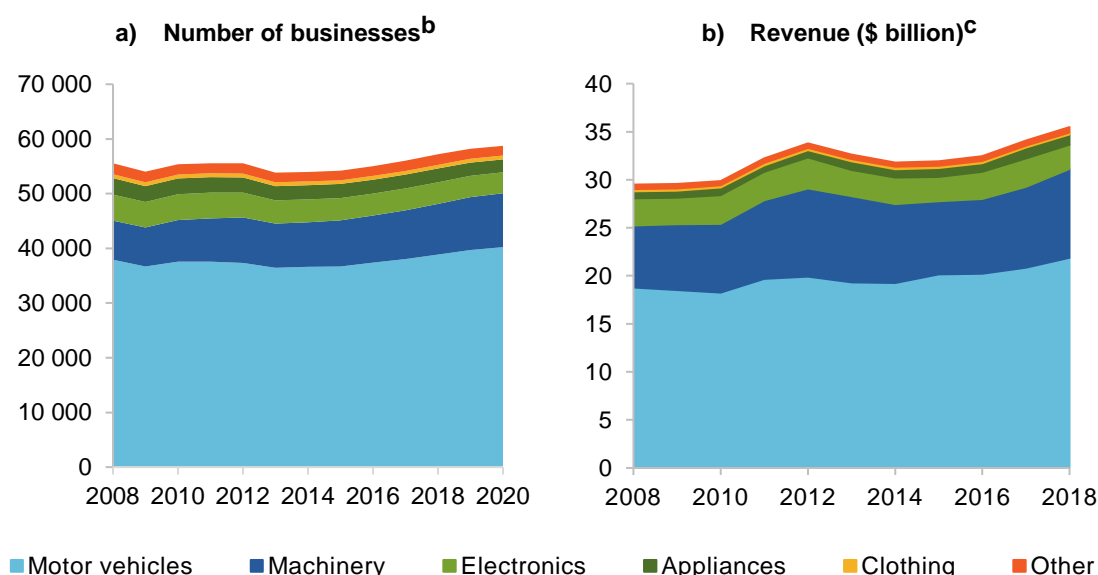
The Australian repair sector has grown moderately over time

Australia’s repair sector performs repair and maintenance for households and businesses across a range of industries, including motor vehicles, machinery, appliances and electronics.⁶ In 2018, there were about 57 000 repair and maintenance businesses in

⁶ Data in this report generally use the following ANZSIC codes for each industry: Motor vehicle – General repair and maintenance (Class 9419); Motor vehicle – Crash repair (9412); Motor vehicle – Electrical repair (9411); Machinery (9429); Appliances (9421); Electronics (9422); Clothing (9491); Other (9499).

Australia and over 203 000 workers — most of which were part of the motor vehicle repair industry (figure 2.5, panel a; ABS 2020b). This suggests that each business employs three to four workers on average.

Figure 2.5 Australia's repair sector has grown moderately^a



a Year end June. **b** Number of businesses operating at the end of the financial year. **c** Inflated to 2017-18 dollars using average consumer price index (CPI) for financial years for the following groups in order: Maintenance and repair of motor vehicles; All Groups; Audio, visual and computing media and services; Major household appliances and Small electric household appliances; Cleaning, repair and hire of clothing and footwear; All Groups.

Sources: ABS (*Counts of Australian Businesses, including Entries and Exits, 2011–2021*, Cat. no. 8165.0; *Business Longitudinal Analysis Data Environment, BLADE, 2018-19*, Cat. no. 8178.0, Microdata).

The repair sector made up just one per cent of total sales revenue across all business sectors in 2018 (ABS 2020c). It generated about \$35 billion in revenue in 2018 (figure 2.5, panel b), contributing about \$14 billion to Australia's gross domestic product (GDP) (once production costs are included) (ABS 2020c). By comparison, Australian manufacturing accounted for about 12 per cent of total sales revenue and contributed about \$106 billion to GDP (ABS 2020c). Most revenue in the repair sector comes from motor vehicle repair — about 62 per cent of all repair revenue in 2018 (figure 2.5, panel b).

The repair sector grew moderately between 2008 and 2018 (figure 2.5).

- Sales revenue increased by about 1.9 per cent per year on average over this period, although revenue growth varied significantly by industry. For example, revenue from machinery and appliance repair grew the fastest (about 3.7 per cent per year) whereas revenue from electronics repair declined (about 1.2 per cent per year).
- The number of businesses grew by less than 1.0 per cent per year between 2010 and 2020. The number of machinery repair businesses grew fastest (about 2.7 per cent per

year), whereas the number of appliance and electronics repair businesses both declined (about 2.0 per cent per year).

- The number of workers grew by about 2.0 per cent per year. The number of workers in each repair industry grew between 2012 and 2018, except for electronics repair which declined by about 1.0 per cent per year on average (ABS 2020b).

The large share of motor vehicle and machinery repairs compared with appliance and electronics repairs likely reflects that repair tends to be a more cost-effective option for more expensive products (section 2.1). Mechanical products also tend to require ongoing maintenance and repair services. In contrast, less expensive and more fashionable products, such as electronics, may cost less to replace. The cost of repair is affected by several factors (section 2.1), including labour (box 2.3) and the cost of spare parts (CESA, sub. 25, p. 2).

The remainder of this section provides a snapshot of the major repair industries and examines their underlying trends. It is important to note that the data used in this section have some limitations (box 2.4).

Box 2.3 Wages and skills shortages in the repair sector

Repair tends to be more labour-intensive than manufacturing. This can be a key factor influencing the price of repair (section 2.1), and therefore consumers' repair–replace decision.

Repair is labour-intensive compared to original manufacture, the productivity of repairers has not increased in line with the productivity of manufacturers, and Australia has high labour costs. (Ai Group, sub. 32, p. 2)

While Australia's labour costs are high relative to other countries (OECD 2021), over the past decade wages for repair and maintenance workers in Australia grew at just one per cent on average per year, similar to the industry average (figure below).

A common challenge cited across many repair industries appears to be difficulty in finding appropriately skilled workers (for example, Ai Group, sub. 32, p. 6; CESA, sub. 25, p. 5; MTA Queensland, sub. DR171, p. 1).

The appliance repair industry is suffering a skills shortage both locally and globally. Often in many regional centres of Australia there is very limited or no repair facility and manufacturers are forced to apply 'Non-repair' remedy for customers ... (LG Electronics Australia Pty Ltd, sub. 38, p. 12)

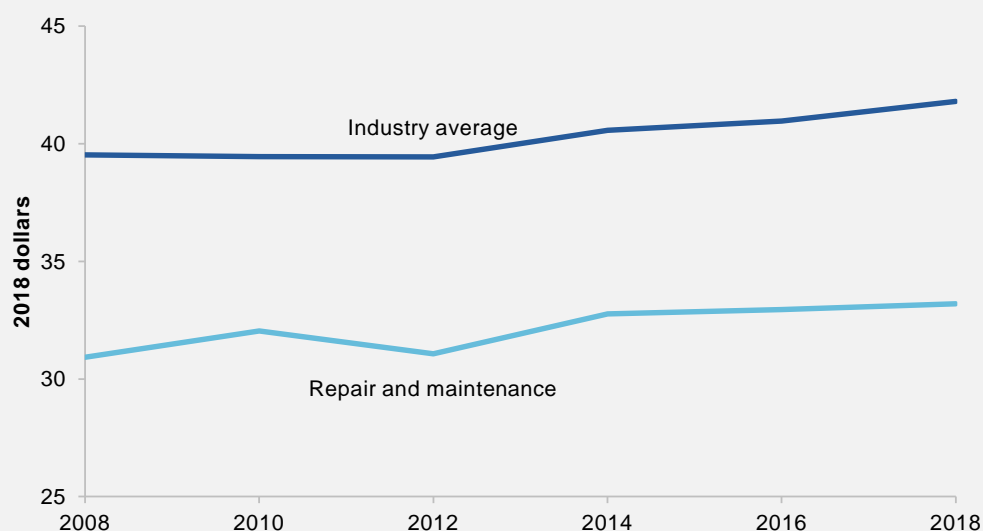
This likely reflects broader skills shortages and labour market issues faced by many trades in Australia. For example, there are national skill shortages for occupations such as electrical and mining engineering, automotive electricians, motor mechanics and general electricians (DESSFB 2019, pp. 1–3). Indeed, many repairers need a licence to operate (such as to repair gas appliances) and some even need a specific repair licence (such as auto repair in New South Wales and Western Australia) (Australian Government 2015, pp. 2–11).

Some overseas repair sectors face similar challenges. For example, in the United States, the repair industry has had difficulty attracting younger workers (McCollough 2010, p. 188) and high labour costs have subdued demand for repairs (Sabbaghi et al. 2017, p. 137).

(continued next page)

Box 2.3 (continued)

Average hourly ordinary time cash earnings^a



^a Inflated to 2018 dollars using the wage price index for ordinary time hourly rates of pay excluding bonuses for: 'other services' for repair and maintenance; and 'all industries' for the industry average.

Sources: ABS (*Employee Earnings and Hours, Australia, May 2018*, Cat. no. 6306.0; *Wage Price Index, Australia: All WPI Series: Original (Financial Year Index Numbers) February 2021*, Cat. no. 6345.0).

Box 2.4 Data limitations

The Commission's industry analysis used publicly available data (where possible) and the ABS Business Longitudinal Analysis Data Environment (BLADE) dataset, which contains individual business-level information (such as tax and other administrative data). While this produced a high-level overview of industry trends, it has some limitations. The data:

- do not identify if a business is an authorised or independent repairer
- include both repair and maintenance activities (maintenance is often required on products that have physical moveable parts, such as motor vehicles)
- likely exclude some repair activity undertaken by manufacturers or self-repair. This is because the Australian and New Zealand Standard Industrial Classification system separates repair from manufacturing or retailing activities, meaning that in some cases, in-house repair activity by manufacturers is captured under their primary industry (such as manufacturing). Therefore, the data are likely to focus on repair that is conducted by authorised and independent repairers whose primary business is repair and maintenance
- for sales revenue exclude goods and services tax (GST)
- do not always exactly reflect similar ABS publications due to methodological differences. For example, some publications for employment numbers rely on survey data, whereas others rely on administrative data.

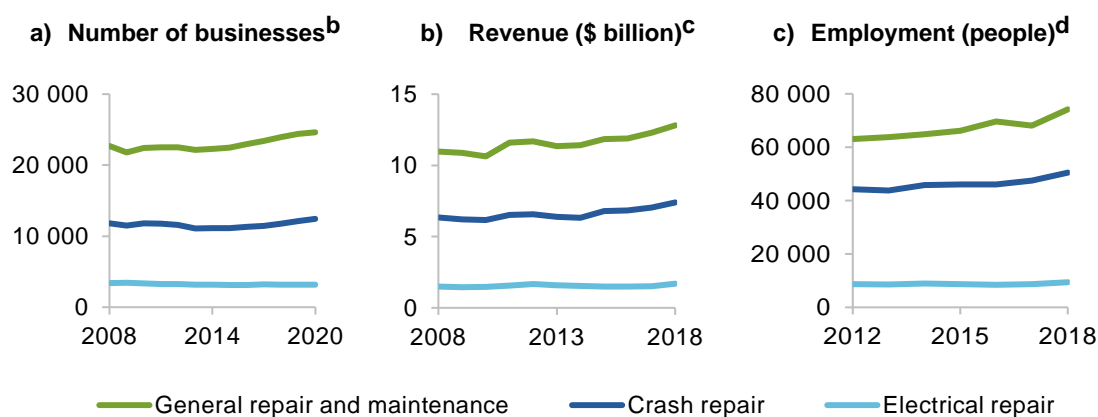
Motor vehicle repair is the largest repair industry in Australia

The motor vehicle repair industry makes up the largest share of repair and maintenance activity in Australia. The industry performs a range of work, including:

- general repair and maintenance (such as brake repair and routine servicing)
- crash repair (such as body, paint and interior repair)
- electrical repair (such as air conditioner and car radio repair).

There were about 40 000 motor vehicle repair businesses in 2020 (figure 2.6, panel a), which represents the greatest share of all repair businesses in Australia (figure 2.5, panel a). Most businesses are small independent repairers — estimates suggest there are seven independent repairers for every authorised dealership (AAAA 2016, p. 11). Mycar (formerly Kmart Tyre and Auto) is one of the larger motor vehicle repair chains, operating over 250 independent service centres across Australia that provide servicing, repairs and tyre services (IBISworld 2020h, p. 32; Mycar 2021). Independent repairers typically repair older vehicles for major out-of-warranty repairs (including smash repairs), whereas dealerships tend to repair and service newer vehicles including those under warranty (AAAA 2016, p. 11; Colmar Brunton 2017, p. 46). Dealerships typically have contractual arrangements with a vehicle manufacturer, which provides them with training, tools and parts (AADA, sub. 98, p. 8).

Figure 2.6 **Motor vehicle repair has grown steadily^a**



^a Year end June. ^b Number of businesses operating at the end of the financial year. ^c Inflated to 2017-18 dollars using average consumer price index (CPI) for financial years for Maintenance and repair of motor vehicles. ^d Includes employees and owner managers of enterprises (substantial quality improvement in industry information for the latter group in 2017-18 means comparison with previous years should be made with caution).

Sources: ABS (*Counts of Australian Businesses, including Entries and Exits, 2011–2021*, Cat. no. 8165.0; *Business Longitudinal Analysis Data Environment, BLADE, 2018-19*, Cat. no. 8178.0, Microdata; *Jobs in Australia, 2017-18*, Cat. no. 6160.0).

Motor vehicle repairs generated about \$22 billion in total revenue in 2018 (figure 2.6, panel b). General repair and maintenance contributed the most to this revenue (\$12.8 billion), followed by crash repair (\$7.4 billion) and electrical repair (\$1.7 billion). The industry also employed over 134 000 people in 2018 (figure 2.6, panel c).

The motor vehicle repair industry has grown at a steady pace over time (figure 2.6). This likely reflects several factors. First, motor vehicles tend to be mechanical products that require ongoing maintenance and repair over time. Second, being more expensive products, it is generally more cost-effective to repair rather than replace cars (section 2.1). Finally, Australia's new car fleet has grown steadily at about 1.6 per cent each year from 2007 to 2017 (ABS 2018), which leads to growing demand for repair and maintenance services. In the wake of the COVID-19 pandemic, there have been production constraints for new cars and strong demand for used cars (Gray 2021; Hope 2021) — to the extent that used cars require more repairs and maintenance, this may further increase demand for these services.

The motor vehicle repair industry is also facing some challenges. Repair is becoming more complex as vehicles become increasingly computerised and differentiated (ACCC 2017b, pp. 39, 94). This often means that specialist diagnostic and repair tools are needed by both authorised and independent repairers to conduct repairs, and this equipment can be costly (IBISworld 2020h, pp. 18, 31).

Empirical evidence indicates the automotive value chain is facing the most severe technology disruption of any sector in Australia's economy. A major issue is the rise in the number of new automotive technologies, the advancement and the acceleration e.g., digitisation, automation and electrification. (MTA Queensland, sub. 80, p. 3)

While this may not affect the difficulty of repair for authorised repairers, there is some concern that this may cause issues for independent repairers if they are unable to access the necessary repair inputs (chapter 4).

Despite moderate growth in the number of vehicle repairers, the Australian Competition and Consumer Commission noted that there has been some consolidation in the number of dealerships (2017b, p. 39). This mostly reflects the acquisition of dealerships by other, larger dealerships to increase economies of scale and profitability. This places pressure on smaller repairers to invest in equipment, information and training to service new vehicle models in order to compete. Similarly, there has been some consolidation in smash repair businesses, due to price competition from repair contracts with insurers (IBISworld 2020g, p. 12).

Capped-price servicing arrangements and extended warranties may also pose a challenge to independent repairers (IBISworld 2020h, p. 30). Capped-price servicing is offered by some dealerships to give new car owners a pre-arranged price for servicing at the authorised dealership (ACCC 2017b, p. 39). Extended warranties (either purchased or included in the purchase price of a new car) lengthen the duration of the manufacturer's warranty (ACCC 2012), such as the 10-year extended warranty offered by Mitsubishi (appendix B). These arrangements can make it more difficult for independent repairers to compete for those customers. However, these arrangements can benefit vehicle owners through more certainty of ongoing repair and maintenance costs when they purchase a new car.

Machinery repair has experienced relatively strong growth

The machinery repair industry is the second largest industry in the repair sector (figure 2.5). This industry primarily conducts repair and maintenance on industrial products, including:

- agricultural machinery (such as tractors and harvesters)
- construction machinery (such as excavators and graders)
- mining machinery (such as drills and crushing equipment).

There were nearly 10 000 machinery repair and maintenance businesses in 2020 (figure 2.7, panel a). There are limited data on the split between third-party and authorised repairers in this industry, but it likely varies depending on the type of machinery. For example, some mining machinery repair and maintenance is performed on-site by a contracted team (Minprovis 2018; MMSA n.d.), whereas agricultural machinery repair is often performed by either an authorised dealership, independent repairer or machinery owners.

While machines are under warranty, the majority of servicing and most repairs are conducted by the dealer that sold the machinery. These functions tend to be performed more frequently by the owner of the machinery or an independent business once the warranty has run out, although survey results indicate that dealers continue to be heavily utilised. (ACCC, sub. 106, p. 7)

One of the largest companies in the industry is Seven Group Holdings Limited (owner of WesTrac) which distributes Caterpillar machinery and provides repair and maintenance for construction and mining equipment (IBISworld 2020d, p. 32).

The machinery repair industry has grown over the past decade (figure 2.7). For example, revenue has grown at an average of 3.7 per cent per year over this period, to about \$9.3 billion in 2018 (figure 2.7, panel b). And the number of workers in the industry has grown to about 44 000 people in 2018 (figure 2.7, panel c).

The relatively strong growth in machinery repair is partly explained by growth in mining and construction activity. The industry is made up of roughly equal parts maintenance and repair (figure 2.8, panel a) and about half of the revenue in the industry is generated by mining and construction uses (figure 2.8, panel b). Mining activity increased significantly between 2005 and 2012 and has remained strong (PC 2017b, p. 93). The construction industry has experienced strong growth, with an average revenue growth of five per cent each year from 2009 to 2019 (ABS 2020c).

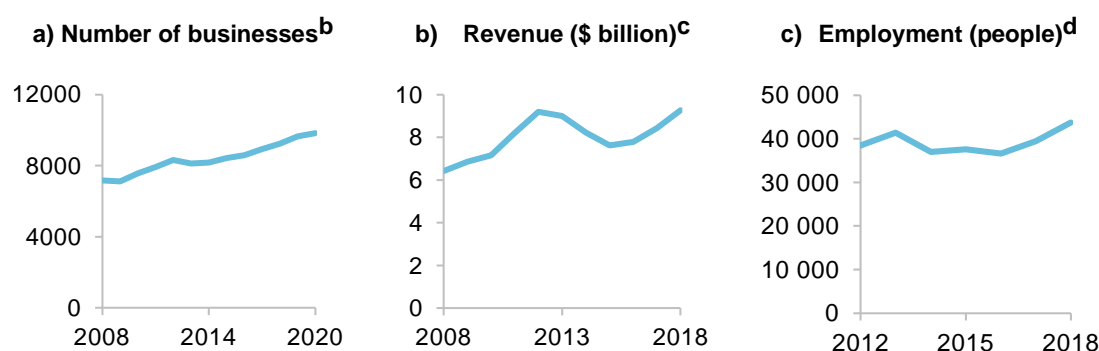
The agricultural sector has experienced increasing consolidation (PC 2016b, p. 478) and is transitioning towards more complex and expensive machinery that is increasingly automated (Wu et al. 2019, pp. 17–18). This also creates demand for routine maintenance and repair of valuable machinery.

The high replacement price of mining, construction and agricultural machinery means that, like motor vehicles, repair is often a small fraction of the cost of replacement (section 2.1). These products are often used for highly specialised purposes, which can make them less practical or convenient to replace if a replacement is not readily available. For example,

highly specialised mining machinery may be more difficult or time-consuming to replace, compared with more standard machinery such as a tractor.

While growth in machinery repair is strong relative to other repair industries, the industry faces a common challenge of finding workers with the appropriate skills to service machinery that is often highly sophisticated (IBISworld 2020d, p. 38). As the complexity of machinery increases over time, it is likely that this shortage will continue.

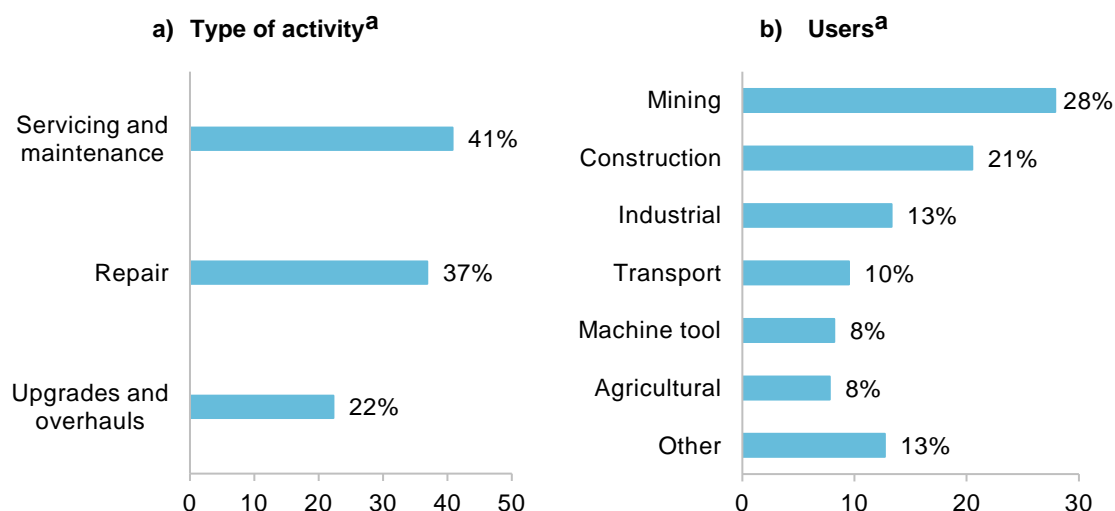
Figure 2.7 Machinery repair has grown faster than most other repair industries over the past decade^a



a Year-end June. **b** Number of businesses operating at the end of the financial year. **c** Inflated to 2017-18 dollars using average consumer price index (CPI) for financial years for All groups. **d** Includes employees and owner managers of enterprises (substantial quality improvement in industry information for the latter group in 2017-18 means comparison with previous years should be made with caution).

Sources: ABS (*Counts of Australian Businesses, including Entries and Exits, 2011–2021*, Cat. no. 8165.0; *Business Longitudinal Analysis Data Environment, BLADE, 2018-19*, Cat. no. 8178.0, Microdata; *Jobs in Australia, 2017-18*, Cat. no. 6160.0).

Figure 2.8 Machinery repair includes significant maintenance activity



a May not sum to 100 per cent due to rounding.

Source: IBISworld (2020d, pp. 19, 21).

Appliance repair is a small part of the repair sector

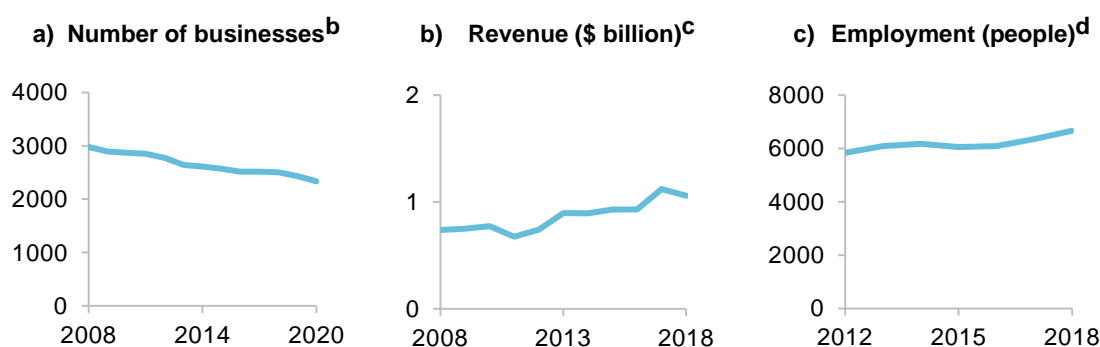
The appliance repair industry primarily conducts repair and maintenance on domestic appliances (for households and businesses), including:

- white goods (such as fridges and washing machines)
- appliances (such as toasters and microwave ovens)
- heating and cooling units (such as air conditioning and heaters)
- entertainment products (such as televisions and stereos).

The appliance repair industry is primarily made up of small businesses (IBISworld 2020b, pp. 22–23). One larger independent appliance repair company is Woolley Appliance Services Pty Limited, which employs about 35 technicians across two sites in Melbourne (IBISworld 2020b, p. 32; Woolley Appliance Services 2021).

Appliance repair makes up a small proportion of all repair activity in Australia — about three per cent of total repair revenue in 2017-18 (figure 2.5, panel b). The industry has experienced stronger growth in the preceding ten years in terms of revenue and employment (relative to other repair industries), but there has been some consolidation in the number of businesses (figure 2.9).

Figure 2.9 **Appliance repair performance has been mixed^a**



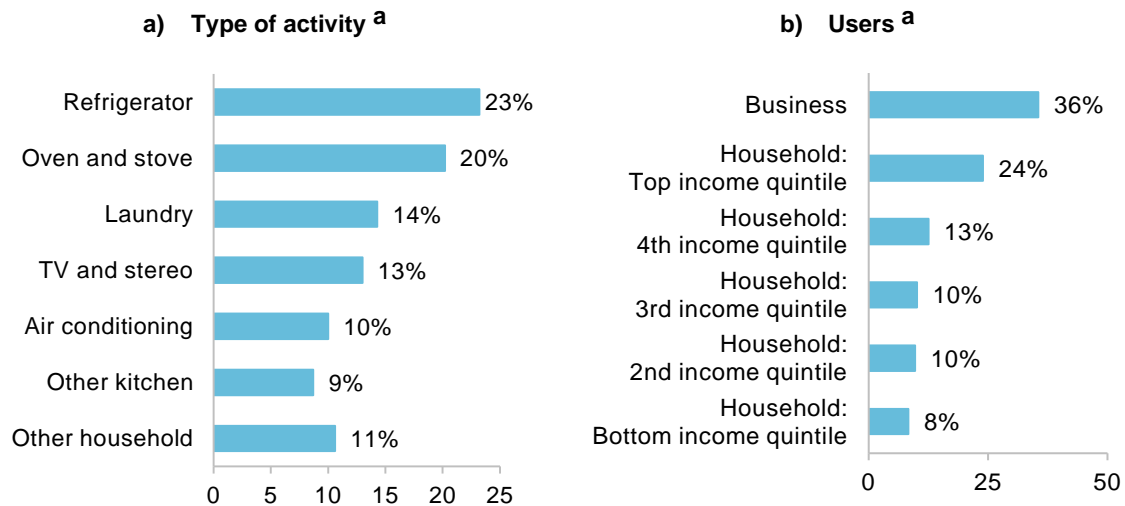
^a Year end June. ^b Number of businesses operating at the end of the financial year. ^c Inflated to 2017-18 dollars using average consumer price index (CPI) for financial years for Major household appliances and Small electric household appliances. ^d Includes employees and owner managers of enterprises (substantial quality improvement in industry information for the latter group in 2017-18 means comparison with previous years should be made with caution).

Sources: ABS (*Counts of Australian Businesses, including Entries and Exits, 2011–2021*, Cat. no. 8165.0; *Business Longitudinal Analysis Data Environment, BLADE, 2018-19*, Cat. no. 8178.0, Microdata; *Jobs in Australia, 2017-18*, Cat. no. 6160.0).

Most appliance repair revenue comes from repairing household kitchen and laundry appliances (figure 2.10). These larger and more expensive appliances (such as fridges, ovens and stoves) have mostly increased as a proportion of industry revenue over time

(IBISworld 2020b, pp. 18–19), likely because the price of replacement is high compared with less expensive appliances, such as kettles and toasters (section 2.1).

Figure 2.10 Appliance repair is concentrated towards larger appliances



^a May not sum to 100 per cent due to rounding.

Source: IBISworld (2020b, pp. 17, 20).

The appliance repair industry also faces several challenges. The price of new appliances has decreased significantly over time, which makes replacement more appealing (figure 2.11). In contrast, wages for repair technicians continue to grow (box 2.3), which contributes to the rising cost of repair. The effects of these trends are likely more acute for inexpensive appliances such as toasters and kettles.

... many small items such as kettles and toasters are thrown away because it is cheaper and easier to buy another one rather than repair it. (Repair Café Woolloongabba, sub. 42, p. 1)

This may reflect different labour costs between the production of new products overseas and the labour costs for Australian repair technicians.

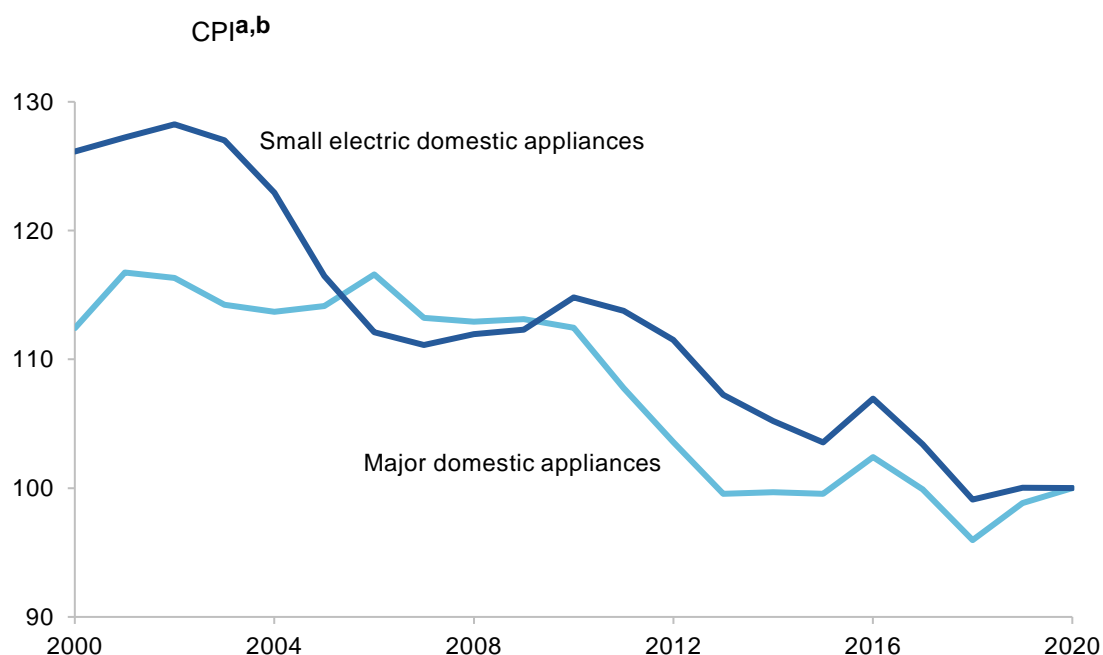
[Unlike] major appliance costs, technician cost[s] have broadly kept up with inflation changing the balance on when an appliance is not economical to repair. (Wilson, sub. 78, p. 3)

Inquiry participants have also suggested that the industry faces challenges in finding workers with the appropriate skills to repair appliances.

In the 90's there were a whole industry of skilled technicians that repaired white goods which have all but disappeared. (comment 169)

... I see thousands of home appliances from other manufacturers come in to our warehouses, many only a few years old being relegated to the scrap heap because they cannot be repaired due to a shortage of parts and service personnel making them uneconomical to repair. (Cole, sub. 9, p. 1)

Figure 2.11 The price of new appliances has fallen



^a Index numbers use the following consumer price index (CPI) expenditure classes: Major domestic appliances uses CPI Major household appliances; Small electric domestic appliances uses CPI Small electric household appliances. ^b Average CPI for financial years.

Source: ABS (*Consumer Price Index, Australia, December 2020*, Cat. no. 6401.0, Table 7).

The electronics repair industry is in decline

The electronics repair industry conducts repair and maintenance on a range of computer, electronic and precision equipment, including:

- consumer electronics (such as mobile phones, computers and gaming devices)
- medical and diagnostic equipment (such as ultrasound and x-ray machines)
- other professional electronics (such as laboratory and navigation equipment).

Electronics repair makes up a relatively small part of the Australian repair sector — accounting for seven per cent of total repair revenue in 2018 (figure 2.5, panel b).

One of the largest electronics repairers is Geeks2U Proprietary Limited, which provides independent on-site repair and maintenance services (IBISworld 2020a, p. 34). Another company in this industry is Cabrini Health Limited, which provides repair and maintenance services for medical equipment (Cabrini Health Ltd 2020).

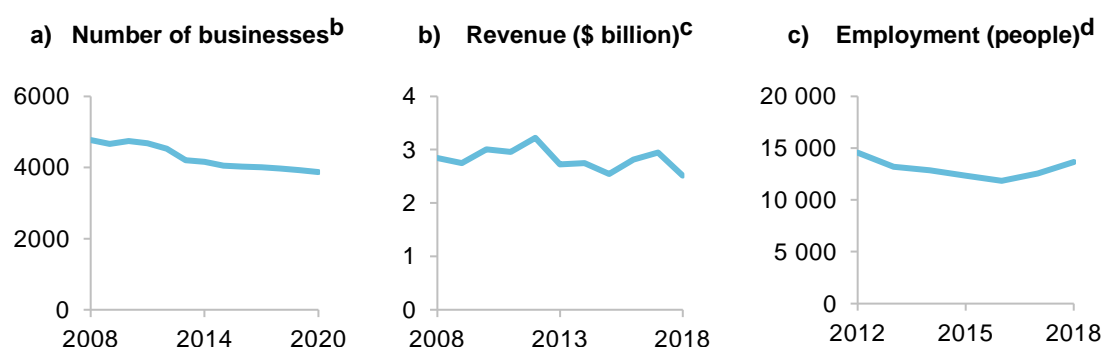
Many consumers appear to use independent repairers for electronics. One Australian study found that 63 per cent of participants who purchased electronics in the past two years had used an independent repairer to repair their products (Wiseman, pers. comm., 2 February

2021). Another study found that in the case of mobile phones, 67 per cent of Australian consumers have used independent repairers compared with 29 per cent having used the manufacturer (Mobile Muster 2020b, p. 15).

Despite steady growth in demand for new electronic products in Australia (IBISworld 2020a, p. 14), the electronics repair industry has declined over the past decade in terms of revenue, the number of businesses and the number of workers (figure 2.12). This pattern is also consistent with the consumer electronics repair market in the United States.

Consumer electronics are turning into consumable devices nowadays, and consumers generally show little inclination to repair broken products due to the lack of repair infrastructures and relatively high repair costs. (Sabbaghi et al. 2017, p. 137)

Figure 2.12 Electronics repair has been shrinking^a



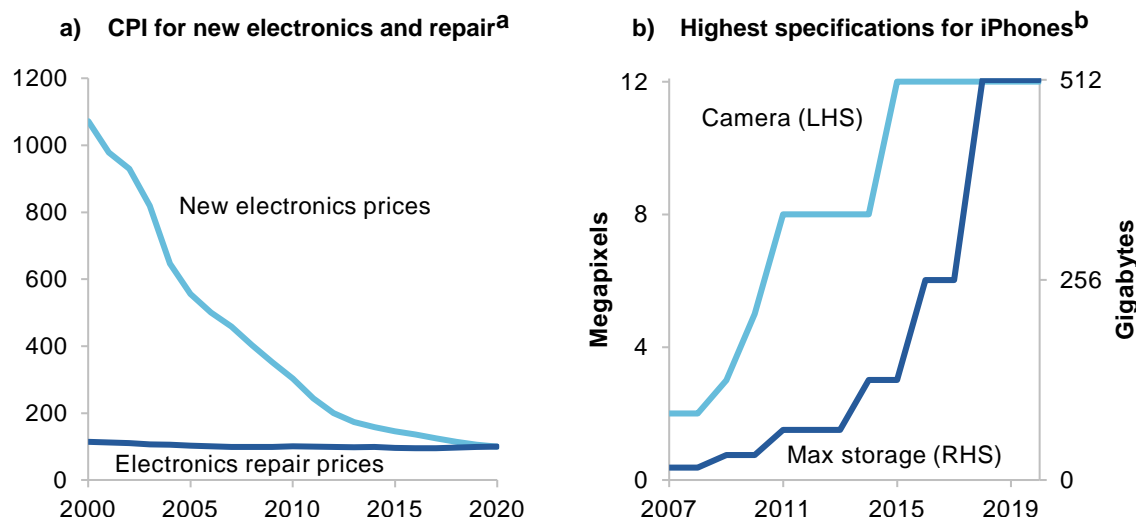
^a Year end June. ^b Number of businesses operating at the end of the financial year. ^c Inflated to 2017-18 dollars using average consumer price index (CPI) for financial years for Audio, visual and computing media and services. ^d Includes employees and owner managers of enterprises. Substantial quality improvement in industry information for owner managers in 2017-18 means comparison with previous years should be made with caution.

Sources: ABS (*Counts of Australian Businesses, including Entries and Exits, 2011–2021*, Cat. no. 8165.0; *Business Longitudinal Analysis Data Environment, BLADE, 2018-19*, Cat. no. 8178.0, Microdata; *Jobs in Australia, 2017-18*, Cat. no. 6160.0).

The decline in the electronics repair industry is partly explained by the price of repair relative to replacement for many electronic products. The price of new electronics such as mobile phones and computers has fallen significantly over time, whereas the price of repair (including labour costs) has remained steady (figure 2.13, panel a), making replacement relatively more affordable.

Further, electronic products have experienced rapid technological development over the past decade (figure 2.13, panel b), providing additional features over time and replacing a variety of other products. For example, computers and smart phones have amalgamated telephones, diaries, cameras, calculators, notepads, radios, alarm clocks and many more products.

Figure 2.13 Falling prices of new electronics, steady repair prices and rapid technological development makes replacement more appealing



^a New electronics prices: consumer price index (CPI) Audio, visual and computing equipment. Electronics repair prices: CPI Audio, visual and computing media and services. Average CPI for financial years. ^b Using the highest specification for storage and camera megapixels for each year of iPhone releases since 2007.

Sources: ABS (*Consumer Price Index, Australia, December 2020*, Cat. no. 6401.0, Table 7); Apple (2008, 2009, 2014, 2015, 2019a, 2019b, 2019c, 2020a, 2020b, 2020c, 2021e, 2021i, 2021f); Eadicicco (2019); Hasnain (2021); Heisler (2015).

The decline in electronics repair may also be explained by other trends.

- Some businesses have adopted in-house repair services for their electronics, which has reduced demand for third-party repair services (IBISworld 2020a, p. 10). This can be significant as most industry revenue comes from businesses repairing and maintaining computers, smart phones and tablets (figure 2.14).
- Some businesses have taken up leasing arrangements for electronic equipment, which often includes free product maintenance (IBISworld 2020a, p. 14).
- The increasing computerisation of products, particularly electronics, means that these products often require specialised knowledge for repairs, which can increase repair costs (section 2.1).

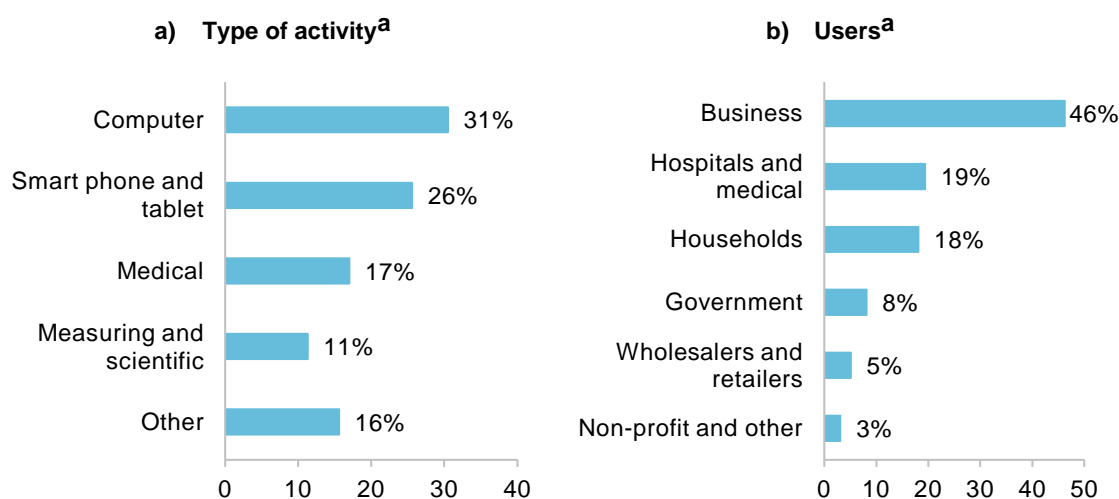
Repairs of electronic or Internet of Things devices increasingly require specialised knowledge, software or parts. This specialisation can provide manufacturers with the ability to dictate when and how a consumer can have their devices repaired ... consumers may be exposed to higher repair costs and limited availability of parts and services as manufacturers may deny access to third parties and insulate themselves from competition. (ACCC, sub. 106, p. 4)

- Some electronics repair may be shifting towards being repaired in-house by the manufacturer (and away from authorised and independent repair). For example, Nikon terminated its authorised repair program in the United States in 2020, and now only conducts repairs in-house (PetaPixel 2019). This would mean that a growing share of in-house repair would

not be captured within repair industry data (box 2.4). However, it is not possible to verify this effect on the decline in the electronics repair industry with existing data.

Consistent with the wider repair sector, there also appears to be a shortage of electronics repairers (box 2.3). The Consumer Electronics Suppliers Association stated that in the consumer electronics sector it is difficult to identify and locate suitably qualified professional repairers (sub. 25, p. 5).

Figure 2.14 Most electronics repair activity comes from businesses



^a May not sum to 100 per cent due to rounding.

Source: IBISworld (2020a, pp. 20, 23).

FINDING 2.1 THE AUSTRALIAN REPAIR SECTOR

A consumer's decision to repair or replace a broken product is primarily driven by price. The inconvenience of repair and consumer preferences for up-to-date products are also likely to make repair less appealing.

The repair sector accounts for about one per cent of all business revenue in Australia and has grown modestly over the past decade.

- Most repair activity (revenue, number of businesses and workers) comes from industries with more expensive products, such as motor vehicles and machinery, that require regular maintenance and where repair is often more cost-effective than replacement.
- There was less activity in repair industries for relatively less expensive products, such as electronics and appliances, where replacement tends to be more attractive. This is likely due to the relatively low and falling prices of these products over time, rapid technological development, and consumer preferences for new and up-to-date products.

The repair sector faces several challenges

While the Australian repair sector has grown moderately, it faces several challenges.

Some challenges are common across multiple repair industries. The high cost of labour has made the price of repair less appealing relative to replacement for some products. And the increasing computerisation of products, from cars to kettles, can make repair more difficult.

Other challenges are likely to affect some industries more than others. For example, rapidly falling real prices of new electronics, technological development and consumer preferences to update their devices, have likely contributed to the declining activity in the electronics repair industry.

While these challenges may act as barriers to repair, they are not necessarily problematic. For example, falling prices of new products benefits households, particularly lower-income earners, and reduces costs for businesses.

However, other barriers to repair may exist that are either unnecessary or lead to inefficient outcomes in which the cost of the barrier outweighs the benefits, or where there are significant negative effects that are not accounted for in the price of the product. Subsequent chapters of this report examine these potential barriers and distortions in depth.

3 Repair rights in consumer law

Key points

- The Australian Consumer Law (ACL) provides consumers with rights to obtain a remedy (repair, replacement or refund) for defective products through consumer guarantees.
- These guarantees are reasonably comprehensive and generally work well. There are, however, concerns about the ability of consumers to access their rights, including because:
 - of the uncertainty over a ‘reasonable’ period of product durability
 - the unavailability of some spare parts and uncertainty about how long parts and repair facilities should be made available
 - a lack of clarity on whether software updates are covered by the guarantees
 - instances where guarantees are ignored by sellers and manufacturers.
- While there is ambiguity about the period of reasonable durability, providing regulator guidance on time periods is unlikely to have net benefits. However, other measures to improve how guarantees are enforced would help to address some of these concerns and enhance consumers’ ability to obtain a repair, replacement or refund.
 - The Australian Government should enable designated consumer bodies to lodge ‘super complaints’ on systemic issues relating to consumer guarantees, with such complaints to be fast tracked and responded to by the Australian Competition and Consumer Commission.
 - State and Territory Governments should work together to identify opportunities to enhance alternative dispute resolution options in each jurisdiction to better resolve complaints about the consumer guarantees.
 - The Australian Government should amend the ACL to make it a contravention for suppliers and manufacturers to fail to provide a remedy to consumers when legally obliged to do so under the consumer guarantees. This would empower the Australian Competition and Consumer Commission to seek pecuniary penalties, in addition to obtaining redress for affected consumers.
- In addition, the ACL should be amended to provide a guarantee that the manufacturer of a product with internet-connected embedded software will take reasonable actions to ensure software updates are provided for a reasonable period. This would modernise the law to reflect that many everyday products require these updates to address operational stability issues and security vulnerabilities.

Consumer policy in Australia aims to improve consumer wellbeing by fostering effective competition and enabling the confident participation of consumers in markets (COAG 2009, p. 3).

Consumers can face information gaps or overload about products, which can lead to poor decision making, and potential social costs from consumer choices (PC 2008, p. 12). Furthermore, information asymmetries open opportunities for businesses to limit or distort the information available to consumers — leading to the potential for further consumer harm, such as higher prices, and reduced product quality and choice (Bruce 2014, p. 14). These features also weaken competition as consumers are not able to play an informed and empowered role necessary to deliver the benefits of competitive markets.

The Australian Consumer Law (ACL) attempts to address these problems with laws that: regulate suppliers' and manufacturers' behaviour (misleading or deceptive conduct, unconscionable conduct, unfair contract terms); require the provision of certain information (for safety); ensure product standards (health and safety standards); and provide baseline protections for consumer purchases (consumer guarantees), among others.

This law is set out in a schedule of the *Competition and Consumer Act 2010* (Cth), operating as a single generic law of the Commonwealth and in each State and Territory. In adopting the ACL, the Commonwealth, State and Territory Governments agreed to retain their own consumer regulators to administer and enforce it. Consequently, there is a 'one-law, multiple-regulator' model (PC 2017a, p. 3).

At the Commonwealth level, the Australian Competition and Consumer Commission (ACCC) administers and enforces the ACL. As the ACCC cannot pursue all matters that come to its attention, it generally focuses on systemic issues that 'will, or have the potential to, impact vulnerable consumers, harm the competitive process or result in widespread consumer or small business detriment' (ACCC 2021a, p. 4) (section 3.7). The Australian Small Business and Family Enterprise Ombudsman (2021) provides assistance to small businesses in dispute with other businesses.

State and Territory ACL regulators typically address problems from consumers in their jurisdiction, including undertaking conciliation and other actions to resolve particular consumer disputes (PC 2017a, p. 6) (section 3.7). In some States and Territories, the Small Business Commissioner (where one exists) can play an active role in helping small business operators resolve disputes with other businesses, including consumer guarantees (VSBC 2016, p. 1).

3.1 Consumer guarantees and repair

The consumer guarantees are part of the ACL framework and are the primary set of rights that affect product repairs. Guarantees automatically provide consumers with a range of protections when they purchase a product (with some exceptions, discussed later). Among other things, they require manufacturers and suppliers to guarantee that the products they sell are of acceptable quality (s. 54) (including that they are reasonably durable) and to meet any extra promises made in warranties about performance, condition and quality, such as lifetime guarantees, and money-back offers (s. 59). There is also a guarantee that

manufacturers will make spare parts and repair facilities available for a reasonable period (s. 58) and that suppliers are required to guarantee that the products they sell are fit for any disclosed purpose (s. 55).

When guarantees are not met, consumers are entitled to a refund, replacement or repair by the supplier or manufacturer of the product. However, the ACL does not empower consumers to prioritise repair over other options. If the product has a ‘minor’ failure, the *supplier* can choose between a replacement, refund, or repair (s. 261). For a ‘major’ failure, the *consumer* can choose between a replacement or refund (s. 263(4)), but not repair.⁷

Notwithstanding this, CHOICE contended that the consumer guarantees provide ‘strong protections for repair and other fair remedies for defective goods’ (sub. 126, p. 14). It also noted that Australian consumer protections are much ‘stronger’ in comparison to some other countries, such as the European Union (which only offer a minimum two-year guarantee).

The Commission has taken a neutral approach to consumer remedies — that is, the focus is on removing any unnecessary barriers or distortions to repair, rather than mandating a hierarchy that preferences repair over replacement or refund. This is because such preferences are not universal: while such a hierarchy may align with some groups’ objectives (such as environmental objectives of preventing the proliferation of e-waste through product repair and reuse) it does not always align with consumer preferences (and may remove consumer choice and risk consumers getting stuck in a cycle of repair). Such a hierarchy may also unnecessarily increase costs for manufacturers and suppliers, which may ultimately be passed onto consumers. Furthermore, there may be more direct, effective and efficient ways of addressing external costs associated with individual consumption choices, such as policies that manage the costs to the community from the waste generated by the disposal of consumer products (chapter 7).

This chapter examines how this framework facilitates access to repairs and whether it could be improved, with a focus on consumer guarantees under the ACL.⁸ This includes whether:

- all agricultural machinery purchases should have consumer guarantee protections to increase access to repair (section 3.2)
- there is sufficient clarity regarding how long consumers can expect to exercise their right to a durable product (section 3.3)

⁷ A product has a major failure (s. 260) when: a reasonable consumer would not have bought the product if they had known about the problem; it has multiple minor problems that, when taken as a whole, would have stopped someone from buying it if they had known about them; it is significantly different from the sample or description; it is substantially unfit for its common purpose and cannot easily be fixed within a reasonable time; it does not do what the consumer asked for and cannot be easily fixed within a reasonable time; or it is unsafe. A repair is not a legal obligation in the event that a consumer elects to reject a product on the grounds of a ‘major failure’ to comply with one or more consumer guarantees. However, a consumer who has a preference for repair may choose to accept that where offered.

⁸ Other policies are also relevant to support competition, consumer rights and wellbeing, including the competition policy provisions set out in the Competition and Consumer Act (chapter 4).

-
- consumers lack reasonable access to spare parts and repair facilities under the consumer guarantees (section 3.4)
 - consumers should have explicit protections to access software updates for products with embedded software (section 3.5)
 - having designated consumer groups be able to raise and fast track systemic issues to a regulator would assist the operation of the consumer guarantees (section 3.6)
 - redress options need to be strengthened to help consumers access their rights (section 3.7).

Overall, the Commission has found that these guarantees are reasonably comprehensive but consumers' ability to access their rights could be enhanced by a range of changes (finding 3.1). While the changes discussed in this chapter would benefit consumers by providing them with greater access to repair (as well as refund and replacement), they would not necessarily substantially increase the amount of repair activity, due to other factors that influence decisions to have products repaired, such as the cost of repair relative to replacement and people's preferences for new over repaired products (chapter 2).

FINDING 3.1 CONSUMERS SOMETIMES LACK THE ABILITY TO EXERCISE EXISTING RIGHTS

The Australian Consumer Law provides consumers with rights to obtain a remedy (repair, replacement or refund) for defective products through consumer guarantees.

These guarantees are reasonably comprehensive but consumers' ability to access their rights could be enhanced by:

- clarifying existing rights by explicitly requiring manufacturers to provide software updates for a reasonable period
- enabling a super complaints process to complement the existing Australian Consumer and Competition Commission's (ACCC) practices for identifying and dealing with potential systemic breaches of guarantees
- enhancing relevant State and Territory regulators' alternative dispute resolution options for individual cases, through options that can result in enforceable outcomes
- empowering the ACCC to seek pecuniary penalties on suppliers and manufacturers that fail to provide a remedy when required to do so, in addition to obtaining redress for affected consumers.

3.2 Consumer definition is not a barrier to repair

A broad definition of a consumer

The consumer guarantees provide rights and protections for 'consumers'. The ACL defines a 'consumer' broadly, to include individuals purchasing products for their personal or

household consumption, as well as for some business transactions. A person is considered to have purchased a particular product as a consumer if:

- the purchase price is less than \$100 000 or
- the product is purchased for personal, domestic or household use or
- the product is a vehicle or trailer purchased to transport products on public roads (s. 3(1)).

This definition means that consumer guarantees extend beyond personal or household consumers to include businesses as consumers. In particular, a person is considered a consumer for all purchases under the monetary threshold (\$100 000), regardless of the nature of the product. This covers standard household items such as white goods, mobile phones and cars used in both domestic situations and business environments. It also covers products purchased for business use, such as agricultural machinery, so long as the purchase price is less than the threshold. Business purchases of vehicles and trailers above \$100 000 are also covered if they transport products on public roads.

Australia is unique in explicitly including some business purchases in its consumer guarantees framework. Other countries such as New Zealand, the United Kingdom and France only provide protections for individual or household products (CAANZ 2017, p. 10; Pinsent Masons 2014; Watson et al. 2015).

Providing consumer protections to businesses was implemented over 40 years ago to primarily assist small businesses (Treasury 2018b, p. 14).⁹ Small businesses have a dual role in consumer policy: as well as being suppliers of goods and services, they are consumers in their own right. They are considered to have similar characteristics to individuals, particularly in relation to unequal bargaining power, and lack of resources to effectively negotiate an outcome in the event of a problem with a product (PC 2008, p. 318). While protecting small businesses was the primary aim, larger businesses also receive these protections. Large businesses are arguably not as affected as small businesses by unequal bargaining power.

In the past few decades, there have been several significant junctures where the objective of protecting small businesses under consumer guarantees has come under review. In all cases, the threshold has been retained on the basis that small businesses have similar characteristics to individuals, particularly in relation to unequal bargaining power (box 3.1).

⁹ In 1977, a monetary threshold was introduced into the *Trade Practices Act 1974* (Cth) that extended a range of consumer protections to businesses — this had the effect of providing protections to small and large businesses that purchased products below that threshold (Treasury 2018b, p. 17). In 1986, further amendments were made to provide consumer protection to the purchase of commercial road vehicles on the basis that owner–drivers are not easily able to understand their rights without seeking legal advice (Treasury 2018a, p. 19).

Box 3.1 Past reviews have accepted the objective of protecting small business

The Commission's 2008 consumer policy framework review concluded that there are 'no clear principles that can be brought to bear in deciding the extent to which small business should be covered by generic consumer protections' (PC 2008, p. 320). It was noted that any significant scaling back of consumer protection for small business would change a longstanding tenet of the generic consumer policy framework in Australia, and would run counter to the trend towards increasing small business protections in other areas of consumer policy (PC 2008, p. 321).

When the Australian Consumer Law was developed in 2010, removing the monetary threshold was considered, so that only personal, domestic or household products would be covered (Treasury 2018b, p. 17). This was rejected, with the legislation retaining the monetary threshold on the basis that small businesses should continue to be protected under the new regime (Hartsuyker 2010, p. 6472).

In its final report, the 2017 Australian Consumer Law review noted removing the threshold criteria would not only exclude business purchases, but also current protections for individuals purchasing products that are not ordinarily acquired for personal or domestic use, but are in fact purchased for personal use (CAANZ 2016, p. 26). Furthermore, such a change would be inconsistent with recent government decisions to increase protections for small businesses, including in relation to unfair contract terms and access to dispute resolution (CAANZ 2016, p. 26).

Existing coverage of agricultural machinery in consumer guarantees

Some inquiry participants submitted that all agricultural machinery purchases should be covered in the definition of a consumer to provide agricultural businesses with corresponding rights to the consumer guarantees, including repair (ASBFEO, sub. DR225, p. 1; GPA, sub. 27, p. 15; NFF, sub. 55, p. 5; VFF, sub. 60, p. 5; Wiseman and Kariyawasam, sub. 105, pp. 6–7). Many of these participants noted that the purchase price of agricultural machinery is typically above the monetary threshold and therefore not covered by the consumer guarantees (for example, NFF, sub. 55, p. 5). Results from the Commission's survey of machinery owners found that about 69 per cent of agricultural machines had a recommended retail price over \$100 000, with many costing upwards of \$300 000 (38 per cent) (chapter 4).

These inquiry participants generally argued that farm businesses have unequal bargaining power compared with manufacturers and sellers of agricultural machinery (for example, NFF, sub. 55, p. 5; VFF, sub. 60, p. 3). The ACCC also found that farm businesses may be in a relatively weak position to negotiate with manufacturers and dealers (2020b, p. 6).

To mitigate this imbalance of power, some participants suggested including an additional provision in the definition of a consumer to protect agricultural machinery purchases, similar to that currently covering vehicles or trailers purchased to transport products on public roads (for example, GPA, sub. 27, p. 15; VFF, sub. 60, p. 3). Changing the definition of a consumer would not only provide access to remedies (of repair, replacement or refund at the cost of the supplier or manufacturer) but would allow consumers to potentially claim compensation for consequential loss from a supplier (s. 259(4)) or manufacturer (s. 272(1b)).

Greater coverage of agricultural machinery is not needed

Based on the evidence presented in submissions and consultations, there does not appear to be a strong case for all agricultural machinery to be covered by the consumer guarantees.

The extension of the consumer guarantees to include all agricultural machinery purchases would impose unnecessary compliance costs on suppliers and manufacturers. A potentially significant cost is the possibility that suppliers and manufacturers may be liable for consequential losses under the ACL because of the failure to comply with the guarantee if it was *reasonably* foreseeable. The National Farmers' Federation asserted the importance of being able to seek damages for losses, including the loss of farm business revenue when machinery fails during a key stage in the production cycle (sub. 55, p. 5). One agricultural machinery manufacturer submitted that it would not object to extending consumer guarantees to business products over the threshold as long as that coverage was limited to repair and/or replacement of goods (CNHI, sub. 116, p. 3). If this was not the case, they claimed exposure to liability for consequential losses would have to be factored into the purchase price of products. There also would be training costs for suppliers and manufacturers to understand and comply with any change in their legal obligations, as well as costs to manufacturers from having to provide remedies (repair, refund or replacement) for products that they are not currently required to do so.

Furthermore, not all farm businesses face an imbalance of bargaining power in the purchase of farm machinery. Approximately 15 per cent of broadacre farms have annual income above \$1 million (CNHI, sub. 116, attach. 1, p. 10). And the farm business sector has been moving away from small family-run farms to larger farms, with more sophisticated operations, commodity diversification and adoption of technology (Wu et al. 2019, pp. 12, 16). Given this trend, extending consumer guarantees to the purchase of all agricultural machinery would, over time, increasingly afford protections to larger farm businesses.

In line with this, some participants took the view that farm businesses, particularly larger farm businesses, are equipped to negotiate with suppliers (CNHI, sub. 116, p. 1; Eglinton, sub. 5, p. 1; TMA, sub. 111, p. 1). For example, Eglinton submitted that:

... a farm machinery dealer is generally doing business with another business and so we are doing business to business transactions ... They are not consumers who lack understanding of the industry but should be aware of the various aspects of purchasing machinery. These customers do the research and understand what they are buying and what they want it to do along with understanding what the service back up would be. (sub. 5, p. 1)

Covering all agricultural machinery purchases under the consumer guarantees also raises issues of consistency with other businesses whose purchases are not covered, many of which may also be small businesses (such as small brewing businesses or building and construction businesses that often purchase costly plant and equipment). Farm businesses, like other small businesses, can engage professional services and obtain advice to gain the necessary knowledge to negotiate a deal. Small businesses have a range of responsibilities in running their business, such as employment and tax obligations for which they may need to obtain

professional advice. Seeking advice on the purchase of agricultural machinery costing over \$100 000 should not be viewed differently.

Changing the definition of a consumer would not effectively address repair-specific issues of most concern to farm businesses. Farm businesses have reported problems accessing diagnostic software tools, calibration or activation codes, repair manuals and spare parts, when needing to repair or service their machinery through third-party repair providers (chapter 4). Additional consumer protection would not result in manufacturers providing these repair supplies to third-party repair providers because:

- if a particular repair was the result of a fault or breakage that constituted a breach of consumer guarantees, the responsibility would rest with the manufacturer (via the supplier) to provide a repair (or some other remedy)
- there is no obligation in the consumer guarantees to provide such repair supplies to third-party repair providers, including for regular maintenance and repair.

The following chapters discuss more targeted measures to increase access to repair supplies, including measures aimed at enforcement of existing provisions against anti-competitive conduct (chapter 4), copyright reforms to enable sharing of repair information (chapter 5) and obligations to provide repair inputs (chapter 8).

While the Commission is not recommending changes to the definition of a ‘consumer’, this examination has highlighted the inconsistency of coverage of business purchases of vehicles and trailers purchased for the transport of goods on public roads. This additional coverage was granted based on an assessment of an imbalance of power almost 40 years ago. The Commission is not aware of any re-assessment of this arrangement in recent decades. A review of the arrangement would be appropriate to determine whether coverage of vehicles and trailers for business purposes is still necessary and in the public interest. Such a review is pertinent given the likely consolidation in the industry and growth in larger businesses in the last decade (Deloitte Access Economics 2019, p. 13).

3.3 Reasonable product durability is difficult to measure

The guarantee that a product will be of acceptable quality is at the heart of the consumer guarantees (s. 54) under the ACL. This includes, among other factors, that the product will be as durable as a reasonable consumer would regard as acceptable, and durable enough to perform its intended function for a *reasonable amount* of time in normal circumstances (Treasury 2019, p. 1).¹⁰

¹⁰ Other factors in determining acceptable quality include being fit for all the purposes for which the products are commonly used for, acceptable in appearance and finish, free from defects, and safe (s. 54(2)). If any fault was drawn to the consumer’s attention before the purchase, the consumer cannot rely upon the acceptable quality guarantees for that particular fault (s. 54(4)).

The principles-based approach to specifying ‘reasonable durability’ in the guarantee of acceptable quality provides suppliers and consumers with the flexibility to apply guarantees to a wide variety of products of different value and quality. Such flexibility can help to reduce compliance costs for manufacturers and suppliers, while at the same time protect consumers (Corones, Christensen and Howell 2016, p. 2).

The ACCC has issued guidance that aims to assist consumers and suppliers to understand whether a product has met the durability requirement in a principle-based manner. In particular, the guidance notes that what constitutes reasonable durability depends on several factors including:

- the nature of the product, which can include the materials used or composition of the components and whether the product is a new product or secondhand
- the price of the product
- statements made about the product, either on the packaging or by the supplier or manufacturer (Treasury 2019, p. 1).

Consumers are likely to seek this information at the time the fault occurs and when they are contemplating whether to seek a remedy under the consumer guarantees (such as repair). This can differ from the type of information that consumers may seek at the point of purchase, to assist them in selecting between similar products with different levels of durability (chapter 6).

There is uncertainty about what ‘reasonable durability’ means ...

While the flexibility of the principles-based legislation has advantages, it can also lead to uncertainty about what is considered a reasonable time period for individual products — which may also not be static over time. There are no specific time periods in the regulator guidance as to what reasonable durability is for particular product types. In practice, it is largely left up to consumers and suppliers or manufacturers to negotiate whether a product has met the reasonable durability requirements in the consumer guarantees.

But consumers’ and suppliers’ expectations may differ from that of an objective ‘reasonable’ consumer, as people form expectations based on their own values and influences, including their familiarity with a product and evolving technologies (Allens 2016, p. 12).¹¹ A large Australian retailer stated that this can result in many different interpretations.

In determining whether a product has failed the test of ‘Acceptable Quality’, the concept of ‘durability’ in section 54 (which is obviously ‘time-based’) is also open to many different interpretations and the Act provides no guidance as to how long a product should last in order to pass this test. (pers. comm., 12 May 2021)

¹¹ Consumers may also be guessing at how long they have owned a product if they have no record of the purchase. Such guesses could be quite different to the actual length of ownership.

This difference can lead to uncertainty as to whether a product has failed to meet the reasonable durability requirements (Australian Democrats, sub. 100, part 1, p. 20; CHOICE, sub. DR232, p. 10; Downes, sub. 96, p. 3; Park, sub. 52, p. 2). Consumers largely bear the cost of such uncertainty.

- A consumer may be aware of the durability requirement but unsure if they are entitled to a remedy, and decide not to seek a remedy and instead replace the item (at their own cost), or live without it.
- Some consumers may believe they are covered but decide that the inconvenience and cost of trying to get a repair (or refund/replacement) is not worthwhile and instead replace the item at their own cost (CHOICE, sub. DR232, p. 10), or live without it.

CHOICE submitted that there are also significant costs to consumers associated with unnecessarily buying extended warranties — as consumers believe it provides greater certainty that, if they experience a problem with their product, their claim will be accepted and the claims process will be more straightforward than relying on their rights under the consumer guarantees (sub. DR232, p. 10).

One area of uncertainty is for higher value products that consumers have owned for some time (but purchased new), receiving some benefit from the product before a fault occurs. In this situation, the application of the acceptable quality guarantee appears to become much more difficult for both consumers and businesses to navigate. CHOICE found that consumers who have purchased high-priced white goods that fail at the seven or eight year mark, for instance, are less able to confidently negotiate a remedy with the business due to the broadness of the law, power imbalance and information asymmetries (CHOICE 2016, p. 12; CHOICE, sub. DR232, p. 10).

For consumers, it may also be unclear what protections they have for secondhand purchases. In part, this is because not all secondhand purchases are covered by the acceptable quality guarantee — the guarantee only applies to products supplied ‘in trade or commerce’ and not private sales. In addition, the variable nature of secondhand products at the time of purchase, compared with new products, means that there is greater uncertainty about whether the guarantee about acceptable quality and reasonable durability has been met. For example, a secondhand premium fridge that is only a year old could be expected to be almost as durable as a new fridge, whereas a secondhand fridge that is 10 years old might not.

The uncertainty for lower-value products does not appear to be as great. The price of a certain type of product is typically related to the quality of materials and the manufacturing techniques used (and hence its durability). For like-for-like products, those with a lower price can be expected to last for a shorter period than higher priced products, other things being equal. A shorter period means that there is less scope for variation in what consumers and suppliers would consider reasonable (such as the reasonable durability for kettles and toasters). In the event of a failure of a lower-value product that is still covered by the consumer guarantees, some consumers may choose not to seek a remedy, because they have a preference to replace the item with a newer or more robust model (chapter 2). Furthermore,

when consumers do seek remedies for low-value products, some suppliers may be inclined to replace or refund the product — even when there may not be an obligation.

... but additional regulator guidance may not have net benefits

In 2019, the Australian Government released guidance, developed by the ACL regulators, on how long a product could reasonably be expected to last after purchase without fault (Treasury 2019). While extensive, and providing several examples for each factor, it did not provide specific time periods for major household consumer goods.

Various types of inquiry participants stated that more clarity is needed regarding how long new products could be expected to be covered under the consumer guarantees,¹² and many advocated for the ACCC to develop and provide that guidance.¹³

Consumer groups highlighted that not only would guidance help with individual cases, but it would assist in re-focusing the ACL as the point of reference for a remedy, rather than consumers relying on manufacturer and extended warranties (CALC, sub. DR229, p. 16; CHOICE, sub. DR232, p. 10). The ACT Government viewed the guidance as a ‘powerful tool’ to better inform consumers about product durability (sub. DR224, attach. 1, p. 2).

Other participants (including manufacturers and the ACCC) questioned the value of additional regulator guidance because of the practical difficulties and resource-intensive nature of developing and maintaining guidance, owing to the number of factors that influence durability, including the materials used, the type of product, and how the product is used.¹⁴ One possible consequence of capturing this variation is quite wide time ranges for any guidance (box 3.2). Notwithstanding this, consumer groups in Australia and internationally have developed some estimates of product durability, which they have shared with their members and the broader community (CHOICE 2018; Smith 2020).

In addition, drawing upon information and expertise of manufacturers to develop guidance may not be straightforward, and may impose considerable compliance costs on manufacturers to provide the information — information which would only be relevant to new products. The ACCC argued that developing guidance would necessitate information gathering powers to provide specific and robust estimates — which neither the ACCC or State and Territory ACL regulators have in relation to producing guidelines (sub. DR214, p. 6). GAMAA stressed that drawing on estimates developed by manufacturers would reflect

¹² These participants include Ai Group, sub. 32, p. 4; Australian Democrats, sub. 100, part 1, p. 21; LGNSW, sub. 97, p. 6.

¹³ These participants include the ACT Government, sub. DR224, attach. 1, p. 2; BRU, sub. DR198, p. 3; CALC, sub. DR229, p. 16; CPRC, sub. DR212, p. 1; Port Phillip EcoCentre, sub. DR190, p. 4; QCA sub. DR165, p. 2; Rimmer, sub. DR168, p. 6; Wiseman and Kariyawasam, sub. DR208, p. 2; WMRR, sub. DR183, p. 5.

¹⁴ These participants include Ai Group, sub. DR156, p. 6; ACCC, sub. DR214, p. 5; AWHF, sub. DR192, p. 2; IGEA, sub. DR180, p. 2; Rheem, sub. DR167, p. 3; GAMAA, sub. DR191, p. 4; FCAI, sub. DR233, p. 10; QLS, sub. DR231, p. 3.

an individual manufacturer's expertise in measuring or estimating durability, among other matters (sub. DR191, p. 4).

Box 3.2 Participants' views on practical difficulties in measuring durability time periods

Rheem submitted that, as manufacturers differentiate their product based on a number of factors that influence the length of time that a product is likely to operate without fault, durability time ranges are likely to be quite wide (sub. DR167, p. 3). In addition, there are likely to be factors beyond the control of manufacturers, such as weather, that should be reasonably factored into the variation of fault free time periods for some products (AWHF, sub. DR192, p. 2).

Ai Group highlighted that different guides would need to be produced for household consumers as well as business consumers for the same product (sub. DR156, p. 6). It submitted, for example, that a 'flat screen TV used for a few hours a day in a household is likely to last longer than the same TV placed in a retail store running 24 hours a day' — despite both purchases likely to be covered by the acceptable quality guarantee.

IGEA emphasised the different nature of products within the same categories, noting that while some game consoles are simply connected to the television, others can be handheld (sub. DR180, pp. 2–3). They contend that these differences may be so significant that even providing a minimum expected durability over a range of years could be difficult and/or broad. Similarly, the Australian Competition and Consumer Commission submitted that to accommodate the variation in products, the guidance would either have to be specific enough to account for all types of products within a category of household products or broad enough to incorporate all products and not likely to be helpful (sub. DR214, p. 6).

There are also potential unintended consequences of a regulator providing guidance on minimum expected durability. GAMAA highlighted that any guidance provided on product durability will set expectations for consumers and become an implied warranty or standard (sub. DR191, p. 4). Moreover, the ACCC submitted that any regulator guidance may act as a disincentive for manufacturers to prioritise durability in the product design, innovation and manufacture of products (sub. DR214, p. 7).

But, even if guidance could be provided, the ACCC had reservations about the usefulness to consumers of regulator guidance that offers a broad range of time periods and/or heavily caveated guidance (ACCC, sub. DR214, p. 6). Furthermore, any guidance would only be one factor in determining if the durability requirement had not been met for a particular product: how the product had been treated and representations made to a consumer would also be relevant. This would further mitigate the usefulness of the guidance in assisting consumers to access their rights.

As the guidance would be non-binding, the ACCC contended that it is unlikely that consumers would be able to use it to obtain a remedy (sub. DR214, pp. 6–7) or have the wider effect of meaningful change in market behaviour to provide consumers with access to a remedy (including repair) (ACCC, sub. DR214, p. 6). Indeed, many inquiry participants who advocated for more information about product durability said that the information

would be more valuable at the point of purchase (to help decide between products), rather than at the point of product failure (to help resolve disputes).

On balance, the Commission considers that additional ACCC guidance on durability — as a means of assisting consumers to better access their rights to a remedy under consumer guarantees (including repair) — would not have net benefits. However, the Commission has proposed other measures to improve how guarantees are enforced, which would help to address some of these concerns and enhance consumers' ability to obtain a repair, replacement or refund. For example, enhanced regulator enforcement tools and powers may be a more direct means of improving consumers' ability to obtain a remedy for products that are not as durable as a reasonable consumer would expect (section 3.7).

3.4 Access to spare parts

When a consumer buys a product there will often be an expectation that they will be able to access spare parts or repair facilities for a period of time if the product breaks. However, it is generally accepted that this access cannot be provided indefinitely.

The consumer guarantees seek to strike a balance between consumer expectations and manufacturer obligations — s. 58(1) provides that there is a guarantee that the manufacturer will take *reasonable action* to ensure that facilities for repair, and parts for the product, are *reasonably available* for a *reasonable period* after the product is supplied.

Although there is limited case law on the matter, the test of reasonability is likely to take into consideration a range of factors, such as the nature of the product supplied, the cost to manufacturers of holding parts, the number of years a product has been out of production and supply chain practicalities (box 3.3). There will be instances where it is reasonable for spare parts not to be available, one possible example could be local or international shortages of semiconductor chips.

Products are more likely to require spare parts when they are older, but if a product has been out of production for a long period of time, spare parts are less likely to be available — which may be reasonable under the consumer guarantees (box 3.3).¹⁵ When parts are needed for recently purchased products, they are more likely to be available — which consumers generally expect. Furthermore, if a recently purchased product fails to meet the acceptable quality guarantee in a minor way, but the product is unable to be repaired because of the unavailability of spare parts, a consumer would be entitled to a refund or replacement.

¹⁵ This will have greater implications for those buying older secondhand products.

Box 3.3 **Possible factors influencing the availability of spare parts**

Nature of the product

It would be reasonable to expect that tyres for a new car will be available for many years after its purchase. But it may not be reasonable to expect the availability of spare parts for an inexpensive children's toy (Emerson 2010, pp. 190–191).

Manufacturers' costs of holding spare parts

Requiring that physical spare parts to be available to consumers after they purchase a product imposes costs on manufacturers and suppliers (Ai Group, sub. 32, p. 4; AIIA, sub. 127, pp. 5–6; Caravan Industry Association, sub. 76, p. 2). These costs include warehouse costs of storing parts and possible transport costs connected with the purchase of less frequently used parts that need to be delivered quickly. Spare parts may degrade while in storage, adding to the cost of storing parts. There could also be disposal costs of parts, if they are surplus to requirements following the minimum time period. The AIIA submitted that:

Making parts available for extended periods for a product that has been withdrawn from market will present ageing shelf life issues. For example, specialised batteries stored for long periods as spare parts will self-discharge and degrade over time and may not be able to be recharged or the efficiency is reduced so they cannot perform as well as a newly manufactured part, and they cannot be remanufactured without retooling and major additional expenses. This is an expense to the original equipment manufacturer. (sub. 127, p. 6)

Feasibility of supply

'Thin markets' (where the repair market is too small to support the provision of services) can also make it difficult to provide consumers with access to repair facilities, including spare parts. Assistive Technology Suppliers Australia, a national organisation of industry participants for products used by individuals to perform tasks that might otherwise be difficult, stated that:

The difficulty in the AT [assistive technology] market is the geographic size of Australia and the specialisation of some AT devices can create repair access difficulties due to in part the 'thin market' environment. However, the AT industry works hard to overcome these barriers to assist the AT user to gain access to repair support wherever they live. This is generally coordinated by the seller of the AT device so that, in turn, the guarantee is supported. (sub. 23, p. 9)

Manufacturers can opt-out of, or limit, the guarantee in s. 58(1) if they inform consumers (with written notice) at or before the time of purchase (s. 58(2)). This can take the form of specifying that facilities and parts would not be available or would not be available after a specified period. While some manufacturers have disclosed that they do not guarantee spare parts or facilities in Australia (such as Fitbit and Ryobi), the Commission has not seen evidence of widespread use of the s. 58(2) clause (Fitbit 2021; Ryobi 2021). In particular, the ACCC submitted that in its experience 'few manufacturers provide such notice' (sub. 106, p. 2).

Importantly, these provisions relate to consumer access to spare parts and facilities for products that are purchased for domestic use or for products valued less than \$100 000. It does not cover spare parts and repair facilities for non-domestic high value products such as agricultural machinery and medical equipment or third-party repair provider access to parts. The issue associated with accessing spare parts for these types of products and repair providers are discussed further in chapters 4 and 8.

Consumers' experiences in accessing spare parts

The Commission heard anecdotes from consumers about their inability to find spare parts for household goods, possibly making their product unusable (chapters 6 and 8). For example, one consumer submitted that they had purchased a good quality exercise bike but less than five years later, with only intermittent use, the resistance dial broke and the part was no longer available. As a result, this consumer considers the bike to be 'useless' (comment 200). A caller to a national radio program, who is a fridge repairer, described how they could not repair a three-year old premium quality fridge because the fan belt spare part was not available (Mackenzie 2021).

While these experiences are clearly frustrating, it was not clear these experiences were due to systemic deficiencies in the consumer guarantees — consultations with consumer groups and the ACL regulators failed to uncover evidence of systemic issues with the consumer guarantees. The ACCC noted that it received almost 100 000 contacts relating to the ACL generally in 2019-20, with only a few hundred relating specifically to access to repairs or spare parts (sub. 106, p. 2). Legal Aid Queensland stated that it had not seen any clients attempting to rely on the guarantee of available repair facilities and spare parts (sub. 68, p. 6). Furthermore, the Commission found limited case law relating to the spare part guarantee.

A lack of complaints to the regulator or consumer bodies may signal that there are strong commercial incentives to make spare parts available to consumers. For high cost and longer lasting products, such as vehicles, it is likely to be more cost-effective to repair, rather than replace or refund. The ACCC submitted that the low cost of repair relative to providing a refund or replacement provided a strong incentive for manufacturers to maintain some form of repair facility available to Australian consumers (sub. 106, p. 2). In this context, the Australian Automotive Dealer Association noted the need to keep parts for safety recalls, even for 'vehicles which are 20 years old or more' (sub. 98, p. 6). (Third party repairer access to repair supplies is discussed in chapter 4).

But the absence of official complaints does not necessarily indicate that there is no problem with accessing spare parts (NSW Young Lawyers, sub. DR220, p. 4).

A lack of complaints could also indicate that consumers, who may not be able to access spare parts under s. 58, have been offered an alternative remedy (replacement or refund) under the consumer guarantees (such as acceptable quality (s. 54)). A large Australian retailer noted that in the event that it could not provide parts, it would offer a replacement or refund.

We note that in the event that a customer has a prima facie right to a repair remedy under the ACL (or a warranty) and the product cannot be repaired, then the customer will usually be offered a refund or replacement ... in the vast majority of cases, consumers with faulty goods much prefer refunds or exchanges as opposed to repairs. (pers. comm., 12 May 2021)

Furthermore, when consumers are faced with a broken product requiring a replacement part (which may have broken through normal wear or because of accidental breakage), they may not seek spare parts as they have a preference to replace their consumer product (chapter 2).

A lack of complaints could also suggest that consumers are unaware of the spare parts guarantee. Consumers appear to be reasonably well informed regarding where to seek advice when a fault occurs (box 3.4). Moreover, it is not clear that further information and consumer education would solve this issue (box 3.4). Nevertheless, ACL regulators should continue to improve and refine the quality of information available to consumers, targeting particularly egregious examples. (Greater enforcement powers in respect of the consumer guarantees for the ACCC, State and Territory regulators and the ability of designated consumer groups to lodge super complaints could help raise awareness of consumer guarantees, including the provision relating to spare parts (sections 3.6 and 3.7)).

Consumer guarantee to access spare parts is not a barrier to repair

While consumer frustration about not being able to access spare parts is apparent, along with possibly having to replace a product, there is limited evidence to indicate that manufacturers are not fulfilling their obligations regarding access to spare parts under the consumer guarantees. In light of this, the Commission does not consider the current drafting of this provision (s. 58) to be a significant barrier to repair.

Later chapters in this report explore other reasons why participants experienced difficulties in accessing spare parts and options (outside of the ACL) to improve spare part availability.

- Chapter 6 examines how a product labelling scheme (which might relate to aspects of repairability such as spare parts availability) for consumer goods (such as white goods) could help consumers to make informed purchases and create incentives for manufacturers to compete on after-sale services (such as the duration that spare parts are available for).
- Chapter 8 examines the potential for repair supplies obligations which would require manufacturers to provide access to repair supplies (such as spare parts) to independent repairers or product owners to promote greater competition in repair markets. Such policies are in place in the European Union and the United Kingdom — chapter 6 outlines these policies.

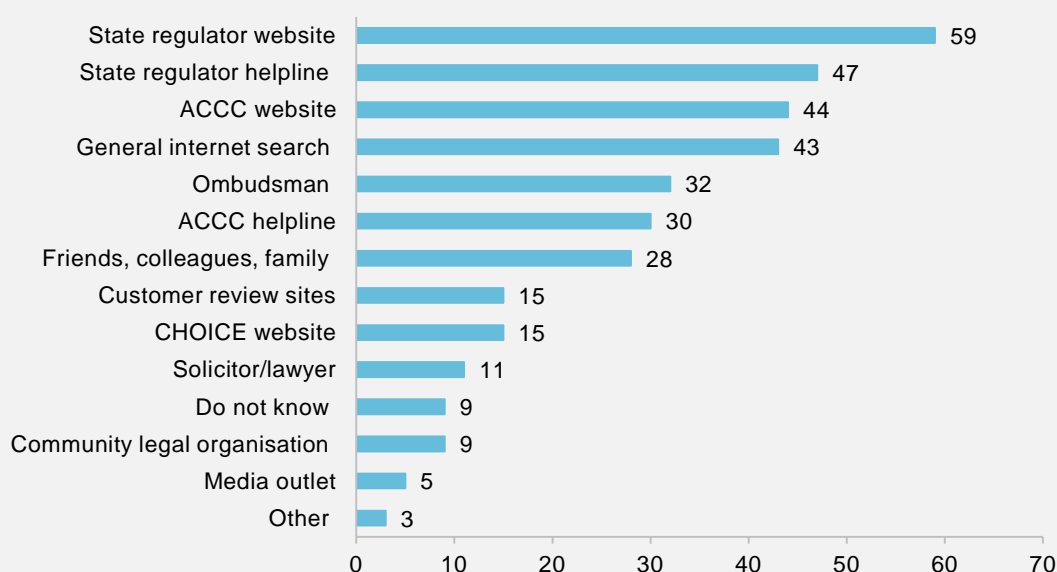
Box 3.4 Would more information about guarantees assist consumers?

A variety of participants supported consumers having more information about their consumer rights (for example, LCA, sub. 114, p. 7). Others either questioned the value of more information (such as, Wiseman and Kariyawasam, sub. 105, p. 8) or highlighted that it is only one component of the solution to consumers accessing remedies under the consumer guarantees (for example, Downes, sub. 96, p. 4).

Consumers benefit from being able to easily access and understand information regarding their consumer rights when a fault occurs. Many consumers are already motivated, with the Australian Consumer Survey suggesting that one third of consumers would always seek information and advice if they had a fault with a product (EY Sweeney 2016, p. 30). A further 62 per cent of consumers indicated they may seek advice on the problem, but it would depend on the circumstances, in particular the cost of the product. Consumers are also relatively well informed of their sources of information and advice on consumer issues (figure below). Of those who have enquired about advice, over 90 per cent found Australian consumer law regulators' websites and phone lines helpful (EY Sweeney 2016, p. 48).

Sources of information for consumer issues

Per cent of consumers willing to seek information or advice



Source: EY Sweeney (2016, p. 31).

3.5 Consumer guarantees need to reflect technology developments

Unlike the physical component of a product and its parts, the consumer guarantees do not explicitly specify obligations relating to software embedded in products and any associated updates. This is understandable as the law was drafted over a decade ago. Since then, increasingly many internet-connected products with embedded software have come to

market, beyond just computers and phones — including door bells, lights, toothbrushes, televisions, vacuum cleaners, mops, fridges, cooking appliances and security cameras.

There are two main concerns. The first concern is whether faulty software embedded in a product is covered by the acceptable quality guarantee which stops the overall product from working or limits the product's function (McGrath, sub. 15, p. 5). This fault may be present at the time of purchase or because of an update.

However, case law indicates that faulty software, including faulty software updates, are covered by the consumer guarantees. For example, following an update, some Apple customers experienced a software fault ('error 53'), which disabled their phones. While Apple declined to provide some consumers with a fix, the Federal Court found that the fault was covered by consumer guarantees (chapter 4). Nevertheless, the Commission has received examples where consumers have had software updates that were faulty but have experienced difficulties rectifying the problem (for example, Davis, sub. DR148, p. 1). (Greater enforcement powers in respect of the consumer guarantees for the ACCC and the ability of designated consumer groups to lodge super complaints could help to resolve these cases (sections 3.6 and 3.7)).

The second concern is whether manufacturers have an obligation to provide software updates for a reasonable period after purchase (much like spare parts) (EFA, sub. 65, p. 3; Witherby, sub. 134, p. 4). As noted by the ACCC (2021b):

Aside from the s. 58 consumer guarantee, the ACL does not impose any express obligation on manufacturers to support a product for a minimum period of time nor does it specifically require manufacturers to tell consumers about the support period.

Software updates can correct problems with the operation of the embedded software (to improve stability), address security vulnerabilities (such as introducing two-factor authentication), and add new features or improvements via an app associated with the product (such as adding Siri voice control). Many consumers do not understand the complexities of 'smart' products and the importance of these updates. A survey of Australian consumers by Data61 showed that about half incorrectly assumed that cyber security is already built in to all smart devices sold in Australia (Australian Government 2021d, p. 11).

The ACL does not explicitly specify obligations relating to software updates and there is no case law to use as a guide. The ACCC also submitted that there are practices that are not currently caught by 'consumer protection and fair trading laws', including businesses not providing security updates for smart products for a reasonable amount of time, which puts sensitive consumer information at risk (sub. 106, p. 5). Digital Rights Watch and Electronic Frontiers Australia submitted that with the growing trend of everyday products having embedded software, it is not sufficient to only include hardware when considering obligations to repair in the law (sub. DR230, pp. 3–4). Wirecutter, an American online product review organisation, reported that a 'connected fridge isn't worth spending extra money on if its operating system isn't receiving updates, and it's certainly not worth that investment if it ends up leaking your Google account details' (Klosowski 2020).

Access to software updates for a reasonable period

Some participants claimed that regular software updates were provided in practice, even if there is no explicit requirement in the law and did not necessarily see the value in imposing additional requirements on manufacturers.¹⁶ For example, IGEA, the gaming peak industry association, submitted that it is ‘common for consoles to still receive essential updates for well over a decade after their initial release’ (sub. DR180, p. 7). Industry commentators have reported that iPhones released since 2011 have received updates for at least five years (Haslam 2020; Muhammad 2020). Furthermore, Apple claim that 86 per cent of iPhone devices introduced in the past four years and 80 per cent of all iPhones in use have the latest operating system (Apple 2021a).

Some participants also understood the desire to have manufacturers provide software updates for a reasonable period but were concerned about the implementation of any change to the law (Ai Group, sub. DR156, pp. 3–4; TMA, sub. DR228; p. 9). For example, Ai Group submitted that consumer expectations need to be managed regarding what this guarantee would deliver. That is, that software updates being available for longer may not necessarily lead to better performance or enhanced features after a certain point, as technology inevitably advances beyond the product hardware (sub. DR156, pp. 3–4). Similarly, the Commission heard in consultations that manufacturers could not be expected to ‘future proof’ software embedded products from the inevitable major technological changes over the years ahead.

On the other hand, there was strong support for requiring manufacturers to provide updates.¹⁷ Some submissions pointed to the risk that otherwise physically long-lived products will have shorter lifespans due to a lack of software support. Manufacturers generally promote smart products on the perceived value of the software embedded features. If manufacturers represent a product as having a particular feature (and derive additional revenues from it), they should be required to deliver on that representation.¹⁸ Without regular software updates, these products may lose some of the additional features. For example, being able to check the contents of a fridge on a phone via camera can be a valuable feature, but in the absence of a requirement to provide software updates, there is a risk that the smart features may no longer be supported or may have limited functionality.

Other participants highlighted that without these updates products can become vulnerable to cyber-attacks putting sensitive consumer information at risk (for example, ACS, sub. 66, p. 3; DHA, sub. DR213, p. 1; DRW & EFA, sub. DR230, pp. 2–3). For example, home security cameras with weaknesses in their embedded software may allow unauthorised parties to reset passwords and/or access vision (including changing the view and zooming

¹⁶ These participants include Ai Group, sub. DR156, pp. 3–4; AIIA, sub. 127, p. 20; AMTA, sub. DR181, p. 4; IGEA, sub. 103, p. 5; sub. DR180, p. 2.

¹⁷ Several participants supported this proposal including CHOICE, sub. DR232, p. 6; CPRC, sub. DR212, p. 2; DRW & EFA, sub. DR230, pp. 2–3; NSW Young Lawyers, sub. DR220, p. 5; QUT Centre for a Waste-Free World, sub. DR172; p. 11; Rimmer, sub. DR168, p. 6.

¹⁸ A UK consumer group found that consumers can pay an additional £850 (\$A1600) for a smart fridge freezer compared with a standard one or pay £260 (\$A500) more for a smart dishwasher (Kirk 2020).

in). These parties may capture personal information (such as when consumers are likely to be away from home) to assist a robbery. They may also gain access to all devices on the home network, including laptops, accessing personal and financial information.

The Commission sees value in amending the consumer guarantees to clearly indicate to consumers and manufacturers that the software embedded in products is covered by the consumer guarantees. To do this, the ACL should be amended to include a new consumer guarantee that manufacturers will provide reasonable software updates for a reasonable period of time (along the lines of the requirement to provide repair facilities and spare parts).

However, unlike the spare parts guarantee (s. 58(2)), the new provision should not permit manufacturers to opt out of, or limit, the requirement to provide software updates. This is because, whereas the ‘need’ to access spare parts may only affect a small proportion of the consumer base (such as where a part has broken), the need for software updates is likely to be one that affects the functionality or operation of an entire product line.

The exact nature and scope of the amendment to the ACL should be subject to regulatory impact analysis and stakeholder input. Nevertheless, the purpose of the amendment is to clarify that consumers are guaranteed access to software updates that are *critical* to maintaining the quality (functionality, security and safety) of software-enabled products, for a reasonable time. For this reason, the Commission considers that software updates could, at minimum, include actions that correct operating problems in the embedded software and address security vulnerabilities — but, like the other consumer guarantees should rely on what is ‘reasonable’ as a standard. There would not necessarily be a requirement to provide ‘feature’ updates, but as indicated by some participants, these types of updates are provided by manufacturers as they are valued by consumers.

Cyber security is an important broader policy issue extending beyond consumer law and the ability to ‘repair’ products via software updates. Consequently, the Australian Government (2021d) has a policy process underway to consider options for regulatory reforms and voluntary incentives to strengthen the cyber security in Australia. As part of this process, the Australian Government is considering minimum product standards for smart devices, product labelling to indicate the level of cyber security via a star system, or product labelling that would specify how long security updates would be provided for. The Commission’s recommendation for the consumer guarantees to be amended to provide reasonable access to software updates would be consistent with the objective of these proposed reforms by providing some base level of security for a reasonable period. However, to fully achieve broader cyber security objectives additional measures may be needed beyond the Commission’s recommended consumer policy changes.

A related issue is whether the ACL should be amended to require manufacturers to inform consumers at the point-of-sale about the minimum period of time that they will provide essential software updates for any product that depends on software to function (CHOICE, sub. DR232, p. 6), such as through product labelling. Chapter 6 outlines principles that any product labelling scheme should consider.

RECOMMENDATION 3.1 REQUIRE SOFTWARE UPDATES FOR A REASONABLE PERIOD

The Australian Government should amend the Australian Consumer Law to include a new consumer guarantee for manufacturers to provide reasonable software updates for a reasonable time period after the product has been purchased, with no option to limit or exclude that guarantee.

3.6 Super complaints for consumer guarantees

Another reform, that would be complementary to additional powers for ACL regulators (as discussed below), is to introduce a ‘super complaints’ mechanism, whereby designated consumer organisations are able to lodge complaints on consumer guarantee issues, including repair. This would provide consumers with another mechanism through which to exercise their rights to remedies under the consumer guarantees.

A super complaint could include identifying a new issue, introducing new evidence, making a case for something that should be prioritised, framing a known issue in a new way, and/or taking a cross sector/thematic perspective (CFA and CHOICE, sub. DR242, p. 2). They are designed to make the regulator aware of market features that appear to be significantly harming the interests of consumers. They focus on highlighting structural issues or behaviour in a particular market, rather than bringing a ‘class action’ on behalf of a group of consumers.

A super complaints process has operated in the United Kingdom for almost two decades (box 3.5) and one was trialled in New South Wales between 2011–2013 (PC 2017a, p. 221). While the NSW trial did not lead to a super complaints process in the state, the trial was considered to have ‘worked well, achieving its objective of allowing CHOICE to lodge complaints of major consumer significance’. Furthermore, the NSW regulator found that such a scheme best resides with a national regulator, given the nationally significant issues that super complaints focus on (Customer Service NSW, pers. comm., 14 October 2021).

Several consumer groups submitted that a super complaints process would provide several key benefits not available under current intelligence gathering measures.

First, a super complaints process would provide a deeper level of analysis on specific issues than existing consultative committees. The Consumer Action Law Centre noted that super complaints processes provide ‘a systematic, rigorous and highly evidenced means for regulators to gather insight on conduct within their remit’ (sub. DR229, p. 8).

Box 3.5 **Super complaints — United Kingdom**

In the United Kingdom, a super complaint is designed to bring to the attention of the regulator market features that appear to be significantly harming the interests of consumers. A market feature may relate to the structure of the market, the conduct of a person who supplies goods or services in the market, or the conduct of their customers (CMA 2015).

Only designated consumer bodies can make a super complaint. It is expected that the designated consumer bodies would be informed organisations that are in a strong position to represent the interests of groups of consumers and able to provide strong analysis and evidence in support of any super complaint made (UK OFT 2003, pp. 5, 16). Evidence that might be expected as part of the super complaint includes: details of the market to which the complaint relates; how consumers' interests are harmed and the scale of detriment; whether vulnerable or disadvantaged consumers are impacted; and details of means of redress available to consumers and their effectiveness.

While a 'super complainant' is not expected to provide the level of evidence necessary for the regulator to decide that immediate action is appropriate, they should present a reasoned case for further investigation. Once a super-complaint is made, the regulator receiving it has 90 days to publish a response setting out what action, if any, it proposes to take and its reasons (UK OFT 2003, pp. 7–8). A super-complaint could lead to enforcement action, a market study or a full competition investigation, for example.

A wide variety of UK regulators can receive super complaints, including the Competition and Markets Authority, Financial Conduct Authority, Payment Systems Regulator, Office of Road and Rail, and regulator for the communications services (Ofcom) (Moorey 2018). Super complaints have been raised on a range of issues including concerns about long-term customers paying more for products and services than new customers, misleading pricing practices in the grocery sector, and the tying of beer purchases to a sole company.

Second, a super complaints process would provide additional transparency about how the ACCC deals with the key issues brought to it by consumer groups (CALC, sub. DR229, p. 9). For example, the usual time limited and public nature of the process ensures that major consumer issues are responded to transparently by the regulator. The Consumer Action Law Centre submitted that the 'timely nature of responses to super complaints is one of the clearest benefits of this system' (sub. DR229, p. 9).

However, one criticism of this feature is that it would divert regulator resources away from 'existing and well-established priorities' (ACCC, sub. DR214, p. 9). The ACCC submitted:

Dealing with a super complaint, particularly multiple super complaints in any one period, would have a profound impact on ACCC resourcing and priorities. It would force the ACCC to deprioritise existing projects and prioritise to achieve the deadline imposed by a super complaints process. (sub. DR214, p. 9)

While some reallocation of resources would be necessary, the regulator receiving the complaint would need only to commit resources for the initial response period, resourcing beyond that is based on the regulators assessment of the issues raised (CFA and CHOICE, sub. DR242, p. 3).

Related to concerns about resource allocation, is the concern that there would be frivolous or vexatious super complaints (for example, VACC, sub. DR218, p. 10). However, the eligibility requirements to be a designated consumer group, such as having a willingness to co-operate with the regulator, would mitigate consumer groups of having a mindset of making such complaints (HM Treasury 2013, p. 6). The evidentiary requirements would also provide a framework for consumer groups to adhere to, which would remove uncertainty about whether or when to submit a super complaint for investigation. Such requirements would also ensure that there is a substantial problem that needs addressing (CALC, sub. DR229, p. 8). The experience in the United Kingdom indicates that frivolous or vexatious complaints are unlikely, with just under 20 complaints in as many years (CFA and CHOICE, sub. DR242, p. 3).

Enabling a super complaints process

On balance the Commission considers that the super complaints process would help address some of the difficulties consumers face in accessing remedies under the consumer guarantees. The Commission's 2017 *Consumer Law Enforcement and Administration* study came to a similar conclusion (2017a, p. 224). The UK super complaints process has operated for almost two decades (and extended into other regulatory areas), indicating that it is functioning well, and is a possible model for Australia to adopt.

A super complaints process in Australia would need to be supported by operational guidance and principles, to ensure that the process is effective and efficient. This should include requirements for designating (and removing) consumer bodies, evidentiary requirements to support a claim (including the potential for consumer harm), and the process by which a regulator should respond to the complaint (such as the specified time period for a response). The guidance and principles should be developed by the Australian Government in consultation with ACL regulators and consumer and industry groups, drawing on lessons from the UK experience. Participants provided support for the operational guidance (QLS, sub. DR231, p. 4; Communications Alliance, sub. DR219, p. 2; CALC, sub. DR229, p. 8).

RECOMMENDATION 3.2 ENABLE A SUPER COMPLAINTS PROCESS

The Australian Government should enable designated consumer groups to lodge 'super complaints' on systemic issues associated with access to consumer guarantees, with the complaints to be fast tracked and responded to by the Australian Competition and Consumer Commission (ACCC).

The Australian Government should design the super complaints system in consultation with the ACCC, relevant State and Territory regulators, and consumer and industry groups. The system should be underpinned by operational principles — including criteria for the assignment (or removal) of designated consumer bodies, evidentiary requirements to support a complaint, and the process and time period by which the ACCC should respond.

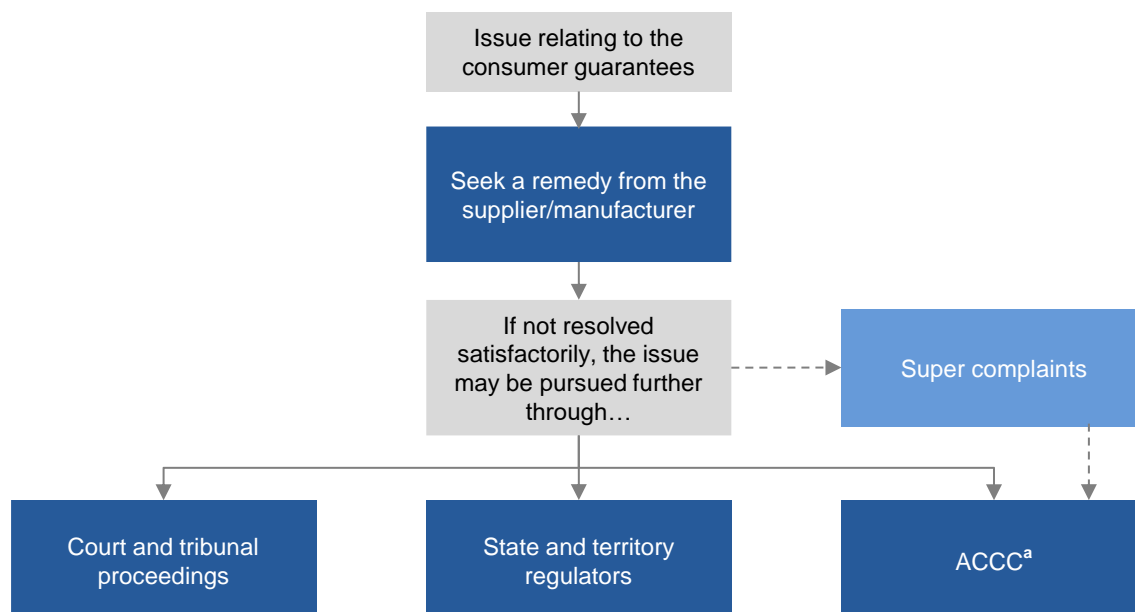
3.7 Consumer guarantee enforcement issues

Under the ACL, the consumer guarantees provide a ‘private right enforceable by consumers’ (ACCC, sub. DR214, p. 4). That is, the onus is on consumers to seek a remedy when their consumer guarantees are not met. Consumers can first seek a remedy from the supplier or manufacturer (depending on which consumer guarantee is an issue) (figure 3.1). Failing a resolution, consumers may be able to:

- contact ACL regulators, who may be able to provide guidance and assistance to help them and suppliers/manufacturers come to a resolution
- initiate court or tribunal proceedings.

A well-functioning consumer redress system is essential for the effective operation of the consumer guarantees. It underpins consumer confidence to seek a remedy and sends a signal to businesses about the need to comply with consumer laws.

Figure 3.1 **Consumer process for seeking a remedy under the consumer guarantees**



^a Although the ACCC is a systemic regulator, it does provide general guidance for and receive complaints from individual consumers. It also has some powers to take representative action in relation to the consumer guarantees, discussed below.

Participants indicated that consumers can have difficulties accessing remedies under consumer guarantees particularly for higher value products such as cars, mobile phones and white goods (ACCC 2020a, pp. 127–128; CALC, sub. 119, p. 6; LAQ, sub. 68, p. 5).

As discussed above (section 3.3), these issues generally arise when consumers approach suppliers or manufacturers for a remedy because a product fails to comply with the consumer

guarantees, but the supplier or manufacturer does not agree or simply refuses to provide a remedy. Although there are mechanisms to escalate complaints and disputes (namely courts and tribunals), some participants explained that these avenues can be difficult to use and may dissuade consumers from seeking redress (including seeking repair). In other cases, consumers might not have access to the same suite of dispute resolution processes as these differ by State and Territory. In the case of complaints of systemic issues made to the ACCC, the regulator is currently unable to directly seek pecuniary penalties for issues relating to the consumer guarantees as they are not contravention provisions. This section explores these barriers to repair and other remedies and how it could be improved.

Courts and tribunals are empowered to make legally binding and enforceable decisions in relation to disputes about the consumer guarantees. But this process is costly, time consuming and complex for consumers, deterring many from seeking redress this way (ACCC, sub. DR214, p. 4; CALC sub. 119, p. 1). Financial costs for consumers can include:

- filing fees to access tribunals and courts — for example, the fees in South Australia are just over \$150 (for all consumer matters) and, in Victoria, filing fees are over \$200 for claims between \$3000 and \$15 000 (Courts Administration Authority of South Australia 2021; VCAT 2021)
- the cost of obtaining evidence — for example, for motor vehicle claims, technical reports are usually required, often costing over \$1000 for motor vehicle claims, as without sufficient independent evidence to prove there was failure, courts and tribunals are not in a position to make decisions in favour of the consumer (CALC 2016, p. 27; Corones, Christensen and Howell 2016, p. 7).

Also, many people considering court or tribunal action are often dissuaded from doing so because of the concern of having to pay the other party's costs, if their claim is unsuccessful (LCA 2016, p. 4).

There are also non-financial challenges and difficulties, including:

- consumers being without a working product such as their car, for a long period of time as a result of protracted legal action (CALC, sub. 119, p. 1)
- having difficulty obtaining experts, such as a mechanic, to provide reports or attend a hearing (LAQ, sub. 68, p. 3).

In many cases, the cost and effort involved in commencing legal action in either a court or tribunal will be greater than the value of the product in question (ACCC, sub. 106, p. 2; LAQ, sub. DR163, p. 2).

Jurisdictional limits for some tribunals and courts can also mean that consumers need to limit their claim or escalate the claim to a higher court if they wish to seek redress. For example, claims for motor vehicles and caravans could be limited (depending on their value) in the Northern Territory, the Australian Capital Territory, and to a lesser extent, New South Wales (ACAT 2021; NCAT 2021; NTCAT 2021). Legal Aid Queensland submitted that jurisdictional limits for motor vehicles should be expanded (sub. 68, p. 10).

Collectively, these costs and inconvenience mean that courts and tribunals are not an effective form of redress for many consumers.

Enhanced dispute resolution powers for State and Territory regulators

As an alternative to tribunal or court actions, consumers may seek assistance from their State and Territory ACL regulator to help them and businesses come to a solution using alternative dispute resolution (ADR) processes. These are considered preferable to going to court or tribunals as they are generally a low cost, flexible and informal means for consumers and businesses to reach a resolution (Ramsay, Abramson and Kirkland 2017, pp. 8, 25). However, a material proportion of consumers either believed that the government does not provide adequate dispute resolution services (13 per cent) that help to resolve disputes between consumers and businesses or they do not know (29 per cent) (EY Sweeney 2016, p. 26).

As previously argued by the Commission, there is value in assessing the suite of ADR processes across jurisdictions with the appropriate resourcing (PC 2008, p. 201, 2017a, pp. 204–211). While State and Territory ACL regulators currently use a range of ADR processes, such as negotiating and facilitating for consumers, most of these processes cannot result in enforceable outcomes, with the exception of South Australia and New South Wales (box 3.6).¹⁹ As such, there is likely to be value in considering whether State and Territory ACL regulators should adopt enforceable ADR processes, including determinative processes — that is dispute resolution processes that have the power to make decisions (figure 3.2).

Although the evidence base on the effects of existing enforceable ADR processes in these jurisdictions is still emerging, there was some positive feedback from some stakeholders and regulators.²⁰ For example, the Consumer Action Law Centre proposed that all State and Territory regulators be empowered to make enforceable directions on low-valued claims to provide better access to remedies for faulty products, similar to those in New South Wales (sub. 119, p. 6). There have been calls for the introduction of an ombudsman for either all consumer products (Wiseman and Kariyawasam, sub. DR208, p. 2) or certain products, such as motor vehicles (CALC sub. DR229, p. 6; MTAA, sub. DR234, p. 8) and mobile phones (CALC, sub. 119, p. 6). The Consumer Action Law Centre stated at the public hearings:

... I just might emphasise the benefits of specialist dispute resolution forums outside the regulators as well. So we consider that having, for example, ombudsman schemes, it's one of the most, you know, significant advances in consumer protection in Australia over the last 30 years and I think in the last 15 years, we haven't seen the opportunities to build on those schemes in

¹⁹ The Australian Capital Territory Government passed laws to enable the Commissioner for Fair Trading to require a business to attend a binding conciliation with a consumer to resolve their dispute (sub. DR224, attach. 1, p. 1). The Tasmanian Government also supports state regulators enforcing the consumer guarantees but noted the budget challenges in doing so (sub. DR240, p. 1).

²⁰ Greater enforcement powers were proposed by a variety of participants including Australian Democrats, sub. 100, part 1, p. 39; CALC, sub. 119, p. 6; sub. DR229, p. 2; CHOICE, sub. 126, p. 16; sub. DR232, p. 5; CPRC, sub. DR212, p. 1; LAQ, sub. DR163, p. 2; QCA, sub. 122, p. 2; QLS, sub. DR231, p. 3; Wiseman and Kariyawasam, sub. DR208, p. 2.

other sectors. So we would like to see for example, a dispute resolution forum like an ombudsman scheme or a tribunal on motor vehicles. (trans., p. 173)

Box 3.6 Existing alternative dispute resolution processes

Compulsory conciliation — South Australia

South Australia introduced compulsory conciliation in 2013. When a consumer and business cannot come to an agreement privately, the regulator, Consumer and Business Services, can arrange a compulsory conference, acting as a neutral third party, prior to the consumer taking legal action. The consumer and the business must attend the meeting, with fines of up to \$10 000 for businesses that do not attend without a reasonable excuse. Outcomes from conciliation must be agreed to by both parties, and may proceed to court if agreement cannot be found. If one party fails to carry out their obligations under the agreement, the other party (or the Consumer and Business Services Commissioner) can apply to the South Australian Magistrates Court to enforce it (under s. 8A(7) of the *Fair Trading Act 1987* (SA)).

In 2018, the main industries subject to compulsory conciliation conferences were solar (35 per cent), building (22 per cent) and mobile phones (7.5 per cent) (SA CBS 2018).

While the program has not been formally evaluated to assess its relative costs and benefits, the evidence suggests that relatively high rates of resolution are being achieved. In its first two years of operation (2013 and 2014), South Australia's conciliation process resolved 86 per cent of the 403 cases that had been escalated to compulsory conciliation (Gago 2015). In 2018, the process resolved 90 per cent of cases (169 cases) (SA CBS 2018).

Enforceable directions — New South Wales

In New South Wales, the Commissioner for Fair Trading can issue a consumer guarantee direction that may require the business to repair, replace or refund certain products (up to the value of \$3000 within six months of the date of purchase), after reviewing submissions from both parties. If the business does not comply with the direction, the consumer will need to register the direction with the Local Court and apply to have it enforced (NSW Fair Trading 2018).

Customer Service NSW is undertaking an internal evaluation of the consumer guarantee directions to determine its efficacy and to provide recommendations for further opportunities for improvement. This evaluation is scheduled for completion in early 2022 (pers. comm., 14 October 2021).

Figure 3.2 Types of alternative dispute resolution processes

Facilitative processes that assist parties to reach agreement	Advisory processes that provide advice	Determinative processes that make a decision
<ul style="list-style-type: none"> • Negotiation • Facilitation • Conciliation 	<ul style="list-style-type: none"> • Expert appraisal • Case appraisal • Neutral evaluation 	<ul style="list-style-type: none"> • Arbitration • Expert determination • Private judging
May have enforceable outcomes	Typically do not have enforceable outcomes	Typically have enforceable outcomes

Source: Adapted from Ramsay, Abramson, Kirkland (2017).

Nevertheless, some participants challenged the need for more dispute resolution options (for example, FCAI, sub. DR223, p. 6).

In general, expanding the suite of available ADR options gives consumers greater choice for how they can resolve their disputes, making it more likely that consumers will be able to find an option that best meets their needs. For this reason, evidence that consumers are choosing to use and are able to resolve complaints through an ADR process is an indicator of whether they are providing a benefit.

Moreover, in other sectors and internationally, enforceable ADR processes have been found to be an appropriate model for managing consumer disputes. For example, in the United Kingdom, the Motor Ombudsman is tasked with reaching outcomes for both consumers and sellers which are fair and reasonable based on the evidence provided (box 3.7). Similarly, in Western Australia, the Building Commissioner can issue a building remedy order (determination action) where they are satisfied that a building service is faulty or unsatisfactory (WADMIRS 2021, p. 3).

Box 3.7 The Motor Ombudsman — the United Kingdom

In the United Kingdom, the Motor Ombudsman is an impartial service that considers consumer complaints about motor vehicles. It is tasked with reaching outcomes for consumers and sellers which are fair and reasonable based on the evidence provided, as an alternative to going to court.

The Motor Ombudsman is a government approved consumer alternative dispute resolution body, funded by accredited businesses. It operates four Motor Industry Codes of Practice which are approved by the Chartered Trading Standards Institute Consumer Codes Approval Scheme.

The aim of this dispute resolution process is to restore a consumer to the position they would have been in had the problem not occurred. Remedies can include an apology, an explanation of what went wrong, a practical action to correct the problem, and/or a financial award (subject to a limit). If the consumer rejects the ombudsman's decision, they lose the right to the resolution offered but the consumer can take the complaint elsewhere, such as the courts.

While the aim is not to punish businesses, the Motor Ombudsman has a range of powers to provide incentives to ensure behaviour that complies with the law and with the dispute resolution processes. The Motor Ombudsman can:

- make recommendations to the business so that it can avoid similar problems happening again
- issue penalty points to businesses that fail to comply with The Code of Practice or engage in the dispute resolution process
- make a reference to the Independent Compliance Assessment Panel to review cases of persistent or serious breaches of the Code

Source: The Motor Ombudsman (UK) (2021).

Given the difficulty for some consumers in accessing a remedy under the existing ADR processes and the limited evidence of what should be implemented for consumer guarantees, the Commission recommends State and Territory Governments work together to identify opportunities to enhance alternative dispute resolution options in each jurisdiction to better

resolve complaints about the consumer guarantees. There should be a focus on evaluating options that can result in enforceable outcomes, the value of having an ombudsman for certain products, the funding of preferred models and the implications for varying enforcement tools across jurisdictions under a national framework.

RECOMMENDATION 3.3 ENHANCE ALTERNATIVE DISPUTE RESOLUTION POWERS

The State and Territory Governments should work together to identify opportunities to enhance alternative dispute resolution options in each jurisdiction to better resolve complaints about the consumer guarantees. In examining such opportunities, governments should consider:

- the extent to which consumers in some jurisdictions face less comprehensive access to alternative dispute resolution and whether this is consistent with a national consumer framework
- funding options to adequately resource enhanced alternative dispute resolutions
- the net benefit of options that enable regulators to make enforceable decisions or facilitate enforceable outcomes
- as an alternative, the net benefit of certain product markets (such as motor vehicles) having an ombudsman to make enforceable decisions or facilitate enforceable outcomes.

The outcomes of this activity should be published.

Empower ACCC to seek penalties for systemic breaches

In addition to enhancing the powers of state regulators to resolve individual disputes relating to consumer guarantees, there have also been calls to strengthen the enforcement powers of the ACCC for systemic complaints relating to these guarantees. Notably, the government is expected to commence, in the near future, a consultation process regarding reforms that would make it a contravention of the ACL if suppliers and manufacturers fail to provide a remedy under the consumer guarantees, when one is required. In 2019, the Meeting of Ministers for Consumer Affairs stated:

Ministers endorsed a regulatory impact assessment of options to ensure that businesses comply with the consumer guarantees and consumers can access the remedies to which they are entitled. This would include a proposed civil prohibition for failure to provide a consumer guarantees remedy. (CAF 2019)

Such a change would allow the ACCC and other ACL regulators to seek pecuniary penalties on offending suppliers and manufacturers, in addition to obtaining redress for affected consumers. This will also enable those regulators to unilaterally commence court proceedings in relation to the consumer guarantees, without the need to obtain consent from each affected consumer.

The Commission agrees that the ACCC's current powers limit its ability to fulfil its role in addressing systemic breaches of consumer guarantees. In particular, a key criteria for the ACCC in deciding whether to take enforcement action is whether the outcome will drive greater compliance by businesses more broadly than the individual business(es) that motivated the action (ACCC 2021a).

However, at present, the only mechanism for the ACCC to directly enforce the consumer guarantees is by taking representative action (s. 277), which effectively enables it to act on behalf of an affected consumer or set of consumers. But taking representative action is unlikely to drive better outcomes for consumers at a systemic level because:

- the case-specific nature of representative action does not lend itself to addressing systemic consumer guarantee issues — instead, representative action cases pursued are likely to be akin to individual action and any outcomes achieved are likely to set a narrower precedent for future cases, if at all
- there are practical barriers to running such actions — in addition to requiring the written consent from each person on whose behalf action is taken, representative actions also in practice require significant time and effort of the affected consumer(s) to assist the regulator, which some consumers may not be willing or able to invest
- the decision to settle or continue an action rests with consumers, meaning the ACCC is unable to make broader strategic decisions on these matters, in such a way that balances systemic outcomes against resourcing considerations
- representative actions are highly likely to be settled prior to a court decision without any outcome other than the remedy originally sought by the consumer (but usually after a costly investigation has been incurred by the ACCC), meaning that the case would not provide a precedent for similar cases in the future
- the available remedies are limited to those available under consumer guarantees (that is, repair, replacement or refund), meaning that the ACCC is unable to seek penalties or court orders that would provide a specific or broader deterrent effect.

While the ACCC may be able to use other provisions of the ACL to take action against businesses that refuse to provide consumers with a remedy under the consumer guarantees, for example where it relates to misleading conduct, such action does not address the core issue of suppliers and manufacturers not providing a remedy when consumers are entitled to one (ACCC, sub. 106, p. 2). Box 3.8 outlines how deficiencies in the ACCC's powers limit its ability to take action in relation to consumer guarantee issues. (Consumers can also take individual action, as described above.)

For these reasons, the Commission supports changes to the ACL to include a contravention for suppliers and manufacturers to fail to provide a remedy to consumers when legally obliged to do so under the consumer guarantees. Empowering the ACCC to seek pecuniary penalties in relation to the consumer guarantees would be an effective means to address current deficiencies.

Box 3.8 Deficiencies in the law — systemic regulator enforcement powers of the consumer guarantees

Failure to provide a remedy vs misleading statement

Anh purchases a tablet directly from its manufacturer (Manufacturer A). The tablet comes with a one year manufacturer's warranty. Two years after purchase, the tablet stops displaying anything on the screen. Anh has not damaged or misused the tablet in anyway and attempts to seek a remedy from Manufacturer A. The manufacturer has an internal policy advising its staff to not mention the consumer guarantees when consumers raise issues with their appliances, unless and until the consumer mentions it first. Anh does not specifically ask Manufacturer A about his rights when he calls about the issue. He is advised by one of its representatives that Manufacturer A cannot provide any remedy under its manufacturer's warranty as the tablet is well outside its warranty period.

Under the current law, the action by Manufacturer A is unlikely to be a contravention of the Australian Consumer Law (ACL). Although Manufacturer A has not considered Anh's claim under the consumer guarantee, the statement made about Manufacturer A's warranty is accurate. As such, Manufacturer A is unlikely to be found to have made a misleading statement.

Following the recommended amendments, because the manufacturer has not provided Anh with the remedy he is entitled, the Australian Competition and Consumer Commission or other ACL regulators could take enforcement action against Manufacturer A for not complying with its obligations under the consumer guarantees.

Major failure vs misleading conduct

Beatrice purchases a car produced by Manufacturer B from one of its authorised dealers. After four months, the car experiences several issues that mean it is objectively not of acceptable quality due to a major failure (such as the car going into idle mode while driving). Beatrice seeks either a refund or replacement as a remedy. The dealer consults with Manufacturer B and they both advise Beatrice that they consider there has not been a major failure to comply with the consumer guarantee of acceptable quality and will not provide her with a remedy she has sought.

Under the current law, this is unlikely to be a contravention of the ACL. Manufacturer B and its dealer have not represented to Beatrice that she is not entitled to a refund or replacement under the consumer guarantees for a major failure. A court would likely consider that Manufacturer B and its dealer have instead made a representation as to their opinion regarding whether there was a major failure on the facts as they understood them.

Following the recommended amendments, the Australian Competition and Consumer Commission or other ACL regulator could take enforcement action against Manufacturer B and/or its dealer. If the regulator took such action, the court would not be focusing on what has been conveyed by the relevant representation. The court would instead focus on whether there has been a major failure to comply with the obligation of acceptable quality (based on the facts), and if the court considers there has been, Manufacturer B and the dealer will be found to have not complied with their obligations under the consumer guarantees in not providing Beatrice with the remedy she is entitled to. This would be a contravention and the regulator could seek a range of orders, including consumer redress and a potential pecuniary penalty (with the court, of course, determining the final orders).

Source: ACCC, pers. comm., 8 October 2021.

RECOMMENDATION 3.4 ENHANCE REGULATOR POWERS TO ENFORCE GUARANTEES

The Australian Government should, in consultation with State and Territory Governments, amend the Australian Consumer Law to make it a contravention for suppliers and manufacturers to fail to provide a remedy to consumers when legally obliged to do so under the consumer guarantees. This would empower the Australian Consumer and Competition Commission to seek pecuniary penalties, in addition to redress for affected consumers.

4 Competition in repair markets

Key points

- Consumers and independent repairers have raised concerns that manufacturers are using their prominent position in the repair market for their goods to limit competition, such as by restricting access to repair inputs or by voiding warranties after any non-authorized repair.
- Such behaviour can harm consumers or society if it results in higher repair prices, or reduced repair access, choice or convenience.
 - However, harm is more limited if higher repair prices result in lower prices for the original product. There are also valid reasons why manufacturers constrain how their products are repaired and who repairs them — including public safety, cyber security, and brand reputation — though these risks can be overstated for many products and types of repair.
- Although there is no evidence of a systemic competition problem across *all* product repair markets, there are several markets where manufacturer restrictions on repair are likely to be lessening competition and leading to consumer harm.
 - For agricultural machinery, manufacturer and dealer repair restrictions are harming machinery owners through higher repair prices, reduced access and choice, and greater financial risks from repair delays. There is a strong case for additional measures to increase third-party access to repair supplies, considered further in chapter 8.
 - For mobile phones and tablets, although there is some indication of harm, evidence is insufficient at this stage to justify specific policy or regulatory interventions. To further examine the market, the extent of harm and the merits of different responses, the Australian Competition and Consumer Commission (ACCC) should undertake a market study.
 - For medical devices, regulations to reduce safety risks may also be encouraging repair restrictions, generating harm through delays and higher costs. As such, the Government should review device regulations, to assess the balance between repair access and safety.
 - For prestige watches, while repair barriers from manufacturers overseas are unlikely to lead to substantial consumer harm, they can be particularly damaging to the viability of small independent watch repair businesses operating in local communities.
- Existing provisions of the *Competition and Consumer Act 2010* are available to address anti-competitive behaviour in repair markets. To enhance enforcement, test the impact of recent legislative changes and provide an educative or deterrent effect to the broader repair market, the ACCC should investigate whether conduct in watch repair markets is contravening the existing provisions.
- To improve awareness of the consumer guarantees, mandatory text in manufacturer warranties should also be required to prominently state that entitlements to remedies under the guarantees do not require previous use of authorised repair services or spare parts.
 - Improvements to awareness and enforcement of the consumer guarantees will also reduce the deterrent effect of warranty terms that void the warranty if any non-authorized repairs occur. A prohibition on such terms is not justified at this time.

Competition matters — at its best, it can drive people to new heights, encouraging them to excel and rewarding their success. Typically, businesses trying to obtain or keep market share in a competitive market will provide customers with higher-quality goods or services for lower prices, while vying among each other to offer the best customer experience, creating a cycle of continuous improvement (Fletcher 2016, pp. 12–13; PC 2018, p. 68).

In repair and maintenance markets, the structure of the market and the strength of competition between different repairers can ensure that consumers have access to affordable high-quality repair. This includes competition between different types of repairers — including in-house repairs by the product manufacturer; repairers that are ‘authorised’ by the manufacturer; those that are ‘independent’ of any manufacturer; and consumers doing their own repairs (‘DIY repair’ or ‘self-repair’). Beyond price, competition in repair markets can also promote innovation in products and repair solutions, enhance the quality, convenience and variety of repair services on offer, and improve the efficiency of the sector.

However, limited competition in repair markets does not always harm consumers or society. A lack of competition could reflect a more durable product with fewer maintenance or repair requirements. It may also reflect weak demand for repair services, particularly for cheap electronic goods where replacement is often more attractive than repair (chapter 2). Moreover, a battle for customers in the market for the original product (the primary market) may be able to offset (fully or in part) any higher prices in the repair market.

This chapter investigates repair market competition and examines concerns raised in the terms of reference — that there is a ‘lack of competition in repair markets’ and that ‘consumers and third parties are being prevented from being able to repair products due to lack of access to the necessary information, tools, parts or diagnostic software’. The chapter is structured as follows.

- Section 4.1 presents the Commission’s framework for assessing competition issues in repair markets.
- Section 4.2 examines the overarching evidence for whether there are barriers to repair market competition.
- Section 4.3 considers some of the justifications for restricting repair, including safety, security and quality concerns, among others.
- Section 4.4 considers the state of competition in specific product markets, taking into account their structure and broader context.
- Section 4.5 concludes with a discussion of possible remedies under the *Competition and Consumer Act 2010* (Cth) (CCA) or through changes to warranty regulations.

4.1 Weighing competition concerns

Concerns about competition in repair markets are widespread, and featured prominently among inquiry participants. There was a particular focus on the commanding role that many

product manufacturers (often through their networks of authorised repairers and dealers) have in the repair markets for their products (box 4.1). Much of this power derives from the inherent advantages in being the product’s manufacturer — they know the product best (including technical specifications and how to repair it) and are typically the major (or often the only) supplier of spare parts and repair tools for that product.

Box 4.1 The commanding role of manufacturers in repair markets

Concerns about the strong position of product manufacturers in the repair market featured prominently in submissions, with many stakeholders noting it has grown over time:

Globally, we note a trend in the technology and mechanical industries since the 2000s towards a ‘walled garden’ style ecosystem in which companies attempt to maximise sales by locking in consumers to their own suite of software and hardware products while also restricting self- or third party repairs through regulatory, legal and technical measures. (Pirate Party Australia, sub. 74, p. 3)

The increased ‘computerisation’ of products has provided manufacturers with new tools to prevent access to aftermarkets (ACS, sub. 66, p. 2; Australian Democrats, sub. 100, part 1, p. 28):

Over the last two decades, we’ve gone from a world where software is rarely seen outside of a general-purpose computer, to a world where billions of microprocessors are embedded in virtually every type of device. As a result, software has become central to the repair of devices. Manufacturers are, unfortunately, taking this opportunity to prevent users from repairing or modifying the devices they have bought, from tractors to printers to coffee makers. (iFixit, sub. 107, p. 10)

Concerns varied between product markets. For example, many participants were concerned about the influence of agricultural machinery manufacturers and dealers:

Currently dealerships have a monopoly on repairs, with farmers being burdened with higher costs and limited choice of repairers ... service to farmers would be greatly improved and costs reduced if they had a choice of repairer they can engage for servicing and repair of their machinery. (Fusinato, sub. 6, p. 1)

Others were concerned about the control that some watchmakers have:

[Swiss watchmakers] like to use the term ‘vertical integration’. In other words, control over manufacturing, control over who sells their product (often limited to the factory’s own retail outlets) and control over who repairs their product. (Peters, sub. 19, p. 2)

Similar issues were raised in other product markets, including consumer electronics (mobile phones, tablets, laptops), motor vehicles, medical devices and domestic appliances (ovens, coffee machines etc.) — discussed further in sections 4.2 and 4.4.

A framework to consider aftermarket competition issues

The Commission’s approach to assessing competition in repair markets (detailed in appendix B) considers whether there is evidence that aftermarket competition is being restricted, and if so, whether this is harming consumers (figure 4.1).²¹

²¹ The focus of the Commission’s framework is on vertical aftermarket restrictions, where manufacturers leverage their market power in downstream repair markets. Concerns about horizontal restrictions — such as anti-competitive conduct of dealers or third-party repairers — were confined to agricultural machinery and motor vehicle repair markets (section 4.2), and more closely resemble a regular competition issue between direct competitors, so are not considered under an aftermarket framework.

Figure 4.1 **A framework to consider aftermarket competition issues**

A. Is there evidence that competition in repair markets is restricted?	
<input type="checkbox"/>	High-level measures indicate a lack of competition (concentration, barriers to entry, profit margins)
<input type="checkbox"/>	Specific cases of manufacturers restricting competition (limits on third-party access to repair supplies)
B. Is there harm to consumers?	
<input type="checkbox"/>	Consumers are 'locked-in' to the repair market (high switching costs)
<input type="checkbox"/>	Consumers face difficulties estimating repair costs (lack of information, complexity)
<input type="checkbox"/>	The repair market is large (relative to the primary market)
<input type="checkbox"/>	Manufacturers have financial ties to the repair market (in-house repair, contracts)
<input type="checkbox"/>	Consumers are not compensated by lower prices in the primary market
<input type="checkbox"/>	Adverse non-price outcomes for consumers (reduced choice, inconvenience)
<input type="checkbox"/>	Risk from third-party repair (to safety, security, quality or innovation) are limited

Source: Commission analysis, based on Tirole (2005, p. 5).

The first step is to identify whether competition in repair markets is restricted (section 4.2).

- **Do high-level measures indicate a lack of competition in repair?** — such as high market concentration and profit margins, or low rates of firm entry or exit.
- **Are there specific cases of manufacturers restricting competition?** — such as limits on third-party access to repair supplies (for both independent repair businesses and consumers doing DIY repair) or warranty terms that discourage independent repair.

Market power is not necessarily a problem, in and of itself (appendix B). So the second step is to consider whether a lack of competition in repair markets is harming consumers or broader society.

- **Do market characteristics encourage higher prices in repair markets?** — there are several characteristics that can indicate when a manufacturer may be more likely to restrict competition in repair markets and set higher prices.
 - *Consumers are 'locked in' to using authorised repair and parts* — the greater the cost of switching to a competing product, the less likely existing customers are to switch to avoid repair prices (Coppi 2007, p. 55; OECD 2017, p. 8). High switching costs can arise for high-cost durable goods (tractors or cars) or appreciating investment goods, for which skilled repair is required (like 'prestige' watches). It can also include factors beyond price, such as a loss of content when changing brands, learning costs for a different product, and contract exit costs (Schulz 2015, p. 124).
 - *Consumers face difficulties estimating repair costs* — inadequate or poor-quality information on repair costs, and the complexity of making long-run calculations for 'lifecycle costs', can mean that consumers cannot factor higher repair prices into purchase decisions (BIAC 2017, p. 10; OECD 2017, p. 9), such as for goods that do not require regular maintenance, or that are purchased primarily by households.

-
- *The repair market is large* — the larger the value of the repair market (relative to the primary market) and the greater the certainty of ongoing returns in aftermarkets (such as through regular maintenance), the more gains there are to manufacturers from raising repair prices (BIAC 2017, pp. 10–11; Coppi 2007, p. 70; OECD 2017, p. 42).
 - *Manufacturers have financial ties to the repair market* — it is only profitable to restrict third-party repairs if there is a mechanism to extract gains from higher repair prices, such as direct profits from in-house repairs, or returns from authorised repairer contracts (like franchising fees or requirements to use manufacturer-branded parts).
 - **Are consumers compensated by lower prices in the primary market?** — where there are highly-competitive markets for the original product (the primary market), firms may ‘compete away’ any profits they earned in the repair market for that product, creating a ‘waterbed effect’²² (Coppi 2007, p. 59; OECD 2017, p. 8; Shapiro 1995, p. 485).
 - The Commission assessed whether this effect exists for motor vehicles — a market with high primary market competition — using the policy change in the United States that mandated the sharing of repair information and tools as a natural experiment. The analysis found some evidence that the price of new cars increased as a result of the policy change, but with a number of caveats to this analysis (appendix B).
 - **Are there adverse non-price outcomes for consumers?** — non-price impacts on consumers include reduced access to and choice of repairers, and more inconvenience from fewer repairers, such as increased time and travel costs (particularly in regional and remote areas). Higher repair prices (and lower primary product prices due to the waterbed effect) can also tilt consumer decisions towards replacement rather than repair, leading to harmful environmental impacts if product disposal is not well managed (chapter 7).
 - **Are there valid reasons for restricting third-party repair?** — such as to maintain the safety, security, quality and environmental standards of products (section 4.3), or to promote innovation and protect a firm’s intellectual property (IP) (chapter 5).

The above criteria help to identify whether there might be a lack of competition in repair markets, leading to consumer or societal harm. However, applying this framework to determine whether government should intervene requires an in-depth analysis of each factor, on a product-by-product basis, to establish the magnitude of harm from existing problems, and the efficacy and cost-effectiveness of potential policy responses. Undertaking such a detailed assessment across *all* products where repair barriers were raised was beyond the scope of this inquiry. Instead, the Commission has generally focused on product markets that were of most concern to participants, taking a largely qualitative approach (supported with data where possible), to arrive at judgments about whether there are competition issues in select repair markets, or where further investigation may be warranted.

²² A pattern of low primary market prices and high secondary market prices (and profits) has been referred to as a ‘waterbed effect’ because reducing one price tends to make the other price go up (appendix B).

4.2 Evidence for restricted competition in repair

High-level measures do not indicate a lack of competition across all repair markets

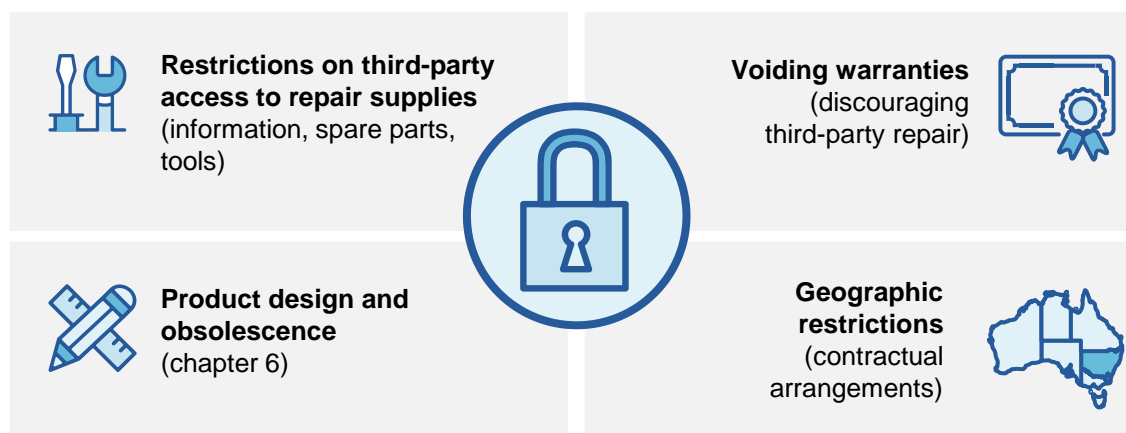
The Commission conducted several broad ‘health checks’ to test the state of competition across the ‘repair and maintenance’ industry and sub-industries — covering appliances, electronics, machinery, clothing and footwear, and different types of motor vehicle repairs, as defined by the Australian and New Zealand Standard Industrial Classification (ANZSIC). The analysis did not indicate a systemic competition problem (further details in appendix B).

- All sub-industries had low market concentration ratios (suggesting numerous providers without market dominance) and entry and exit rates were comparable to the rest of the economy (indicating healthy movement of businesses in and out of the market).
- Profit margins in sub-industries have not changed substantially over the past decade, suggesting that any increasing barriers to competition have not resulted in higher profits in repair markets, as would otherwise be expected.

However, there are some caveats to this analysis. First, sub-industry-level trends may mask significant variations between product markets (for which consistent data are not available). For example, the machinery sub-industry (‘other machinery and equipment repair and maintenance’) covers agricultural, mining, construction, forestry, refrigeration, and most other kinds of heavy machinery. Second, the data do not differentiate between manufacturer-affiliated and independent repair providers, so the concentration of manufacturer-affiliated repairers may be increasing and independent repairers decreasing. Third, for some products (such as mobile phones and medical devices) the data do not capture in-house repair services provided by the manufacturer. Finally, the effects of restricting competition may not be evident in the data — for example, greater barriers to the repair of newer ‘computerised’ products may not yet affect the viability of independent repairers, as they are still able to repair older products in circulation.

As an alternative area of investigation, the Commission assessed the evidence base for competition concerns about the specific actions and behaviours of manufacturers in particular product markets. These concerns can be categorised into four types (figure 4.2).

Figure 4.2 **Methods of restricting repair**



Restrictions on third-party access to repair supplies

Repairers need access to specific inputs to conduct repairs effectively, including:

- spare parts
- tools and equipment (such as special tools, diagnostic software and calibration codes)
- repair information (such as repair manuals, technical specifications or circuit diagrams).

Several inquiry participants raised concerns that manufacturers are using their strong market position to restrict third-party access to these supplies. Of the concerns raised in submissions, 82 per cent related to a ‘refusal to deal’, where manufacturers refused to provide supplies to any party outside their authorised repair network. For example, a medical equipment supplier said that it ‘has made many attempts to purchase parts, components and equipment from [manufacturers] and these have been flatly rejected’ (MD Solutions, sub. 41, p. 4).

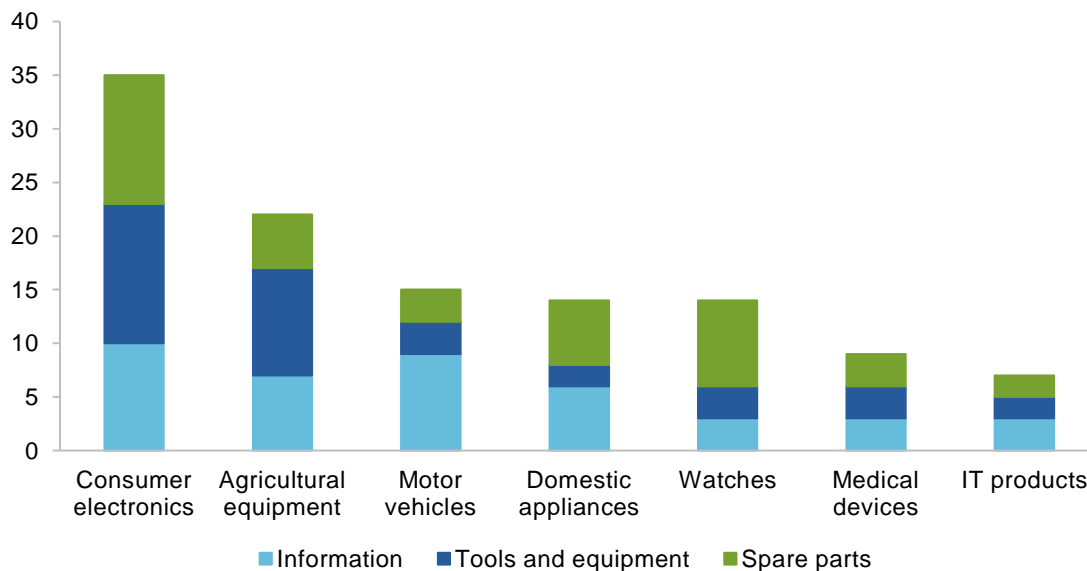
Other inquiry participants noted that some manufacturers will notionally sell repair supplies to any purchaser, but may set their prices prohibitively high (‘margin/price squeezing’) or only sell the necessary repair supplies with other repair services or products (‘tying’ or ‘bundling’), making third-party repair uncompetitive. For example, one participant said that Samsung sets its prices for replacement mobile phone parts at the same level as the cost of parts *and* services in its authorised repair network, making independent repairs uncompetitive (The Phone Spot, sub. 50, p. 2).

Based on submissions to this inquiry, such impediments appear to be particularly prevalent for consumer electronics, agricultural equipment, motor vehicles, domestic appliances, prestige watches and medical equipment (figure 4.3). Concerns about limited access to repair

supplies were roughly evenly split across the different types of supplies (spare parts, tools and equipment, and information).

- *Spare parts* — concerns mostly related to accessing manufacturer-branded spare parts, particularly for highly complex or valuable products (such as for prestige watch components — WCA, sub. DR196, p. 2), or parts that are essential to repair and maintenance (Free Software Melbourne, sub. 43, p. 3).
- *Tools and equipment* — concerns about accessing tools and equipment were mainly related to the repair of agricultural machinery and consumer electronics. More specifically, for agricultural machinery, access to diagnostic software tools was the primary barrier (for example, NFF, sub. DR226, p. 1), whereas for consumer electronics, access to calibration tools (to fine-tune or reinitialise products after new parts are installed) was the main issue (for example, The Phone Spot, sub. 50, p. 1).
- *Repair information* — issues accessing repair information were more of a barrier for motor vehicles, where access to data (such as diagnostic/product use/consumer data) was a particular issue (for example, AAAA, sub. 81, p. 3). Repair information was also a relatively large issue for domestic appliances (for example, Holmes, sub. DR154, p. 1), where access to product schematics was the primary issue.

Figure 4.3 Repair barriers, by industry, raised in submissions^a



^a Consumer electronics includes mobile phones, laptops, tablets and printers. Agricultural equipment includes heavy equipment and tractors. Motor vehicles includes cars and caravans. Domestic appliances include ovens, dishwashers, coffee machines, blenders and power tools. Information technology products include software, operating systems, telemetry and data analytics services.

Such restrictions on repair supplies have a long and well-known history — for example, Ford Motors was first reported to have restricted third-party access to specialised repair tools in

the 1920s — but the ‘electrification and computerization’ of products appears to have ‘dramatically expanded’ the capacity of manufacturers to implement restrictions (Hanley, Kelloway and Vaheesan 2020, pp. 6, 8). In particular, the spread of complex software to ever more products can enable IP rights to be used as a mechanism to prevent access (Grinvald and Tur-Sinai 2019, p. 74), through the use of copyright, patents, trademarks and digital locks (chapter 5).

However, restrictions on access to repair supplies do not prevent all third-party repairs. Independent and DIY repairers can often turn to other suppliers of non-branded parts and diagnostic tools, or salvage parts from used or second-hand equipment (Hanley, Kelloway and Vaheesan 2020, p. 10). The use of 3D printing of parts and tools may provide another workaround, and will likely expand in use as the technology continues to advance and costs decline (Gerwitz 2016; Savastano et al. 2016, pp. 153–156). And in instances where repair supplies are cheaper or more readily available overseas, freight forwarding can also assist third-party access to parts and tools (OTS Australia 2021).

Despite such workarounds, these efforts are not always possible, nor costless, in many product markets, risking third-party repairers being excluded from the market entirely. For example, alternate suppliers may not be available in many repair markets, particularly where the necessary supplies are highly specialised or protected from replication (such as 3D printing) by IP laws. Some workarounds (such as circumventing diagnostic software on agricultural machinery) can also involve significant time and money costs — for both repairers and consumers — and there is uncertainty about the legality of repair circumventions under Australian copyright law (chapter 5).²³ And even if third-party repairers are able to find a workaround, such solutions may be incomplete or offer no security of ongoing supply (ACCC 2017b, p. 10). Some consumers may also be concerned that workaround repair solutions will result in repercussions from their local authorised repair provider, particularly in regional and remote areas with few alternative authorised providers.

Similar issues may also arise if manufacturers are unwilling to provide repair training to independent repairers. For complex repair work, specialised training can substantially reduce the time and other costs imposed on third-party repairers — who are often forced to reverse engineer products and learn from a system of trial and error (ATSA, sub. 23, p. 10; Stuart, sub. 29, p. 1) — with implications for product safety and security (section 4.3). The provision of manufacturer-specific repair training (whether free or paid for by the third-party repairer) appears to be limited (or non-existent) across several product markets, including motor vehicles and medical devices (ACCC 2017b, p. 125; MD Solutions, sub. 41, p. 5).

However, as a general rule, suppliers have the right to choose who they wish to deal with, and there are many reasons why a manufacturer may refuse to supply goods or services. For example, a manufacturer may find it too costly or inconvenient to sell to everyone who asks, particularly for orders under a minimum threshold (appendix B). Concerns about safety, security, quality and environmental protections are other reasons that manufacturers may

²³ For example, in response to repair restrictions and the need for timely repair during periods of harvest, some US farmers have started ‘hacking’ their tractors with illegally torrented firmware (Koebler 2017b).

restrict access to repair supplies, although these rationales can be overstated for many products and types of repair (section 4.3). Nonetheless, limits on third-party access to repair supplies may also be unlawful under some provisions of the CCA, especially if it substantially lessens competition (discussed in section 4.5 and appendix B).

Warranty terms that discourage third-party repair

Nearly all consumer products come with a manufacturer warranty (also known as a ‘warranty against defects’) that typically provides consumers with a voluntary, time-limited promise that, if the goods (or part of them) are defective, the manufacturer will either repair or replace the goods. These warranties are separate to, and cannot displace, the consumer guarantees under the Australian Consumer Law (ACL) (chapter 3).

Many manufacturer warranties contain conditions that limit the warranty’s coverage in the event that the product is *damaged* due to non-authorised repairs, maintenance or modification. While such clauses can be a reasonable mechanism to limit manufacturer liability, some warranties go further and include terms that permit the manufacturer to void the entire warranty should *any* non-authorised repairs, maintenance or modification occur, even where those repairs are unrelated to a subsequent fault covered by the warranty. These clauses can also involve the use of warranty seals, such as ‘warranty void if removed/broken’ stickers found on some products (US PIRG 2018, p. 3). Commission analysis of over 40 warranties suggests that such warranty voiding clauses exist across a wide range of products (including mobile phones, video game consoles, small electronic appliances and watches), but only for a minority of brands (box 4.2).

Even where the warranty does not contain these voiding clauses, evidence from the United States suggests that customer service representatives often (in 28 of 31 home appliance manufacturers tested) tell consumers their warranty is void anyway (US PIRG 2018, pp. 12–13). Similar concerns about misrepresentations from customer service staff in Australia were raised as part of this inquiry (AAAA, sub. 81, pp. 4–5; GiveGet, sub. 35, p. 4), as well as in the ACCC’s market study on new car retailing (ACCC 2017b, pp. 55–57).

Many warranties also use language that can be dense and difficult to understand (Repair Café Woolloongabba, sub. 42, p. 2), leading consumers to mistakenly believe that their warranty would be void if they sought non-authorised repair services (AAAA, sub. 81, pp. 4–5; Abbas, sub. 34, p. 10; Wiseman and Kariyawasam, sub. 105, pp. 7–8). For example, manufacturer warranties on motor vehicles generally do not contain voiding clauses (Kollmorgen 2020), but a survey conducted for the ACCC found that 30 per cent of people cited worries about voiding the warranty as a reason for getting vehicle repairs at dealerships, while 28 per cent stated it was mandatory under the warranty (Colmar Brunton 2017, pp. 49, 63). These results led the ACCC to conclude that the use of authorised dealer repairs by a majority of consumers ‘appears to be, in part, the result of a mistaken belief that the manufacturer warranty requires them to only use an authorised dealer’ (ACCC 2017b, p. 57). Similarly, despite the Tractor and Machinery Association noting that non-critical repairs will

generally not void its members' warranties (sub. DR228, p. 4), the Commission's survey of agricultural machinery owners (section 4.4) found that about 53 per cent of respondents that used authorised dealer repair services reported that maintaining their warranty coverage was an 'important' or 'very important' factor influencing their choice of repairer.

Box 4.2 Examples of void warranties from independent repair

During the course of the inquiry, the Commission heard about or found several examples of warranty terms that automatically void the warranty after non-authorised repair.

In the United States, one experiment found that 45 out of 50 home appliance manufacturers either had voiding terms in their warranties, or customer service representatives were stating that warranties would be void (US PIRG 2018, pp. 2–3). To partially replicate this analysis, the Commission reviewed Australian warranties across a range of products — tractors, gaming consoles, mobile phones, washing machines, microwaves and watches — and found that, of 41 warranties examined, six clearly stated a void warranty term for non-authorised repair, while 10 had similar (but ambiguous) wording. The remaining 25 warranties had clauses that appear to exclude any damages from non-authorised repair, though often with unclear or dense language.

Examples of the use of these voiding clauses in warranties were observed or suggested across a range of products during this inquiry. For example:

- for some game consoles — such as the warranty for Nintendo's Switch console, which states that the 'warranty does not cover ... the Product if it has been opened, modified or repaired by you or any other person not authorised by Nintendo' (Nintendo 2020)
- in the agricultural machinery sector — the National Farmers Federation observed that some manufacturers are 'voiding the machine's warranty if purchasers conduct repairs themselves or use an independent repairer' (sub. DR226, p. 1)
- in the medical device industry — MD Solutions, a medical device supplier, suggested that some manufacturers routinely inform customers that any third-party repairs will void their warranty, and that 'if third party repairs are found by certain [manufacturers] (no matter how minor), a complete rebuild will be quoted ... This is usually more than the residual value ... resulting in a new purchase' (sub. 41, p. 3).

However, as part of this inquiry, a number of manufacturers also stated that their warranties do *not* contain any such automatic voiding clauses, such as for John Deere agricultural machinery (sub. 84, attach. 1, p. 2) and Microsoft Xbox gaming consoles (IGEA, sub. 103, p. 16).

As a result, inquiry participants and other commentators have raised concerns that warranty voiding clauses (or the widespread belief that they exist) can discourage consumers from seeking third-party repairs during the warranty period and restrict competition within the repair market (Buckingham, sub. 22, p. 2; GiveGet, sub. 35, p. 4; Hanley, Kelloway and Vaheesan 2020, p. 21; IT Professionals Australia, sub. 26, p. 6; Janday, sub. 37, p. 1; Proctor, sub. 92, pp. 1–2; SA Repair Café Coordinators, sub. 46, p. 11). In particular, there are several legitimate circumstances where consumers may want to access independent repairs during a warranty period, but concerns about their coverage for any future product defects may discourage them from doing so. For example, warranties do not cover all repairs, with few warranties covering accidental damage or 'normal wear and tear' ('non-warrantable' repairs), making independent repair a potentially cost-effective alternative to paying for

authorised repair. And even where a defect or fault is covered by the warranty and would be provided by the manufacturer for free (‘warrantable’ repairs), some consumers may still prefer non-authorised repairs, particularly if the inconvenience or shipping costs for a warranty claim are greater than the cost of an independent repair solution.

Moreover, voiding clauses in warranties can conflict with the consumer guarantees on most consumer products (or business products up to \$100 000 value — chapter 3). Guarantees typically cover a similar range of failures or defects for a period that may last longer than the warranty, and generally offer the same remedies — repair, replacement or refund (ACCC 2021m, 2021f).²⁴ Recent court cases — particularly relating to Apple products (box 4.3) — have also clarified that the consumer guarantees do not cease to apply to subsequent defects, simply because of the previous use of non-authorised repairs or third-party parts, regardless of the terms of the manufacturer warranty.

Yet, given that consumers can have difficulties understanding their rights (chapter 3), it is not clear that they are aware that voiding warranty terms and ‘warranty void if removed’ stickers do not prevent them from obtaining a remedy for a fault under the consumer guarantees, even if they have previously had non-authorised repairs. As the Australian Automotive Aftermarket Association (sub. 81, p. 6) noted ‘if the consumer is unaware of their rights, or misled about their statutory rights, it is highly unlikely they will be able to take action to enforce these rights’. This means that voiding warranty terms can continue to have undue influence over consumer behaviour, discouraging third-party repairs even when consumers have a viable alternative remedy available under the consumer guarantees.

Box 4.3 Apple software fault (error 53)

In 2015, Australian Apple customers experienced a software fault called ‘error 53’. The error disabled some iPhones and iPads after an update to Apple’s operating system. The issue particularly affected consumers who had repair — primarily installation of a new ‘home button’ — carried out by a non-Apple technician. Responding to at least 275 Australian customers over the period 2015-16, Apple declined to provide consumers with a remedy, on the basis that they were not eligible for a remedy if their device had been repaired by a third-party repairer.

The Federal Court found that the fault was covered by consumer guarantees and that ‘the mere fact that an iPhone or iPad had been repaired by someone other than Apple did not, and could not, result in the consumer guarantees ceasing to apply’ (ACCC 2018d). The Federal Court ordered Apple Inc to pay \$9 million in penalties for making false or misleading representations to customers about their rights under the Australian Consumer Law.

Sources: ACCC (2018d); *Australian Competition and Consumer Commission v Apple Pty Ltd (No 4)* [2018] FCA 953.

²⁴ The party who chooses the remedy depends on the nature of the defect — for minor failures, the supplier or manufacturer chooses the remedy, but for major failures it is the consumers’ choice.

Nevertheless, many manufacturers have legitimate concerns about being held liable for prior poor-quality repair work by unauthorised parties, or of safety issues for authorised staff conducting subsequent repairs (section 4.3).²⁵ As the National Farmers Federation noted:

... there are legitimate reasons for a manufacturer to limit the applicability of warranties. Foremost among these is the desire of manufacturers to limit their financial liability to sub-standard repairs undertaken by a third-party. It may be fair and reasonable for a manufacturer to choose not to carry the risk arising from a third party over whose actions the manufacturer has no control. (sub. 55, p. 2)

But as the National Farmers Federation went on to note, a concern about shared liability ‘does not justify the inapplicability of that warranty to mechanical issues unrelated to the third-party repair’ (sub. 55, p. 2).

Some of these terms can resemble tying and bundling arrangements, with both the ACCC and state and territory consumer protection agencies noting that this may breach anti-competitive conduct provisions (such as exclusive dealing — appendix B), particularly in the motor vehicle sector (ACCC 2014, p. 1; CAANZ 2018, p. 20). Voiding terms in warranties or incorrect statements from customer service representatives about warranty coverage may also contravene ACL provisions against unfair contract terms (s. 23) and false and misleading representations (s. 29), respectively, although neither application appears to have been tested in court. And despite manufacturer concerns, these warranty voiding clauses and the use of warranty seals are unlawful in the United States already (section 4.5).

FINDING 4.1 MANUFACTURER WARRANTIES CAN DISCOURAGE INDEPENDENT REPAIR

Some manufacturer warranties include terms that automatically void the warranty if repairs are undertaken by a non-authorised repairer or use non-authorised parts. Other warranties often contain dense and difficult to understand language, which can lead consumers to mistakenly believe that such terms exist. These voiding clauses can deter consumers from using third-party repairs during the warranty period, limiting their choice of repairer and reducing competition in repair markets.

Many consumers are also not aware that consumer guarantees under the Australian Consumer Law cannot be displaced by terms in warranties, and the guarantees are not extinguished if consumers have previously used non-authorised repair services or spare parts (as long as those services have not caused any damage to the product).

²⁵ Other manufacturers claim that their warranty terms help to protect IP rights (IGEA, sub. 103, p. 18), although it is not apparent how time-limited warranty terms or warranty seals pose a serious obstacle to IP infringement. For agricultural machinery, McIntosh & Sons also observed that warranty periods are normally short, so do not lessen competition over a machine’s entire commercial lifetime (sub. 24, p. 2).

Extended warranty voiding clauses and service requirements

Although less prominent, concerns about similar voiding clauses in extended warranties (an optional product extending warranty coverage, often purchased separately) were also raised by the Consumer Action Law Centre (sub. 119, pp. 5, 10, sub. DR229, p. 12). The Australian Securities and Investment Commission (ASIC) has also previously found that some extended warranty products in the motor vehicle industry have onerous servicing requirements, including tied-servicing arrangements, where consumers are required to service their vehicle at the selling dealer (both during the period of the manufacturer warranty and after it has expired) or the extended warranty will be void (ASIC 2019, p. 55).

However, the Commission is of the view that voiding terms within *manufacturer* warranties are a more pressing issue than similar terms in *extended* warranties, particularly as manufacturer warranties are typically provided with the purchase of goods, without any choice or opportunity for negotiation by consumers.

There are also a number of broader issues with extended warranties — such as high-pressure sales tactics, misleading representations and low value (CALC, sub. DR229, pp. 12–14) — although many of these are beyond the scope of a right to repair. The Australian Government has recently enacted a number of reforms to the regulation of add-on insurance,²⁶ which aim to ensure consumers can make informed decisions by requiring a mandatory four-day cooling-off period between the product purchase and the sale of any add-on insurance (a ‘deferred sales’ model, supported by regulatory guidelines from ASIC), as well as improved information disclosure and caps on some sales commissions (ASIC 2021a; Frydenberg 2020, pp. 61–100). These reforms will cover extended warranties that have similar characteristics to (or contain aspects of) add-on insurance (ASIC 2014, 2021b, pp. 6, 12), such as some mobile phone screen protection plans (Frydenberg 2020, p. 61), potentially helping to address some of the broader concerns about extended warranties.

Authorised repairer contracts — geographic restrictions

As a key part of the repair market, the nature of the contractual arrangements between manufacturers and authorised repairers or dealers can also influence the state of competition. Several inquiry participants were concerned that such agreements may reduce competition by creating geographic restrictions on authorised repairs, preventing customers in one region from seeking repairs from a dealer in another region. These claims were particularly common for agricultural machinery (GPA, sub. 27, p. 14; NFF, sub. DR226, p. 1) where, for example, the Victorian Farmer’s Federation (VFF) stated that:

... geographical restrictions can effectively render purchasers of agricultural machinery a captive market when buying certain brands, inhibiting their ability to shop around for better prices or service. Indeed, many farmers have provided the VFF with examples where they were directly

²⁶ In response to concerns about add-on insurance raised in the Commission’s report on *Competition in the Australian Financial System* (PC 2018, pp. 415–432), as well as the *Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry* (Hayne 2019, pp. 288–292).

told by dealers that they were unable to purchase outside their area, or have struggled to get agricultural machinery fixed by a dealer if it wasn't purchased locally. (sub. 60, p. 5)

Where they exist, such restrictions could severely constrain competition in repair services, by effectively providing dealers with a local monopoly over repair and maintenance. As noted by the ACCC:

The effect of these restrictions may be that dealers are able to charge higher prices or provide lower quality after-market goods and services than would be possible in the absence of these restrictions. (2020b, p. 14)

However, the extent to which such geographic restrictions actually exist is uncertain.

Some manufacturers denied that their agreements with authorised dealers and repairers contain any clauses that create geographic restrictions (CNHI, sub. 116, attach. 1, p. 12; JDL, sub. 84, attach. 1, p. 4). But other participants noted that it is common — particularly in motor vehicle and agricultural machinery markets (ACCC 2017b, p. 32, 2021c, pp. 13–14) — for authorised dealer agreements to assign a geographic 'area of responsibility'.

The manufacturer-assigned 'areas of responsibility' are not necessarily preventing competition between authorised dealers though. Manufacturers and industry groups noted that these terms are for marketing rights, regional performance measurement, or allocating a primary (but not exclusive) authorised seller, which is often necessary to ensure dealerships have adequate business to remain viable (Ai Group, sub. 32, p. 7; Eglinton, sub. 5, p. 2; FCAI, sub. 115, p. 6; JDL, sub. 84, attach. 1, p. 4; Toyota Australia, sub. 118, p. 4). The Federal Chamber of Automotive Industries noted that dealers 'are able to sell vehicles and genuine parts, provide associated financial and insurance agency services as well as service customers regardless of where they may reside' (sub. 115, p. 6). Consistent with this view, a recent ACCC market study found that arrangements to designate an area of responsibility in agricultural machinery markets are 'not absolute', and in some circumstances, may enable services to be supplied to purchasers at a lower cost (2021c, p. 14).

Despite an absence of explicit clauses, some dealers (particularly in agricultural machinery) may still be responding to market opportunities or incentives created by manufacturer performance measures, and tacitly agreeing not to compete with other repairers. While the Commission was not provided with specific evidence of such conduct, if any such behaviour between local dealers exists (creating effective local monopolies) it may constitute anti-competitive conduct under the restrictive trade practices provisions (Part IV) of the CCA (section 4.5, appendix B). However, agricultural machinery owners may also be reluctant to lodge a formal complaint with the ACCC, as this could risk repercussions from their local dealer, which can be the only available provider in some regional and remote areas. That said, the ACCC also has the capacity to receive and protect confidential material (under s. 155AAA of the CCA) on matters related to the Part IV provisions, should any machinery owners have evidence of anti-competitive geographic restrictions that they are prepared to bring forward.

4.3 What are the reasons for restricting repair?

Manufacturer restrictions on access to independent repairs are often justified as a safeguard for public safety, cyber security and environmental standards, as well as to protect the reputation and quality of branded products, or the IP attached to some products (chapter 5).

Public safety and liability for defects

The nature of some products — and the manner in which they are commonly used — can result in some classes of goods generating risks to public safety. For example, defective motor vehicles or improperly functioning medical devices (such as ventilators, cardiac pumps or defibrillators) can lead to serious harm or death (BITRE 2011, p. 6; MITA 2019, p. 3).²⁷

The safety risks inherent in some products — and the possibility that a poor-quality repair may exacerbate them — is a prominent justification for restrictions on third-party repair. In particular, manufacturers express concerns that third-party repairers:

- *lack qualifications and specialised training* — some manufacturers (or their authorised networks) invest significant time and money hiring skilled technicians and providing specialised on-the-job training (Ai Group, sub. DR156, p. 5; AWHF, sub. DR192, p. 1; Eglinton, sub. 5, p. 1; GAMAA, sub. DR191, p. 2; IGEA, sub. 103, p. 18)
- *use low-quality parts* — it is sometimes claimed that independent providers are more likely to use non-branded or second-hand aftermarket parts that are of lower quality or are not subject to the same safety testing and certification as manufacturer-branded parts (Ai Group, sub. DR156, p. 6; AIIA, sub. 127, p. 12; ATSA, sub. 23, p. 12)
- *may not adhere to safety standards* — for example, the Federal Chamber of Automotive Industries and the Tractor and Machinery Association of Australia contend that unregulated modifications and safety system disablement are more likely with independent repair (FCAI 2017, p. 27; TMA, sub. DR228, pp. 6-7).

However, the Commission has not been provided with, or been able to find, substantive evidence that independent repairs result in systemic safety issues, or are not as safe (on average) than authorised repairs. Indeed, the Commission heard several arguments to the contrary.

- Repairs of some high-risk goods are already governed by mandatory occupational licensing — for example, an electrical licence is typically needed to repair electrical appliances, while a repair licence and trade certification is required for automotive repairs in several states (AADA, sub. 98, p. 9; NSW Government 2021; WALGA, sub.

²⁷ Vehicle defects, including defective parts, cause or contribute to about 5–12 per cent of all crashes in Australia (BITRE 2011, p. 6; Paine 2000, p. 1). In 2017, the Therapeutics Goods Administration received 5370 ‘adverse event reports’ relating to medical devices (2018, p. 5), many of which appeared to be related to mechanical failure or other product defects (2021).

DR155, p. 4).²⁸ Similarly, repairs of medical devices are required to meet the Therapeutic Goods Administration's standards and regulations (section 4.4).

- For specific products, some independent repair technicians may have gone through the same training and certification processes that manufacturers require of their own technicians (Forster, sub. DR150, p. 1), particularly as it is 'not uncommon for independent repair shops to have former technicians from big manufacturers on staff' (iFixit, sub. 107, pp. 18–19).
- Many common repairs — for example, replacements of smartphone screens or batteries — do not require extensive expertise and pose few safety risks and can be learnt on the job at either an independent or authorised repairer (iFixit, sub. 107, pp. 18–19).
- Non-branded parts are often sourced from the same suppliers that manufacturers use. For example, one participant claimed that mobile phone makers like Foxconn sell identical non-branded parts, separate from their supplies to manufacturers (iFixit, sub. 107, p. 18). Further, in some instances non-branded parts may be of higher quality, such as for motor vehicles and medical equipment (AAAA, sub. 81, p. 5; MD Solutions, sub. 41, p. 9).
- Independent repair businesses have a similar brand reputation to uphold for high quality and safe repair services (iFixit, sub. 107, p. 18). Workplace health and safety requirements also apply to independent repairers.

Moreover, by withholding critical repair supplies, like repair manuals, tools, spare parts or training, independent repairs may be less safe than they otherwise would be (FTC 2021b, p. 28; Hanley, Kelloway and Vaheesan 2020; Thorpe, sub. 8, p. 3). For example, there were reports that during the early stages of the COVID-19 pandemic, constrained access to repair information and spare parts for ventilators obstructed repairs, leaving some devices non-functional during the peak of the crisis (iFixit, sub. DR236, pp. 1–2; Koebler 2020; Proctor, sub. 92, p. 2; US PIRG 2020b, pp. 9–10). Limiting independent repair may also reduce the accessibility and affordability of maintenance or repair (Proctor, sub. 92, p. 2), encouraging consumers to persist in using malfunctioning equipment or reducing the frequency that products have pre-emptive repairs or maintenance.

For many products, safety concerns about independent repair appear to be overstated. For example, safety concerns are often raised about repairs of consumer electronics or small household appliances, due to the potential for electrocution or malfunctioning batteries that create fire hazards (IGEA, sub. 103, p. 17; Mend It, Australia, sub. 101, pp. 7, 9). Yet the Commission has seen no substantive evidence that independent repairs add to these risks — for instance, most of the risk of house fires due to lithium-ion batteries is inherent in the design of products or occur due to misuse or damage (Fogelman 2020; Jacques 2020; WADMIRS

²⁸ Similarly, a gasfitting and/or plumbing licence is required to repair products that are connected to gas or water, such as gas ovens and water heaters (Adelaide Appliance Repairs, sub. 102, p. 1; AWHF, sub. 94, p. 1; Rheem, sub. 53, p. 1). However, some manufacturers contend that such occupational licensing requirements do not adequately address safety risks from third-party repair (for example, GAMAA, sub. 58, p. 3; Rinnai, sub. 71, p. 2). In 2008, the Commission recommended a review of occupational licensing to ensure that the regime is fit-for-purpose and efficient (PC 2008, pp. 92–98).

and WADFES 2020). And while there are risks from electrical shocks — with nearly 400 individuals hospitalised each year due to exposure to an electric current from cords, switches or domestic appliances (AIHW 2018, p. vi) — there is no evidence to suggest independent repairs are at fault.²⁹ Even for products that pose a higher risk to public safety when incorrectly repaired, like medical devices, some basic repairs require little expertise and pose no significant safety risk (such as simple mechanical repairs for wheelchairs).

One reason that some manufacturers may be overly cautious about safety risks is due to concerns that they may be held legally liable for any issues that arise due to independent repair (IGEA, sub. 103, p. 18; LG Electronics, sub. 38, p. 3). The ACL contains provisions against unsafe or defective goods, with manufacturers liable for compensation for any loss or damage to people, goods or property (ss. 138–141). However, these provisions also allow a defence against liability if the safety defect ‘did not exist ... at the time when the goods were supplied by their actual manufacturer’ (s. 142). In practice, manufacturer liabilities should be limited if subsequent repairs or modifications cause any safety issues, although manufacturers may still incur substantial legal costs to demonstrate their lack of liability.³⁰ A related manufacturer concern is damaged brand reputation due to safety-related incidents caused by third-party repairers — especially if there is substantial media coverage. Such instances are likely to be rare (discussed below), and may also be an opportunity for manufacturers to promote authorised repair as an alternative.

Independent repairers, just like authorised repairers, also vary in their competence and experience. Vigorous competition between repairers — authorised and independent — is one of the best remedies to poor-quality or unsafe repairs, as customers share their experiences by word of mouth or on social media (and the latter has been a fast growing tool for widely-sharing customer experiences).

Security and privacy

Many manufacturers also argue that restrictions on access to repair supplies are necessary to prevent data and software security risks, as well as to protect consumer privacy. In particular, they argue that unauthorised repair or replacement of device components can disable key hardware or software security features, or impede firmware updates for device security or system integrity (Microsoft 2019, p. 8). Such conduct can create ‘backdoors’ into internet-connected devices, as well as risk the user’s personal details, private conversations, financial information, and data on physical movements (box 4.4) (Communications Alliance, sub. 131, p. 2; Paget 2018; Stumpf 2020).

²⁹ In its submission, Mend It Australia included data obtained from the Monash University Accident Research Centre (MUARC) on injuries relating to home repairs of electrical items (sub. 101, pp. 7–9). According to its correspondence, MUARC found only 40 cases from 2015 to 2020 in Victoria, with most injuries to the wrist and hand (56 per cent), 28 per cent going to hospital, and none who died or were electrocuted.

³⁰ Some manufacturers appear to insure against product liability to mitigate such risks (Boyle 2018).

Box 4.4 **Examples of product specific security concerns**

Although security and privacy risks are applicable to most internet-connected devices, some devices may have elevated risks.

- Medical devices can be reliant on the interaction of hardware and software components, and are often connected to other medical devices, databases and hospital networks. Security breaches may provide access to sensitive health records (Miller 2020a; Williams and Woodward 2015, p. 307), as well as create direct risks to health, such as research showing that pacemakers are vulnerable to hacking (Groeneveld et al. 2019, pp. 1–3; Smith 2018).
- Gaming consoles can risk personal information, while some inquiry participants claimed that independent repairs to gaming consoles may allow third-parties to install counterfeit software, modify the operating system for intellectual property infringement, or defraud the manufacturer by gaining free credits or games (IGE, sub. 103, p. 18).
- Motor vehicle manufacturers contended that access to telematic data could potentially expose call data, vehicle coordinates and other personal information to hackers, in response to a 2020 ballot initiative in Massachusetts expanding right to repair legislation (Stumpf 2020).

However, much like for safety concerns, it is also possible that restrictions on repair could *increase* security and privacy risks.

- If a vulnerability exists, restrictions on access to embedded software and firmware could prevent researchers from more easily finding it and raising concerns, before the vulnerability is exploited (Camejo 2020). For similar reasons, some industry experts have suggested that open-source software and security are typically less vulnerable than closed-source (‘proprietary’) software (Gain 2021; Rymon 2015; SecuRepairs 2020), which ‘rely on obfuscation for security’ (GEOTAB Australia Pty, sub. 61, p. 4).
- Most manufacturers eventually stop providing operating system or security software updates for products still in circulation, yet restrictions can still prevent independent operators from producing and sharing their own software updates to address such risks (ACS, sub. 66, p. 3; EFA, sub. 65, pp. 3–4).
- Where there is a security or privacy vulnerability, it is crucial that the software is updated with a fix as soon as possible. While some fixes can be pushed out remotely (like for smartphones), others need access to the physical product and the right tools (like for many agricultural machinery software updates or aviation navigation updates). Restrictions on repairs that limit the availability of such tools can create significant delays to these updates, prolonging vulnerabilities (Camejo 2020; SecuRepairs 2020).

Moreover, there are numerous established methods to address cybersecurity and privacy threats from internet-connected devices (Jang-Jaccard and Nepal 2014, p. 979), not many of which require restriction on access to repair (Thorpe, sub. 8, pp. 1–2).³¹ For areas where there are genuine residual security concerns, security and background checks of independent repairers may also assist, without restricting access to repair.

³¹ The Australian Government has also committed to clarifying cyber security obligations on businesses (including for consumer device manufacturers) as part of the Cyber Security Strategy 2020 (DHA, sub. DR213, pp. 1–2).

Quality control and shared liability

Another common rationale for restricting third-party repair is to ensure the quality of all repair services. Even when there are no safety issues, manufacturers may be concerned about being held liable for product malfunctions after low-quality independent repair, leading to costs through remedies under warranties or consumer guarantees (Borenstein, Mackie-Mason and Netz 2000, p. 185; IGEA, sub. 103, p. 18; TMA, sub. DR228, p. 4).³²

Determining the cause of a malfunction can often be complex and costly — particularly where product design intertwines different components, or for products with embedded software or firmware (Ai Group, sub. DR156, p. 5; IGEA, sub. 103, p. 18). On the other hand, software can also allow for a more precise and immediate determination of the cause of failure. This complexity creates opportunities for competing claims on liability, with both the manufacturer and the third-party repairer apportioning fault to each other, leaving consumers without a clear remedy and in some cases requiring legal action to determine liability (which can be difficult and costly, as discussed in chapter 3). Additionally, manufacturer brands can be damaged by consumer perceptions (or media coverage) that misattribute product failures to the product, rather than poor repair work. For example, in 2011, reports of an iPhone 4 that caught fire mid-flight on an aeroplane in Australia initially blamed the battery (Jones 2011), but later investigation uncovered a loose screw left in by a third-party repairer (Chirgwin 2012).

However, such instances are relatively rare, and blanket restrictions on repair to eliminate these risks are unlikely to be a proportionate response. In particular, any defects with the underlying product would also be found among products that had *not* been repaired by a third-party. Most manufacturers also know their products in intimate detail and have strict quality control and continual improvement processes in place (Mitra 2016, pp. 3–14), making many faults caused by third-party repair relatively easy to identify.

Moreover, despite several inquiry participants and other commentators claiming that independent repair businesses typically offer lower-quality services, others suggested that some independent repairers are of better quality (box 4.5). Overall, there is limited evidence of quality differences between authorised and independent repairers on average and, as noted above, the added competition from independent repairers can act to lift standards for both authorised and independent repairers.

Many of the most acute concerns about repair quality relate to work conducted by consumers (DIY or self-repair) on their own product (CESA, sub. 25, p. 5; LG Electronics, sub. 38, p. 2). While it could be argued that DIY repair is, on average, likely to be of lower quality than independent repair work conducted by a professional business (authorised or not), the

³² On this basis, Cabral (2014, p. 60) claimed that ‘where there is a risk of shared liability ... aftermarket power may be a “necessary evil”’.

Commission has not seen any evidence that this is necessarily the case.³³ In any case, it would be regulatory overreach to seek to outright ban DIY repair (especially for products out of the warranty period) on the basis that it might be lower quality. A number of stakeholders — such as iFixit (sub. 107, p. 1) and Rossman (sub. DR216, p. 2) — also made the case that the owner of a product has the right to do what they want with that product, including any DIY repairs. Manufacturers may also be able to reduce their risks from DIY repair by designing products in ways that make repairs simpler, such as through easier disassembly and parts replacement.

Box 4.5 Quality concerns relating to independent repair

Several inquiry participants (typically those representing manufacturers) claimed that independent repair businesses offer lower-quality services.

There is a distinct quality difference between repairs by a supplier trained repair provider and an open market/independent repairer ... Unfortunately, it is not uncommon for an independent repairer to learn as trial by error, which is of great concern to the industry. (ATAA, sub. 23, p. 10)

Technicians (such as gasfitters, plumbers, electricians, refrigeration mechanics) even if authorised in their jurisdiction to perform such work may not have the necessary skills and knowledge for appliances from particular manufacturers without specialist training and accreditation from such manufacturers. (CESA, sub. 25, p. 3)

However, other participants and commentators suggested that independent repairers offer superior-quality services.

Whilst there is no evident difference in quality between Independent Repair Shops and manufacturers our experience suggests that Independent Repair delivers higher quality repairs at lower prices compared with [manufacturer repairs], provided they have access to the right tools. (Australian Democrats, sub. 100, part 1, p. 24)

People who used independent repair shops were more satisfied with the repairs than those who used factory service, which is consistent with what we've found previously. (Consumer Reports 2014)

Most independent repair shops are no different than your friendly, local auto mechanic whom you recommend to your friends and family ... And many of them are fully capable of performing the same repairs that manufacturers do — plus some repairs the manufacturers won't do. (iFixit, sub. 107, p. 17)

Safeguarding environmental standards

Some manufacturers have also argued that restrictions on independent repairs are necessary to safeguard environmental standards. In particular, they contend that unrestricted repairs would enable modifications of engine systems or disablement of software that complies with emissions standards, particularly for motor vehicles and agricultural machinery (Ai Group, sub. 32, pp. 1–2; CNHI, sub. 116, p. 2; Honey Bee Manufacturing, sub. 2, attach. 2, p. 10; JDL, sub. 84, attach. 1, p. 2; TMA, sub. DR228, p. 7). There is some evidence from overseas

³³ Although DIY repairers do not have a reputation to uphold and there may be more variability in their skill level, they would incur greater costs from a botched repair that makes their product unusable, creating strong disincentives against work beyond their skillset. Some DIY repair work may also be exploratory in nature, investigating whether a fault can be easily fixed, before seeking professional repairs.

to support such concerns — a survey of 770 equipment dealers in the United States found that 116 (15 per cent) had seen modified equipment with removed, impaired or disabled emissions controls in their dealership over the previous 24 months (EDA 2019, p. 1).

Environmental and emissions standards on products exist for a reason — circumvention of these safeguards can create worse outcomes for society, through the release of substances that may be harmful to human health (such as particulate matter) or the environment (such as nitrogen oxide) (DIT 2010). Indeed, some of these safeguards appear to require manufacturers to install active measures against circumvention — for example, Australia’s emissions standards for both light and heavy vehicles (including agricultural machinery and other special purpose vehicles) require that ‘any vehicle with an emission control computer shall include features to deter modification, except as authorised by the manufacturer’.³⁴

However, the restrictions seldom require all independent repairs to be precluded, nor are they incompatible with broader access to repair supplies. In fact, light vehicle emissions standards specifically require manufacturers to ‘authorise modifications ... necessary for the diagnosis, servicing, inspection, retrofitting or repair of the vehicle’ (Australian Design Rule 79/04 — Emission Control for Light Vehicles, Volume 2, para. 5.1.5.1).

Moreover, even where a minority of users misuse access to repair supplies to undermine environmental standards (and other standards, like those for safety and security, discussed above), these modifications are often unlawful or regulated themselves, without a need for manufacturer enforcement. For example, New South Wales requires all significant light vehicle modifications to have a compliance certificate issued by an accredited certifier, including any modifications to engines, exhausts or fuel systems that impact applicable emissions levels (NSW RMS 2013, pp. 1, 4, 15). Similarly, Queensland requires all modifications of heavy vehicles that affect compliance with applicable emission standards to be approved by the National Heavy Vehicle Regulator, with fines of up to \$10 000 for unauthorised tampering (ss. 87–91, *Heavy Vehicle National Law Act 2012 (Qld)*).³⁵ Instead, the methods used to prevent such modifications (section 4.2) also prevent many legitimate repairs or other lawful modifications, restricting competition in repair markets.

Summing up

Manufacturers often justify restrictions on third-party repair as a means of reducing risks to public safety, cyber security, brand reputation and environmental standards. Although these risks are real, on balance, it is unlikely that independent repair systematically increases such risks for most products and types of repair. Similarly, the United States Federal Trade

³⁴ Vehicle standards (Australian Design Rule 79/04 — Emission Control for Light Vehicles, Volume 2, para. 5.1.5.1; and Australian Design Rule 80/03 — Emission Control for Heavy Vehicles, Volume 3, para. 6.1.10.1), based on the Euro 5 and Euro V emission standards (DITRDC 2018).

³⁵ Similar laws exist in other states and appear to be well enforced. For example, in March 2021 the National Heavy Vehicle Regulator fined a South Australian company \$3000 for tampering with an emission control systems and operating a heavy vehicle not in accordance with the manufacturer’s design (Taylor 2021).

Commission concluded that ‘there is scant evidence to support manufacturers’ justifications for repair restrictions’ (2021b, p. 6).

In some cases, manufacturer restrictions on third-party repair could even heighten risks, by limiting access to high-quality repair supplies or reducing opportunities to identify cyber security vulnerabilities. Further, for many products, manufacturer concerns about risks to public safety (particularly for consumer electronics) and environmental standards (for motor vehicles and agricultural machinery) appear to be overstated. More broadly, manufacturers are also seldom liable for safety defects or circumvention of environmental standards due to repairs or modifications beyond their control, though they may suffer reputational risk and transaction or legal costs to discover the underlying cause of any issues.

Ultimately though, repair risks vary by product, type of repair and the capabilities of the repairer. As such, the potential risks posed by improving access to third-party repair need to be considered on a case-by-case basis, and in the context of specific policy proposals to improve access (such as some of the policy changes discussed elsewhere in this report). Likewise, where repair risks are used by manufacturers to justify restrictions on third-party repair, manufacturers should show clear and verifiable evidence that the risks are genuine and cannot be mitigated through other (more proportionate) means.

FINDING 4.2 SOME LIMITS ON ACCESS TO REPAIR SUPPLIES LACK SOUND JUSTIFICATION

There is no evidence of a systemic competition problem across all repair markets. For some products, however, manufacturers are limiting third-party access to repair supplies (such as information, tools and parts).

While manufacturers often justify these limits as a way to safeguard against risks from poor-quality repair (particularly for safety and security), these risks can be overstated for many products and types of repair. Where manufacturers have genuine reasons to restrict access to third-party repair, they should show clear and verifiable evidence of the associated risks.

4.4 Are consumers harmed by repair restrictions?

The Commission has considered the evidence above and applied its framework to particular product repair markets to consider whether it is likely that competition is being restricted and consumers (or broader society) are being harmed by higher repair prices, greater inconvenience or reduced choice of repairer. This involved assessing product and market characteristics (using the framework in section 4.1), the nature and effect of repair restrictions (section 4.2), and the reasons why restrictions might be in place (section 4.3). As noted earlier, given data limitations and the range of product markets in scope for this inquiry, the Commission has taken a largely qualitative approach, supported by quantitative analysis where possible.

Overall, this assessment finds that there are some products (agricultural machinery, mobile phones and tablets) for which market characteristics — such as considerable consumer lock-in, a large repair market (relative to the primary market) and limited competition in the sale of original equipment³⁶ — indicate that consumers may be harmed from limits on third-party access to repair supplies (table 4.1).

Table 4.1 Assessment of competition and harm

<i>Product market</i>	<i>Factors indicating competition is restricted or consumers are harmed</i>	<i>Factors protecting consumers from harm</i>	<i>Assessment</i>
Agricultural machinery	<ul style="list-style-type: none"> • Large repair market • High profit margins from repair • High lock-in (costly, durable and low inter-brand operability/data portability) • Primary market competition unlikely to compensate consumers • Large impact from reduced access or choice (regional customers) • High financial costs from repair delays 	<ul style="list-style-type: none"> • Typically purchased by businesses, so cost of repairs likely considered upfront (although there are a significant number of small farms) • Some manufacturers improving access to repair supplies for third-party repairers and owners 	Consumer harm is highly likely (from higher prices and reduced access and choice)
Motor vehicles	<ul style="list-style-type: none"> • Very large repair market • High profit margins from repair • High lock-in (expensive and durable) • Large impact from reduced access or choice (ubiquitous consumer product) 	<ul style="list-style-type: none"> • Primary market competition likely to partly compensate • Repair information sharing scheme recently introduced 	Potential for consumer harm (from reduced access and choice)
Mobile phones and tablets	<ul style="list-style-type: none"> • Some ecosystem lock-in (learning costs, content loss, product incompatibility) but rapid turnover • Primary market competition unlikely to compensate consumers • Low safety risks from repair 	<ul style="list-style-type: none"> • Some manufacturers improving access to repair supplies (although there are concerns about onerous contracting terms) 	Harm likely small per consumer, but could be significant across the economy
Domestic appliances	<ul style="list-style-type: none"> • Moderate lock-in for high-end brands (white goods and entertainment units) • Low safety risks from third-party repair (except for installed appliances) 	<ul style="list-style-type: none"> • Primary market competition likely to compensate • Modest repair market size and low profit margins • Manufacturers have limited ties to the repair market 	Harm possible for high-end brands, but strong primary market competition
Medical devices	<ul style="list-style-type: none"> • High lock-in for some products (expensive) • Primary market competition may not compensate owners 	<ul style="list-style-type: none"> • Safety risks can be high (however already heavily regulated) 	Harm possible, but need to assess balance with safety risks
Watches	<ul style="list-style-type: none"> • High lock-in (expensive, durable and high emotional attachment) • Primary market competition unlikely to compensate consumers 	<ul style="list-style-type: none"> • Very small repair market • Modest consumer impact from reduced access/choice 	Low aggregate consumer harm, but considerable harm to small businesses

³⁶ The Commission's analysis of primary market competition has relied on measures of market concentration and product substitutability. Competition assessments typically also consider structural indicators (such as entry/exit rates), participant conduct, market outcomes and relevant geographic levels (ACCC 2021c, p. 8).

Agricultural machinery

Agricultural machinery (such as tractors, harvesters, spray rigs and other farm equipment) was one of the most commonly-cited products of concern among inquiry participants, particularly due to restrictions on third-party access to repair supplies (Canegrowers Herbert River, sub. 12, p. 1; Fusinato, sub. 6, p. 1; GPA, sub. 27, p. 6; NFF, sub. DR226, p. 1; NSW Farmers, sub. DR239, p. 1).

To further examine these concerns and the nature of the agricultural machinery repair market, the Commission conducted an online survey of agricultural machinery owners.³⁷ Among other things, the survey found that 40 per cent of respondents reported problems accessing diagnostic software tools, with many also reporting issues accessing calibration/activation codes (32 per cent), spare parts (32 per cent) and repair manuals (28 per cent). Difficulties accessing diagnostic software tools and calibration/activation codes were even higher for machines less than 5 years old (52 per cent and 43 per cent, respectively). In addition, the survey found that the majority of respondents that used an authorised repairer would have opted for a third-party repair provider if they had access to the necessary repair supplies (71 per cent).

There are several features of the Australian agricultural machinery market that suggest that these restrictions on repair supplies are likely to be harming machinery owners through higher repair prices.

- The repair and maintenance market is reasonably large, giving manufacturers an incentive to increase repair prices. Revenue from repair and maintenance is estimated to be about \$720 million in 2018 (Commission estimates),³⁸ or about 9–32 per cent of the value of new machinery sold in 2018 (\$2.3–7.9 billion) (ACCC 2021c, p. 4; Hunkin 2017; IBISworld 2020c, p. 8,14; Statista 2021a; TMA, sub. DR228, p. 16).
- Profit margins for repair and maintenance appear high, which suggests limited competition for those services — sales of spare parts and repair services are about three to six times more profitable than original equipment (US PIRG 2021, p. 17; Waldman and Mulvany 2020).
- Owners tend to be locked in to a particular brand’s repair market, as agricultural machinery is often expensive to replace with separate proprietary attachments and accessories, making it difficult to switch between brands — for example, a new combine

³⁷ The survey asked for details about the recent repair experiences of agricultural machinery owners and was open from 26 July to 31 August 2021, receiving 304 responses (summary results are available on the Commission’s website). The survey did not use random sampling, but instead sought responses from engaged and motivated machinery owners online.

³⁸ The Commission has estimated repair market size in this chapter using total revenue for ANZSIC repair and maintenance industry classes (ABS 2020d), multiplied by IBISworld estimates of the proportion attributable to product markets within those classes (IBISworld 2020d, p. 21, 2020a, p. 20).

harvester can cost upwards of \$400 000 (GPA, sub. 27, p. 4). Inter-brand data portability and operability can also be constrained (ACCC 2021c, p. 54).

- Results from the Commission’s survey of machinery owners found that 69 per cent of machines had a recommended retail price over \$100 000, with many costing more than \$300 000 (38 per cent).
- High concentration in the market for new machinery suggests price competition may be limited, such that manufacturers are unlikely to compensate customers for higher repair prices by lowering prices for new machinery. A few prominent players account for more than half the market (ACCC 2021c, pp. 11, 47; NFF, sub. 55, p. 2).³⁹ Concentration is also likely much higher in some regions and for specific products, particularly as there is a high degree of product differentiation across brands, limiting substitutability (ACCC 2021c, p. 11).
- Manufacturers also have strong financial ties to the repair market — all of the major players have extensive networks of franchised or authorised dealers, with numerous dealerships across Australia (ACCC 2021c, p. 3).

Further, the Commission’s analysis of the geographic distribution of agricultural machinery repairers suggests that independent repairs are important for access and convenience in regional and remote areas. For example, in New South Wales, independent repairers had a larger geographic spread, covering a number of areas that dealers did not (figure 4.4). These differences can be even more pronounced for dealer networks that are only authorised by a single brand. The Commission also heard from several industry groups that farmers often possess the necessary skills to undertake some repairs themselves (for example, NFF, trans., p. 198; VFF, sub. 60, p. 5).

As such, restrictions on third-party access to repair supplies can force machinery owners to:

- travel further distances than would otherwise be required to access repair services (or incur expensive call out fees from authorised providers)
- resort to costly workaround repair solutions such as manual diagnostics.

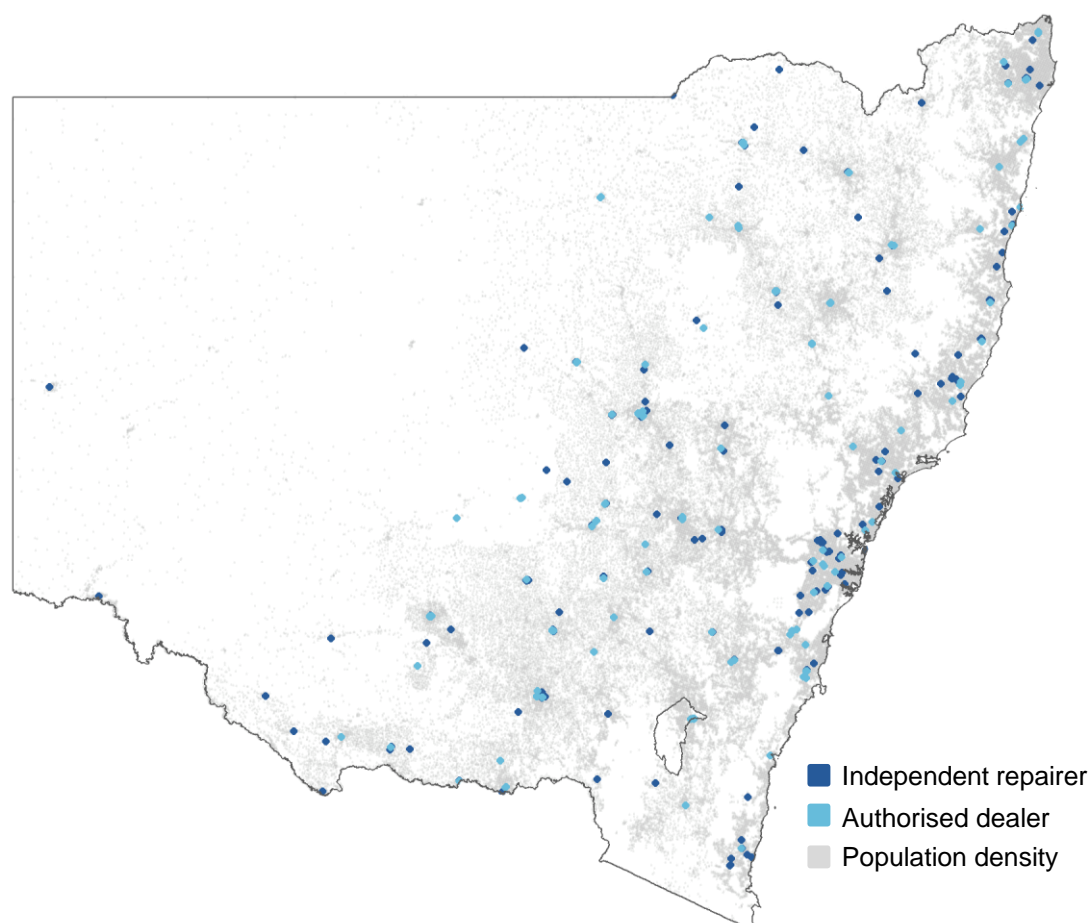
Both of these can increase costs and result in significant repair delays, exposing machinery owners to large financial risks, particularly during periods of harvest or planting (GPA, sub. 27, p. 11; Honey Bee Manufacturing, sub. 2, attach. 1, p. 3; VFF, sub. 60, p. 3).

Indeed, results from the Commission’s survey suggest that where owners used authorised dealers, they tend to experience greater repair delays and incur higher costs. For example, for repairs of a broken or degraded part, third-party providers were able to complete 37 per cent of repairs within 5 days, compared with about 32 per cent for authorised repairers. Financial losses from repair delays were also higher for authorised repairs — 18 per cent of authorised repairs for a broken or degraded part were associated with financial

³⁹ Key players in the market for agricultural machinery include John Deere, AGCO, CNHI, and Kubota (ACCC 2021c, p. 11; Mordor Intelligence 2021). Although not a representative survey, 41 per cent of machinery discussed in the Commission’s survey were John Deere, followed by CNHI (28 per cent).

losses in excess of \$25 000, compared with about 5 per cent for independent or self-repairs.⁴⁰

Figure 4.4 **Location of agricultural machinery repairers in NSW^a**



^a Data capture some businesses that do not exclusively provide agricultural machinery repair services (for example, 'construction and agricultural machinery' or 'heavy machinery' repairs). Independent repairer numbers (from web scraping) are also likely underestimated, as not all repairers are listed on Yellow Pages.

Sources: Commission estimates, based on ACCC (2021c, p. 12) and Yellow Pages (2021, pp. 1–28).

However, one factor that may protect against harm is that most purchasers of agricultural machinery are businesses (ACCC 2021c, pp. 47–48), which are more likely to consider the

⁴⁰ Moreover, for replacement of a broken or degraded part, 59 per cent of repairs provided by a third-party repairer cost less than \$5000, compared with about 35 per cent for authorised repairers. However, the Commission was not able to control for repair complexity, so authorised repairers may undertake more complex (and hence more costly or time consuming) repairs, on average.

cost of repairs (or to negotiate on prices) when making purchases, or to obtain professional advice to help them to do so. As noted by one manufacturer:

The majority of these purchases are made by savvy business owners in support of their complex and sophisticated operations. These individuals are in the main very capable of negotiating transactions and understanding their legal rights. (CNHI, sub. 116, p. 1)

Yet there also remains a substantial (though shrinking) number of small farms in Australia — about 50 per cent of broadacre farms have less than \$260 000 in annual turnover (ABARES 2021) — which often blur consumer and business capabilities together.

Agricultural machinery manufacturers also appear to be working to improve access to repair supplies. In July 2021, the Tractor and Machinery Association (representing agricultural machinery manufacturers) released a ‘statement of principles’ outlining the industry’s commitment to providing farmers with the necessary information, tools and training required to safely repair their machinery (TMA 2021). While this may improve access to repair supplies, the effectiveness of a similar statement of principles in the United States has been criticised (Proctor, sub. 128, p. 1), and a similar voluntary commitment made in 2014 by the Australian motor vehicle industry was found to be largely ineffective (ACCC 2017b, p. 10).⁴¹

Overall, the Commission’s analysis indicates that competition in agricultural machinery repair is limited and leading to detriment in the form of higher prices, inconvenience, reduced access and choice. The ACCC also reached a similar conclusion in its recent market study (2021c, pp. 43, 46), and recommended that third-party access to repair supplies be expanded (2021c, p. viii). The Commission is similarly supportive of agricultural machinery manufacturers improving third-party access to repair supplies, including through the staged introduction of a ‘repair supplies obligation’ for agricultural machinery. These and related issues are discussed in chapter 8.

FINDING 4.3 LIMITS ON REPAIR SUPPLIES FOR AGRICULTURAL MACHINERY ARE CAUSING HARM

Manufacturer and dealer restrictions on repair supplies for agricultural machinery (including repair manuals, diagnostic software tools and spare parts) are causing material harm to farmers and other machinery owners through higher repair prices, reduced access and choice, and greater financial risks from repair delays. There is a strong case for additional measures to increase third-party access to repair supplies (recommendation 8.2).

To test the impact of market characteristics on the assessment of consumer harm, the Commission also examined construction machinery, which shares many similarities to agricultural machinery (box 4.6). Overall, the Commission found that there is a lack of

⁴¹ Some manufacturers also stated that they already provide access to repair information and diagnostic tools for owners (TMA, sub. DR228, pp. 4, 9). However, it is not clear whether these services are widely advertised and have significant uptake, nor whether the information is provided in a user-friendly format.

evidence that manufacturers are restricting third-party repairs in construction machinery, and any restrictions that do exist are less likely to result in harm than for agricultural machinery.

Box 4.6 Is there harm in the construction machinery repair market?

While no submissions expressed concerns about competition in construction machinery repairs and maintenance (such as for excavators, bulldozers and compactors), these products share many of the same characteristics as agricultural machinery. The repair market is large — about \$1.9 billion in revenue in 2018 (Commission estimates) or 17–23 per cent of the size of the market for new construction machinery (\$8.4–11.3 billion in 2018) (IBISworld 2020c, pp. 8, 14; Market Reports World 2019). The equipment is costly — a large bulldozer can cost upwards of \$1 000 000 (Taylor 2019) — durable, and increasingly reliant on data (Komatsu 2020, pp. 7–11). And failure of a single piece of machinery can bring construction to a standstill until it is repaired or replaced (H.O. Penn 2021).

However, relative to agricultural machinery, competition in the primary market for the sale of new construction equipment appears to be high, such that consumers are more likely to be compensated for higher repair prices (Grand View Research 2020). Caterpillar, Komatsu, AB Volvo, JCB and Liebherr collectively accounted for only about 40 per cent of the global construction equipment market in 2019, and there is some indication that manufacturers compete vigorously on new sales and the provision of aftermarket services (Fortune Business Insights 2021; Grand View Research 2020).

There are likely also fewer issues in accessing repairs, less delays and lower transport costs compared with agricultural machinery because a smaller proportion of activity occurs in regional areas. Construction equipment is also typically purchased by businesses that are likely to consider the cost of repairs when making an initial purchase. It is also common for (particularly small) construction equipment users to lease their equipment from large asset managers (Inter Capital 2020), who are more likely to consider lifecycle costs.

Motor vehicles

Participants also expressed concerns about competition in the repair and maintenance market for motor vehicles, with particular concerns about third-party access to repair information and data (AAAA, sub. 81, p. 2; ICA, sub. 120, attach. 1, p. 1; MTAA, sub. DR234, p. 20).

The motor vehicle repair and maintenance market has several characteristics that increase the likelihood of restricted competition and consumer harm. Motor vehicles have the largest repair market, at about \$22 billion in revenue in 2018 (chapter 2). This is about one third of the size of the market for the sale of new cars — about \$64 billion in 2016–17 (ACCC 2017b, p. 1) — creating a substantial incentive to increase repair prices. Dealers also tend to earn higher margins from aftermarket services than from new car sales — parts, repairs and servicing was estimated to account for 15 per cent of revenue but 49 per cent of gross profit in 2017 (ACCC 2017b, p. 45). Consumer lock-in is high for motor vehicles, as cars are

durable and necessary, and can be one of the largest household expenses.⁴² Many consumers are also unlikely to estimate repair costs at the time of purchase (ACCC 2017b, p. 141), although maintenance costs may be more predictable through long-term fixed-price contracts (such as ‘capped price servicing’).

One factor that may protect consumers from harm is competition in the market for new cars. The ACCC (2017b, pp. 4, 26, 35) considered that the new car market is generally competitive, with 67 brands (or ‘marques’) vying for business. However, there is a higher concentration of manufacturers — the top five car manufacturers (Toyota, Mazda, Hyundai, Holden and Ford) accounted for about 50 per cent of all new cars sold in 2016. Further, the ACCC stated:

Consumer switching in the new car market is unlikely to provide strong competitive discipline on manufacturers and dealers in aftermarkets, and any benefit of competition in the sale of new cars to consumers does not offset the impact of less competitive aftermarkets. (2017b, p. 11)

The ACCC concluded that repair restrictions were ‘causing detriment to consumers’ through higher costs, greater inconvenience and delays, and reduced choice (2017b, p. 11).

Given the characteristics of the motor vehicle repair market could lead to consumer harm, the ACCC (2017b, p. 12) recommended the introduction of a mandatory repair information sharing scheme to improve competition. Such a scheme has recently been legislated and is set to commence in July 2022, requiring manufacturers to share vehicle diagnostic, service and repair information on fair and reasonable commercial terms. Given some aspects of the scheme are still being developed and it has not been tested in practice, any further policy changes to the motor vehicle repair market would be premature, though there would be considerable merit to a review of the scheme after it has commenced (chapter 8).

Mobile phones and tablets

Consumer electronics were the most commonly-cited products of concern during the inquiry. Particular concerns were raised about the difficulties that third-party repairers have in obtaining supplies and information to repair mobile phones and tablets (Bader, sub. 146, p. 1; iFixit, sub. 107, p. 6; Osborne, sub. 7, p. 1; The Phone Spot, sub. 50, pp. 1–2).

Several characteristics of the mobile phone and tablet market indicate that competition in the repair market for these products may be limited and consumers may be harmed.

- Mobile phones and tablets have some degree of consumer lock-in to brands and operating systems, creating scope for manufacturers or authorised repairers to raise repair prices without losing customers. Although product turnover is high and mobile phones and tablets are less expensive than other durable goods (such as agricultural machinery)

⁴² However, the cost of switching may be lower if consumers are able sell their motor vehicle in the used car market, reducing lock-in. In 2015, for example, there were an estimated three million used cars sold in Australia (Manheim 2015, p. 85), compared with about one million new cars (Chesterton 2021).

(Lu 2017), ‘if a consumer has invested significantly in a particular product “ecosystem” through provision of their data, buying accessories, or purchasing a range of compatible devices, they may not be able to easily switch to a competitor’ (ACCC, sub. 106, p. 4). Consumers may also be dissuaded from switching brands due to learning costs and the time and effort required to transfer content, particularly when moving between iOS and Android operating systems (Montgomerie and Roscoe 2013, pp. 292–293; Yan 2019).⁴³

- High market concentration for new devices suggests price competition in those markets is unlikely to compensate customers for higher repair prices. For mobile phones, Apple’s market share was over 50 per cent from 2011 to 2021, well above the next highest competitor (Samsung) with a market share of about 23 per cent (Global Stats 2021a; Statista 2020a). For tablets, market concentration is even higher — Apple’s market share was 82 per cent in July 2021 (Global Stats 2021b; Statista 2020b).
 - To the extent manufacturers have market power in the device market, they may also have an incentive to make repairs less attractive (such as through higher repair prices) to encourage consumers to purchase new products (Perzanowski 2020, pp. 361–362).
- Safety risks associated with third-party repairs of mobile phones and tablets are also likely to be low, particularly for common repairs such as screen and battery replacement (section 4.3; iFixit, sub. 107, pp. 18–19), suggesting that some manufacturer justifications for repair supply restrictions are overstated.

The Commission was not able to obtain reliable data on the size of the repair market or profit margins (to assess incentives to restrict competition).⁴⁴

However, some major manufacturers appear to be working to improve access to repair supplies. In particular, Apple (2021d) expanded its Independent Repair Provider (IRP) program to more than 200 countries (including Australia) in March 2021, giving independent repairers access to Apple-branded parts, tools, repair manuals, and diagnostics, as well as free training. That said, the IRP program has also received criticism overseas for containing onerous and restrictive contract terms (iFixit, sub. 107, p. 20; Stone 2020), and it is too early to tell whether it will significantly benefit consumers and independent repairers in Australia.

Overall, the Commission’s view is that manufacturer restrictions on repair supplies are likely to be resulting in some consumer harm (through higher repair prices and reduced choice of repairer), which could be material overall, given the ubiquitous nature of mobile phones and tablets. However, due to data limitations and some countervailing market characteristics (such

⁴³ While there are applications and support services to assist the transition from iOS to Android, the process can still be difficult and costly. For example, products purchased on iOS applications often need to be repurchased, incompatible docking stations and hardware need to be replaced (Yan 2019), and some products (such as Apple Watches) are not able to sync with non-iOS products (Keller 2020).

⁴⁴ Commission analysis indicated that the repair market for mobiles and tablets was about \$640 million in 2018, equivalent to about 6 per cent of the size of the new devices market (\$10.3 billion) (IBISworld 2020f, p. 14), but repair market size does not include in-house repairs provided by manufacturers, so is not a reliable estimate. There are some signs that profit margins earned from repair (excluding repairs under warranty) are high (Asay 2015; Lovejoy 2019).

as high product turnover), the Commission does not recommend a specific regulatory response or other policy changes at this time (such as a repair supplies obligation — chapter 8). Instead, to further examine the nature of the market, the magnitude of harm from repair barriers and the need for a targeted policy response, the ACCC should undertake a market study of the mobile phone and tablet market. The assessment should consider:

- the size of the repair and primary product markets
- the state of competition in repair and new device markets, including manufacturer profit margins from repairs and from sales of new devices
- the extent to which third-party access to different types of repair supplies is being restricted
- evidence on product turnover and premature obsolescence, factoring in consumer preferences in the market and the drivers behind repair/replace decisions
- the extent to which consumers are locked in to brand-specific ecosystems and the impact this has on the quality and pricing of products and services
- recent manufacturer efforts to facilitate third-party repair and the use of refurbished phones
- the merits of different targeted policy responses, such as a ‘repair supplies obligation’ on manufacturers (chapter 8), or additional competition enforcement action in the industry (section 4.5).

FINDING 4.4 EXTENT OF HARM IN MOBILE PHONE AND TABLET REPAIR MARKETS IS UNCERTAIN

Manufacturer restrictions on repair supplies for mobile phones and tablets are likely to be resulting in some consumer harm (through higher repair prices and reduced choice of repairer), which could be material in aggregate, given the ubiquitous nature of such goods and the concentrated market for new devices. However, data limitations and some countervailing market characteristics (such as high product turnover) mean that the evidence base is insufficient to justify specific policy interventions at this time.

RECOMMENDATION 4.1 UNDERTAKE MOBILE PHONE AND TABLET MARKET STUDY

The Australian Competition and Consumer Commission should undertake a market study of the mobile phone and tablet market, to further examine the nature of the market, the magnitude of harm from repair barriers, and the merits of different policy responses (such as a repair supplies obligation on manufacturers).

Domestic appliances

Several inquiry participants claimed that manufacturers of domestic appliances are restricting repairs, with access to repair information, diagnostic tools and spare parts of particular concern (for example, Holmes, sub. DR154, p. 1; Mend It Australia, sub. 101, p. 5; Newman,

sub. DR216, p. 1; Rossman, sub. DR216, p. 1; Witherby, sub. 134, p. 1). Some participants also noted that access to embedded software will become more of an issue as the ‘Internet of Things’ expands into new appliances (Held, sub. DR157, p. 2; iFixit, sub. 107, p. 10).

Across all domestic appliances though, there is limited evidence of a competition problem leading to material consumer harm.

- The domestic appliance repair market is large — generating about \$1.1 billion in revenue in 2018 (chapter 2) — but is only about 9 per cent of the size of the market for new equipment (\$11.4 billion) (IBISworld 2021a, p. 14).
- Profit margins for repair and maintenance are low — about 6 per cent — substantially less than for other product repair markets (IBISworld 2020b, pp. 7–8).
- Competition in the primary market is high, characterised by low concentration and profit margins (4–5 per cent) (IBISworld 2020e, pp. 27–28; Mordor Intelligence 2020). For example, there are about 11 brands competing for refrigerator sales (Canstarblue 2021).
- Manufacturer financial ties to the repair market are also not as strong as in other product markets, limiting incentives to restrict competition and set high aftermarket prices.⁴⁵

However, the definition of domestic appliances can be broad and potentially includes a wide range of products, such as white goods (like fridges and washing machines), small household appliances (toasters and microwave ovens), installed heating and cooling appliances (gas and electric water heaters), entertainment units (televisions and stereos) and power tools (like electric drills and lawn mowers).

As such, high-level assessments can mask consumer harm in more narrowly-defined market segments. For example, lock-in is considerable for some expensive and durable domestic appliances — such as high-end fridges, ovens and stoves that can cost upwards of \$10 000 and have an expected life of about 15 years (CHOICE 2018; McKay 2021). Yet for other expensive and durable goods — such as gas or electric heating and other ‘installed appliances’ — safety risks are likely to be elevated (AWHF, sub. DR192, p. 2; GAMAA, sub. DR191, p. 2; Rheem, sub. DR167, p. 2) and professional repairers are already highly regulated (section 4.3), so consumer access to repair supplies is unlikely to be justifiable.

Some participants also suggested that small domestic appliances — such as toasters, kettles, power tools, and hair dryers — are generating considerable environmental harm, as they lack an established and effective repair market (NSROC, sub. 117, p. 5; Repair Cafe Woolloongabba, sub. 42, p. 1; SA Repair Café Coordinators, sub. 46, p. 6). Although these types of products do contribute to a considerable amount of e-waste generation (chapter 7), the lack of a repair market is primarily driven by the low cost of replacing such items (chapter 2), rather than a lack of competition in repairs.

⁴⁵ While some manufacturers offer appliance repair and maintenance services through authorised service agents or franchisees, there appears to be a healthy independent market (IBISworld 2020b, pp. 28–31).

Overall, although restrictions on some domestic appliance repairs may generate harm, the magnitude of harm is unlikely to be large enough to justify a targeted policy response. Rather, other recommendations in this report — such as the introduction of product labelling for repairability and/or durability (chapter 6), better dispute resolution and enforcement of consumer guarantees (including the guarantee of spare parts and repair facilities) under the ACL (chapter 3), and improvements to e-waste management (chapter 7) — are likely to be more effective at remedying stakeholder concerns or improving competition in domestic appliance repairs. For example, reform of copyright laws to facilitate the sharing of repair information (chapter 5) may help to address issues accessing repair manuals and product schematics for domestic appliances, which were raised by several stakeholders (such as Holmes, sub. DR154, p. 1; Witherby, sub. 134, p. 1).

Medical devices

Several inquiry participants said that medical device manufacturers are unnecessarily restricting access to repair information and spare parts (iFixit, sub. DR236, p. 2; MD Solutions, sub. 41, p. 3; Sir Charles Gairdner Hospital, sub. DR233, p. 9).⁴⁶ These repair restrictions can have detrimental impacts for both patients receiving health care (such as by delaying hospital procedures while equipment is awaiting repair) and for device users with a high dependency on their equipment (such as people who use a wheelchair or hearing aids) (Abbas, sub. DR209, p. 8; iFixit, sub. DR236, p. 2; US PIRG 2020a).

Time-sensitive services and user dependency also mean patients and device users often have limited alternative options, increasing their lock-in. Expensive devices — such as magnetic resonance imaging (MRI) scanners, defibrillators, endoscopes and ventilators — also mean many healthcare providers face high switching costs for alternative brands. And competition in the primary market may not be strong enough to compensate purchasers for high repair prices, as markets for specialised medical devices can be highly concentrated. For example, MD Solutions (sub. 41, p. 3) said that Olympus controls about 95 per cent of the market for flexible endoscopes in Australia.

Many medical devices are purchased by businesses delivering health services (such as hospitals and medical clinics), including devices provided to end users as part of a service, such as implanted devices (DoH, sub. 121, p. 6) or mobility aids given (or loaned) to a patient. While, in principle, businesses would normally have a commercial incentive to consider repair and maintenance costs at the time of purchase, commercial incentives can be muted in health care due to the high degree of regulation and government ownership.

⁴⁶ The definition of medical devices is broad, and includes ‘instruments, apparatus, appliances, software, implants, reagents, materials or other articles intended for human therapeutic use’ (DoH, sub. 121, p. 3), ranging from simple equipment such as some walking aids, to complex machines like endoscopes, pacemakers and MRI scanners. Commission analysis indicated that the repair market for medical devices was about \$430 million in 2018, equivalent to about 7 per cent of the size of the new devices market (\$6.1 billion) (IBISworld 2020a, p. 9,15; Statista 2021b), but this does not include repair services provided by manufacturers and wholesalers, so is not a reliable estimate.

Healthcare funding arrangements also mean that higher costs (from non-competitive repairs or from additional treatments due to delayed medical procedures) can be passed onto taxpayers, as well as patients (including through health insurance premiums).

Due to elevated safety risks, the medical device industry is also closely regulated by the Therapeutic Goods Administration (TGA), with many medical devices required to demonstrate that they conform with the ‘essential principles’ in the Therapeutic Goods (Medical Devices) Regulations 2002 before they can be supplied in Australia. While ‘the use of a medical device is never entirely without risk’, the essential principles require that the design and construction of medical devices ‘eliminate or reduce risks as far as possible’. Although the essential principles do not explicitly discourage repairs (but do limit modifications or refurbishment), they also do not appear to consider the risks created by a lack of access to repair. Moreover, a focus on maximising safety and the manufacturers’ responsibility for the ongoing safety and efficacy of their medical devices over the long term can encourage manufacturers to ‘limit, restrict or prohibit the repair of the medical device’ (DoH, sub. 121, pp. 4–8).

Yet not all medical devices pose significant safety risks and require specialised regulation. A 2015 expert review of medical device regulation recommended that requirements should be ‘commensurate with the risk posed by the regulated products’ and that low-risk medical devices should be reclassified as consumer goods to avoid creating an ‘unnecessary burden on industry’ (Sansom, Delaat and Horvath 2015, pp. 92, 129–131).⁴⁷ Even for high-risk devices, not all *repairs* pose significant safety risks, especially those by professional third-party repairers (ATSA, sub. 23, p. 6; FDA 2018, p. i).⁴⁸ Some hospitals have highly-qualified technicians on hand that would be capable of conducting repairs (Sir Charles Gairdner Hospital, sub. DR233, pp. 3–4).

As such, it is not apparent that medical device regulations have found the right balance between repair access and device safety, and may be creating strong incentives for manufacturers to restrict repairs, generating harm to patients and device users through medical delays and additional costs. However, due to the complexity of the medical device market and the wide variety of different devices covered by existing regulations, the Commission did not have sufficient evidence to justify specific policy changes. That said, the Commission is also of the view that there are sufficient valid concerns to warrant an independent public review of the medical device market and regulations, to examine (on a device-by-device basis, where possible):

- the extent of manufacturer restrictions on third-party repairs of medical devices

⁴⁷ However, the proposed response to implement the expert review’s recommendation may increase regulations in some areas, providing additional incentives for manufacturers to restrict repairs. In particular, while most household and personal aids for people with disabilities are currently excluded from TGA regulations, proposed reforms to clarify this exemption may draw some medium- and high-risk assistive technologies (such as hearing aids and prostheses) into TGA regulations (TGA 2019, pp. 12–14, 2020).

⁴⁸ For example, a United States evaluation of 4301 medical device reports relating to deaths allegedly involving third-party servicing found that only three contained sufficient information to conclude that servicing caused or contributed to the deaths (FTC 2021b, p. 28).

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- whether existing regulations encourage or create incentives for repair restrictions
 - the state of competition in both the market for new medical devices and for repairs of those devices, including manufacturer profit margins from repairs and new sales
 - the characteristics and competencies of professional third-party repair technicians, including the evidence base for safety-related concerns about third-party repair
 - the impact of repair restrictions on patients and device users, particularly through higher costs, medical delays and inconvenience for patients
 - the merits of different targeted policy responses, such as amendments to the essential principles to strike a better balance between repair access and safety for low-risk devices, or requirements within the TGA regulations for manufacturers to provide suitably-qualified technicians with access to repair supplies on a commercial basis (similar to a repair supplies obligation — chapter 8).

FINDING 4.5 MEDICAL DEVICE REGULATIONS DO NOT CONSIDER REPAIR ACCESS

Current regulations of medical devices — such as the ‘essential principles’ in the Therapeutic Goods (Medical Devices) Regulations 2002 — aim to minimise safety risks to patients and device users, which has the effect of encouraging manufacturers to restrict access to repair. The regulations do not appear to account for the potential harm from reduced access to repair services (such as medical delays and additional costs), or that risks are likely to be low for some devices or for repairs completed by highly-qualified independent repairers.

RECOMMENDATION 4.2 REVIEW THE MEDICAL DEVICE MARKET AND REGULATIONS

The Australian Government should conduct an independent public review of existing medical device regulations to assess whether they strike a balance between repair access and device safety that maximises community wellbeing. The review should consider whether current regulations create incentives for manufacturers to restrict repair, and examine potential ways to improve repair access for low-risk medical devices or for highly-qualified independent repair technicians.

Watches

Watches were also a product of concern for some participants, primarily independent watch repairers (Peters, sub. 19, p. 1; Vintage Time Australia, sub. 13, p. 1, sub. DR194, p. 3). In particular, a number of participants said that specific (mostly Swiss) watch manufacturers are refusing to supply spare parts and information to independent watch repairers around the world, including in Australia (CS Watch Repairs, sub. 88, p. 1, sub. DR197, p. 2; Robinson, trans., pp. 119–120; WCA, sub. DR196, p. 2; WCA Vic Div, trans., pp. 237–247).

There are several features of the watch market that suggest such restrictions on repair supplies are likely to adversely affect consumers through higher repair prices.

- Consumer lock-in can be significant for more expensive ‘prestige’ watches, particularly for mechanical watches, as these tend to appreciate in value and are not easily substitutable due to limited supply of certain brands and the high emotional value that consumers often attach to their watch (Altieri 2020; EC 2014, p. 23).
 - Many consumers and repairers also emphasise the importance of using manufacturer parts, rather than third-party parts, in order to maintain the value of the timepiece (WCA Vic Div, trans., pp. 243–244).
- Competition in the primary market for the sale of new watches is also unlikely to be strong enough to compensate consumers for high watch repair prices — the top three manufacturers (Swatch, Rolex and Richemont) hold over 70 per cent market share (Muller 2021; Statista 2020c).

Some specialist independent repairers also claim to provide higher-quality repairs than manufacturers — suggesting manufacturer restrictions are not always justified on the basis of ensuring product quality or brand reputation (Peters, sub. 19, p. 1; Vintage Time Australia, sub. 13, p. 3) — although the Commission was not able to test these claims.

As a result, restrictions on watch equipment and components can generate some harm to individual consumers (especially older watch owners), through higher repair prices, reduced choice, and greater delays or inconvenience (CS Watch Repairs, sub. DR197, p. 3; WCA, sub. DR196, p. 2).

On balance though, aggregate consumer harm is unlikely to be substantial enough to justify the potential costs of additional (industry-specific) policy changes, as the size of the watch repair industry is relatively small. The Commission was unable to disaggregate it in the data from an unclassified group of repairs (which includes bicycle and furniture repair).

However, some of the alleged conduct by watch manufacturers is likely to be affecting competition in watch repairs, by undermining the viability of independent watch repairers in Australia, many of which are small family-owned businesses, run by artisan watchmakers (CS Watch Repairs, sub. DR197, p. 3; WCA, sub. DR196, p. 2). For similar reasons, a UK-based wholesaler for watch components and equipment — Cousins Material House, also known as CousinsUK — has taken Swatch Group to court in Switzerland, on the basis that their refusal to supply parts to independent wholesalers and repairers is anti-competitive conduct (CousinsUK 2021b; Corder 2020; WCA, sub. 83, p. 1; WCA Vic Div, sub. DR217, p. 1). Although a judgement in that case is still pending (CousinsUK 2021a), any similar behaviour in Australia may contravene the restrictive trade practices provisions under the CCA (discussed in section 4.5).

4.5 Policy solutions for competition issues in repair markets

Where there is evidence of a competition problem in repair markets and this is causing harm, government or regulator intervention may be justified, to support Australia's economic dynamism by increasing competition between firms.

The application and effectiveness of existing competition provisions

One avenue for intervention to resolve competition issues in repair markets could be through actions under the existing restrictive trade practices provisions of Part IV of the CCA, which are intended to prevent anti-competitive outcomes. More specifically, in instances where manufacturers seek to control a market and this substantially reduces competition, there are existing remedies available under Part IV of the CCA to prevent anti-competitive outcomes, including against anti-competitive agreements (s. 45), misuse of market power (s. 46) and exclusive dealing (s. 47). These provisions, and the way they interact with repair market issues, are outlined in appendix B.

Several inquiry participants noted that the current CCA provisions are able to address anti-competitive conduct in repair markets (AADA, sub. 98, p. 9; ATSA, sub. 23, p. 11; FCAI, sub. 115, p. 8; LCA, sub. 114, p. 8; LG Electronics, sub. 38, p. 4; Toyota Australia, sub. 118, p. 5). Indeed, as the ACCC noted:

Some of these prohibitions could apply to aftermarket repair markets if businesses were to leverage their market power or engage in conduct such as exclusive dealing that has the purpose, effect or likely effect of substantially lessening competition. (sub. 106, p. 6)

In line with this, the Commission also heard a number of claims of alleged conduct that, if established to have occurred, may breach the Part IV provisions, such as by specific mobile phone manufacturers and agricultural machinery dealers (section 4.2). One prominent source of concerns were the restrictions that some (mostly Swiss) watch manufacturers have placed on the supply of spare parts, tools and information to independent watch repairers (section 4.4). There are credible arguments that these restrictions may constitute a misuse of market power (s. 46) that substantially lessens competition in the watch repair market, by affecting the viability of local watch repairers. In particular, the Commission notes that:

- the definition of the relevant market is vitally important. A long-running case in Europe that concluded in 2017 found that the market for watch repairs could be defined narrowly, amplifying manufacturer market power.⁴⁹ Australian courts may similarly define the watch market narrowly, on the basis that:

⁴⁹ In 2004, several independent watch repair businesses lodged a complaint to the European Commission (EC) against Swiss watch manufacturers that refused to supply spare parts. While the EC found that there were several distinct repair markets (each associated with a particular brand), it ultimately dismissed the case for a range of reasons, including low likelihood of success under EU competition law (EC 2014, pp. 2, 22–26, 38, 54). In 2017, the European General Court concurred with the EC's view (Kmieciak 2017).

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- there is strong consumer lock-in from highly durable, expensive watches that appreciate over time (and often have emotional value from being handed down across generations), while consumers may also have difficulty estimating the cost of repair over the life of a multi-decade product. This suggests that the repair market could be defined as separate from the primary market
 - other types of watches (like smartwatches and most quartz watches) may have low substitutability for prestige (mostly mechanical) watches, as the latter often serve a different function, tend to be ‘luxury’ or ‘positional’ goods, are repaired rather than replaced, and can require very different skillsets to repair
 - non-interchangeable spare parts and strong consumer preferences to use manufacturer parts (to maintain the value of the watch) could even lend weight to an argument that there are several distinct repair markets, each associated with a particular brand.
- even if the watch repair market is defined reasonably broadly, sales of prestige watches are much more concentrated than many other markets, suggesting that new cases may still be successful in proving the existence of market power
 - the Commission has heard from a number of independent watch repairers that the viability of their businesses is being affected by manufacturer supply restrictions, suggesting the conduct would have the effect or likely effect of substantially lessening competition in watch repairs.

FINDING 4.6 HARM FROM RESTRICTIONS ON WATCH REPAIR SUPPLIES IS SMALL

The high degree of market concentration and consumer lock-in in the prestige watch market in Australia suggests manufacturer restrictions on the supply of watch repair equipment and components to small independent repairers are resulting in consumer harm. This harm is likely to be limited due to the small size of the prestige watch repair market in Australia.

Nonetheless, there are credible arguments that these restrictions may constitute a misuse of market power under Australian competition law (s. 46 of the *Competition and Consumer Act 2010*) that substantially lessens competition in the watch repair market, by affecting the viability of local watch repairers. Such arguments have never been tested in an Australian court.

From principle to practice — enforcement of the Part IV provisions

Despite repeated claims of potentially anti-competitive conduct across a number of repair markets, the Commission is not aware of any substantive competition cases related to repair market conduct over the past 23 years, since *Regent's Pty Ltd v Subaru (Aust) Pty Ltd* [1998] FCA 730 was considered by the Federal Court (box 4.7).

This lack of recent cases may have been one reason that a number of inquiry participants raised concerns that the CCA provisions have not been effective in addressing competition issues in repair markets (Australian Democrats, sub. 100, part 1, p. 28; Repair Café Hobart, sub. 14, p. 2; SA Repair Café Coordinators, sub. 46, p. 12). For example, the ACT Minister for Consumer Affairs noted that ‘despite [the CCA] restrictions and protections, premature product obsolescence and a lack of competition in repair markets remain’ (Rattenbury, sub. 133, attach. A, p. 2).

Although the Commission has not seen any evidence to suggest that the existing CCA provisions are systematically unfit to address anti-competitive conduct in repair markets, the effectiveness of the Part IV provisions may be constrained by a lack of *enforcement* — a vital part of competition policy. As noted by one inquiry participant, ‘laws can only change behaviour if they are enforced’ (McGrath, sub. 15, p. 9).

Box 4.7 Sub-markets and Subaru markets

The case of *Regent’s Pty Ltd v Subaru (Aust) Pty Ltd* [1998] FCA 730 related to an allegation that Subaru had misused its market power by terminating its relationship with a distributorship (Regent’s), and then refused to supply Regent’s with genuine Subaru spare parts or to authorise it to resell such parts and service Subaru vehicles.

The Federal Court’s conclusion was that the aftermarket (the market for spare parts and ancillary services) was only a subset of a broader market for motor vehicles, spare parts and ancillary services, based on:

- evidence of cross-elasticity of demand and supply at the wholesale and retail levels — that is, a price rise of Subaru parts would lead to buyers switching to other brands of cars or parts (including the use of non-genuine parts for common, substitutable parts)
- a close interrelationship between the cars and the parts markets, with profit margins from spare parts supporting the sale of new motor vehicles (Clapperton and Corones 2006, p. 694).

Consequently, the court found that, even where other parts were not physically substitutable for Subaru parts, Subaru’s pricing had regard to the prices of parts for other vehicles, to ensure that consumers did not reject Subaru vehicles due to expensive parts. As such, Subaru was found to *not* have market power in this broader market, so the case was dismissed.

There are two main obstacles to third-party repairers bringing cases under the existing competition provisions in Part IV of the CCA.

The first is that the evidentiary bar for pursuing a successful court case can be high. Generally, the applicant in each case bears the onus of proof to demonstrate that a company’s conduct substantially lessened competition in that market and, where relevant, that a firm has substantial market power across both the primary and repair markets (Duke 2019, p. 997). This threshold can be difficult to clear — for example, more than half of cases have historically failed to establish substantial market power under s. 46 (Merrett 2015). And while recent changes to the CCA — specifically the introduction of the ‘effects test’ to s. 46 and narrowing of the exemptions for IP (outlined in appendix B) — may help to reduce the

threshold for a successful case, they will require more time to be reflected in common law. More broadly, competition policy has also come under recent global criticism for defining its objective too narrowly, and failing to account for environmental or social outcomes.⁵⁰

The second is that civil legal proceedings can be very costly and time consuming to pursue (Duke 2019, p. 51; Harper et al. 2015, p. 407; PC 2014, pp. 113–128). This can be particularly true for small businesses with a complaint about a competitor or a supplier's conduct — the Harper Competition Review received numerous submissions confirming that 'small businesses either lack the time and financial resources to take action themselves or are concerned about the impact this might have on their ongoing business relationships' (Harper et al. 2015, p. 84). Similarly, the Australian Small Business and Family Enterprise Ombudsman recently noted that small businesses have:

... immense difficulty ... in resolving their disputes. Both disputes and commercial relationships are often abandoned due to the cost and stress of trying to fix them. Commercial disputes are very common and devastating when not handled correctly. (2020, p. 3)

To help overcome enforcement barriers and increase competition across the economy, the ACCC is empowered to investigate anti-competitive conduct in Australia and to institute court proceedings to enforce the law (ACCC 2021a, p. 4).⁵¹ However, the ACCC does not have the resources to pursue every allegation of anti-competitive conduct, so selects cases on the basis of several 'prioritisation factors'. One factor prioritises cases 'involving a significant new or emerging market issue or where action is likely to have an educative or deterrent effect', and another prioritises action that 'will assist to clarify aspects of the law, especially newer provisions' such as the new 'effects test' for the misuse of market power (appendix B). Other factors also prioritise cases with substantial detriment (to consumers or small businesses) or significant public interest (ACCC 2021a, p. 5).

Several inquiry participants were supportive of additional ACCC action on repair market restrictions, to improve access to justice and help to clarify the law (Rimmer, sub. DR168, p. 8; WCA Vic Div, sub. DR217, p. 2).

A test case for repairs would seemingly meet at least two of the ACCC's prioritisation criteria. First, a successful case would likely have a strong educative and deterrent effect across most repair markets. Second, some of the repair market conduct raised during this inquiry may also meet the thresholds for sufficient detriment or public interest, such as the impact of manufacturer restrictions on the viability of small independent watch repairers (discussed above).

⁵⁰ The 'hipster antitrust' movement typically argues that the consequences of market concentration are felt much more broadly than through reduced product quality and higher prices, and that competition policy should account for these other consequences, such as environmental degradation, income inequality, unemployment and concentrations of political power (Daly 2017; Meyer 2018; Sims 2018; Wood 2019).

⁵¹ There are also a number of avenues available to small businesses to aid with enforcement and provide access to remedies, including several small business ombudsmen and commissioners at the federal, state and territory level (ASBFEO 2020, pp. 16–17; PC 2014, pp. 283–344).

Recent global developments have also highlighted a growing interest in regulator enforcement of competition law in repair markets. For example, following a recent executive order from the Biden administration (The White House 2021), the United States Federal Trade Commission ‘unanimously voted to ramp up law enforcement against repair restrictions ... that violate antitrust or consumer protection laws’ (FTC 2021a). And in Switzerland, an outcome from the court case between CousinsUK and Swatch Group over access to spare parts for watches is due soon (section 4.4), potentially establishing a global workaround.

As such, there is considerable merit in the ACCC conducting a new investigation of whether manufacturer conduct in repair markets is contravening the existing Part IV provisions (and, where possible, publishing the results). One initial candidate for investigation should be whether manufacturer conduct in watch repairs is breaching the misuse of market power (s. 46) provisions. The ACCC has investigated claims of anti-competitive conduct (and alleged related ACL breaches) by watch manufacturers at various points over the past two decades and did not find sufficient evidence of breaches of the CCA or ACL (ACCC, pers. comm., 24 September 2021). However, recent developments may have reduced some of the obstacles that existed in the past. In particular, the introduction of the ‘effects’ test may have lowered the evidentiary bar for a case, while global repair market developments, such as recent prestige watch cases in Europe (discussed above), might have established some precedents that could be relied on in Australian courts. Other conduct raised during this inquiry may also be suitable for investigation — such as by mobile phone manufacturers and agricultural machinery dealers (section 4.2).

FINDING 4.7 ACCC ACTION COULD ADDRESS CONCERNS ABOUT ENFORCEMENT

There are considerable costs and a high evidentiary threshold for bringing cases under the existing competition provisions in Part IV of the *Competition and Consumer Act 2010* — such as the misuse of market power, exclusive dealing and anti-competitive agreement provisions. This is likely to discourage third-party repairers (particularly smaller businesses, such as watch repairers) from taking action against manufacturers and authorised dealers.

However, the Australian Competition and Consumer Commission already has powers to investigate credible cases of anti-competitive conduct in repair markets and, if warranted, institute court proceedings. New cases could test the impact of recent legislative changes and other global repair market developments, as well as provide an educative or deterrent effect for broader repair market conduct.

RECOMMENDATION 4.3 FURTHER INVESTIGATE CONDUCT IN WATCH REPAIR MARKETS

The Australian Competition and Consumer Commission (ACCC) should investigate whether manufacturer conduct in repair markets is contravening the restrictive trade practices provisions of the *Competition and Consumer Act 2010*, with a view to commencing proceedings. The ACCC’s investigation should initially focus on whether the alleged conduct of watch manufacturers is breaching the misuse of market power (s. 46) provisions.

Addressing competition issues through other policy measures

The Part IV provisions are only one set of tools available to address competition issues in repair markets. In particular, other policy measures and more targeted interventions may be beneficial (subject to the costs and limitations of intervention) where competition issues in repair markets are generating material harm to consumers and society, but where existing competition provisions are unlikely to address the problem. Indeed, the ACCC noted that:

... in many instances an individual business' conduct will not substantially lessen competition, meaning Part IV would not apply to their conduct. Nonetheless, a market as a whole may suffer from poor competition because of the individual actions of multiple businesses. In these circumstances the government should consider the potential for these behaviours to harm competition and consider whether specific regulation to facilitate stronger competition is warranted. (sub. 106, p. 6)

To this end, the Commission has also recommended a number of policy changes in other chapters that would have beneficial impacts on the state of repair market competition. For example, chapter 8 discusses the costs and benefits of requiring manufacturers to provide access to repair supplies (a 'repair supplies obligation'), which may address some issues (section 4.2) for specific product markets like motor vehicles and agricultural machinery (section 4.4). And more broadly, the introduction of product labelling for repairability and/or durability (chapter 6), changes to dispute resolution and the enforcement of consumer guarantees under the ACL (chapter 3), and reform of some repair-related IP laws (chapter 5) would all enhance competition in repair markets by empowering consumers seeking repairs or creating a more level playing field for competing third-party repairers.

Another available policy option is to change the regulation of manufacturer warranties, to improve awareness of consumer rights or to limit the use of terms that void warranties after independent repairs.

Improving consumer access to repair through warranty terms

Some manufacturer warranties include terms that void the warranty if repairs are undertaken by a non-authorised repairer or use non-authorised parts, while other warranties are so dense and difficult to understand that consumers mistakenly believe that such terms exist. These voiding terms can deter consumers from using third-party repairs during the warranty period, limiting their choice of repairer and competition in repair markets (section 4.2).

Further, most people are also not aware that consumer guarantees under the ACL are not extinguished if consumers have previously used non-authorised repair services or spare parts (as long as those services have not caused any damage to the product). This lack of awareness about their rights may cause some consumers to avoid using independent repairers, or prevent them from seeking a remedy from the manufacturer when they have the right to do so (section 4.2).

The Australian Government could address these impediments to independent repair associated with warranties in one of two ways. The first focuses on increasing awareness about existing rights under the consumer guarantees through mandatory warranty text, the other involves prohibiting terms that void the warranty if repairs are undertaken by a non-authorised repairer or use non-authorised parts (hereafter ‘voiding clauses’).

Additional warranty text to improve awareness of consumer rights

One way to address concerns about voiding clauses would be for the Australian Government to amend existing regulations that require warranties to include text about the consumer guarantees and a consumer’s rights under the ACL. This warranty text could be expanded to clarify that consumers do not need to have previously used authorised repair or parts to be entitled to a remedy under the consumer guarantees (particularly when the subsequent failure is unrelated to the previous repair).

Currently, the ACL allows for regulations that ‘prescribe requirements relating to the form and content of warranties against defects’ (s. 102). This provision (r. 90 of the Competition and Consumer Regulations 2010) has been used to set out the basic requirements of a manufacturer warranty, as well as requiring warranties to include specific text about the consumer guarantees under the ACL.⁵² The 2017 review of the ACL noted:

The mandatory text alerts consumers to the ACL and acts as a reminder to local and international traders (and frontline staff handling warranty claims) of their obligations to not mislead consumers in warranty documents and that they cannot ‘contract out’ of the consumer guarantees. (CAANZ 2017, p. 26)

The purpose of additional mandatory text would be to make consumers more aware that if they were to seek a remedy for a faulty product under the consumer guarantees, their access to that remedy would not be prejudiced by having used non-authorised services and parts on a previous occasion, as long as those prior repairs had not damaged the product. The intention of the text would be to prevent situations where consumers’ lack of awareness of their rights under the consumer guarantees causes them to avoid using independent repairers (when doing so would have been preferred, as it was the more convenient or competitive option) because they assumed that using an independent repairer would extinguish their right to a remedy if the product fails in the future. The text is also intended to prevent situations where lack of awareness of the consumer guarantees causes consumers who have previously used an independent repairer to avoid seeking a remedy from the manufacturer when they have the right to do so. Further, the text could improve manufacturer and supplier awareness of the consumer guarantees, which would also benefit consumers.

⁵² For goods, the required text is ‘Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure’.

Such additional warranty text received support from a number of inquiry participants,⁵³ including the ACCC:

Depending on how it is implemented, the ACCC considers this recommendation may be a relatively low cost change that may provide a small improvement to consumer guarantees dispute resolution. In particular, this additional warranty against defects text may help make this point clear to suppliers and manufacturers ... The ACCC considers that it could help to decrease barriers to repair and change consumer behaviours in the long run by encouraging consumers to seek third party repairers. (sub. DR214, p. 11)

Although changing the required warranty text would create some implementation costs for manufacturers — as the text of their warranties would need to be updated and their customer service staff trained on the new text and its meaning — ongoing costs should be minimal.

Importantly, the inclusion of additional mandatory text seeks to clarify existing rights under consumer guarantees, not create new rights. During the course of the inquiry, some inquiry participants expressed concerns that the additional text would create new consumer rights, by allowing consumers to take their product to a third-party repairer for a defect covered by a warranty or the consumer guarantees, and then claim compensation for the cost of the repair from the manufacturer (AWHF, sub. DR192, p. 2; Eglinton, sub. DR164, pp. 5–6; FCAI, sub. DR223, p. 9; GAMAA, sub. DR191, p. 3). Other stakeholders were concerned that the additional text may create confusion for consumers (IGEA, sub. DR180, p. 5).

This is not the intention of the additional warranty text. It does not provide consumers with new rights to seek compensation from manufacturers for third-party repairs — rather, it simply aims to improve consumer awareness of existing rights under the consumer guarantees.⁵⁴ In most instances, consumers with a faulty product should first approach the manufacturer or supplier for a remedy under the warranty or consumer guarantees (chapter 3 and section 4.2). For example, a consumer with a defective mobile phone (such as from faulty software) during the warranty period should first seek a remedy from the manufacturer or supplier, since a genuine defect would likely be covered by the warranty (a ‘warrantable’ repair) or consumer guarantees, so repairs would typically be provided free of charge.

But while consumers should first approach a manufacturer or supplier for product defects, this does not mean that a manufacturer should have a monopoly on *all* repairs during the entire warranty period. In particular, consumers are under no obligation to go to the manufacturer for repairs that are not covered by the warranty (‘non-warrantable’ repairs, such as from accidental damage like a broken phone screen), nor when they are willing to pay for an otherwise warrantable repair due to other reasons (such as the time cost or inconvenience of making a warranty claim).

⁵³ For example: CALC (sub. DR229, p. 10); CHOICE (sub. DR232, p. 5); QCA (sub. DR165, pp. 2–3); QLS (sub. DR231, p. 4); Rimmer (sub. DR168, p. 6); Tasmanian Government (sub. DR240, p. 2); Vintage Time Australia (sub. DR194, p. 4); Wiseman and Kariyawasam (sub. DR208, p. 3).

⁵⁴ However, there are some circumstances in which consumers can seek compensation from manufacturers for third-party repairs under the consumer guarantees, such as when a supplier or manufacturer is unable to repair a product, or cannot repair the product in a reasonable time (s. 259 of the ACL).

Nevertheless, given participant concerns, changes to the mandatory warranty text would require further stakeholder consultation to ensure the wording is clear and not likely to be misconstrued by consumers, manufacturers or suppliers. As the costs of amending the warranty text are largely fixed, stakeholder consultation could also consider other potentially beneficial changes to the text. For example, CHOICE suggested that the warranty text should specify that consumer guarantees may offer a remedy for a longer period than the manufacturer warranty (CHOICE, sub. DR232, pp. 22–23). Such timeliness information may be a practical way to improve consumer awareness of the guarantees, but the exact wording would require consultation and consideration of the legal implications (such as when a manufacturer offers a ‘lifetime warranty’).

The additional warranty text would also be more effective if it were paired with other ways of improving awareness of the consumer guarantees. For example, public communications from the ACCC at the time of the change could further improve consumer awareness. Similarly, the ACCC has indicated that potential reforms to the ACL, including greater enforcement of the consumer guarantees, would support the additional warranty text:

... the ACCC notes that mandatory disclosure of information in warranty documents is unlikely to be an effective measure on its own. Many consumers do not read their warranty documents. This would be most effective alongside reforming the ACL consumer guarantee regime to make the failure to comply with the consumer guarantees a prohibition. (sub. DR214, p. 11)

RECOMMENDATION 4.4 ADD NEW MANDATORY WARRANTY TEXT

The Australian Government should amend r. 90 of the Competition and Consumer Regulations 2010, to require manufacturer warranties (‘warranties against defect’) on goods to include text (located in a prominent position in the warranty) stating that entitlements to a remedy under the consumer guarantees do not require consumers to have previously used authorised repair services or spare parts. The final wording of the text should be subject to consultation with industry and consumer groups.

A step further: should voiding clauses in warranties be prohibited?

As an alternative policy option, the Commission also considered whether clauses that void a warranty due to any prior non-authorised repairs should be prohibited. A prohibition would prevent warranties from being automatically voided if consumers do not use the repairers or spare parts specified by the manufacturer (and prohibit the use of warranty seals, such as ‘warranty void if removed’ stickers). It would also preclude customer service representatives from making any similar representations to consumers, particularly where warranty text is ambiguous. Similar prohibitions already exist for most products in the United States under the Magnuson-Moss Warranty Act, and for motor vehicles in the European Union (box 4.8).

Box 4.8 An absence of the void — prohibitions on warranty terms**Magnuson-Moss Warranty Act**

In the United States, the federal Magnuson-Moss Warranty Act governs product warranties. Enacted in 1975 and enforced by the Federal Trade Commission (FTC), the Act prohibits ‘provisions that state or imply that a consumer must buy or use an item or service from a particular company to keep their warranty coverage’, unless the item or service is provided for free or the FTC provides an exemption. The FTC also permits manufacturers ‘to disclaim warranty coverage for defects or damage caused by the use of parts or services you didn’t provide’ (FTC 2018a).

In 2018, the FTC sent warning letters to six companies (Sony, Microsoft, Nintendo, Hyundai, HTC, and ASUS), alerting them that their use of warranty voiding clauses (including warranty seals such as ‘warranty void if removed’ stickers) was unlawful under the Act, and gave them 30 days to change their policies (Gault 2018; FTC 2018b).

European Commission vertical agreement guidelines

In 2010, the European Union introduced new guidelines on the application of competition law to vertical agreements in the motor vehicle sector (EU Regulation 461/2010). Alongside this, the European Commission (EC) published supplementary guidelines (2010, pp. 16–27) that clarified the EC’s ‘determination to preserve competition both between the members of authorised repair networks and between those members and independent repairers’ (p. 24). To this end, the EC noted several types of conduct contrary to that goal, including the misuse of warranties that ‘explicitly or implicitly reserve repairs ... to the members of the authorised network’, with exceptions for any claims that are ‘causally linked’ to poor-quality repairs or spare parts (p. 26). The practical impact of this guideline was to act as clarification that:

... vehicle manufacturers may not make the warranties conditional on the repair and servicing of a vehicle within their network, or on the use of their own branded spare parts. According to the new set of rules, consumers have the right to use any repair shop for non-warranty work, during both the statutory warranty period ... and any extended warranty period. Of course ... anyone who damages a vehicle as a result of negligent work or use of defective parts is responsible for it. (R2RC 2010, p. 10)

Several inquiry participants were opposed to such a prohibition, expressing concern that it would encourage low-quality third-party repairs and that manufacturers and suppliers could be held liable for damage caused by non-authorised repairs or parts (Ai Group, sub. DR156, p. 5; Eglinton, sub. DR164, p. 5; TMA, sub. DR228, p. 8). Although there is limited evidence that third-party repairs are systematically of lower quality (section 4.3), any such prohibition would nevertheless have to contain an exemption for any terms that limit or exclude warranty coverage for any damage caused by the use of non-authorised parts or services, similar to the exemptions under US and EU law.

Other participants objected to a prohibition on the basis that it would increase costs on manufacturers to determine whether a product fault was caused by a manufacturing defect (covered under warranty) or from damage due to previous non-authorised repairs (Ai Group, sub. DR156, pp. 5–6; WALGA, sub. DR155, p. 3). Some participants suggested that these additional costs would be passed on to consumers (IGEA, sub. DR180, p. 11), while others

were concerned that manufacturers would offset increased costs by offering less generous warranties (Ai Group, sub. DR156, p. 6):

Unfortunately, an unintended but entirely counter-productive consequence of imposing restrictions on the ability of manufacturers to set conditions around their own voluntary warranties is that many will decide to simply stop providing them or to scale them back to avoid further commercial and legal risks. Clearly, this would only lead to an inferior outcome for consumers ... (IGEA, sub. 103, p. 19)

While a prohibition is likely to increase some costs for manufacturers (primarily through the need for additional fault discovery), the Commission was not provided with evidence on the extent of such costs. The Commission also found limited evidence that a prohibition would result in less generous warranty offerings (box 4.9).

Box 4.9 Will a prohibition affect product warranty offerings?

To examine whether a prohibition in Australia would reduce the generosity of warranty offerings, the Commission examined changes in warranty terms in the United States (US) following the introduction of the Magnuson-Moss Warranty Act (MMWA), and differences in warranty lengths between the US and Australia.

- There is little evidence to suggest that product warranties in the US became less generous after the MMWA was introduced. One study found that the coverage and length of warranties analysed either remained the same or increased after the MMWA was introduced (Schmitt, Kanter and Miller 1980, pp. 15, 18). Another found that about three-quarters of manufacturers examined did not substantially change their warranties (Wisdom 1979, p. 1141).
- The Commission compared warranty terms across 29 products (including household appliances, electronics and machinery) in the US and Australia, and found that about half of products had identical warranty lengths, but where they differed, Australian warranties tended to be longer. Although this difference might be linked to the impact of the MMWA (shortening US warranties), it can also be explained by other factors — such as the strength of Australia's consumer guarantees, which may encourage manufacturers to offer longer warranties.

On the other hand, a number of inquiry participants supported such a prohibition,⁵⁵ on the basis that it could simplify discrepancies between warranties and the consumer guarantees, by aligning warranties with the consumer guarantees. It would also assist in clarifying ambiguous warranty language, helping to reduce the proportion of consumers that mistakenly believe they must go to an authorised repairer to maintain their warranty coverage (section 4.2). And it would benefit businesses for purchases not covered by the consumer guarantees (such as most agricultural machinery), by ensuring they can conduct independent or self-repair on their equipment without putting their warranty coverage at risk (unless they damage the product).

⁵⁵ For example: CALC (sub. DR229, p. 11); CPRC (sub. DR212, p. 2); IT Professionals Australia (sub. 26, p. 9); NSW Young Lawyers (sub. DR220, p. 7); Wiseman and Kariyawasam (sub. DR208, p. 4).

However, evidence is not available to assess the magnitude of these benefits, to compare them with the costs of a prohibition. For example, the Commission was unable to determine the extent to which customer service agents are telling Australian consumers that non-authorised repair will void their warranty (even if the warranty does not contain such clauses).⁵⁶ As such, the benefit of a prohibition to prevent such behaviour remains unknown.

Moreover, other proposed reforms and recommendations in this report will go some way towards reducing the deterrent effect of warranty voiding clauses on third-party repair services or parts. For example, additional warranty text (recommendation 4.4) may be a low-cost way of improving awareness of the consumer guarantees under the ACL, which already provide a means to pursue a remedy for a faulty product without being contingent on previous use of authorised services and parts. Similarly, proposed reforms to strengthen enforcement of the consumer guarantees — by introducing pecuniary penalties for the failure to provide a remedy (chapter 3) — are likely to encourage manufacturers and suppliers to offer a remedy under the guarantees, if a consumer is entitled to one.

As a result, given the proposed measures to improve awareness and enforcement of the consumer guarantees, a prohibition on voiding clauses is not needed at this time.

FINDING 4.8 A PROHIBITION ON WARRANTY VOIDING CLAUSES IS NOT JUSTIFIED AT THIS TIME

Improvements to awareness of the consumer guarantees (through mandatory warranty text — recommendation 4.4) and the enforcement of those guarantees (through the introduction of pecuniary penalties — recommendation 3.4) will go some way towards reducing the deterrent effect of manufacturer warranty terms that void the warranty if any non-authorised repairs occur. Although a prohibition on such terms may have some additional benefits — through simplifying differences between warranties and the guarantees, clarifying ambiguous warranty language and covering non-consumer purchases — it may also increase costs for manufacturers and consumers, so is not justified at this time.

⁵⁶ Evidence suggests that misrepresentations from customer service agents are a significant issue overseas though — a US study found that most customer service representatives (28 of 31) indicated that a warranty would be voided by any non-authorised services or parts, even when warranties did not clearly contain such terms (US PIRG 2018, p. 13). This could similarly be tested in Australia through a ‘shadow’ or ‘mystery’ shopping exercise, contacting customer service representatives and asking about warranty terms.

5 Intellectual property protections and repair

Key points

- When product owners seek to repair items themselves or through a third-party repairer, they can encounter barriers due to manufacturers using intellectual property (IP) protections over the product. These barriers include IP protections that:
 - restrict third-party access to inputs needed for repair, such as spare parts, tools, and information (for example, the copyright holder of a repair manual may prevent others from reproducing and sharing it)
 - limit the scope of repairs that third parties may undertake (for example, end-user licences may stipulate that product disassembly can result in licence termination, which may render the product unusable).
- Such IP protections can adversely affect the cost and availability of repair services by preventing third-party repairers from competing with authorised repairers. But they can also have wider community benefits (such as encouraging innovation). Hence, reducing IP protections to facilitate repair can involve trade-offs.
- Copyright laws that prevent third-party repairers from accessing repair information (such as repair manuals, and diagnostic data hidden behind ‘access control technological protection measures’ (TPMs)) are the most significant unnecessary IP-related barriers to repair in Australia. Such laws do not strike the right balance between the interests of rights holders and of others seeking to access and use those materials for the purpose of undertaking repairs.
- As such, the Commission has recommended the following changes to Australia’s copyright laws to help lower these barriers to repair.
 - To improve access to repair information protected behind TPMs:
 - ... amend the existing TPM circumvention exception for repair in the Copyright Regulations 2017 to clarify its scope and application to permit circumvention in order to access information necessary to perform repairs to the product in which the TPM is installed
 - ... amend the TPM circumvention device prohibition in the *Copyright Act 1968* to permit the distribution of circumvention devices for the purpose of facilitating a permitted act of circumvention (such as circumvention for the purpose of repairing a product in r. 40(2)(d) of the Copyright Regulations 2017).
 - To improve access to repair information such as repair manuals and technical diagrams:
 - ... introduce a new ‘use’ exception to the Copyright Act to allow for the reproduction and sharing of copyright repair information — in the immediate term via the Act’s existing ‘fair dealing’ framework, but in the medium to long term, through an open-ended and principles-based ‘fair use’ exception
 - ... amend the Copyright Act to prohibit the ‘contracting out’ of copyright law exceptions, including those relating to product repair.

In media coverage of the ‘right to repair’ movement, it is common to hear about the experiences of farmers who attempt to fix their tractor, only to be thwarted by the need for specific computer software or code to access diagnostic information and undertake repair activities (Burt 2018; Koebler 2017b). Then there are cases of self-repair hobbyists who are unable to access the repair manuals for their laptops (The Tech Journal 2012) or unable to obtain spare parts needed to fix a mobile phone (Van der Velden 2020). These are examples of how intellectual property (IP) protections, used by manufacturers, can affect people’s ability to undertake repairs.

A key underpinning of IP policy is striking the right balance between rights holders and the interests of others seeking to access and use that IP. In the context of repairs, IP protections can adversely affect the cost and availability of repair services, by reducing the ability of independent repairers to compete with authorised repairers and discourage self-repair by consumers. But protecting the rights of ‘creators’ can often have wider community benefits beyond the repair market. For example, by granting time-limited exclusive IP rights, governments can incentivise businesses to invest in and bring to the market socially beneficial innovations and creative outputs. Consumers may also benefit from some IP-related restrictions (such as trademarks) where it enables them to clearly identify and distinguish brands that have established a reputation (including for safety and quality).

This chapter examines the various ways IP can act as a barrier to product repair (section 5.1). It then considers the evidence on the extent of IP-related barriers to repair in Australia (section 5.2), and what the government could do to address such barriers (section 5.3).

5.1 How IP protections can act as a barrier to repair

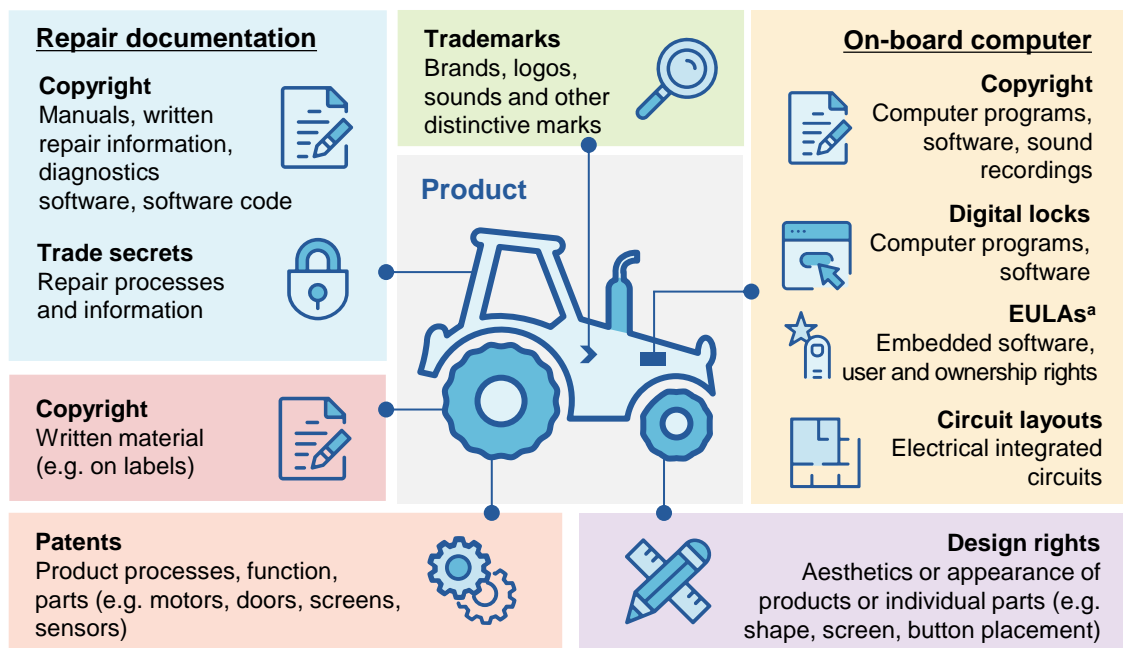
IP protections describe the range of legal and technological measures used by manufacturers (or other people) to protect their creations of the mind (inventions), literary and artistic works, designs, symbols, names and images used in commerce (WIPO nd).

IP rights (such as rights arising from copyright, patent, design and trademark laws) are one of the main forms of IP protection. IP rights provide legally enforceable, exclusive rights to creators over the use of their creations for a certain period of time (IP Australia 2020; WTO 2020). Different IP rights provide different forms of protection and a single product may be protected by multiple IP rights. For example, a registered design right may protect the distinctive shape of a product, a trademark may protect the brand name and logo, copyright may protect the underlying computer software, and a patent right may provide exclusive rights over parts (figure 5.1).

In addition, manufacturers may use technological and contractual arrangements to protect their creations. Digital locks — such as password protection, file permissions, encryption and copy controls — enable manufacturers to control who can access and reproduce their copyrighted material (such as software) (HRSC/LCA 2006, p. 8). Contractual arrangements can take a variety of forms. End-user licence agreements (EULAs) are contractual

agreements that enable manufacturers to stipulate the terms and conditions by which users can access products (particularly software) and may impose post-sale usage, repair and modification restrictions on consumers (Hanley, Kelloway and Vaheesan 2020, p. 14).⁵⁷ Manufacturers may also have contractual or licensing arrangements with other businesses (such as authorised repairers) that may include provisions such as non-disclosure of confidential repair information to third parties.

Figure 5.1 A single product may be covered by multiple IP protections



^a End-user licence agreements.





Product owners seeking to repair items independently may encounter multiple barriers resulting from manufacturers' use of IP protections over the product (figure 5.2). Each of these restrictions is discussed in more detail in section 5.2.

- **Restrictions on accessing inputs required for repair** — including:
 - *reduced access to physical spare parts* (such as screens, wiring and other product components) — for example, design and patent laws prohibit unauthorised manufacture and sale of protected parts
 - *inability to access and share repair information* (such as diagnostics, product data, and repair manuals and schematics) — for example, manufacturers may use digital locks to block access to diagnostic information, or rely on copyright law to prevent third-party repairers from reproducing and sharing repair manuals with each other

⁵⁷ EULAs can take the form of 'click wrap' licences whereby users agree to conditions by clicking a digital click box, or 'shrink wrap' licences whereby users agree to conditions by taking off product packaging (Lindsay 2002, pp. 70–75).

- *inability to access tools and equipment* necessary to open up products, diagnose issues and replace components (such as screwdrivers and diagnostic devices) — for example, design and patent laws prohibit unauthorised manufacture and sale of protected tools.
- **Restrictions limiting the scope of repairs that third-party repairers or consumers may undertake** — for example, EULAs (which are used to define the terms and conditions for the granting of licences to use embedded software) may stipulate that disassembly of the product could result in termination of the licence.

Figure 5.2 How IP protections may act as a barrier to repair

Access to inputs required to undertake repair	
Tools and equipment	Information
<ul style="list-style-type: none"> • Inability to access tools to unlock/ bypass manufacturers' digital locks <ul style="list-style-type: none"> • Copyright law prohibits their dissemination • Inability to access tools for issue diagnosis, disassembly and repair <ul style="list-style-type: none"> • Design and patent laws prohibit unauthorised manufacture and sale • Copyright law prohibits unauthorised copying and dissemination of software tools 	<ul style="list-style-type: none"> • Inability to access repair manuals <ul style="list-style-type: none"> • Copyright law prevents unauthorised copying and dissemination • Inability to access diagnostic and calibration information, and product data <ul style="list-style-type: none"> • Such information is often held behind digital locks, with copyright law restricting access tools (see 'tools and equipment') 
Spare parts	
<ul style="list-style-type: none"> • Reduced access to original manufacturer parts <ul style="list-style-type: none"> • Design and patent laws allow for control of exploitation and use • Reduced access to generic parts <ul style="list-style-type: none"> • Design and patent laws prohibit unauthorised manufacture and sale by third parties • Uncertainty about legal protections for third parties making and using generic spare parts • Reduced availability of refurbished parts <ul style="list-style-type: none"> • Trademark law prohibits unauthorised importation and sale of parts bearing registered trademarks 	
Scope of repairs	
<ul style="list-style-type: none"> • Reduced scope to disassemble <ul style="list-style-type: none"> • May void warranty or product licence under end-user licence agreements • Reduced scope to repair embedded software <ul style="list-style-type: none"> • Copyright law permits the use of certain digital locks to prevent access to software • Copyright law prohibits unauthorised reproduction of software • Reduced scope to alter product <ul style="list-style-type: none"> • Patent law prohibits remanufacture and reconstruction 	

Sources: FTC (2021b); Grinvald and Tur-Sinai (2019); Svensson et al. (2018); inquiry submissions, for example: iFixit (sub. 107); Law Council of Australia (sub. 114); MD Solutions Australasia (sub. 41); Wiseman and Kariyawasam (sub. 105).

5.2 Key IP-related barriers to repair in Australia

In the course of this inquiry, a number of participants highlighted concerns about IP-related barriers to repair. Most concerns related to limits on accessing inputs required to undertake repair (such as spare parts, tools and equipment, and information). The examples tended to focus on products such as consumer electronics, agricultural equipment, motor vehicles and domestic appliances. This section examines specific types of IP-related barriers in more detail and the evidence on the extent that they are a material barrier in Australia.

Preventing access to inputs required for repair

Access to spare parts

The increasingly complex nature (including the computerisation and miniaturisation) of everyday products can make repairs more difficult. Repairers are often unable to simply drop down to their local hardware store to get the spare parts they need — for example, a standard connector or ring seal may no longer do.

International studies suggest a variety of IP rights may limit access to physical spare parts required to complete product repairs (FTC 2021b, p. 22; Grinvald and Tur-Sinai 2019, pp. 112–119; Svensson et al. 2018, pp. 5–6). For example, design and patent law protections provide manufacturers with the exclusive rights to use and exploit their creations, and prohibit their unauthorised manufacture and sale. As such, a manufacturer who owns the patent or registered design for a particular product part can refuse to license the IP rights to manufacture and sell generic parts, and pursue parties who have manufactured or sold generic parts without authorisation. There are also instances internationally where the importation of spare parts bearing logos has been blocked using trademark law (box 5.1). Manufacturers may also refuse to supply their spare parts, regardless of whether or not an IP right over the spare part is actually held; however such conduct may in some cases fall foul of competition laws (chapter 4).

Although many submissions to this inquiry (approximately 25 per cent) expressed concerns that manufacturers restricting access to spare parts was a barrier to repair, none explicitly stated that manufacturers are using IP law protections to do so (such as by refusing to license third parties to produce generic spare parts or taking legal action to prevent the unauthorised importation of IP-protected parts under IP laws). This may suggest that IP protections are not the limiting factor. Rather, the main issue could be that manufacturers simply refuse to provide access to parts commercially (whether or not the parts are protected by specific IP rights) (chapter 8, box 8.3).

One possible reason IP protections may not be a barrier to accessing spare parts is because Australian IP laws provide some defences for the manufacture of IP protected spare parts for the purposes of repair. In particular, the ‘spare parts defence’ in the *Designs Act 2003* (Cth) (‘Designs Act’) enables the manufacture of design-protected spare parts for the purpose of

repairing ‘complex’ products (box 5.2). The burden of proof for this defence lies with the design owner — rather than the repairer — to show that the repairer was *not* using the design for the purpose of repair.

Box 5.1 Apple has asserted its trademark rights to prevent the importation of spare parts

There have been two relatively high-profile overseas cases where Apple has prevented imports of aftermarket iPhone screens by independent repairers on the basis that the screens infringed Apple’s exclusive trademark rights. In one case, court proceedings were commenced.

In these cases, replacement iPhone screens imported from China and Hong Kong by independent repairers were seized by Norwegian and United States customs authorities on suspicion that they were counterfeits bearing unauthorised Apple trademarks that therefore infringed Apple’s trademark rights (Koebler 2018b; Montello 2020, pp. 172–174; Van der Velden 2020). In one case, Apple was earlier granted an injunction requiring customs authorities to ‘seek to disclose and keep from release all articles [regardless of importer] with trademarks or figure marks belonging to Apple Inc’ (*Henrik Huseby v Apple Inc*, HR-2020-1142-A, case no. 19-141420SIV-HRET, at [5]). The parts in question were argued by the repairers to be aftermarket parts comprised of a mix of original manufacturer, refurbished and aftermarket components, with some original internal componentry bearing microscopic Apple logos invisible to consumers.

Box 5.2 The ‘spare parts’ defence

Generally, a person infringes a registered design if they make, import, sell, or use in trade or business (among other things) a product (without the authority of the registered owner) that embodies or is substantially similar to the registered design (*Designs Act 2003* (Cth) s. 71).

However, the *Designs Act* s. 72 provides a complete defence to infringement of a registered design for certain repairs if the product to which the registered design is embodied is a component part of a complex product (products containing two or more replaceable parts) and its use is for the purpose of repairing the complex product so as to restore its overall appearance (though not to repair function or enhance a product). The provision defines ‘repair’ to include:

- restoring or replacing a decayed or damaged component part of the complex product to a good or sound condition
- replacing incidental items when restoring or replacing a decayed or damaged component part of the complex product
- carrying out maintenance on the complex product.

The onus of proof lies with the registered owner to show that the repairer was *not* using the design for the purpose of repair.

The defence was not tested in court until the Federal Court clarified the operation of the defence in *GM Global Technology Operations LLC v S.S.S. Auto Parts Pty Ltd* [2019] FCA 97. It was held that ‘spare parts can be acquired for both repair and enhancement, and that the defence should be available in such cases’ (Wiseman and Kariyawasam 2020b, p. 140).

Some stakeholders have called for reform of the defence, with one arguing that the current defence is ‘awkward and cumbersome’ and may not fully account for the development of new technologies (Rimmer, sub. DR168, p. 50). However, the defence appears to provide sufficient protection in the few cases that have been brought under it (for example, *GM Global Technology Operations LLC v S.S.S. Auto Parts Pty Ltd* [2019] FCA 97), and with further cases, the courts will be able to fully explore the scope and reach of the defence.

New technologies such as 3D printing may also increase the accessibility of spare parts, by enabling repairers to fabricate their own replacement parts and be less dependent on conventional manufacturers (Abbas, sub. 34, p. 13). However, it was noted by a number of inquiry participants that not all products or parts are suited to current 3D printing methods due to their nature (for example, 3D printing simple mechanical parts is easier than electronic parts) or the requirement for very precise tolerances (for example, in the case of small and/or very precise products such as mechanical watches) (Abbas, trans., p. 80; iFixit, trans., p. 33; WCA Vic Div, trans., p. 244). In addition, Ai Group members noted that ‘for many, the technology as it stands does not provide a viable alternative to the manufacture and storage of spare parts’ for reasons including an inability for current 3D printing technologies and materials to replicate parts’ surface finishes and specific durability qualities (for example, strength, hardness, temperature stability, water absorption properties and chemical resistance) (sub. DR238, p. 1). As 3D printing technologies continue to evolve, these constraints may be reduced or eliminated.

In Australia, the use of 3D printing to create spare parts is unlikely to infringe manufacturers’ IP rights if: the 3D printed spare part is not substantially similar in overall impression to the original part (or the ‘spare parts defence’ under the Designs Act applies); there has been no copying of the part’s original (copyrighted) design schematics in the creation of the print (the part is reverse engineered); and no manufacturer trademarks are printed on to the part.

It is unclear whether manufacturers could use trademark law protections to prevent the importation of spare parts into Australia, as has occurred in other countries. In particular, the use of microscopic marks on non-visible product components may not satisfy legislative criteria set out in the *Trade Marks Act 1995* (Cth) as to the ‘use’ of a mark that gives rise to exclusive trademark rights, as the consumer is unable to use the sign to distinguish the goods.⁵⁸

Access to repair information

Manufacturers may also use IP protections to limit access to repair information, including:

- information to diagnose the problem — for example, diagnostics and product data

⁵⁸ In addition, the High Court commented in *Pioneer Kabushiki Kaisha v Registrar of Trade Marks* (1977) 137 CLR 670, [34] that: ‘[i]ndeed to place a word or device mark on some small part of an elaborate piece of equipment where it would not be seen in the course of ordinary use may well not amount to a use of the mark at all, as in the case of a mark too small to be seen’.

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- information to rectify the problem — for example, repair manuals, schematics (such as parts lists and product assembly diagrams), calibration codes and information.

Restrictions on reproducing and sharing repair information such as manuals

Some forms of repair information such as repair manuals and technical diagrams or schematics are generally copyrightable in that they often contain text, flowcharts, and other graphics that satisfy copyright's creativity requirements (Hanley, Kelloway and Vaheesan 2020, p. 13).⁵⁹ Manufacturers can therefore use copyright law to prevent third parties reproducing and disseminating (sharing) manufacturer repair manuals for their products (such as by uploading them to a hobbyist website). In Australia, there are no general defences or exceptions for unauthorised uses of copyright material for the purpose of repair under the *Copyright Act 1968* (Cth) ('Copyright Act').⁶⁰

A number of participants to this inquiry raised concerns about IP-related barriers to accessing repair information, including repair manuals and other 'how to' repair information such as service information, schematics and parts lists. As with spare parts, the majority of submissions that raised concerns about access to repair manuals did not explicitly identify how manufacturers were restricting access to this information. However, there has been a high-profile instance in Australia of a multinational laptop manufacturer, Toshiba, exerting its rights under copyright to prevent unauthorised reproduction and dissemination of copyrighted repair manuals for its products (box 5.3). (The Toshiba case also demonstrates how manufacturers can use contractual arrangements (such as confidentiality agreements) in conjunction with their rights under copyright law to control access to repair information and prevent unauthorised reproduction and dissemination.)

Overseas, a number of similar instances have been reported, including with respect to Apple MacBook Pro manuals (Cook 2006), and more recently, hospital ventilator manuals (Frank's Hospital Workshop nd; Linder 2020). For example, iFixit reported similar actions in the United States with respect to copyrighted Apple schematics:

iFixit received a US DMCA [Digital Millennium Copyright Act] takedown notice from Apple on December 8, 2015, demanding the removal of a circuit schematic uploaded by a community member for a MacBook Pro logic board. (sub. 107, p. 3)

⁵⁹ However, copyright protections only protect 'the expression in a work in which it subsists [and] does not protect an idea or information communicated through such expression' (Davies Collison Cave Pty Ltd, sub. 141, p. 2). As such, while some parts of a repair manual or schematic may be copyright protected, the parts containing factual information, such as the mechanism by which a product is assembled or disassembled or a list of parts and tools required to conduct repairs is not likely to be copyrightable.

⁶⁰ Section 47E of the Copyright Act permits the reproduction or adaptation of computer programs to correct errors in limited circumstances. However, in order to rely on the exception, an error-free copy must not be available within a 'reasonable time at an ordinary commercial price' (that is, a replacement program is not otherwise available).

Box 5.3 **The case of the Toshiba laptop manuals**

The legal interactions between multinational laptop manufacturer Toshiba and an Australian hobbyist repairer in 2012 are one well-known example where a manufacturer firmly enforced their exclusive intellectual property rights with respect to repair information.

Toshiba does not make its laptop service documentation publicly available (a fairly common practice amongst many laptop manufacturers) (Wiens 2013). A popular website containing a range of laptop service manuals, hosted by a hobbyist repairer, included over 300 Toshiba manuals that could be freely accessed and downloaded (Wiens 2012). Toshiba sent a cease and desist letter to the repairer demanding he remove their copyrighted manuals from his site and destroy all copies held, on the grounds that he was not an authorised service provider to whom manuals were provided, and his distribution without permission infringed their copyright:

The Manuals are only available to Toshiba authorised service providers under strict confidentiality agreements. You are not a Toshiba authorised service provider and therefore you have no rights to have any of the Manuals ...

The Manuals are copyright and, as stated, contain Toshiba proprietary information. The copyright statement prohibits the copying and distribution in any format without the prior written authority of Toshiba. You have not made any written requests of Toshiba for permission to access, hold, copy and distribute Toshiba's proprietary Manuals nor has Toshiba granted any rights to you ...

You are required to immediately disable the links to the Manuals that are contained and published on and distributed from your website and to destroy all copies of the Manuals that you hold in whatsoever format ... within seven ... days of this letter. (Toshiba Australia 2012, p. 1)

Because Toshiba does not make this repair documentation publicly available, the removal of these manuals makes repairing Toshiba laptops by third-party repairers considerably more difficult and potentially impossible if such information cannot be found elsewhere.

In some cases, repairers may be able to develop workarounds that enable them to share repair guides and information without the risk of infringing copyright. For example, organisations such as iFixit have undertaken ‘teardowns’ (whereby products are disassembled to identify its component parts, method of assembly and functionality) of a wide variety of products to find out how they work (iFixit 2021b), and re-assembled them to create their own ‘how-to’ repair guides that differ in expression to the copyright manufacturer manuals (iFixit 2021a). These guides are readily accessible to consumers and third-party repairers online. However, these endeavours are resource-intensive and may not cover all products that consumers and independent repairers seek to repair. They may also not always identify the most efficient means of repairing the products.

There are also differences in whether and how manufacturers seek to exclude others from sharing copyrighted repair information. Several submissions noted that some manufacturers make repair and service information available to third-party repairers — for example, agricultural machinery dealers and manufacturers argued that technical repair manuals are made available to the public online (JDL, sub. 84, p. 1), and can be purchased by independent repairers or customers (Eglinton, sub. 5, p. 10). In some cases, it was submitted that service information is made available (sometimes free of charge) to equipment owners, provided they first input product serial numbers (AIIA, sub. 127, p. 15). The Brunswick Tool Library noted that this is the case for some household appliances, with companies such as

Bosch sharing repair documentation for their appliances so long as a full model number or model name of the appliance is available (sub. 77, p. 5).

The extent to which manufacturers and copyright holders enforce their rights may also differ. Measuring enforcement is inherently challenging because there is no central record of actions, such as the issuing of ‘cease and desist’ or ‘takedown’ notices, that might be a sufficient deterrent. Similarly, it is also difficult to measure the extent to which some repairers may be sharing repair manuals, but such behaviour goes undetected or ignored.

Manufacturers may also have other (non-IP) reasons for restricting access to repair information, including safety, security and quality control concerns (chapter 4).

Barriers to accessing embedded (digital) repair information such as diagnostics

A rise in technology-enabled products means that it is now much harder to work out how to repair a product merely by looking at it or pulling it apart. Much of the information required to diagnose or repair a fault is digital; embedded into the product itself and held behind digital locks that require passwords or other codes to bypass.

Several inquiry participants, as well as Australian legal academics (Austin 2020, p. 121; Wiseman and Kariyawasam 2020a, pp. 95–96), raised concerns about manufacturers’ use of technologies (such as digital locks) to restrict access to embedded repair information. For example, iFixit stated that:

Manufacturers are unfortunately using new technology to prevent users from accessing their data and repairing or modifying the devices they have bought, from tractors to printers to coffee makers. (sub. 107, p. 8)

An electrician specialising in the service and repair of power supply and generator equipment noted various digital mechanisms used by manufacturers to restrict access to information, including service codes (special codes required to access equipment service settings) and ‘dynamic’ service codes (codes that change ‘month to month’ or that are ‘generated based on the equipment serial number and date of the visit’) (Marriott, sub. 16, p. 3).

Some types of digital locks, known as technological protection measures, are specifically protected by copyright law. Under Australian copyright law, it is lawful for a manufacturer to use technological protection measures (as defined in the Copyright Act) to protect copyright subject matter such as software and computer code embedded in a product from unauthorised access or copying. The Copyright Act also generally prohibits the circumvention (or bypassing) of certain types of technological protection measures (‘access control technological protection measures’ (TPMs)) unless there is an explicit legislative exception (box 5.4). Digital locks that prevent diagnostic or repair information, in the form of code or output of a copyright software program, from being accessed without a password are likely to be considered ‘TPMs’ under copyright law, and thus subject to the anti-circumvention provisions and exceptions.

Box 5.4 **The prohibition on circumventing TPMs**

Provisions relating to technological protection measures are set out in the *Copyright Act 1968* (Cth) and the Copyright Regulations 2017.

In order to be covered by the anti-circumvention provisions, a digital lock or other technological measure used by manufacturers must meet the definition of an ‘access control technological protection measure’ under Australian copyright law. That is, it must:

- be a device, product, technology or component (including a computer program)
- used in Australia by the owner or exclusive licensee of the copyright in a work in connection with the exercise of the copyright
- in the normal course of its operation, control access to the work.

Where the copyright work is a computer program embodied in a machine or device, the protection measure is excluded from the definition to the extent it restricts the use of goods (other than the copyright computer program) or services in relation to the machine or device. The explanatory memorandum for the Bill introducing this provision expressly states that this clause:

... excludes measures which restrict the supply of spare parts by third parties or the provision of repair or maintenance services by third parties in relation to the machine or device. [For example] it is intended that there would be no protection under the scheme for a measure used by a computer printer manufacturer to restrict the use of generic cartridges in its printers. Similarly it is intended that there would be no protection for a measure used by a garage door manufacturer to prevent the use of remote control garage door openers made by competitors. (Ruddock 2006a, sec. 12.13)

Where a digital lock is used purely as a means of ‘serialisation’ or to control what spare parts are installed in a product (for example, Canadian Repair Coalition, trans., p. 260), it may not satisfy the definition of an access control technological protection measure under copyright law, and thus may not be subject to the Act’s anti-circumvention provisions. This is because these sections of the Act only apply to digital locks that prevent access to copyright material, and operate *in connection with* the protection of copyright in a work.

Source: *Copyright Act 1968* (Cth), ss. 10, 116AN.

There is an exception in Australian copyright law that seemingly permits the circumvention of TPMs to access protected copyright information for the purposes of repair, in limited circumstances (box 5.5). However, the scope of this exception is ambiguous — in fact, some stakeholders to both this inquiry and the Australian Competition and Consumer Commission (ACCC) agricultural machinery market study were of the opinion that no such exception exists (ACCC 2021c, p. 43; ADA, trans., p. 295). For example:

Regulation 40 of the Copyright Regulations 2017 sets out exemptions to this ban, which include a number of permitted uses by disability groups and educational and cultural institutions, as well as the making of interoperable products. However, it does not currently include circumvention for the purpose of repair. (ADA 2020, p. 2)

One area of ambiguity in the exception is the extent that the TPM must itself be ‘malfunctioning’ (either by interfering with or damaging the product) before circumvention is permitted to access protected repair information needed to repair the product (box 5.5). If the exception only applies when the TPM ‘malfunctions’, this would narrow the scope of permissible repairs — because products may require repair even when the TPM is not ‘malfunctioning’.

Box 5.5 The 'repair' exception for TPM circumvention

Australian copyright law generally prohibits the circumvention (or bypassing) of access control technological protection measures (TPMs) (box 5.4). However, there is an exception that seemingly allows for repairers to circumvent TPMs to access protected information to undertake repairs in limited circumstances. The exception allows:

... the gaining of access by a person to copyright material that is protected by a technological protection measure that interferes with or damages a product in which it is installed (the host product) or another product used in conjunction with the host product ... to repair the host product or another product (if circumvention of the technological protection measure is necessary to enable the repair to be carried out) ... (Copyright Regulations 2017, r. 40(2)(d)(ii) via *Copyright Act 1968* (Cth) s 116AN(9))

However, the scope of this exception is somewhat ambiguous. One area of ambiguity is whether the exception would extend to repairers seeking to circumvent a TPM for the defined purpose (to repair the host product), but where the TPM is not necessarily 'malfunctioning' (that is, 'damaging' or 'interfering with' the host product in a conventional sense).

On face value, a TPM that 'interferes with' or 'damages' the host product appears to be a threshold requirement. This interpretation is supported by the fact that the exception was initially introduced to the Copyright Regulations 1969 (now superseded by the Copyright Regulations 2017) under the heading 'Malfunctioning technological protection measures'. In addition, the original exception was introduced following a recommendation of the 2006 review of TPM exceptions (HRSCLC 2006), which was made after considering a number of submissions raising issues about TPMs that had become obsolete, or where passcodes to bypass TPMs were lost over time, thus rendering the protected material inaccessible (AVCC 2005, pp. 17–18; DEST 2005, pp. 34–35; HRSCLC 2006, p. 123; NSW DET 2005, pp. 15–16; Weatherall 2005, pp. 25–26).

However, a range of secondary sources associated with and discussing the exception appear to indicate that TPM 'malfunction' is not required. For example, the original recommendation that led to the introduction of the exception stated:

The Committee recommends that the proposed exceptions to liability for TPM circumvention for ... Access where a TPM interferes with or causes damage or a malfunction to a product, or where circumvention is necessary to repair a product. [emphasis added] (HRSCLC 2006, p. xxiii)

The explanatory statement accompanying the introduction of the exception stated:

New paragraph 6.2 of table item 6 [equivalent to current regulation 40(2)(d)(ii)] prescribes the activity of accessing copyright material protected by a TPM to prevent damage to a product or to repair a product on which the TPM is installed. New paragraph 6.2 of table item 6 allows the circumvention of an access control TPM in these circumstances. [emphasis added] (Ruddock 2006b, p. 15)

The government has made similar references to the exception since its introduction (such as part of a 2017 copyright regulations consultation paper and a 2012 review of TPM exceptions):

... access where a TPM damages a product, or where circumvention is necessary to repair a product. [emphasis added] (DoCA 2017, p. 15)

In addition, the government removed the heading reference to 'malfunctioning' TPMs when the current Copyright Regulations 2017 were created, which may allow for a broader interpretation of the phrase 'interferes with or damages'.

A lack of case law dealing with this particular exception adds to the interpretive uncertainty.

There is also ongoing debate overseas about the ideal scope of TPM circumvention exceptions for repair, in particular in the United States and Canada (box 5.6).

Box 5.6 TPM circumvention and repair issues are not specific to Australia**A push for a broader repair exception in the United States**

In the United States, the Library of Congress has the power to grant temporary (three-year) exemptions permitting circumvention of technological protection measures (TPMs) for various purposes. In 2018, the Library issued an exemption to (among other things) access computer programs contained in and controlling the function of personal and commercial vehicles and mechanised agricultural vehicles, smart phones or home appliance systems (such as refrigerators, thermostats, heating and air conditioning systems and electrical systems) where circumvention is necessary to allow for the diagnosis or repair of the specified products, and not be for the purpose of gaining access to other copyrighted works (US Copyright Office, Library of Congress 2018, pp. 54029–54030).

As a result, the Federal Trade Commission considers that manufacturers' assertions of intellectual property rights 'do not appear to present an insurmountable obstacle to repair' in the United States (2021b, p. 26). Nevertheless, various repair advocates (including iFixit and the Electronic Frontier Foundation) have been pushing for a permanent exception 'to repair all software-enabled devices' protected by TPMs (Purdy 2021b), as they consider the current approach of the US Copyright Office 'too narrow' (Rimmer, sub. DR168, pp. 24–25).

A review, consultation and an independent Private Member's Bill in Canada

The Canadian House of Commons Standing Committee on Industry, Science and Technology recommended in the 2018 Statutory Review of Canada's Copyright Act:

That the Government of Canada examine measures to modernize copyright policy with digital technologies affecting Canadians and Canadian institutions, including the relevance of technological protection measures within copyright law, notably to facilitate the maintenance, repair or adaptation of a lawfully-acquired device for non-infringing purposes. (SCIST 2019, recommendation 19)

As a result, in 2021, the Canadian Government as part of a 'Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things' is seeking evidence and feedback on how to adapt existing TPM provisions to facilitate repair, including technical information about TPMs and their operation in industry, the steps and devices necessary to circumvent TPMs and perform tasks such as repair, as well as potential reform avenues (ISED Canada 2021a, pp. 22–23, 2021b).

Independent of this review process, Private Member's Bill C-272 was introduced to the Canadian Parliament in February 2021, to amend their Copyright Act to 'allow the circumvention of a technological protection measure in a computer program if the circumvention is solely for the purpose of diagnosis, maintenance or repair of a product in which the program is embedded' (May 2021, p. ii). The Bill passed its second reading in early June and has been referred to the House of Commons Committee for further discussion (Parliament of Canada 2021; Pavia 2021).

As discussed below, even if repairers are able to rely on the 'repair exception' already in the Copyright Regulations 2017 to circumvent TPMs, their ability to do so may be limited by copyright law provisions that prevent the communication, distribution or provision of devices used to circumvent TPMs (Copyright Act, s. 116AO).

Manufacturers often justify controls over access to embedded data through TPMs on the basis that they are necessary to protect their financial investments in IP, such as by

preventing the pirating of software (IGEA, sub. 103, p. 24). Public safety and security grounds are also cited as a reason (such as cybersecurity risks) (LG Electronics Australia, sub. 38, p. 5). For example, the Interactive Games and Entertainment Association highlighted the important role of TPMs with respect to developer IP:

TPMs underpin the entire video game ecosystem and the willingness of developers to invest the tens or hundreds of millions of dollars that it can take to innovate their products and to develop new games. With a secure hardware system in which to create and publish new games, developers, who are often small-to-medium-sized creative businesses, are more willing to make the financial investments necessary to support the development of new games. This in turn benefits the consumer who has a wider array of games and interactive experiences to enjoy. TPMs have allowed the games industry to move beyond packaged goods and to embrace new digital technologies and distribution models. (sub. 103, p. 23)

Efforts to implement a right to repair policy will, whether intended or not, also better arm these malicious actors and erode the ability of manufacturers to protect their products, the IP of game developers, and players themselves. (sub. 103, p. 11)

Some participants noted that the risks associated with providing greater access to embedded repair information are particularly pronounced for more complex products such as cars (Toyota Australia, sub. 118, p. 7).

Access to repair tools and equipment

Modern (particularly tech-enabled) products now require repairers to have access to a diverse range of tools and equipment in order to conduct repairs. These can include:

- unique physical tools used to open up and replace or repair parts that are held together by similarly unique fastenings (for example, special screw heads or wrench heads)
- standalone software tools (such as programs and code) that are used to diagnose and repair faults (including software needed to recalibrate products and installed parts)
- equipment used to legally circumvent digital locks (known as circumvention devices), which may be in the form of physical devices housing code, or standalone software that can be loaded onto a device.

Physical tools

Physical tools may be patent and design-protected, which give rights holders the exclusive right to use, sell and otherwise exploit them. For example, a manufacturer who owns the patent or registered design for a repair tool can refuse to license the IP rights to manufacture and sell the tool, and pursue those who manufacture and sell generic tools without authorisation. As discussed above, manufacturers can also refuse to supply necessary tools to consumers and third-party repairers, though these refusals may occur regardless of whether the tools are IP-protected. Difficulties were raised by some stakeholders in accessing specialised physical tools (for example, Vintage Time Australia, sub. 13, p. 1).

There are arguably more workarounds to overcome IP-related barriers to repair in the case of physical tools, in contrast to intangible tools such as software or digital lock circumvention tools — which third-party repairers might not have access to even look at, let alone recreate.⁶¹ Physical tools can often be reverse engineered (for example, repairers may be able to deduce the shape and form of tools required to unscrew or prise open a particular part by looking at the product). Some organisations such as iFixit develop and sell their own range of non-infringing tools (created via reverse engineering) to allow self- and third-party repairers to open and fix otherwise un-openable electronic products (Wiens 2018a).

Some participants raised concerns about manufacturers designing products that are hard to open or fix, including through using un-screwable or atypical screws (Zyllberberg and McDonnell, sub. 44, p. 1). These concerns overlap with product design and planned or premature product obsolescence concerns and are better viewed through the lens of government measures to address such issues (chapter 6).

Software tools

There are copyright law provisions that prohibit the dissemination of certain tools that are used to unlock or bypass TPMs. In this regard, there is a close link between repairers' ability to access repair *information* and their ability to access repair *equipment*, namely:

- repairers may be unable to access repair information because they cannot bypass or circumvent TPMs (even where doing so is otherwise permitted under copyright law)
- copyright laws prevent persons (including repairers) from buying, selling or otherwise distributing devices used to circumvent TPMs (Copyright Act, s. 116AO).

A large number of inquiry participants have raised concerns about manufacturers limiting supply of diagnostic tools and software tools such as circumvention devices necessary for repair in Australia (for example, Canegrowers Herbert River, sub. 12, p. 1; Fusinato, sub. 6, p. 1; GPA, sub. 27, p. 6; May, sub. 129, p. 3; NFF, sub. 55, p. 2).

With respect to such diagnostic and other software tools, copyright laws that prohibit repairers procuring TPM circumvention devices from other parties appear to be a potentially material barrier to repair. For example, one independent repairer of agricultural and earthmoving equipment submitted that a lack of access to diagnostic software tools prevented him from providing a full range of repairs:

I am unable to provide farmers the full service they require because I cannot access the diagnostic equipment at a reasonable cost, so machinery with software errors needs to be repaired by authorised dealers. The only way I can repair a machine with electronic error codes is to use manual diagnostic processes which can be very time consuming and increases the costs to farmers for repairs. (Fusinato, sub. 6, p. 1)

⁶¹ For example, Apple and Samsung diagnostic and service toolkits (Purdy 2019).

In addition, iFixit submitted that an inability for independent repairers to access Apple diagnostic software means that Touch ID sensors on iPhones are not repairable by anyone other than Apple (sub. 107, p. 12).

The inability of repairers to procure TPM circumvention devices may mean their only other option is develop a circumvention device themselves from scratch. However, many repairers may lack the technical computing knowledge and resources to do so.⁶²

A number of stakeholders also raised issues with accessing software tools necessary to calibrate products and parts after repair or installation (for example, iFixit, sub. 107, p. 6; Marriott, sub. 16, p. 2; Osborne, sub. 7, p. 1; The Phone Spot, sub. 50, p. 1). Digital locks may be used by manufacturers solely to ‘serialise’ parts and products, controlling what spare parts are installed in a product. However, these digital locks may not be protected by the Copyright Act’s TPM anti-circumvention provisions (box 5.5 above).

Limitations on the scope to repair

Consumers and third-party repairers may be reluctant to undertake repairs where doing so could expose them to liability for any future product faults or for breaches of IP law. For example, where terms and conditions in EULAs prohibit repair-related activities, and where repair involves directly altering a product that is protected by certain IP rights (namely, patents and copyright).

End-user licence agreement terms and conditions

EULAs are contracts that set out the terms and conditions under which manufacturers provide users with access to their products, most often software (including software embedded in physical products). For example, smart phone buyers typically have to agree to the operating system developer’s conditions of use before they can use the phone — although purchasers may own the physical phone, they are only accessing the software under licence.

Some inquiry participants have argued that manufacturers use EULAs to limit the scope of repairs that third-party repairers may undertake, by imposing restrictions on disassembly and other post-sale usage, repair and modification restrictions on consumers. For example, one hobbyist noted that typical conditions in EULAs forbid software components being re-distributed or reverse engineered, which restricts consumers’ ability to reuse and reverse engineer critical firmware components such as device drivers (McGrath, sub. 15, pp. 4, 10).

⁶² A ‘repair supplies obligation’ on manufacturers to provide access to embedded repair information would reduce the need for TPM circumvention devices in the product markets in which the obligation applies — chapter 8. However, such an obligation only currently applies in Australia with respect to motor vehicles, and excludes some types of information, such as computer program source codes, telemetry, and manufacturer trade secrets (Treasury 2020, p. 7).

Others stakeholders highlighted concerns that EULAs were used in certain industries to prohibit repairs by independent repairers:

It was recognised that within agriculture the sophisticated agricultural machinery comes with equally sophisticated and complex software contracts that not only restrict farmers' rights to repair their tractors but also forces them to use only authorised repairers. (Wiseman and Kariyawasam, sub. 105, p. 14)

Although it is possible to find examples of Australian EULAs that contain conditions similar to those described by participants (box 5.7), it is much more difficult to gauge how often manufacturers actually enforce these contract conditions.

Box 5.7 EULA terms often prohibit repair-related activities

Many end-user licence agreements (EULAs) for embedded software products include terms that may directly restrict users' ability to repair their products, such as prohibitions on disassembly, reverse engineering, and bypassing digital locks and encryption. This can occur *even where acts may be permitted under law* (that is, these acts are not those over which copyright holders are granted exclusive rights, or there is an exception under the Copyright Act that applies). For example, the EULA for an electrical utility communication product states that:

Licensee may not cause, permit or suffer the Software to be reverse engineered, disassembled or decompiled ... (SystemCORP Energy Pty Ltd nd, p. 1)

Some EULAs explicitly acknowledge that there are some cases where uses of the copyright material are permitted by law (for example, via specific copyright law exceptions). For example, the EULA for an energy monitoring and distribution product states that:

You agree not to, and you will not permit others to: ... modify, make derivative works of, disassemble, reverse compile or reverse engineer any part of the Product Software (except to the extent applicable laws specifically prohibit such restriction for interoperability purposes ...). (carbonTRACK nd)

Licence termination is a common outcome for non-compliance with licence terms. For example:

carbonTRACK may terminate this EULA at any time if you breach any term(s) of this EULA. ... Upon termination of this EULA, the license granted hereunder will terminate and you must stop all use of the Product Software ... (carbonTRACK nd)

Overall, the extent to which EULAs limit repairers' willingness to undertake repairs is uncertain — despite seeking further feedback on whether EULA terms are unnecessarily discouraging third-party repairs, the Commission received very few responses.

Copyright and patent law limitations on altering protected products

In some cases, repairing a product may involve more than just replacing a small cable or a battery, and instead requires replacing a large number of parts, or significant product parts such as a chassis. In other cases, repairs may require modifying, re-coding or completely replacing the faulty programs or code embedded in physical products.

Some legal experts noted that undertaking these types of repairs could breach IP rights and thus expose repairers to potentially significant penalties. In particular:

- if a repairer was to undertake significant repairs to a product (including where repairs involve replacing a large number of parts, or multiple substantial parts) they could risk infringing a manufacturer's exclusive patent rights as to the manufacture (making) of their inventions (Grinvald and Tur-Sinai 2019, pp. 100–101; Svensson et al. 2018, p. 5)
- if a repairer was to perform modifications to faulty code in the course of repair they may infringe on the manufacturer's copyright over the embedded computer programs (protected as 'literary works') — modifying faulty code is likely to be considered an unlawful copying of the program under copyright law (LCA, sub. 114, p. 14).

Uncertainty about what constitutes a breach of these IP rights and the associated penalties⁶³ (along with the cost of litigating) could discourage self- and small independent repairers from undertaking repairs.

Overall, the extent to which IP rights (particularly with respect to patent and copyright) discourage repairers or limit the scope of repairs that are undertaken in practice is uncertain.

With respect to patent law, concern was raised by a number of stakeholders that without a clearly defined 'right to repair', consumers face difficulties determining whether or not their repair activities are considered infringing or permissible conduct (Abbas, trans., pp. 81–82; Rimmer, trans., pp. 74–75).

The High Court decision in *Calidad v Seiko Epson Corporation* [2020] HCA 41 ('*Calidad*') (box 5.8) clarified to some extent the line between (permissible) repair and (impermissible) remaking (as well as addressing patent exhaustion, discussed later — box 5.10), thereby 'recognis[ing] and facilitat[ing] the right to repair patented goods' (Wiseman and Kariyawasam, sub. 105, p. 11). However, concerns have been raised that uncertainty remains as to 'whether the doctrine of exhaustion applies on a national or international basis' in Australia, arising from the absence of a 'bright-line test' to determine what constitutes permissible repair under the doctrine (Abbas, sub. DR209, pp. 6, 7). That said, future cases will serve to test the High Court's reasoning and clarify the scope of the doctrine, particularly as it applies to different acts of repair.

Issues relating to an inability to undertake particular types of repair of copyright-protected products (including software) under the copyright regime have the potential to pose a material barrier to repairs. The Law Council of Australia raised two main concerns.

- A lack of defences in the Copyright Act for the modification of copyrighted computer programs for repair — in particular, while a defence exists that permits the reproduction or adaptation of computer programs to correct errors, its operation is limited to 'where a working copy is not available "within a reasonable time at an ordinary commercial price"'

⁶³ If a repairer is found to have infringed IP rights in the course of repairing a product, the courts may impose an injunction, and require either damages or an account of profits be paid to the rights holder: *Copyright Act 1968* (Cth), s. 115; *Designs Act 2003* (Cth), s. 75; *Patents Act 1900* (Cth), s. 122; *Trade Marks Act 1995* (Cth), s. 126.

(sub. 114, p. 14). Consequently, even where software repair is straightforward (and possible) without the need for replacement, repairers must still first attempt replacement. This may be costlier than modifying (repairing) software code, and restricts consumer choice.

- The circumvention of TPMs for the purpose of repair is limited to repairing ‘machines or devices’ and does not allow for the circumvention of TPMs ‘in the context of repair of electronic files or software’ (sub. 114, p. 13).

Box 5.8 The ‘Calidad case’ clarifies issues about repair of patented products

Until the High Court of Australia’s 2020 decision in *Calidad v Seiko Epson Corporation* [2020] HCA 41 (‘*Calidad*’), there was little Australian jurisprudence as to what constitutes a permissible ‘repair’ of a patented product (as compared with an impermissible ‘remaking’ or ‘manufacture’). As such, the decision provides ‘much-needed certainty and clarity’ about Australian patent law and its relationship to rights of repair (Williams and Farago-Diener 2020, p. 147).

The dispute

Calidad operates in the aftermarket for printer consumables, and had imported and sold in Australia used printer cartridges that were originally manufactured by Seiko Epson. These cartridges had been restored to working condition by a third party (including through emptying and cleaning the cartridges, injecting new ink through a port drilled into the cartridge, reprogramming memory chips, and sometimes installing new memory chips and modifying circuit boards). Seiko Epson owned two Australian patents over the cartridges, and alleged that Calidad’s importation and sale of its used printer cartridges constituted patent infringement. The High Court was required to determine whether refilling and restoring the used Epson cartridges to working condition was a permissible repair or an impermissible manufacture of a new article.

The decision

The High Court (in a 4-3 majority) found that once the modifications had been carried out, what remained were the original cartridges with some alterations that had enabled their reuse, and there was no replication of parts and features of the invention as claimed in the patents. Ultimately, the modifications were consistent with ‘the exercise of the rights of an owner to alter an article to improve its usefulness and enable its re-use’ (*Calidad*, at [70]).

The need for independent repairers to repair software faults may be limited, to the extent that manufacturers provide software updates. The Victorian Automotive Chamber of Commerce noted that for some products with embedded software, these are provided voluntarily by the manufacturer:

... software updates are automatically performed over an internet connection (mobile phones, computers) or by downloading a software patch directly from the manufacturer’s website (TV’s, printers) – installing it to the device, usually at no cost to the consumer. (sub. 136, p. 8)

The Commission has also recommended that the Australian Consumer Law be amended to include a consumer guarantee that manufacturers will provide software updates for a reasonable period of time after the product has been purchased (recommendation 3.1).

FINDING 5.1 COPYRIGHT LAWS ARE AN IMPEDIMENT TO ACCESSING REPAIR INFORMATION

Copyright laws that prevent third-party repairers from accessing repair information (such as repair manuals and diagnostic data) are the most significant unnecessary intellectual property-related barriers to repair in Australia.

5.3 What IP reforms are needed?

As noted in section 5.2, based on the available evidence, copyright laws that prevent third-party repairers from accessing repair information are one of the more significant unnecessary IP-related barriers to repair.⁶⁴ These laws do not strike the right balance between the interests of rights holders and of others seeking to access and use those materials for the purpose of undertaking repairs — and thus unnecessarily limit the ways in which repair information can be used.

Amending these laws could improve access to repair information and help increase competition and consumer choice in repair markets, including by increasing repairers' ability to safely and efficiently perform product repairs, thereby reducing any costs associated with third-party repair (such as product teardowns, reverse engineering, search costs, and repair delays). However, a range of other factors will influence whether such changes are likely to have net benefits to the community. Amending laws governing IP protections may have unintended impacts, such as increasing product safety risks associated with making sensitive information more readily available to the public. Any changes to Australian IP laws would also need to be consistent with Australia's obligations relating to minimum standards of IP protection under international agreements.

This section considers four copyright law reforms for improving access to repair information for repairers:

1. allowing repairers to legally access repair information hidden behind TPMs, by:
 - clarifying the existing TPM anti-circumvention exception relating to repair, to permit circumvention in order to access information necessary to perform repairs to the product in which the TPM is installed
 - amending the TPM circumvention device prohibition, to permit the distribution of circumvention devices for the purpose of facilitating a permitted act of circumvention (such as circumvention for the purpose of repairing a product)
2. expanding the exhaustion doctrine to copyright law
3. introducing a new use exception into the Copyright Act
4. prohibiting the use of 'contracting out' clauses with respect to copyright exceptions.

⁶⁴ While it could not be established that other forms of IP, including patents, designs and trademarks, are materially impacting product repairs to warrant reform at this time, this is not to say that issues in these areas do not exist, nor that they may not become a material issue requiring government intervention in the future.

While some changes to copyright laws outlined in this section would constitute an improvement, they would not be a complete solution to addressing barriers to accessing repair information. They would not necessarily provide third-party repairers with access to all the types of repair information they might need. Other information, such as program source codes, may be required in addition to diagnostic information and repair manuals and schematics. Further, the reforms would not prevent manufacturers from using measures such as TPMs to protect digital repair information in the first place, and would not address instances where manufacturers are in sole possession of the desired information and refuse to release it.

The Commission has considered the relative merits of copyright reforms as part of a broader package of measures, including a potential ‘repair supplies obligation’ (chapter 8). An obligation on manufacturers to provide repair information and other inputs could help overcome *some* of the IP-related barriers to repair outlined in this chapter. For example, where manufacturers are required to share repair information, there is likely to be limited need for repairers to copy and share manuals and parts schematics, or to bypass TPMs to access this information. However, as the proposed obligation would only apply to specified industries, broader copyright law reforms will still assist in addressing barriers relating to access to repair information in relation to other products.

Allow repairers to access repair information located behind TPMs

There are two main ways that repairers’ access to digital repair information located behind TPMs could be improved:

- clarifying the circumstances under which repairers may legally circumvent TPMs
- enable repairers to procure the tools required to access necessary information to conduct repairs.

Clarify when repairers may legally circumvent TPMs

As noted above, while circumventing TPMs is generally prohibited under the Copyright Act, one exception to this is for product repairs (Copyright Regulations 2017 r. 40(2)(d)). However, the drafting of this provision is somewhat uncertain — in particular, it is unclear whether the exception only applies if the TPM itself is ‘malfunctioning’ (box 5.5 above).

Addressing this uncertainty would provide clarity for repairers looking to rely on the exception, and ensure that the intended benefits of the exception are realised. A number of stakeholders supported a clarification of the existing exception (BRU, sub. DR198, p. 3; NSW Young Lawyers, sub. DR220, p. 14; Rimmer, sub. DR168, p. 29; WALGA, sub. DR155, p. 5). For example, the NSW Young Lawyers submitted:

... the Committee agrees that the current exception under regulation 40(d) of the Copyright Regulations 2017 (Cth) is unclear. The Committee recommends that this exception be clarified so that it is apparent whether or not the exception applies only if the TPM is malfunctioning (by interfering with, or damaging, the host product). (sub. DR220, p. 14)

The Commission considers that the wording of the exception should be amended to clarify that repairers are permitted to circumvent TPMs in order to access information necessary to perform repairs to the product in which the TPM is installed ('host product') *or* to prevent damage where the TPM is 'interfering with' the host product in a manner beyond the typical operation of a TPM. This amendment would more clearly give effect to the policy intent of the exception to allow access to copyright material protected by a TPM to repair a product on which the TPM is installed (Ruddock 2006b, p. 15).

Given the close link between fault diagnosis and repair (a repairer cannot repair a product without first determining what is wrong), these amendments should also explicitly state that the exception also applies to issue diagnosis as well as repair. This is in line with clarifications that are proposed in Canada (box 5.6 above), which would permit circumvention 'if the person does it for the sole purpose of diagnosing, maintaining or repairing a product in which the computer program is embedded' (May 2021, p. 1).

Australia's international obligations with respect to copyright law and TPMs, including the Australia-United States Free Trade Agreement (AUSFTA) (box 5.9) and its effects, must be considered when implementing this amendment. On face value, the proposed amendments are unlikely to raise international law implementation issues — the exception already exists in Australian law (and has for some time) and its clarification is not a wholesale change, rather it is to ensure that its practical operation aligns with its policy intent.

Permit the distribution of TPM circumvention devices

Section 116AO of the Copyright Act prohibits repairers from obtaining TPM circumvention devices.⁶⁵ This is despite the fact that an exception exists that permits repairers to circumvent TPMs for the purpose of repairs (discussed above, box 5.5).

In order to address this anomaly and improve the regime's consistency, section 116AO of the Copyright Act should be amended to make it legal for repairers to distribute (and obtain from others) TPM circumvention devices, where the act of circumvention itself is permitted under the Act or Regulations (such as the TPM circumvention exception for repair).

By being able to communicate, distribute or provide TPM circumvention devices to other repairers, repairers who lack the skills or resources to develop their own circumvention devices would no longer be precluded from accessing important information necessary for repair. Although this measure would change the circumstances under which circumvention devices can be distributed and obtained, it does not change the circumstances under which the act of circumvention (using circumvention tools) is permitted.

⁶⁵ A person is prohibited from manufacturing or importing (with the intention of providing to others), distributing, offering to the public, providing or communicating devices used to circumvent a TPM.

Box 5.9 Article 17.4.7 of the Australia-United States Free Trade Agreement sets out requirements for Australia's TPM regime

The Australia-United States Free Trade Agreement (AUSFTA) covers a wide range of issues, including intellectual property. Article 17.4.7 of the AUSFTA sets out a number of requirements for Australia's technological protection measures (TPM) regime, including relating to prohibitions, exceptions, offences and penalties, which are reflected in Australia's *Copyright Act 1968* and Copyright Regulations 2017.

Broadly, AUSFTA requires that each party to the agreement prohibit a person:

- knowingly, or having reasonable grounds to know, circumventing without authority any effective TPM that controls access to a protected work or subject matter (article 17.4.7(a)(i))
- manufacturing; importing; distributing; offering to the public; providing or otherwise trafficking in devices, products or components; or offers to the public; or provides services that:
 - are promoted, advertised, or marketed for the purpose of TPM circumvention
 - have only a limited commercially significant purpose or use other than to circumvent a TPM
 - are primarily designed, produced or performed for the purpose of enabling or facilitating the circumvention of a TPM (article 17.4.7(a)(ii)).

AUSFTA provides for a number of permissible exceptions to these prohibitions. The general list of exceptions is set out in article 17.4.7(e)(i) to (vii), with subparagraph (viii) allowing for additional exceptions beyond these, provided that they satisfy a number of conditions (non-infringing use, actual or likely adverse impact credibly demonstrated in a legislative or administrative review conducted at least once every four years). However, different exceptions are available for each prohibition (article 17.4.7(f)).

Source: DFAT (2021).

A potential risk of increasing access to circumvention devices generally is that it may increase the scope for people to use such devices for illegal activities, or activities that go beyond what is otherwise permitted under the exceptions. However, the proposed reforms would not change the existing incentives faced by such actors to engage in illegal activity involving TPM circumvention and circumvention devices. It would still be an offence to use copyright material without authorisation, circumvent TPMs and communicate, distribute or otherwise provide TPM circumvention devices without an exception, with substantial penalties being a deterrent.⁶⁶

On face value, there may be constraints under international law that limit Australia's ability to introduce new exceptions to the prohibition on sharing circumvention tools (box 5.9). However, these concerns may not be insurmountable. In particular, and as discussed above, analogous amendments have been proposed in Canada (box 5.6), which would permit the 'manufacture, importation, distribution, sale, renting and provision of technologies, devices or components used for diagnosis, maintenance or repair' of products in which a computer

⁶⁶ Currently, standard penalties for such acts can be as high as a \$122 100 fine, five years imprisonment or both (with the unauthorised conversion of a work from hard copy to digital form attracting a harsher fine of up to \$188 700, five years imprisonment or both) (*Copyright Act 1968* (Cth); Commonwealth of Australia (2020)).

program is embedded’ (May 2021, p. ii). Canada’s international obligations in relation to TPMs as a result of the Canada–United States–Mexico Agreement are almost identical to Australia’s TPM obligations under AUSFTA.⁶⁷

RECOMMENDATION 5.1 AMEND THE TECHNOLOGICAL PROTECTION MEASURES REGIME

The Australian Government should amend the technological protection measures (TPM) regime in the *Copyright Act 1968* and Copyright Regulations 2017 to better facilitate repairers’ access to embedded information protected by TPMs necessary for issue diagnosis and repair. To do this, the Government should:

- amend the existing TPM circumvention exception for repair in regulation 40(2)(d) of the Copyright Regulations 2017, to clarify its scope and application to permit circumvention in order to access information necessary to perform repairs to the product in which the TPM is installed
- amend section 116AO of the *Copyright Act 1968*, to permit the distribution of TPM circumvention devices for the purpose of facilitating a permitted act of circumvention (such as circumvention for the purpose of repairing a product in regulation 40(2)(d) of the Copyright Regulations 2017).

An ‘exhaustion doctrine’ for copyright?

Originating in patent law, the exhaustion doctrine states that the patentee’s exclusive rights cease upon first sale of a product embodying the invention (except the right to prevent others from ‘making’ such products), unless the patentee expressly imposes contractual conditions to the contrary (Pereira and Cooper 2020). As a result, purchasers can do what they like with their purchased product, so long as a new product is not *made* in such a way that infringes the patentee’s exclusive rights (Williams and Farago-Diener 2020, p. 159).

Expanding the ‘exhaustion doctrine’ to copyright law has been proposed as one way in which access to repair information can be improved. The Law Council of Australia (sub. 114, pp. 11–12) noted that the doctrine of exhaustion was held by the High Court of Australia (in the recent *Calidad* case) to apply to patentees’ rights in Australia, and argued that the court’s reasoning ‘may also support the application of the doctrine in the context of other forms of IP’ including copyrighted works in order to ‘facilitate repair in the context of copyright protection’ and bring Australia in line with overseas jurisprudence (box 5.10).

⁶⁷ Article 20.66 of Canada–United States–Mexico Agreement (Government of Canada 2020) is almost identical in wording to Article 17.4.7 of the Australia–United States Free Trade Agreement (DFAT 2021).

Box 5.10 **The patent law exhaustion doctrine**

Broadly, the exhaustion doctrine is founded upon a need to balance intellectual property owners' exclusive rights with the public interest in allowing the free movement of goods. Patent law seeks to encourage innovation by granting a limited monopoly to inventors to allow them to obtain a 'reward' (the ability to exploit (sell) their inventions at monopoly prices) for bringing the product to the market. Patentees should only be able to obtain the 'reward' once for each product sold, and so once the product is sold by the patentee (at the monopoly price), they have reaped the 'reward' promised to them, and 'the exhaustion doctrine leaves no patent rights to be enforced' (*Calidad Pty Ltd v Seiko Epson Corporation* [2020] HCA 41, at [73] ('*Calidad*'). Patentees' rights to make and sell another product embodying the patented invention remain.

The adoption of the exhaustion doctrine in Australia

In late 2020, the High Court in *Calidad* held that the exhaustion doctrine applied in Australia with respect to patented products, displacing the longstanding 'implied licence' doctrine. The exhaustion doctrine was preferred due to its logic, simplicity and coherence with legal principle, consistency with fundamental property rights, and consistency with US and EU jurisprudence (where exhaustion is well-established).

The exhaustion doctrine overseas

The principle that exclusive intellectual property rights are exhausted at the sale of a product is not confined to patent law. In some jurisdictions, exhaustion also applies to copyright. The so-called 'first sale' doctrine in copyright law was first applied by US courts over 100 years ago, to limit copyright holders' right to control downstream (retail) distribution and sale of books (Pruzman and Stenshoel 2013, p. 9). The doctrine has since been codified into US copyright law.

The doctrine allows a person who knowingly purchases (and now owns) a copy of a copyrighted work from the copyright holder to sell, display, lend or give away the particular copy, without the permission of the copyright holder (Reis 2015, p. 173; United States Department of Justice Archives 2020). As such, the copyright holder's exclusive rights under copyright law to distribute the work ends once the particular copy is sold. Copyright owners' exclusive rights to reproduce and communicate their works are not restricted as a result of the first sale doctrine.

In theory, an exhaustion doctrine in copyright law could allow consumers or repairers who purchase repair information to share them with other repairers. However, this option has several drawbacks.

First, the feasibility of expanding the exhaustion doctrine via legislative reform is unclear. Around the world, the exhaustion doctrine is a common law doctrine, originating from courts and not through legislation. In this inquiry, the Commission received no feedback about the feasibility of introducing an exhaustion doctrine via legislative amendment to the Copyright Act, including the potential legal issues, implementation costs and risks of doing so.

Second, there may be limits to the what an expanded exhaustion doctrine would allow. A number of stakeholders noted during consultations that, given that the doctrine relies on the legal *sale* of a product from the copyright owner, the exhaustion doctrine is unlikely to apply to embedded software and other repair inputs that are supplied on a *licence* basis. In addition, under the Copyright Act, the exclusive rights of copyright owners include rights to the

reproduction, distribution and communication of copyright works. The exhaustion doctrine (particularly as it applies in the United States) only allows for unauthorised distribution of copyright materials after purchase (Prutzman and Stenshoel 2013, pp. 2–3) and does not affect copyright holders’ reproduction and communication rights. This means that while it could permit repairers to share repair manuals that they have purchased from manufacturers, it would not be permit them to make copies of the manuals to share.

In addition, there are still uncertainties as to the exact scope and limitations of the recently-adopted patent law exhaustion doctrine, including whether the doctrine applies on an international basis to allow for parallel importing of patented articles, or only on a national basis (Abbas, sub. DR209, p. 7). This uncertainty may act to limit the effectiveness of such a doctrine generally, and in particular with respect to product repairs as many repairers choose to source repair inputs online from overseas. Thus, it may be unwise to adopt a similar doctrine into copyright law without first resolving these issues.

On these grounds, the Commission does not recommend the expansion of the exhaustion doctrine via amendments to the Copyright Act. That said, it is still open to Australian courts to find that the exhaustion doctrine applies in relation to copyrighted materials (as was the case with patent exhaustion in *Calidad*). In any event, the Commission considers that an explicit legislated copyright exception (either fair use or fair dealing, discussed below) is more likely to effectively address issues regarding access to repair information. This approach would also mitigate any immediate need to enact legislative reforms relating to the exhaustion doctrine in copyright law.

A new ‘use’ exception for copyright

The Australian Government could amend copyright laws (through the introduction of an exception) to allow the reproduction and sharing of repair manuals — such that acts (or uses of the copyright material) that would otherwise breach copyright holders’ exclusive rights would be considered non-infringing under certain circumstances.

Broadly speaking, there are two ways in which the government could do this:

- introducing a **specific copyright exception** for the reproduction and sharing of information for the purpose of repair, through the existing fair dealing regime in the Copyright Act
- introducing a new **general copyright exception** that may cover the reproduction and sharing information for the purpose of repair (a broad ‘fair use exception’ in the Copyright Act) (box 5.11).

Importantly, neither approach would give repairers unfettered usage of copyrighted material. Any uses of the copyright material (including by a repairer who chooses to reproduce a repair manual or schematic) must be considered ‘fair’ to be permissible.

Box 5.11 Fair use and fair dealing: what is the difference?

Fair dealing: a defined list approach

The 'fair dealing' regime allows for the use of copyright material without permission from the copyright owner, so long as the use falls within one of the defined categories (for example: research or study; criticism or review; parody or satire; and reporting news) and is considered a 'fair dealing'. This is the approach that is taken in Australia, Canada and the United Kingdom.

In order to determine whether a dealing is considered 'fair' in the circumstances, the court is to consider a range of 'fairness factors'. These general factors have been established in Australia through case law, and apply across all fair dealing categories. However, some fair dealing categories have specific 'fairness factors' associated with them — for example, the fair dealing exceptions for the purpose of research or study (s. 40) and for access by persons with a disability (s. 113E).

Fair use: a principles-based approach

A 'fair use' approach to copyright exceptions provides that an otherwise infringing use of copyright material is considered non-infringing if the use is 'fair'. This is the approach used in the United States. The Australian Law Reform Commission and the Productivity Commission have recommended that Australia adopt a similar model, which would include four 'fairness factors':

- the purpose and character of the use
- the nature of the copyright material
- the effect of the use upon the potential market for, or value of, the copyright material
- the amount and substantiality of the part used.

The broad nature of these 'fairness factors' reflects the intent of a broad 'use' exception — the exception is meant to be 'flexible and technology-neutral', applicable to any potential use of copyright material, including currently non-existent or unforeseen uses and contexts.

A hybrid approach

Some jurisdictions have adopted a hybrid approach to copyright exceptions, which combines the 'defined list' approach of fair dealing with the 'principles based' approach of fair use. Broadly speaking, these approaches fall into two categories:

- there is a defined list of permitted activities, but one or more items is very broad, so as to practically cover (almost) any 'fair' use — such as in Singapore and South Korea
- the list of permitted activities is non-exhaustive; activities that meet the fairness principles but are not explicitly listed are also permitted — such as in Sri Lanka, Israel and Malaysia.

Sources: ALRC (2013); Azmi (2021); *Copyright Act 2007* (Israel); *Copyright Act 1987* (Malaysia); *Copyright Act 1987* (Singapore); *Copyright Act 2017* (South Korea); Handler and Hudson (2021); PC (2016a).

Fair dealing allows repair to be explicitly included

As noted above, Australia's existing fair dealing regime could be expanded to include a category for repair-related uses. This would allow government to explicitly set out the types of repair or uses of copyrighted repair materials that are (and are not) within the scope of the

exception. In other words, repairers seeking to rely on the exception would have a high degree of certainty about whether sharing of particular types of repair information is permitted.

To the extent that existing ‘fairness factors’ in the fair dealing regime are inadequate in accounting for the unique characteristics of repair information and its uses, the government could introduce repair-specific fairness factors to be taken into consideration by the courts. For example, in comparison to copyright material used for purposes such as research and study:

- an entire repair manual is often necessary to undertake repairs (in contrast to the 10 per cent or single chapter taken to be a permitted fair dealing for materials such as books for research and study (Copyright Act, s. 40(5))⁶⁸
- the use of repair-related information is more likely to be commercial in nature (such as in the course of third-party repairs), or at least not for sole personal use (such as for use at repair cafes and to teach repair techniques)
- the repair information *itself* may have limited commercial value for manufacturers, but in the right hands, it has the potential to unlock product repair markets, which are of significant commercial value for manufacturers (in contrast to books, that are *themselves* the commercially significant product for authors).

The Australian Digital Alliance flagged the likely need for specific ‘fairness factors’ associated with a fair dealing exception for repair:

... should the Commission recommend the introduction of a fair dealing exception for the purposes of repair, that additional fairness factors would most likely need to be adopted. (trans., p. 294)

Some stakeholders pointed to a number of drawbacks associated with a repair-specific fair dealing exception that do not arise with a broad fair use exception (discussed below). These primarily relate to the inherently narrower scope of fair dealing compared with fair use.

- The courts have, particularly in recent litigation, interpreted existing fair dealing exceptions very narrowly (Rimmer, sub. DR168, p. 18; Wiseman and Kariyawasam, sub. DR208, p. 5).
- Depending on the wording of the exception, its application may be limited to ‘immediate’ acts of repair and exclude acts similar in essence to, but are not, ‘immediate’ acts of repair (for example, product maintenance) (QUT Centre for a Waste-Free World, sub. DR172, p. 8).
- Narrow fair dealing exceptions limit ‘the law’s ability to adapt and evolve over time ... particularly in relation to the speed of technological advancement’ (WALGA, sub. DR155, p. 5). This may mean that the exception may not extend to uses that government may not have anticipated at the time of drafting, but nevertheless have an overall social benefit.

⁶⁸ While s. 40(5) deems 10 per cent or a single chapter of a work to be fair dealing for the purpose of research or study, this does not preclude the court finding an amount greater than this to be fair dealing.

Notably, however, most proponents for a fair use exception also supported a fair dealing exception, even if they considered it to be a second-best option (for example, ADA, trans., p. 293; QUT Centre for a Waste-Free World, sub. DR172, p. 8; Wiseman and Kariyawasam, sub. DR208, p. 5).

Further, the concerns raised about the narrower scope of a fair dealing approach are not insurmountable. Activities adjacent to product repair (for example, product maintenance) that are intended by government to be covered by the exception can be drafted to clearly be within scope. By only specifying in detail what is essential when defining the exception's scope (and not detailing specific types of products being repaired or the specific format of repair information that may be covered), the exception can remain technologically-neutral and able to adapt to changing circumstances over time. In addition, a fair dealing exception could be drafted broadly, which could give the courts more breadth to interpret the exception flexibly, rather than narrowly.⁶⁹

But fair use could have broader benefits

One of the main benefits of a fair use exception in copyright law is the ability for a single exception to be applied to a range of uses of copyright material, as the exception is founded upon overarching principles. This provides flexibility and adaptability over time to new and changing uses and circumstances, and serves to simplify the copyright exceptions regime, superseding the range of existing fair dealing exceptions.

However, in contrast to a repair-specific fair dealing exception, there could be a degree of uncertainty as to what repair-related 'uses' would fall under the broad definition of 'fair'. In particular, the broad nature of the 'fairness factors', coupled with limited international jurisprudence on the application of fair use to repair contexts (box 5.12), means that there would be a high degree of discretion (at least initially) in how Australian courts interpreted whether repair-related uses of copyright material are considered 'fair'.

Stakeholders had mixed views on the utility of the fair use exception in the United States in facilitating access to copyrighted repair information (and thus similar issues may arise if implemented in Australia), as evidenced by ongoing 'right to repair' reforms to improve access to repair inputs (for example, the Massachusetts right to repair legislation — chapter 1). However, others disagreed — for example, Kyle Wiens from iFixit argued that fair use is 'very helpful' and was 'a really critical underpinning of US copyright law', with a recent iFixit-initiated project helping to 'connect ... repair technicians at hospitals with the service information that they needed for medical equipment' being predicated on fair use (trans., pp. 39–40). Indeed, iFixit was required to exercise its fair use defence in relation to medical equipment repair manuals posted as part of this project to defend a take-down notice sent by a medical equipment manufacturer (EFF 2020; Rimmer, sub. DR168, p. 20).

⁶⁹ Rimmer (sub. DR168, p. 18) noted that 'the judiciary in Canada has interpreted the defence of fair dealing in a much more broad fashion — compared to its Australian counterparts'.

Box 5.12 Fair use and repair information in the United States

There have been a small number of repair-related fair use cases brought to the courts in the United States. The United States has a fair use exception, which permits the ‘unlicensed use of copyright-protected works in certain circumstances’ set out in the legislation (US Copyright Office 2020). While providing useful context as to what uses of repair information may or may not be likely to be considered fair use (including in any future Australian context), the outcome of each case was decided in its unique factual circumstances, applying the relevant legislative ‘fairness’ criteria, and as such, no general principle about fair use and repair can be deduced from analysing these cases.

The use of aircraft maintenance manuals (provided by customers who legally obtained them from the manufacturer) by a company to provide aircraft maintenance tracking services was held, on balance, to be ‘fair’ in *Gulfstream Aerospace v Camp Systems International* 428 F.Supp.2d 1369 (S.D. Ga. 2006). The use of the manuals was found to be ‘non-transformative’ (used in the way originally intended, with no new additions or further uses (US Copyright Office 2020)), commercial (subscription fees were charged for services that utilised the manuals), part of the company’s core business, and involved a significant amount of the manuals. However, the manuals were used only to benefit the customer who provided the manual (and not distributed to other manual purchasers such as repair shops), and the manufacturer specifically licensed the manual purchaser to use it for the purpose of maintenance and repair. In addition, the use of the manuals did not affect the manufacturer’s market for the creation or sale of the manuals itself — the fact that it could affect the market for the manufacturer’s own maintenance tracking service was held to be irrelevant.

The use of a copyright automobile emission manual to produce a similar (but not identical) chart was also found to be fair use (*Sinai v Bureau of Automotive Repair* 25 U.S.P.Q.2d 1809). Factors that leaned towards fair use included that: the information was used for a public purpose (dissemination to Bureau offices to assist in compliance checks); was primarily factual in nature; the replica chart was not ‘substantially similar’ to the original; and there was only a slight effect on the market for manuals (free-of-charge distribution, to a limited set of recipients).

However, an individual’s copying for sale of a copyright video instructing viewers how to modify and enhance the performance of cars was found not to be fair use (*Calibrated Success Inc v Charters* 72 F.Supp.3d 763 (E.D. Mich. 2014)) — there was an intention for financial gain (illegally downloading the video from a torrent website and selling copies for up to \$50 each); the use was not ‘transformative’; the entirety of the work was used; and the market for the manual would be ‘obliterated’ if others could engage in the same conduct (manuals would be able to be purchased for a fraction of the original price).

In addition, concerns remain about the unintended impacts of a broad fair use exception, especially to the extent that it is introduced to enable specific types of activities (such as repair). Such concerns were raised in response to this inquiry by number of stakeholders in non-repair sectors such as television, film and screen, and video games (Australian Film/TV Bodies, sub. DR173, pp. 5–7; IGEA, sub. DR180, p. 13; Screenrights, sub. DR174, p. 1).

Notwithstanding this, there are likely to be economy-wide benefits from a fair use regime, over and above any benefits it would have for repair uses. Indeed, the adoption of a fair use regime has previously been recommended by the Australian Law Reform Commission’s report, *Copyright and the Digital Economy* (2013), and the Productivity Commission’s inquiry report, *Intellectual Property Arrangements* (2016a).

The effect of Australia's international law obligations must be considered

Under any approach, there would be some implementation risk relating to Australia's international IP obligations and trade agreements. In particular, any reforms seeking to make an exception to copyright holders' exclusive rights (such as rights to reproduce, disseminate, and communicate their works) — including fair use and fair dealing — would need to comply with a 'three-step test' under international law (box 5.13). If the reforms were seen to be inconsistent with the three-step test, other countries or entities could choose to formally oppose them, thus opening up dispute resolution processes under the respective agreements, that may require any non-complying reforms be removed or nullified. Other penalties (such as financial penalties) may also be imposed.

Box 5.13 The 'three-step test'

Any exceptions to copyright owners' exclusive rights proposed by the Australian Government must satisfy the 'three-step test' under international law. The test is considered to be the 'international standard for assessing the permissibility of copyright exceptions generally', originating as Article 9(2) of the Berne Convention in its 1967 revision. It was later incorporated into the Agreement on Trade-Related Aspects of Intellectual Property Rights and the World Intellectual Property Organization Copyright Treaty. The Australia-United States Free Trade Agreement also requires Australia to comply with the test for exceptions to all exclusive rights of the copyright owner.

The test consists of three cumulative steps (or conditions) — any limitations or exceptions to exclusive copyright rights must be confined to certain special cases, which do not conflict with a normal exploitation of the copyright material and do not unreasonably prejudice the legitimate interests of the rights holder.

Source: ALRC (2013, pp. 116–117).

While dependent on the framing and precise wording of any legislative amendments, on face value, there is evidence to suggest that Australia's international law obligations (in particular, the three-step test) would not pose an implementation barrier.

In the case of fair use, the ACCC has previously sought legal advice from the Department of Foreign Affairs and Trade (DFAT) that suggests that fair use would satisfy the three-step test:

While the specific details of any fair use exception would need to be reviewed in light of these commitments, DFAT's view is that any fair use exception developed in Australia is likely to meet the 'three-step test'. DFAT further notes that the Australian Law Reform Commission shares this perspective. (ACCC 2016, p. 2)

Further, other countries have successfully implemented fair use regimes — for example, the United States and Israel — and so it is unlikely that similar reforms in Australia would be challenged.

In addition, while other jurisdictions with a fair dealing regime (such as New Zealand, the United Kingdom, Canada and Singapore) do not have a fair dealing category specifically for repair-related uses, Australia has successfully implemented additional fair dealing categories not universally found in other jurisdictions — for example, fair dealing for the purpose of professional advice, and for providing access by persons with a disability — and therefore it should be possible to similarly craft a fair dealing exception for repair.

A new fair dealing exception for repair

While both fair use and fair dealing are policy responses that could result in increased access to repair information for third parties, for the purpose of increasing access to copyright repair information, it is the Commission’s assessment that, in the immediate term, a fair dealing exception to enable repair activities is more practical.

In 2016, as part of its inquiry into *Intellectual Property Arrangements*, the Commission recommended that the Australian Government implement a fair use exception in Australia, in order to ‘redress the imbalance between copyright holders, consumers and intermediate users’ (PC 2016a, p. 165). Fair use was considered to better reflect the way content is consumed and used in the digital world, accommodate new legitimate uses of copyright material, address concerns about the narrow scope and prescriptive nature of Australia’s current fair dealing exception regime and ultimately provide net benefits to the Australian community.

However, to date, rather than introduce a fair use exception, the Australian Government has chosen to instead address the concerns raised by the Commission by progressing a range of copyright reforms, targeted at particular users and uses of copyright material. For example, a fair dealing exception for access by persons with a disability, and general exceptions in the areas of disability access, libraries, cultural institutions and schools were introduced in the past few years. Further reforms underway also include a new fair dealing exception for non-commercial quotations, education exceptions, further amendments to library and archives exceptions, and a limited liability scheme for the use of orphan works (DITRDC 2020).

In light of the Australian Government’s current reform directions to copyright law, the Commission recommends the inclusion of a new fair dealing exception that allows for the reproduction and sharing of repair information. This would also allow repair activities to be explicitly and immediately embedded in the copyright exception regime.

That said, the case for a principles-based approach to copyright exceptions is likely to grow over time, as new digital technologies emerge. For this reason, it is likely that in the future more flexible copyright exceptions, such as a fair use exception, will be needed to enable the copyright regime to respond to changing circumstances.

RECOMMENDATION 5.2 INTRODUCE A NEW 'USE' EXCEPTION IN THE COPYRIGHT ACT

The Australian Government should amend the *Copyright Act 1968* to include an exception that allows for the reproduction and sharing of repair information. In the immediate term, this exception should be included through the existing fair dealing framework in the Copyright Act.

In the medium to long term, the Australian Government should pursue a more flexible copyright exception regime, including a principles-based 'fair use' exception.

'Contracting out' should be prohibited

To supplement the copyright exception recommended above, the Copyright Act should be amended to include 'contracting out prohibition'. Such a provision would deem to have no effect on any agreement, or provision of an agreement, that excludes or limits (or has the effect of excluding or limiting) the operation of certain copyright law provisions.

A contracting out prohibition is likely to be crucial to realising the benefits of copyright exceptions, including those relating to repair as proposed above. Manufacturers could otherwise use private contractual agreements — such as confidentiality agreements or EULAs — to prevent the acts provided for by the exceptions. For example, a use exception could be implemented to permit the reproduction or sharing of copyright repair information, such as digital manuals. However, manufacturers could circumvent such a provision through clauses in their contract with the purchaser, which require the purchaser to keep such information in the manual confidential. Alternatively, a manufacturer could use a EULA term of a digital manual to override the ability for a consumer or repairer (who has purchased the manual from the manufacturer) to reproduce or share it.

Participants generally supported the need for such a 'contracting out prohibition' (Rimmer, sub. DR168, p. 30; QUT Centre for a Waste-Free World, sub. DR172, p. 10; WALGA, sub. DR155, p. 5; Wiseman and Kariyawasam, sub. DR208, p. 5). For example:

The most advantageous option for the consumer would be to include a prohibition exception in the Copyright Act on the use of contractual agreements. Manufacturers can potentially use other means such as contractual agreements including confidentiality agreements or EULAs (End User Licence Agreements) to prevent access to repair information in the first place. (WALGA, sub. DR155, p. 5)

However, some stakeholders questioned whether there was evidence of an issue (Australian Film/TV Bodies, sub. DR173, p. 11).

There is evidence that manufacturers already engage in contractual behaviour that would undermine the effectiveness of new exceptions aimed at facilitating the exchange of repair-related information. One clear example is Toshiba's cease-and-desist letter sent to Tim Hicks (box 5.3 above), which explicitly states that the company's repair manuals are

‘only available to Toshiba authorised service providers under strict confidentiality agreements’ (Toshiba Australia 2012, p. 1). While not all manufacturers engage in such behaviour (Hicks notes that ‘Dell, HP and Lenovo provide service manuals for all of their laptop computers for download, free of charge or registration or membership of any kind, on their various support websites’ (2012)), some clearly do. In addition, many EULAs already contain terms that prohibit certain repair-related activities (box 5.7 above). Some even specify that these restrictions operate *even where such acts may be permitted under law*, including copyright law exceptions.

Some stakeholders expressed concern that a contracting out prohibition would impinge upon individual contractual freedoms (Australian Film/TV Bodies, sub. DR173, p. 11). However, contracting out provisions already exist in the Copyright Act (section 47H prohibits contracting out of certain exceptions relating to computer programs) as well as in other areas of the law — for example, section 64 of the Australian Consumer Law prohibits contracting out of the consumer guarantees (Wiseman and Kariyawasam, sub. DR208, p. 4).

In addition, there is little to suggest that existing contracts between manufacturers and consumers (or between manufacturers and repairers) are the result of genuine negotiation between the parties. In practice, consumers purchasing products protected by EULAs are often required to accept EULA terms by opening the packaging (in the case of ‘shrink-wrap’ EULAs) or clicking ‘accept’ before use (in the case of ‘click-wrap’ EULAs). The terms are the same for all users of the same product, and there is limited to no opportunity for consumers to clarify any terms with the manufacturer, let alone engage in individual negotiation of terms. This lack of negotiating ability (or bargaining power) of consumers and repairers with manufacturers underscores the need for some form of contracting out prohibition in copyright law. As previously noted by the Commission, limitations on contracting out are ‘particularly prevalent in circumstances where consumers may not have the bargaining power to efficiently negotiate contracts, or where contracts are offered to consumers unilaterally’ (PC 2016a, p. 140).

The NSW Young Lawyers argued that ‘a combination of competition law and consumer law are the most appropriate mechanisms to safeguard the public interest and ensure fair contractual arrangements in the respect of the right to repair’ (sub. DR220, p. 16). The unfair contract term provisions under the Australian Consumer Law provide that contract terms deemed by a court to be ‘unfair’ are considered void and non-binding (ACCC 2021) (box 5.14). However, for repairers without legal expertise, identifying such contract terms and enforcing the law against manufacturers (including in court) is likely to be costly and difficult. Newly announced reforms to the regime (box 5.14) strengthen protections for consumers and small businesses, but may still fail to capture all repairers or contract terms. As such, an explicit contracting out prohibition in the Copyright Act is preferable in this instance, as it more directly deals with the issues at hand to promote repair activities.

Box 5.14 **Unfair contract terms under the Australian Consumer Law**

The Australian Consumer Law protects consumers and small businesses from unfair terms in circumstances where they have little or no opportunity to negotiate with businesses, such as with standard form contracts (where the same or similar contract is offered to multiple parties). For a small business contract to be covered under the provisions, relevantly, it must be for the supply of goods or services, at least one of the parties is a ‘small business’ (employing less than 20 people), and the upfront price payable under the contract is no more than \$300 000 (or \$1 million if the contract is for more than 12 months).

The law voids terms considered by a court or tribunal to be ‘unfair’ in the context of the contract as a whole. Factors that may point towards a term being unfair differ slightly depending on whether it is a consumer or small business contract.

- For consumer contracts, a term may be unfair if it causes a significant imbalance between a consumer's rights and obligations and those of the business; is not reasonably necessary to protect the legitimate interests of the business; would cause detriment if enforced; or lacks transparency.
- In the case of small businesses, if a term enables one party (but not another) to avoid or limit their contractual obligations, terminate or vary the contract, or penalises one party (but not the other) for breaching or terminating the contract, then this may constitute an unfair term.

In August 2021, the Australian Government announced it will strengthen unfair contract term protections for consumers and small businesses, with reforms to the Australian Consumer Law and *Australian Securities and Investments Commission Act 2001* (Cth). Key reforms include:

- prohibiting the use, application and reliance on an unfair term
- providing courts with the power to impose a financial penalty for a contravention
- expanding the protections to capture a larger number of small businesses
- creating a rebuttable presumption that a term is unfair if a court has already found that a similar term used in similar circumstances is unfair.

Sources: ACCC (2021l, 2021k); Sukkar (2021b).

A broad or repair-specific contracting out prohibition?

A contracting out prohibition in the Copyright Act could take the form of a broad prohibition that covers all exceptions provided for in the Act, or a specific prohibition applying to particular exceptions only (similar to that already contained in section 47H of the Act).

In principle, exceptions provided for under the Copyright Act are policy decisions made by government for a particular purpose to strike a particular, careful balance between copyright holders, producers and users, and as such should not be overridden by contractual arrangements (PC 2016a, p. 141). To this end, to ensure that contractual arrangements do not undermine the effectiveness of copyright exceptions, there is a sound argument for the Australian Government to introduce into the Copyright Act a broad contracting out prohibition to ‘make unenforceable any part of an agreement restricting or preventing a use of copyright material permitted by a copyright exception’ (2016a, p. 32, recommendation 5.1). Such a broad prohibition would cover existing and recommended copyright exceptions relating to product repair.

At a minimum, a repair-specific contracting out prohibition would be required to facilitate the operation of existing and recommended repair-related exceptions.

RECOMMENDATION 5.3 PROHIBIT CONTRACTING OUT OF COPYRIGHT EXCEPTIONS

To give full effect to copyright exceptions, including those relating to repair, the Australian Government should amend the *Copyright Act 1968* to make unenforceable any part of an agreement restricting or preventing a use of copyright material permitted by copyright exceptions.

6 Product design and obsolescence

Key points

- There is growing concern in Australia and overseas that the lifespans of everyday products are becoming unnecessarily short ('premature obsolescence') with detrimental impacts on consumers and the environment.
 - Some groups claim that manufacturers are intentionally shortening the lifespans of certain products, such as consumer electronics and white goods, to force consumers to purchase new products ('planned obsolescence').
- Various arguments have been made for governments and regulators to step in and prevent premature obsolescence in order to:
 - protect consumers from unfair or misleading conduct
 - overcome information gaps regarding product qualities, such as repairability and durability, that prevent consumers from making informed purchasing decisions
 - reduce the unaccounted environmental impacts associated with short-lived products.
- However, the evidence is mixed on whether premature obsolescence is a significant problem.
 - While it is not possible to exclude that some manufacturers engage in strategies to intentionally reduce product lifespans, such practices are unlikely to be widespread. Further, Australian consumer and competition laws contain provisions that provide some protection against such behaviour (such as prohibitions on misleading conduct).
 - The lifespans of some products are becoming shorter, but this is often driven by consumers choosing to replace their products with newer ones rather than the products breaking; indeed, some products are becoming more durable.
 - For certain types of products (such as white goods and consumer electronics), some consumers find it difficult to access relevant information about product repairability and durability when making purchasing decisions. Such information gaps could contribute to premature obsolescence by preventing consumers from selecting more repairable and durable products based on their preferences, and reducing manufacturers' incentives to develop these products.
- On balance, highly interventionist policies to prevent premature obsolescence — mandatory product design standards, tax incentives and subsidies, or expanded consumer protection laws — are unlikely to have net benefits to the community and should not be pursued.
- In contrast, a product labelling scheme that provides consumer information about repairability and/or durability for certain products has merit and should be pursued. The Australian Government should develop a scheme in three key stages.
 1. Commit to introducing a product labelling scheme within five years and establish a working group to steer its development.
 2. Design and implement a pilot scheme for products where it is likely to have the most benefits (such as white goods and consumer electronics).
 3. Review the pilot scheme within two years of commencement to assess its effectiveness and whether it should be modified or expanded to include additional products in the formal scheme.

There is growing concern in Australia and overseas that the lifespans of everyday products are becoming unnecessarily short ('premature obsolescence'). Some groups claim that manufacturers are intentionally shortening the lifespans for products, such as consumer electronics and white goods, to encourage consumers to purchase new products ('planned obsolescence').

This chapter considers whether premature product obsolescence (either intentional or unintentional) is a significant problem in Australia and what, if anything, the government should do about it.

6.1 Obsolescence: key definitions and concepts

Obsolescence occurs when products are discarded or no longer used because they no longer work or have been replaced by an alternative. For example, businesses have gradually abandoned dot matrix printers because they are noisy, and their staff and clients expect higher quality printed work. Technological developments have made this possible.

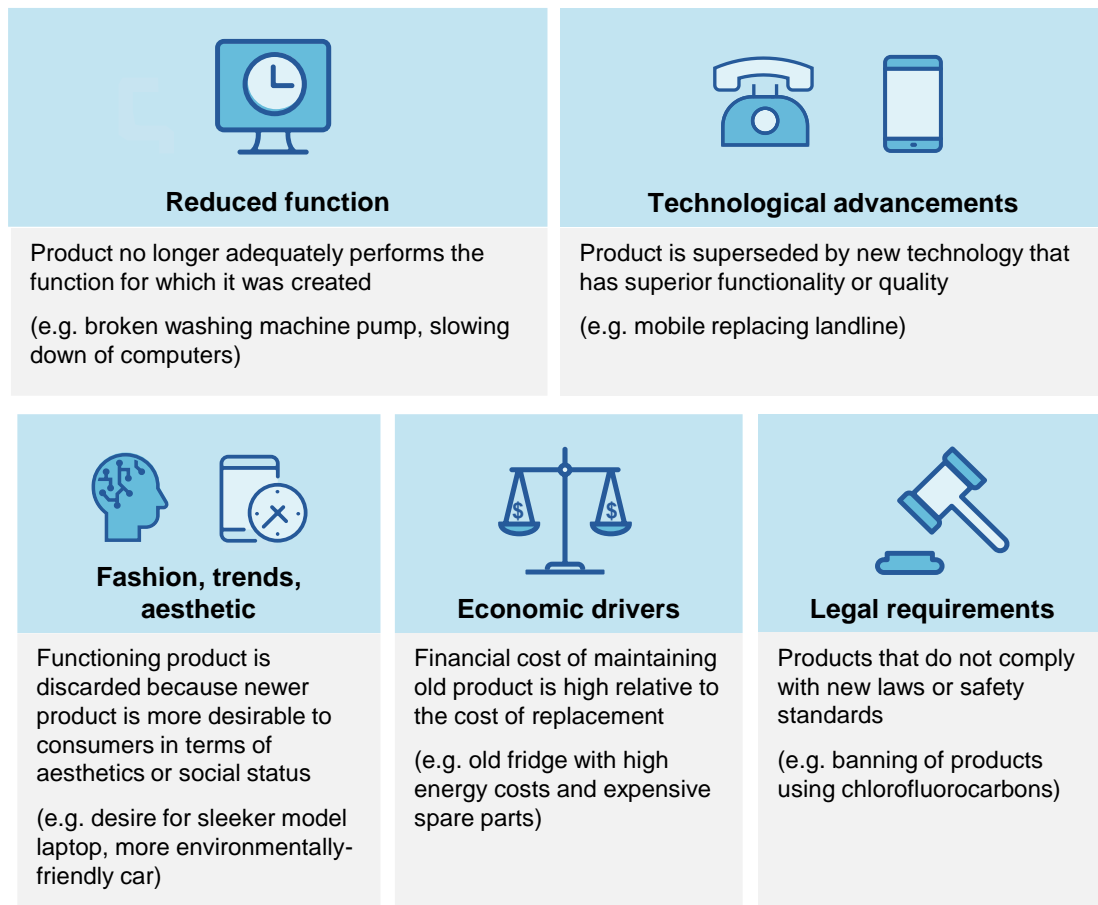
A variety of factors may contribute to product obsolescence. These include changes in product function, technology, fashion, regulatory standards, and the relative cost of maintenance and repair (figure 6.1). Often a user's decision to replace a product will be due to a combination of factors. For example, a consumer might replace their smart phone because the battery has degraded over time and because newer phones have better cameras.

Planned obsolescence

The term planned obsolescence dates back to at least the 1930s, when American real estate agent Bernard London proposed ending the Great Depression through policies such as offering tax rebates to consumers for turning in obsolete merchandise (London 1932, pp. 2–3). In 1954, American industrial designer Brooks Stevens famously defined planned obsolescence as 'instilling in the buyer the desire to own something a little newer, a little better, a little sooner than is necessary' (Stevens, quoted in Valant 2016, p. 3).

Today, planned obsolescence has taken on negative connotations. Prakash et al. observed that popular media often use planned obsolescence to refer to the intentional shortening of product life by manufacturers, with the aim of forcing consumers to purchase new products (2020, p. 61). This view of planned obsolescence is based on the premise that the product had not reached the end of its technical lifespan and that consumers would have preferred to use the product for longer.

Figure 6.1 **Mind, matter, money: factors contributing to obsolescence**



Prakash et al. (2020, pp. 273–274) and others (for example, Ai Group, sub. 32, p. 10) have noted that the pejorative use of ‘planned obsolescence’ is problematic because designing products to suit consumers’ changing needs also requires planning. Further, product obsolescence is not as one-dimensional as it is sometimes portrayed in the media — of manufacturers as ‘perpetrators’ who manipulate the design of their products, and consumers as defenceless ‘victims’ of a conspiracy (Prakash et al. 2020, p. 273). For example, it may just indicate that consumers are replacing older ‘obsolete’ products with products that better meet their needs.

Claimed planned obsolescence strategies commonly include:

- designing products with structural weak points so they fail after limited use — for example, designing fans with poor quality metal components (Hamilton, sub. 57, p. 3)
- designing products in a way that prevents repair or upgrade — for example, soldering components together to construct a device can make it difficult to disassemble for repair (iFixit, sub. 107, p. 9)

-
- limiting access to repair supplies or repair services⁷⁰
 - limiting compatibility across products — such as changing charger ports on successive models of a product (Mama Minimalist 2019)
 - restricting the refurbishment and resale of secondhand devices — for example, forcing recyclers to shred old phones rather than refurbish them (Koebler 2017a)⁷¹
 - designing software updates that reduce product performance — for example, software updates that slow down older model smart phones (Australian Democrats, sub. 100, part 1, p. 18)
 - marketing strategies that encourage consumers to replace functioning products with new models to remain fashionable (Valant 2016, p. 1) (figure 6.2).

These strategies include actions put in place before a product is released (for example, during the design phase) and after (for example, limiting access to spare parts or updating the software embedded within a product).

Premature obsolescence

While claims of ‘planned obsolescence’ often grab the media’s attention, many experts on the topic often emphasise the need to address all forms of ‘premature obsolescence’, which refers to a product’s lifespan being shorter than necessary, reasonable, or optimal (either due to an intentional strategy by the manufacturer, as in the case of planned obsolescence, or for some other reason). Some definitions of premature obsolescence focus on the consumer side, while others focus on the producer side. For example, van den Berge and Thysen defined premature obsolescence as the disposal of a product that is ‘physically still functioning, or in need of (minor) repair’ (2020, p. 5). In contrast, Malinauskaite and Erdem suggested premature obsolescence also occurs where a product has ‘a shorter physical life than the industry is capable of producing under existing technological and cost conditions’(2021, p. 6).

Governments in several other countries, particularly in Europe, have adopted policies aimed at addressing premature obsolescence. In several cases they have commissioned reports that show the potential benefits to consumers and the environment from longer-lived products.

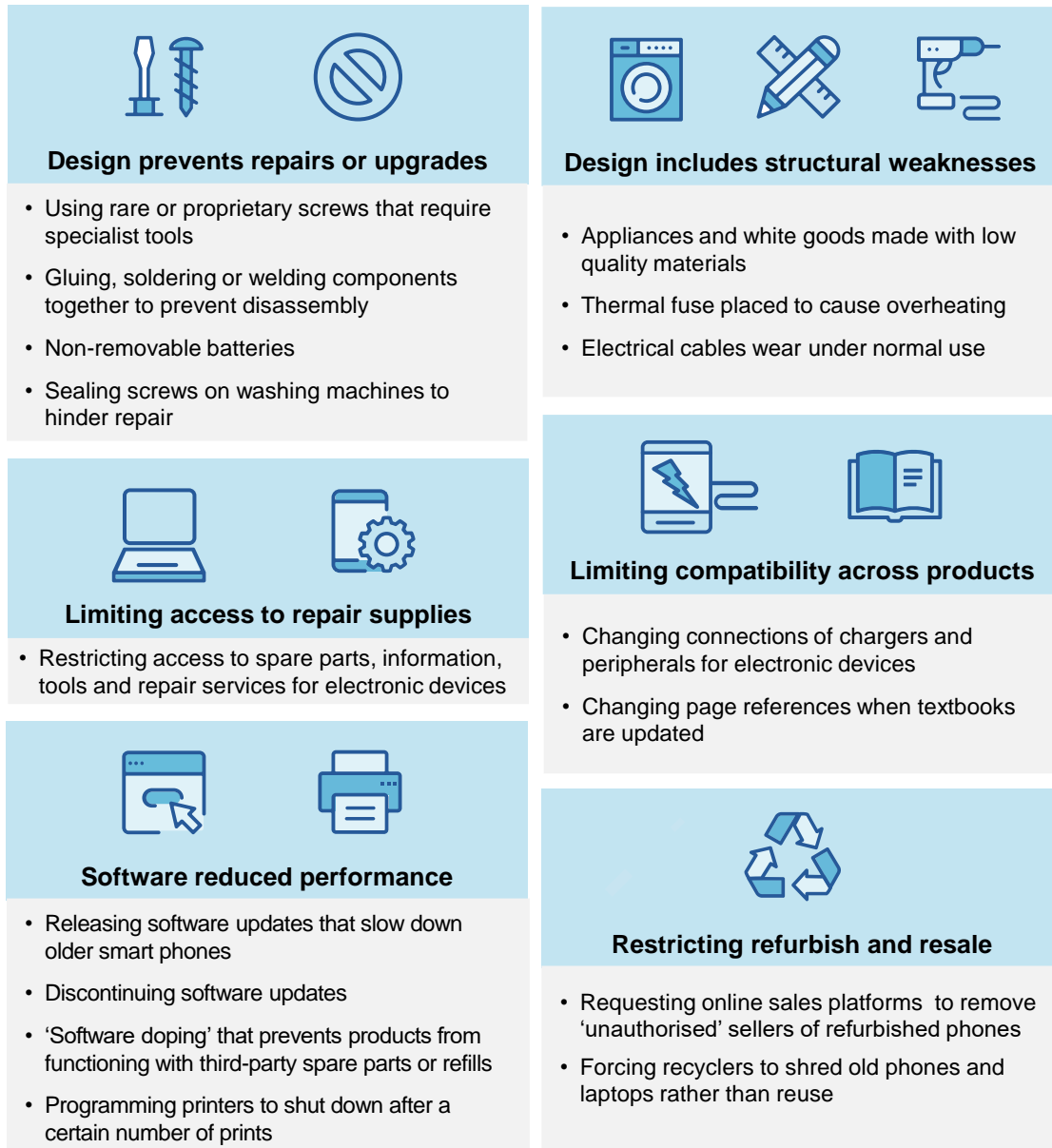
To better understand whether premature obsolescence is a problem in Australia and what, if anything, the government should do about it, the following sections consider the issue from a community-wide perspective, using economic principles. Section 6.2 examines the common market failure arguments for government intervention. Section 6.3 considers evidence on whether premature obsolescence is a problem in Australia. Section 6.4 assesses

⁷⁰ Chapter 4 examines concerns about manufacturers restricting access to repair supplies and chapter 8 examines a potential policy response in some cases.

⁷¹ Chapter 7 discusses barriers to reuse for electrical and electronic products and recommends changes to product stewardship schemes to promote reuse.

suggested reforms to prevent premature obsolescence, such as mandatory product design standards, tax incentives and subsidises for repair, labelling and legal penalties.

Figure 6.2 Examples of claimed planned obsolescence



Sources: Albergotti (2020); Australian Democrats, sub. 100, part 1, pp. 7, 12, 18, 35-36; Bader, sub. 146, pp. 1-2; Brunswick Tool Library, sub. 77, p. 2; CHOICE, sub. DR232, pp. 15, 24; CPRC, sub. DR212, p. 3; Free Software Melbourne, sub. 43, p. 3; Hamilton, sub. 57, pp. 2-3; Held, sub. DR157, pp. 1-2; Holmes, sub. DR154, pp. 1-2; iFixit, sub. 107, p. 9; Janday, sub. 37, p. 1; Koebler (2017a, 2018a); Leighton, sub. 82, p. 2; Lewis-Fitzgerald, sub. 75, p. 3; Osborne, sub. 7, p. 1; Porter (2015); Stein and Crosby, sub. 51, pp. 3-4; Storer, sub. 140, p. 1.

6.2 Arguments for government intervention to address premature product obsolescence

Various ‘market failure’ arguments have been made for governments and regulators to step in and prevent premature obsolescence through policies such as mandatory product design standards, tax incentives and subsidies for repair, product labelling and expanded consumer protection laws. These arguments fall into the broad themes of consumer and environmental protection.

Consumer protection

It can be frustrating for consumers when their product breaks or malfunctions sooner than expected. Replacing or repairing an essential item, or simply getting a refund, can involve financial costs, time, and inconvenience. It can also be particularly difficult for low-income and vulnerable consumers (CALC, sub. 119, p. 12). Submissions to this inquiry and previous studies have suggested these issues can be brought about by market failures relating to manufacturers engaging in unfair or misleading conduct (as part of planned obsolescence strategies), and information asymmetries between manufacturers and consumers.

Unfair or misleading conduct by manufacturers

A common argument made for government intervention to address planned obsolescence is that such strategies often constitute unfair or misleading conduct. There are two notable international precedents in this regard.

- Under the European Union Unfair Commercial Practices Directive (UCPD) and associated guidelines, planned obsolescence is defined as a commercial policy involving ‘deliberately planning or designing a product with a limited useful life so that it will become obsolete or non-functional after a certain period of time’. From the UCPD point of view, planned obsolescence is not unfair per se. However, under Article 7, a trader who fails to inform consumers that a product has been designed with a limited lifetime might be considered to have omitted material information depending on the specific circumstances of the case (EC 2016a, p. 81).
- In France, the government has made planned obsolescence a criminal offence, defined ‘as a group of techniques through which a manufacturer or a marketer seeks to deliberately reduce the life cycle of a product in order to increase its replacement rate’. Planned obsolescence is punishable with a two-year imprisonment sentence and a €300 000 fine (HOP 2021).⁷² However, it can be difficult to prove that a company has intentionally reduced the life of a product (section 6.3).

⁷² A translation of article L441-2 and L454-6 of the French Consumer Code.

There is a clear role for government in prohibiting planned obsolescence strategies that involve misleading consumers about important aspects of product durability, repairability or support. Misleading conduct can cause significant consumer harm. For example, the Australian Competition and Consumer Commission (ACCC) noted that ‘because a lack of continuing security support may compromise consumers’ personal data, it is important that consumers are equipped with all necessary information to assess this risk prior to purchase’ (sub. 106, p. 5). Misleading conduct can also weaken competition, by making it easier for poorly performing businesses to survive, and making consumers less willing to deal with unfamiliar suppliers (PC 2008, p. 12). In practice, however, there are likely to be some grey areas with respect to whether a manufacturer failing to disclose certain product information is in fact misleading and causing consumer harm. For example, the court may need to determine what would have been reasonable based on the specific circumstances of the case.

The ACCC also argued that there may be a case for government to protect consumers from planned obsolescence strategies where customers are unable to switch to another competitor (sub. 106, pp. 4–5). For example, some consumers may be locked into a manufacturer’s technology ‘ecosystem’ such that they are vulnerable to strategies that reduce the life of products, access to repairs, or support services. This is consistent with economic literature, which suggests that manufacturers of durable products *may* have a financial incentive to reduce product lifespans when they have considerable market power — as customers will return to them for a replacement product (Bulow 1986, pp. 746–747; Orbach 2004, pp. 94, 112–113) (box 6.1). In contrast, manufacturers are far less likely to engage in such strategies when there is healthy competition (Malinauskaite and Erdem 2021, p. 735), as customers will simply buy a competing product that better meets their needs.

Unlike other jurisdictions, Australia’s consumer and competition laws do not have a general prohibition for unfair conduct⁷³ or planned obsolescence⁷⁴. However, they do contain provisions that provide some protection against planned obsolescence, namely:

- prohibitions against unconscionable conduct (which may include consideration of the extent to which the parties acted in good faith) (ACCC 2021j)
- false or misleading representations (including statements likely to create a false impression) (ACCC 2021g)
- refusal to supply products or services when the supplier is acting unconscionably (ACCC 2021h)
- consumer guarantees (manufacturers and suppliers of goods must guarantee, among other things, that those goods are of acceptable quality and there is also a guarantee that manufacturers will provide spare parts and repair facilities for a reasonable period of

⁷³ The EU Unfair Practices Directive takes a three-tiered approach which consists of a first tier general prohibition of unfair commercial practices, second tier prohibitions against misleading and aggressive practices, and a third tier for specific practices that are prohibited in all circumstances (Brody and Temple 2016, p. 164). Planned obsolescence is not on the third tier but may be considered a misleading practice (EC 2016a, p. 81).

⁷⁴ In the United States, there is no specific federal law prohibiting planned obsolescence. However, other protections such as mandated warranties and prohibitions on unfair business practices may apply (Cissé et al. 2020).

time, unless the consumer is advised otherwise) (ACCC 2021f). CHOICE noted that the Australian consumer guarantees are stronger in comparison with some other jurisdictions — for example ‘consumer guarantees in Europe last for a maximum of two years, and are only binding on the trader, not the manufacturer’ (sub. 126, p. 14). Chapter 3 also makes recommendations for enhancing consumers’ ability to obtain a repair, replacement or refund under Australian Consumer Law (ACL).

Box 6.1 Incentives to engage in planned obsolescence depend on the level of competition

Economists often highlight that incentives to engage in planned obsolescence will be affected by the intensity of competition. In particular, several papers have shown how a monopolist, and in some cases oligopolists (generally through collusion), of durable products may have an incentive to engage in planned obsolescence to overcome what is known as the ‘Duropolist Puzzle’ (Bulow 1986, p. 730; Malinauskaite and Erdem 2021, p. 735; Orbach 2004, pp. 112–113).

The Duropolist Puzzle describes when monopoly producers of durable products are unable to engage in monopoly pricing because they cannot commit to keep prices high in future periods. This is because after selling the durable product at the monopoly price to high-value customers, the market will become exhausted (because the goods are long-lasting). Therefore, the monopolist has an incentive to lower the price of the product to attract lower-value customers into the market (Orbach 2004, p. 72). Consumers will anticipate this pricing strategy, and will hold off their purchases until prices are close to the competitive level (Orbach 2004, pp. 72–73).

Orbach noted that strategies to overcome the Duropolist Puzzle may include designing products with lower durability, introducing annual style changes that convince consumers to replace their old product, tying arrangements, and ‘crippling’ secondhand markets and aftermarkets (2004, pp. 74–75, 90–111). For example, in 1924, companies including Philips, Osram, and General Electric formed the ‘Phoebus cartel’ to fix prices and reduce the lifespans of lightbulbs. The average lifespan of a standard lightbulb from Phoebus members’ factories fell from about 1800 hours in 1926 to 1205 hours in 1933–34, which persisted until the cartel agreement came to an end in World War Two (Krajewski 2014).

In contrast, under competitive market conditions, employing planned obsolescence strategies would harm businesses (Malinauskaite and Erdem 2021, p. 735). For example, deliberately reducing a product’s quality in a competitive environment would result in a loss of customers to competitors and lower long-term profits.

Information gaps about product repairability and durability

Concerns about premature obsolescence are not confined to instances of manufacturers deliberately shortening product lives or intentionally misleading consumers. For example, Prakash et al. argued that shorter product lives may reflect information asymmetries between manufacturers and consumers about the qualities of products, preventing consumers from making buying decisions that align with their needs.

... planning pertaining to the product life-time is dependent upon the objectives and target groups as well as future market and technology development scenarios. The requirements are, therefore, different for different products — an aspect which is generally communicated within the sales

prices. The requirements are also influenced by other factors, such as service-delivery, availability of spare parts, additional functions, design, updates, repairability, mechanical and electrical robustness etc. What lies behind the decisions of companies, however, is not something consumers are privy to. The lack of transparency leaves consumers unable to make the best buying decisions as regards their own needs (asymmetrical information). (Prakash et al. 2020, p. 30)

Similarly, representatives from the environmental ministries or attached agencies in Austria, Belgium, France, Germany and Italy have argued that:

The lack of information concerning durable and repairable products causes an asymmetry in the market balance and leaves consumers unable to make the best buying decisions regarding to their own needs. (Ober et al. 2017, p. 318)

Similar observations have been made in other contexts, such as households failing to adopt energy efficiency improvements that are cost-effective for them (PC 2005, p. 103).

There may be a role for government intervention where information asymmetries are insurmountable for most consumers at any reasonable cost.⁷⁵ This may involve governments providing such information directly or requiring sellers to provide it (for example, through product labelling), to reduce the search costs of obtaining information (PC 2005, p. 54).

While France has recently passed laws mandating the provision of information on product repairability to consumers through labelling (and other EU countries are pursuing similar measures), there are no equivalent measures in Australia. However, Australia has a range of regulations and government-funded programs that seek to address potential information asymmetries for other product qualities (for example, product safety, energy and water efficiency labelling) (Australian Government 2021c, 2021e; DISER 2021).

‘Bounded rationality’ — limits on people’s ability to process all relevant information

Another argument for government intervention to address premature obsolescence is to correct for cognitive limitations that cause consumers to underinvest in products or product features that would benefit them in the long term.⁷⁶ Consumers may use rules-of-thumb (or heuristics) when making purchases that involve complex information or uncertainties. For example, rather than considering all of the information needed to determine the product that provides the best value for money, consumers may choose to focus on fewer criteria when comparing products, such as price. This may result in consumers making purchase decisions that they eventually regret. Similar arguments have been used to support compulsory superannuation.

⁷⁵ The public good characteristics of information also means manufacturers may underprovide it.

⁷⁶ This is not to be confused with arguments that limits on people’s ability to process all relevant information make them vulnerable to deception. Measures to protect consumers from misrepresentation are discussed above.

As discussed previously by the Commission in its inquiry into *The Private Cost Effectiveness of Improving Energy Efficiency*, arguments for government intervention based on cognitive limitations (or bounded rationality) are contentious.

... while individuals might not make ideal choices from the perspective of an outside observer, they may well be optimising something else that is just as important to them — such as the value of their time — which might be better spent on core projects or leisure activities ... In other words, concepts of bounded rationality help explain how firms and individuals achieve entirely appropriate, if somewhat constrained, approximations of economically-efficient outcomes. They might not be ideal outcomes, but given the limits on cognitive abilities, and the transaction costs involved in seeking out the ideal solution (which may include the opportunity cost of management time), they are as economically efficient as it is practical to contemplate achieving. (2005, pp. 56–57)

In that inquiry, the Commission concluded that limits on people's ability to process all relevant information is an insufficient ground for justifying measures such as minimum energy efficiency standards, as it 'relies on notions of omniscient regulators who are capable of making decisions that are in the best interests of energy users' (2005, p. 57). However, the Commission suggested that bounded rationality is on stronger grounds in its application to labelling systems that help consumers to 'cut through the information haze without curtailing choice'. Even then, an argument for labelling 'can be mounted more strongly from the grounds of information asymmetries'.

Environmental protection

Community concerns about the environmental impacts associated with the production, consumption and disposal of products have been a major driver behind both the right to repair movement and calls for the Government to prevent premature and planned obsolescence (City of Melbourne, sub. 20, p. 3; DIA, sub. 108, pp. 1–2; East Waste, sub. 18, p. 3; NSW Circular, sub. 93, p. 3; Rattenbury, sub. 133, p. 8; WWF Australia, sub. 54, p. 2). This is particularly evident in Europe, where several governments have enacted policies to promote the circular economy (including by promoting product repairability, upgradability, durability, and recyclability) (box 6.2). In Australia, there has also been a shift towards policies relating to the circular economy, including the Modern Manufacturing Strategy (which promotes recycling and clean energy as a priority (WMRR, sub. 85, p. 3)), and waste export bans and product stewardship initiatives supported by the new *Recycling and Waste Reduction Act 2020* (Cth) (chapter 7). Further, State Governments — such as in Victoria, the ACT and New South Wales — have implemented policies that draw on circular economy principles, such as improving recycling and waste management practices (ACT Government 2021; DELWP 2021; NSW Government 2019, pp. 2, 4).

Box 6.2 **The circular economy and its growing influence on government policies**

A 'circular economy' is an economic system designed to minimise waste, emissions, and resource use through long-lasting product design, and the sharing, maintenance, repair, reuse, remanufacturing, refurbishing and recycling of products (Ellen MacArthur Foundation 2021; Geissdoerfer et al. 2017, p. 763). The circular economy movement has gained momentum in recent years (particularly in the European Union (EU)), influencing government policy at the local, regional, national and international level (Geissdoerfer et al. 2017, p. 763). For example:

- Germany passed a law on the circular economy in 1996, which aimed to reduce landfill through initiatives such as closed-loop recycling (recycling old products into new products) (Ogunmakinde 2019, p. 6)
- Japan implemented a 'Basic Law for Establishing a Recycling-based Society' in 2000. This included clarifying the basic principles for establishing recycling policies, and outlining the responsibilities of the state, local government, businesses and public (MEJ 2000, p. 2)
- China released a 'Circular economy promotion law' in 2009, which aimed to improve the efficiency of resource use in areas such as product design, production, consumption and waste management (Ogunmakinde 2019, p. 4)
- France adopted a legal measure in 2015 to make planned product obsolescence a crime (HOP 2021)
- Australia implemented a National Waste Policy in 2018, which includes circular economy principles such as avoiding waste and improving resource recovery (discussed in chapter 7).

EU circular economy action plan and the right to repair

The 2015 EU circular economy action plan included an initiative to extend the scope of the Ecodesign requirements — an EU-wide initiative that sets out the minimum mandatory requirements for the energy efficiency of certain products (EC 2021b) — to also include repairability, upgradability, durability, and recyclability aspects for products (European Parliament 2021). As of 2021, Ecodesign requirements to increase the repairability and durability of washing machines, dishwashers, fridges and electronic displays (including televisions) have been implemented (for instance, one of the requirements is to extend the length of time spare parts are available for repair after purchase) (EC 2019c; Mikolajczak 2021).

The new 2020 EU circular economy action plan seeks to expand the Ecodesign requirements to more products and establish a 'right to repair' for information and communications technology products (that is, improving the availability of spare parts, software updates and repair services) (EC 2020a, pp. 5, 7). The European Commission will also consider strengthening consumer protection against premature obsolescence by setting minimum requirements for sustainability labels and information tools.

Submissions to this inquiry and previous studies have argued for policies to address premature obsolescence (and promote the circular economy) on the basis they reduce market failures relating to environmental externalities.

Environmental externalities

Externalities are the unintended costs and benefits of an activity (such as the production, consumption or disposal of goods) that are experienced by people who are not directly involved in that activity (PC 2006, p. 419). For example, a waste processing or recycling facility may have adverse effects on the amenity of residential neighbours (a negative externality). The existence of negative externalities means that people may undertake too much of an activity from a community-wide perspective because they do not consider the costs that the activity has on others. The magnitude of environmental externalities can depend on where they occur. For example, the damage done to human health by pollution is generally lower if the pollution is emitted in remote areas rather than metropolitan areas (PC 2006, p. 419).

On the other hand, there are positive externalities where the individual buying the product causes a broader benefit to the community and these goods are likely to be under-provided. A classic example is immunisation against infectious diseases, where immunising each person can reduce the spread of the disease, providing benefits to the community at large.

Policies that cause firms to bear the costs of negative externalities (that is, internalising the costs) can help promote a level of activity that better balances the costs and benefits to the community. Such policies may include requiring a firm to adopt practices to avoid environmental damage, to repair any damage caused, or to pay compensation to the community for causing the damage (PC 2006, p. 419). That said, policies themselves create costs and these need to be weighed against the benefits from a community-wide perspective.

Several stakeholders argued that the environmental externalities associated with the production, consumption and disposal of various products mean that product lives are too short from a community perspective (Bower Reuse and Repair Centre, sub. 48, p. 1; DIA, sub. 108, pp. 1–2; South Australian Repair Café Coordinators, sub. 46, pp. 3–4; TCO Development, sub. 137, p. 2; WMRR, sub. 85, p. 3; WWF Australia, sub. 54, p. 1). The European consumer group BEUC have similarly argued that:

Negative impacts on the environment may not always be clear to consumers as prices for products do not communicate externalities to consumers such as the negative impact on the climate as well as local communities and the environment in producing countries. If such externalities are taken into account, the costs of repair would not seem to be that high. (2015, p. 5)

There is a role for government in reducing the external environmental impacts associated with the production, consumption and disposal of goods.

However, a critical issue is whether measures targeting premature obsolescence through policies, such as mandatory product design standards or tax incentives and subsidies for repair services, are likely to be the most effective and efficient way to do so, and how they might fit within Australia's broader environmental policies. For example, one of these environmental policies is Australia's *Product Emissions Standards Act 2017* (Cth), which establishes a national framework that allows the Australian Government to address the adverse impacts of air pollution from certain products on human and environmental health (DAWE 2021i). The Act allows the Australian Government to prescribe products as an

‘emissions-controlled product’ and make rules for those products with associated penalties (DAWE 2021i). As of 2021, marine engines and outdoor power equipment are the only emissions-controlled products under the Act. Other products can be added subject to a cost-benefit analysis.⁷⁷

Further, it is important to recognise that government measures to reduce the environmental impacts associated with the production, consumption and disposal of products have both benefits and costs. Therefore, the outcome that achieves the highest net benefits for the community will not necessarily involve eliminating all the environmental impacts in question. At some point, the cost of further reducing the impact will exceed the benefit to the community. For example, a regulation that mandates a particular production technology to reduce airborne particulates might have a negligible effect in terms of reducing risks to human health, but significantly increase the cost of the products.

6.3 Is premature obsolescence a problem in Australia?

The evidence on whether premature obsolescence is a significant problem in Australia is mixed. The following sections considers evidence on: the prevalence of *planned* product obsolescence (including for software updates); the significance of information failures relating to product repairability and durability; and the significance of environmental externalities associated with premature obsolescence.

Prevalence of planned obsolescence

There are widely divergent views on the prevalence of *planned* obsolescence in Australia. Some stakeholders are convinced that there is widespread planned obsolescence. Claims of planned obsolescence presented in inquiry submissions related to a range of consumer products, particularly for consumer electronics and household appliances (box 6.3). Common concerns related to designs that prevented repair or upgrade, designs with structural weak points and software updates that reduced performance.

The main evidence used to support claims of planned obsolescence are examples of product features or marketing behaviour that seemingly have no plausible function other than to force consumers to replace the product after a short period of time (figure 6.2 above). One critic of planned obsolescence noted:

In terms of proving intentional deception, evidence is not difficult to find. In their hardware, all components of the iMac are fused to the motherboard, which makes repair impossible and can render an entire system broken when one element is faulty. Similarly, Apple has made it needlessly difficult to find certified parts when fixing iproducts, forcing consumers to use Apple-only retailers. (Sanford 2020)

⁷⁷ As of 2021, the Australian Government has made no decision to add other products.

Box 6.3 **Claims of planned obsolescence from submissions**

Many inquiry participants expressed concerns about planned obsolescence in Australia. Most concerns were broad and covered a range of consumer products, and often related to issues such as e-waste generation or the disproportional impact on people with low-incomes.

As each industry learns how to force consumers into their business models ownership becomes more tenuous, service costs more expensive, obsolescence and its associated costs to the environment becomes more pervasive ... (Holmes, sub. DR154, p. 2)

When vulnerable consumers are effectively cut out of a market due to planned obsolescence and an inability to afford an upgrade, they can either try to live without an essential good or they can turn to loans for these essential items, which may cause a debt spiral and much further financial loss. (CALC, sub. 119, p. 12)

However, some consumers and businesses made specific claims about planned obsolescence, particularly for consumer electronics and household appliances. In these submissions, the most common claim was that the design of products prevented them from being repaired or upgraded.

Modern kettles are now made with fused plastics (and sometimes circuit boards!), so you can't disassemble them for repairs even if you wanted to ... Then you have electric toothbrushes, which cannot be opened in any way (including for battery replacement) ... (Lewis-Fitzgerald, sub. 75, p. 3)

It is standard for storage in phones and tablets, and increasingly also in laptops, to be integrated into the mainboard. This means that if the board fails, it becomes impossible to access the data saved on the device ... (Leighton, sub. 82, p. 2)

Similarly, some submissions claimed that some products are made of poor-quality materials that break easily.

At the Repair Cafe, we find that items are commonly unable to be repaired because ... materials are non-durable and hard/impossible to repair ... (South Australian Repair Café Coordinators, sub. 46, p. 7)

Products can be constructed with cheaper parts (like plastic instead of metal) ... (CHOICE, sub. DR232, p. 24)

Other participants claimed that particular products are designed to fail after a set period of use.

Printers are designed to self-destruct — many stop working after a certain number of prints (with a microchip controlling a 'kill' switch), so you're forced to replace them. (Lewis-Fitzgerald, sub. 75, p. 3)

I've seen cables flex tested and found to last too long and be made weaker intentionally. I've had colleagues talk of lawn mower motors have [had] the brushes specified so the mower only runs for a certain number of hours. I've been told to life-cycle test a product I'm working on to match the two year warranty period, and absolutely not beyond. (comment 188)

Submissions also claimed that issues with software or firmware prevented products from being updated and used, or reduced product performance.

Software updates are a key part of the planned obsolescence problem: rendering functional hardware effectively useless with newer updates ... (Stein and Crosby, sub. 51, pp. 3–4)

Apple was deliberately slowing down older iPhone devices, through discrete software updates, often making them extremely slow, and owners did not know what was wrong — causing many to purchase new devices instead of repairing their devices. (Australian Democrats, sub. 100, part 1, p. 18)

Many printer manufacturers code their printers so non genuine cartridges cannot be used ... (Bugden, sub. DR149, p. 1)

Critics of planned obsolescence also point to international studies that show shortening product lifespans for a range of products (such as consumer electronics and white goods) as further evidence of a problem (Bluff 2015; Wiens 2018b) — although some of these studies stop short of finding that planned obsolescence is occurring. For example, the Öko-Institute

in Germany — a not-for-profit environmental research institute — examined trends in lifespans and use-time for a range of electrical and electronic appliances (such as washing machines, televisions, and laptops) in Germany, from 2004 to 2013. The study found that the average period that first consumers held onto products (first useful service life)⁷⁸ decreased for most of the products analysed. For instance, the average first useful service life decreased from 14.1 years in 2004 to 13.0 years in 2012-13 for large household appliances, and from 5.4 years in 2004 to 5.1 years in 2012 for laptops (Prakash et al. 2020, pp. 24–25). The study also found that more appliances were replaced or disposed of within five years. For example, the author stated:

Critical is the increase in the proportion of large household appliances which have been replaced within less than 5 years due to a defect from 3.5% to 8.3% of total replacements between 2004 and 2012. (Prakash et al. 2020, p. 24)

Manufacturers in Australia and overseas have strenuously denied allegations of planned obsolescence, stating that competitive pressures and reputational risk mitigate such behaviour. They argue that many design features that are alleged to be planned obsolescence are driven by consumer demand or other practical considerations. For example, Ai Group noted that it:

... rejects the view that industrial designers and engineers routinely design products to create premature failure to generate more profit for [manufacturers]. While there are always nefarious players in any given environment (market or otherwise), the short life cycle of many products is easily explainable by competitive pressures on manufacturers to supply products that meet consumer needs at the lowest possible price. To achieve the rock-bottom price points consumers have come to expect, manufacturers must lower production costs. Among the strategies to do this is to reduce specifications for components and assemblies to the minimum necessary to meet consumer preferences and performance standards. Lower build quality specifications and the parts that make them up can add higher levels of uncertainty in respect to their long-term reliability and durability. This trade-off must be weighed in the particular context of different product markets and different consumer preferences. Extended product life is of little value to consumers who expect to use the product briefly or upgrade it rapidly. (sub. 32, p. 10)

The ACCC lent some support to the view expressed by manufacturers.

To date, the ACCC has seen little evidence of manufacturers designing a product to fail at a certain point to encourage a consumer to buy a new one. Competition limits the incentives for planned obsolescence as consumers are unlikely to buy the same product again if there are competing products with a reputation for lasting longer. Furthermore, third parties that investigate such products are likely to identify obsolescence by design and the reputational cost of being discovered engaging in such practices would be significant. (sub. 106, p. 4)

The Öko-Institute study also rejected some claims of planned obsolescence. The study examined three commonly cited examples of planned obsolescence: aluminium electrolytic capacitors used in televisions; plastic tubs in washing machines; and ink pad reservoirs in ink-jet printers. It concluded that ‘in all three cases, allegations of planned obsolescence in

⁷⁸ Not to be confused with the technical product life, which is the average time from the first purchase until the terminal defect of the product.

terms of wilful design manipulation failed to stand up’ (Prakash et al. 2020, pp. 30–31). Box 6.4 describes the example of ‘programmed printer death’ used in the study. Similarly, in their consultation with the Federal Trade Commission, Microsoft argued that some manufacturing practices, such as the use of adhesives, actually promote durability.

... the use of adhesive, over screws, makes for a sounder, more durable and damage resistant device that can better survive ‘inadvertent drops or mishandling,’ while ‘also meet[ing] consumer demand for a high-quality, tactile, and ‘solid’ product feel by preventing internal components from rattling with the casing.’ (FTC 2021b, p. 34)

Box 6.4 Case study: ‘programmed printer death’

In 2010, there were various reports in Europe of planned obsolescence in the form of ‘programmed printer death’. This is where some ink-jet printers signalled that the printer needed to be serviced, or should not be used, shortly after the warranty period had expired. Critics noted that after a certain number of printed pages, the software would stop the functioning of the printers, thereby deliberately shortening the lifespan of the product. However, there is more to the story.

When an ink-jet printer is used, a small amount of ink is flushed through the printer head and diverted into a waste-ink pad (an absorbent pad designed for a ‘normal’ printer lifespan). Generally, the saturation of the waste-ink pad is monitored by a ‘drop counter’ that ensures that the pad does not breach capacity and cause potential damage to the printer or its surroundings (for example, furniture or carpet). Therefore, the drop counter exists as a measure to protect the printer and its surroundings from damage and cannot be viewed as a form of planned obsolescence. That said, other technical options could be used (such as exchangeable containers for the waste-ink pad). Also, there could be an issue of consumer misrepresentation, as consumers may be unaware of this problem at the point of purchase.

Source: Prakash et al. (2020, pp. 176–177).

Several studies have also highlighted the role that consumers play, rather than just strategies associated with planned obsolescence, in driving shorter product lifespans. The Öko-Institute study found that ‘increasing numbers of electrical and electronic appliances are being replaced although they are still in working order. In such cases, the desire to possess an even better appliance is key’ (Prakash et al. 2020, p. 5). For instance, in 2012, over 60 per cent of functioning flat screen televisions in the study were replaced because consumers wanted a better device (Prakash et al. 2020, p. 25). Similarly, Bachér et al. found that the actual lifetime for some products is rarely as long as the designed lifetime, as emotional and socio-economic factors also influence a product’s lifespan (2020, pp. 12–13).⁷⁹ For example, the authors found that the average actual lifetime for vacuum cleaners was 8 years compared with an average design lifetime of 10 years (Bachér et al. 2020, p. 13). Further, drawing on various European studies, van den Berge and Thysen found:

Regarding reasons to replace products, responses from users’ surveys show that 31% of washing machines ... 66% of vacuum cleaners ... 56% of TVs ... and 69% of smartphones ... were disposed

⁷⁹ Bachér et al. use ‘actual lifetime’ to refer to the time from the moment a product is sold to when it is discarded or replaced (2020, p. 11). The ‘designed lifetime’ refers to the maximum lifetime that a manufacturer intends its product to remain functional, which is determined by product design and after-sale services.

for other reasons than being broken ‘beyond’ repair. For three out of four product categories this is above 50% of the discarded products. This provides evidence for the relevance of investigating the user and market related factors in relation to early product replacement. (2020, p. 28)

There is also evidence that products are becoming more, not less durable. Data from surveys conducted by Consumer NZ revealed that product reliability has improved for a variety of products in recent years (figure 6.3). For example, the reliability score for a range of white goods (such as dishwashers, washing machines and vacuum cleaners) increased between 2009 and 2018. Similarly, the Öko-Institute study found the average lifespan of products in Germany that were replaced due to defect increased from 5.2 years in 2009 to 5.9 years in 2012 for televisions and was unchanged from 2004 to 2012 for hand mixers and blenders (about 11 and 10 years respectively) (2020, pp. 25, 106–107).

In Australia, it is difficult to identify trends in product reliability⁸⁰ as available data (produced by CHOICE) are only available from 2015 and do not cover every product each year. Nonetheless, the data show a mixed picture. For example, product reliability scores increased slightly for smart phones (76 to 78 per cent from 2015–2019), and declined slightly for televisions (88 to 86 per cent from 2015–2018), and remained much the same for fridges (2015–2018) and washing machines (2015–2018).

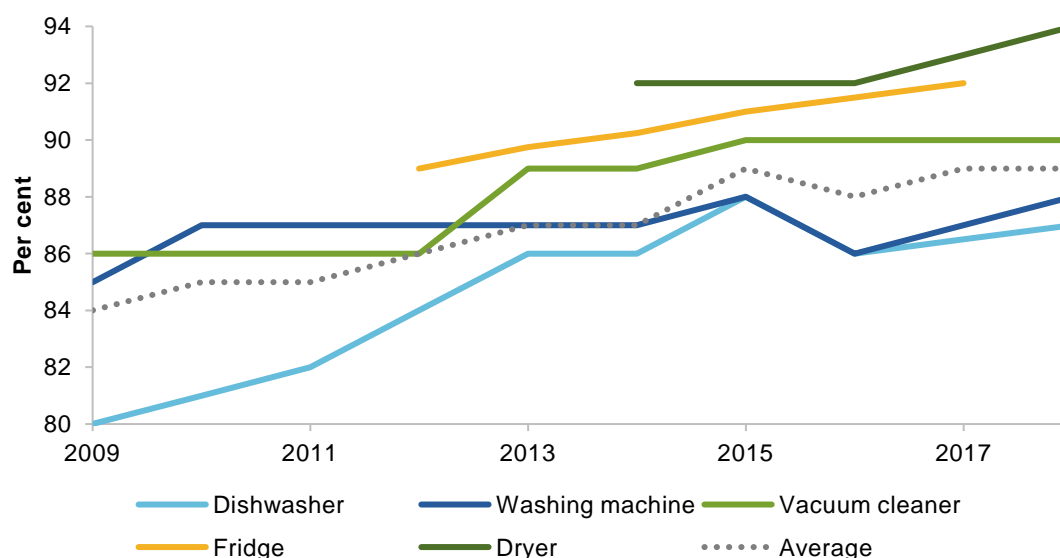
It appears that the perception of a problem, rather than direct experience, is also partly driving concerns about planned obsolescence. A study based on a 2017 online survey in Germany (with 2000 participants aged 14–66 years) asked respondents: (1) whether they agreed with the statement that some manufacturers design devices intentionally so that they break down after the warranty has expired and (2) if they had ever had a device that broke down within or shortly after the warranty had expired. The authors observed:

... the participants were asked if they ever had a device that broke down within or shortly after the warranty has expired. To 61% of respondents this has never happened ... It is interesting here, that the strong conviction, that some manufacturers deliberately limit the lifetimes to the two-year warranty (hold by 90%) and deceive their customers (believed by 89%) does not necessarily correspond with own experiences. This may be due to the fact that the majority of respondents refer to experiences from their social environment or the narratives around planned obsolescence presented by the media. (Jaeger-Erben and Hipp 2017, p. 19)

⁸⁰ The reliability score produced by CHOICE is an index out of 100 based on the following question: ‘In the past 12 months, have you had any problem with the performance or reliability of this [product category]? (Y/N)’. The reliability scores are calculated through an age standardisation method to control for the effect of age on product reliability. The products analysed were purchased within a 5 year period for smart phones and televisions and an 8 year period for fridges and washing machines. CHOICE does not conduct surveys for every product group each year.

Figure 6.3 Reliability of white goods has increased in recent years

Percentage of products that have not needed repair^a



^a Consumers were asked about products they purchased within the past five years and whether they have required repair. The product reliability score is calculated as the percentage of products that have not required repair in this time frame. Consumer NZ does not survey every type of product every year — however, products such as vacuum cleaners and washing machines feature regularly, allowing for a trend analysis.

Source: Smith (2020).

Software updates and ‘big tech’

In recent years, there have been increased concerns that large technology companies are using planned obsolescence strategies to exploit the dependence of smart devices on software updates to ensure functionality or security. One alleged strategy, which has been the subject of some international court cases (box 6.5), is designing software updates to reduce the longevity or operating speed of devices. To date, no court has explicitly found that companies have engaged in planned obsolescence of this kind. This may partly reflect the difficulty of proving that the intent of the software update was to shorten product life. In 2017, for example, Apple stated that its software updates had slowed the performance of some phones with degraded batteries to prevent the demands of updates from causing batteries to shut down, but denied intentionally shortening the lifespan of the product (Gibbs 2018).

Regulators have nonetheless acted where they believe companies have not been upfront with consumers about the potential impacts of software updates on product functionality. Internationally, manufacturers (including Apple and Samsung) have been fined for misleading consumers about software updates affecting the functionality of older model smart phones (also known as ‘throttling’) (box 6.5). For example, the Italian competition

authority fined Apple and Samsung for not informing consumers about software updates that might reduce the functionality of their older smart phones:

... Samsung group and Apple group have carried out unfair commercial practices in violation of Articles 20, 21, 22 and 24 of the Consumer Code in relation to the release of some firmware updates for their mobile phones which caused serious malfunctions and significantly reduced their performance, in this way speeding up their replacement with more recent products. (AGCM 2018)

Samsung denied that its software updates reduced the phone's performance (Gibbs 2018).

Box 6.5 Cases filed against technology companies internationally

There have been a number of cases filed against large technology companies internationally related to planned obsolescence. However, no cases have yet found that the companies were intentionally reducing product lifespans.

- The French environmental association Halte à l'obsolescence programmée (HOP) has filed two claims of alleged planned obsolescence under the French planned obsolescence law.
 - In 2017, HOP filed a complaint against printer companies (such as Epson, HP, Brother and Canon) for inserting sensors into their printer cartridges to stop them working before they were actually empty (Malinauskaite and Erdem 2021, p. 741). The outcome of this complaint was still pending as of 2021 (Boring 2020).
 - In 2017, HOP filed a complaint against Apple for software updates that were slowing down the performance of older smart phone models. The French regulator (DGCCRF) did not find evidence proving that Apple intentionally reduced the lifespan of the product. However, the DGCCRF did fine Apple for misleading commercial practice by omission for not informing iPhone owners that the updates would likely cause their device to slow down (Boring 2020).
- The Italian Competition Authority (AGCM) investigated Samsung and Apple in regard to software updates that slowed down the performance of older smart phones. Similar to the DGCCRF, the AGCM only found that the software updates were misleading to consumers and fined both companies €5 million (AGCM 2018). The AGCM also fined Apple an additional €5 million for inadequately informing consumers about the essential characteristics of lithium batteries (such as average duration and deterioration factors) (AGCM 2018).
- In the United States, Apple settled a class action lawsuit in 2020 in regards to software updates slowing down devices (Cissé et al. 2020; Stempel 2020). A lawsuit was also issued against Tesla in 2019 alleging that software updates were reducing the battery capacity of Model S and X cars (Cissé et al. 2020; Sage 2019). Another lawsuit was filed against HP in 2020 for software updates that blocked customers from using third-party ink and toner cartridges, and forced them to buy the more expensive HP-branded supplies (Shaak 2020).

Similar software update cases have been filed for other types of products, such as electric cars and printers (box 6.5). In Australia, in 2018 the ACCC required HP PPS Australia to compensate customers for misleading information and conduct, for failing to disclose at the time of sale that a subsequent firmware update would cause the printer to reject non-HP printer cartridges (at the time of purchase the printer accepted non-HP printer cartridges) (2018c).

Another way technology companies are alleged to engage in planned obsolescence (or at least contribute to premature obsolescence) is by discontinuing software updates for older models. Several inquiry participants raised concerns that without manufacturers providing software updates, otherwise physically long-lived products will have shorter lifespans (chapter 3). For example, CHOICE noted that:

People have told us about when the lack of software updates has resulted in product faults or has stopped them using the product for the purpose they purchased it. Some of the examples include mobile phones being used only as a music player, or all-in-one computers being used as a second monitor. (sub. DR232, p. 15)

In its submission, the ACCC highlighted the challenges associated with identifying instances in which companies are discontinuing software updates ‘prematurely’ to induce consumers to purchase a new product, as opposed to where providing updates is cost prohibitive.

In many circumstances, obsolescence in computer software or devices with a software component is an inescapable characteristic of the product. As such, manufacturers may plan ahead for a product to become obsolete at a particular point in time, including by ceasing to provide security updates or updates necessary for continued functionality. This is a form of planned obsolescence, but is not necessarily intended to induce a consumer to purchase a new product. In many circumstances it will not be reasonable or efficient to require a manufacturer to support a product for an indefinite amount of time. At some point it may be cost prohibitive for manufacturers to continue to support older products. What is ‘reasonable’ will be circumstance-specific and depend on a number [of] factors such as what a reasonable consumer would expect for goods of that kind. (sub. 106, p. 4)

In chapter 3, the Commission recommended that the Australian Government amend the ACL to include a new guarantee that manufacturers provide reasonable software updates for a reasonable period of time after the product has been purchased, with no option to limit or exclude that guarantee. This change would mitigate the risk of companies using software updates to limit product life (to the extent the practice is occurring).

Summary

It is not possible to rule out that some manufacturers engage in strategies to intentionally reduce product lifespans, but there is no evidence that such practices are widespread. Further, Australian consumer and competition laws, combined with other recommendations in previous chapters, contain provisions that provide some protection against such behaviour (such as prohibitions on misleading conduct). Although there is evidence that the lifespans of some products are becoming shorter, this is often driven by consumers choosing to replace their products with newer ones rather than the products breaking. There is also evidence that some products are becoming more durable.

Significance of information failures

A number of inquiry participants raised concerns that consumers often lack good information on product repairability and durability (box 6.6) (ACCC, sub. DR214, p. 5; City of Melbourne, sub. 20, p. 3; CPRC, sub. DR212, pp. 4–5; Repair Café Woolloongabba, sub. 42, p. 3; South Australian Repair Café Coordinators, sub. 46, p. 15). Service and technology professional Brett Buckingham stated that consumers can have little understanding of product repairability and durability at the time of purchase (sub. 22, p. 4) and the Australian Democrats noted that ‘there’s no standard of repairability in Australia on which consumers could make a decision’ (sub. 100, part 1, p. 40).

Box 6.6 **Repairability and durability information**

Providing information about a product’s repairability and/or durability can help consumers better understand the qualities of the product when making a purchase.

Repairability refers to the ease with which a product can be repaired. There are many aspects to repairability, and thus repairability information can include the:

- availability of documentation — such as the number of years repair instructions are available
- availability of spare parts — such as the number of years spare cameras are available
- price of spare parts — such as the average price of spare parts as a proportion of the product price
- ease of disassembly — such as the number of steps required to disassemble the product for repair or whether a product is designed for self-repair so that consumers can save on repair costs.

These aspects (and many others) affect repairability on their own and together — for example, better access to replacement batteries will be of little use if the old battery cannot be removed.

Durability generally refers to how long a product will last under normal use. Like repairability, there are many aspects to durability, and thus durability information can include:

- expected product life — such as the average number of years before fault under normal use
- expected life of critical components — such as the average number of years before the pump needs to be replaced in a washing machine
- availability of software updates — such as the average number of years software updates are available.

The relationship between repairability and durability can be complex. In some cases, a more repairable product can also be more durable — a laptop with a replaceable battery may last longer. In other cases, there may be a trade-off between repairability and durability — gluing components of a smart phone may make it harder to repair but improve its resistance to damage (such as from accidental drops).

The type of information that is important for a product’s repairability or durability may differ across products. For example, the expected number of years before a battery needs to be replaced may be very important for smart phones, but not be relevant for dishwashers. Therefore, it is necessary to examine the repairability and durability information that are most relevant to each product.

In contrast, some manufacturers suggested that consumers already have access to several sources of information and professional advice before purchasing their products (ATSA, sub. 23, p. 14;

IGEA, sub. DR180, p. 15; VACC, sub. DR218, p. 17). For example, Rheem noted that for water heaters, ‘consumers receive expert advice ... on their product selection’ (sub. DR167, p. 4).

That consumers lack information about product durability or repairability does not necessarily imply that they face significant costs to obtain such information; consumers may lack the motivation to seek out this information because it is not a key factor influencing their purchase decision. Further, the size and importance of information gaps will differ across products as consumers value information differently depending on the type of product. For example, repairability may be more important for a washing machine — a high-value product which can be expected to last many years — than a toaster. And while information may be available, it may not be in a form that is useful to consumers.

If a substantial proportion of consumers value repairability and durability for certain products, but are unable to access relevant information when deciding which product to purchase, the market may not operate efficiently. In particular, it could prevent consumers from selecting more repairable or durable products that align with their preferences and reduce manufacturers’ incentives to develop more repairable or durable products. There may be a role for government to ensure this information is available to consumers (section 6.2).

To determine whether there are significant information gaps in particular product markets, some key questions must be considered:

1. do consumers value the repairability or durability of the product?
2. does information already exist that is relevant and easy to access?

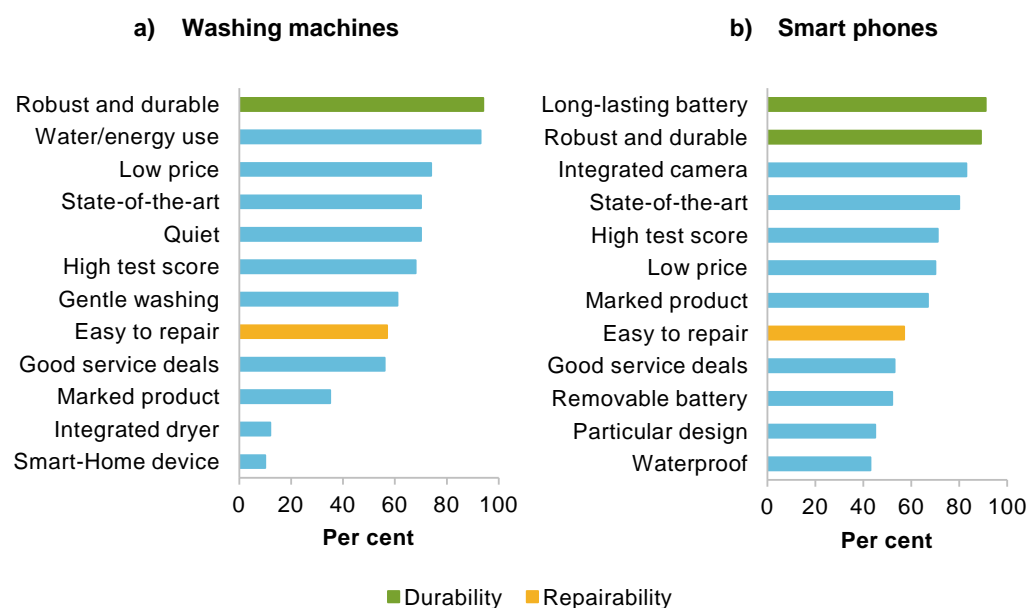
For certain products, consumers value durability and to a lesser extent repairability ...

There is limited research on the extent to which consumers prioritise the repairability and durability of the products they buy. Most research relates to white goods and consumer electronics.

International studies suggest that consumers tend to prioritise the durability, and to a lesser extent the repairability, of products. For example, a German study found that aspects of durability were the most important consideration for washing machines and smart phones (figure 6.4). And while less important than some other product characteristics, over half of respondents stated that repairability played a significant role in their purchase decision. Similarly, consumer surveys in the European Union found that durability, along with price and quality, was one of the most important factors influencing consumer purchasing decisions for washing machines, dishwashers, vacuum cleaners, televisions and smart phones (EC 2018, pp. 141–144, 2020c, pp. 16–17). Although, one EU study noted that ‘repairability ... was still rated as important for most product categories’ (EC 2018, p. 142). Consumer interest in repairability and durability also seemed to be greater for larger and more expensive products (such as white goods), compared with fashion items (such as smart phones) (EC 2018, p. 10).

Some Australian surveys, which related to a broader range of products, also indicate that repairability and durability information is important to consumers. For example, a 2018 CHOICE survey (unpublished) found that performance and durability were the most important factors influencing purchasing decisions for household appliances (94 per cent of respondents), followed by price (90 per cent). Similarly, a 2021 CHOICE survey (unpublished) found that product lifetime (an aspect of durability) was the most important environmental concern of respondents (85 per cent), followed by ease of repair (73 per cent).

Figure 6.4 Consumers value durability, and to a lesser extent repairability
Purchasing criteria for washing machines and smart phones^a



^a Responses to the question: 'What role did the following aspects play in selecting the current washing machine/smart phone?' Percentages represent the share of respondents who indicated the aspect played 'a rather large' or 'a large role' for the respective products.

Source: Jaeger-Erben and Hipp (2017, pp. 6–7).

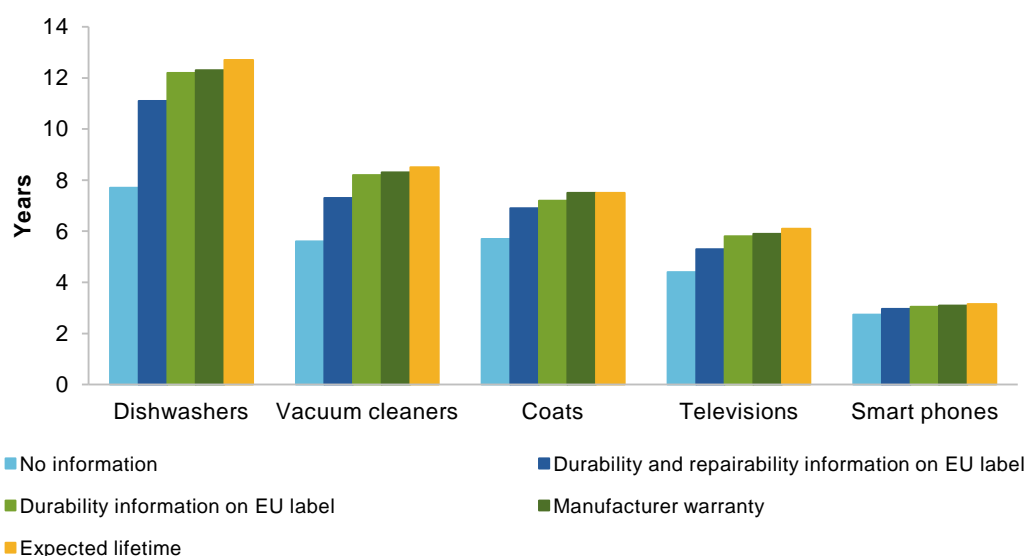
Other Australian studies have looked at the specific aspects of repairability or durability that consumers value — however, the studies did not examine these aspects for specific products. For example, in one survey, respondents stated that having information on the availability of spare parts (42 per cent) and software updates (46 per cent) when buying a new product would be very useful (CHOICE, sub. DR232, p. 26). In another study, BehaviourWorks Australia found that consumers associate repairability with:

- the ability to have the product repaired by a repair firm (45 per cent), the manufacturer (37 per cent), or themselves (28 per cent)
- the availability of spare parts (36 per cent) and repair manuals (16 per cent)
- components (such as the battery) being easily accessible to the end-user (14 per cent) (2020, p. 38).

International studies also suggest that providing information about certain aspects of repairability and durability at the point of purchase may influence consumers towards choosing more repairable and durable white goods and consumer electronics. Some EU studies have found that providing information on minimum or expected product life and the availability or price of spare parts can influence consumers to purchase longer-lived and repairable products (for example, figure 6.5) (EC 2017, pp. 418–420, 429–430, 2018, pp. 155–161; EESC 2016, p. 2). Another study found that considering repairability and repair cost at the time of purchase has a positive impact on repurchases and purchase recommendations for repairable products (Sabbaghi et al. 2016, p. 121). Further, some early evidence indicated that the recently implemented French repairability index (section 6.4) may already be influencing consumer behaviour.

... Samsung reported the results of a survey the manufacturer commissioned on how the French repairability index was impacting consumer behaviour. Key results include that 83% of those surveyed would prefer to repair rather than replace a broken product, 90% said they thought the index was useful and would encourage them to choose a more repairable product with 86% reporting that the index impacts their purchasing behaviour. (iFixit, sub. DR236, pp. 10–11)

Figure 6.5 Durability labels can influence consumers to purchase longer-lived products^a



^a Results from an EU purchasing experiment that examined the average durability consumers chose for products when presented with different durability labels on a simulated e-commerce website. On the EU labels, respondents could reveal the durability and repairability definition by clicking on the label. Durability was defined as the period in which the manufacturer promises to replace or repair the product free of charge. Repairability was defined as a rating based on the availability of repair manuals, spare parts and repair services. The warranty and expected lifetime labels did not provide durability definitions because it is common market practise to display such promises at the point of sale.

Source: EC (2018, pp. 156, 159).

... but relevant repairability and durability information can be difficult to find

Several stakeholders identified gaps or limitations in public information about repairability and durability for products broadly. For example, BehaviourWorks Australia found that some consumers have difficulty finding reliable information on the expected life and repairability of products (sub. 95, p. 5). And CHOICE indicated that, broadly, there is no publicly available information for: the availability of spare parts and repair manuals, cost of spare parts, estimated time for repairs, or expected product life (sub. DR232, p. 25). In some cases, such information gaps might reflect barriers to obtaining relevant information, but in other cases it may reflect that this information is not relevant to consumers.

Relevant repairability information for white goods and consumer electronics can be difficult to find. While some resources exist, such as iFixit repairability scores and the French repairability index, they are generally limited in their product coverage and information relevance. For example, iFixit repairability scores are only available for smart phones, laptops and tablets and Australian consumers do not seem aware of them.⁸¹ Further, these scores may not cover some potentially important aspects of repairability that consumers value, such as the availability and price of spare parts.⁸² Kyle Wiens noted that iFixit do not:

... factor the availability of software updates ... [and] price of parts, and that's because we rate products usually on day one when they come out, and we don't know what the parts pricing is going to be. Whereas the French system does factor in pricing of parts and timeline of availability which I think is a wonderful thing. (trans., p. 35)

And while the recently implemented French repairability index for televisions, smart phones, laptops, washing machines and electric lawn mowers (section 6.4) may provide more relevant information, it may not reflect the Australian repair market. For example, the price and availability of spare parts may be different in Australia, potentially generating a different repairability score. Australian consumers may also be unaware of this information.

There are more information sources that consumers can use to inform their expectations of product durability, including for white goods and consumer electronics, but each has limiting factors.

- Online resources — some websites provide information that may indicate durability (such as product quality and performance). For example, product review websites (such as CHOICE, CANSTAR and ConsumerAffairs), YouTube and other online platforms.⁸³

⁸¹ iFixit (sub. 107, p. 28) estimated that their most viewed smart phone webpage in 2020 was the iPhone 8 with approximately 6400 unique Australian views (although this may be an underestimate), suggesting Australians may be largely unaware of these scores. Especially in comparison with the French repair index which appears to have strong community awareness in France (iFixit, sub. DR236, pp. 10-11).

⁸² For example, an EU survey found that the main attribute consumers associate with product repairability is spare parts availability (46 per cent of respondents) (EC 2018, p. 120).

⁸³ A 2018 CHOICE survey (unpublished) found that most respondents research thoroughly before purchasing home appliances (86 per cent for big ticket items and 68 per cent for small household appliances), suggesting that consumers could be using these online resources.

However, these resources sometimes require subscription fees and may not provide easily comparable information for consumers (CPRC, sub. DR212, p. 4).

- Price — CHOICE (2018 unpublished) found that 57 per cent of survey respondents said that price was a big influence in determining product durability for household appliances. However, as noted by Ai Group: ‘products don’t necessarily last longer because they’re more expensive’ (sub. DR156, p. 6). For example, price may be a poor proxy for some aspects of durability, such as the average time before a battery needs to be replaced.
- Manufacturer warranties — warranties can inform expectations about durability as they signal that the manufacturer will fix the product if it is defective within the warranty period (figure 6.5). However, in practice, because warranties are voluntary and tend to be similar in length,⁸⁴ they provide a poor comparator of product durability for consumers.
- Brand reputation — CHOICE (2018 unpublished) found that 55 per cent of survey respondents stated that the brand was a big influence in determining product durability for household appliances. However, brand reputation is built up over a long period of time so consumers may overlook new suppliers who produce durable products.
- Previous experiences — CHOICE (2018 unpublished) found that 69 per cent of survey respondents stated that previous experiences were a big influence when determining product durability for household appliances. However, such a ‘trial and error’ approach may be frustrating and costly to consumers when a product’s durability does not meet their expectations.

There is mixed evidence on the size of the problem created by information gaps

The available evidence suggests that there is likely an information gap for product repairability and durability for white goods and consumer electronics.

However, there is mixed evidence that these information gaps are causing significant problems. It is difficult to find evidence to determine whether there are systematic issues in product markets due to information gaps. For example, this could include evidence that consumers consistently choose products that break or malfunction well before they expect them to, or evidence that there is a lack of repairable or durable products in the market. As discussed above, some evidence suggests that certain white goods and consumer electronics are less durable than they used to be, while other evidence suggests that some are becoming more durable. And while declining product lifetimes could be a result of less repairable or durable products, it may also reflect consumers’ preferences to replace their products more often, including before the end of their useful life (van den Berge and Thysen 2020, p. 28; EC 2018, p. 86).

⁸⁴ In chapter 4, the Commission examined 41 manufacturer warranties to determine the prevalence of void terms for third-party repair. From this research it was evident that warranties from the same product groups (such as smart phones) tend to have a similar length.

Nevertheless, the Commission did receive anecdotal evidence from several submissions that highlighted consumer dissatisfaction with the repairability and durability of their products, particularly for consumer electronics and household appliances (Das, sub. 31, p. 1; East Waste, sub. 18, p. 6; Leighton, sub. 82, p. 2; Lewis-Fitzgerald, sub. 75, p. 3; South Australian Repair Café Coordinators, sub. 46, p. 6; Stein and Crosby, sub. 51, pp. 3–4). For example, Held noted that when repairing a phone the ‘original parts are often either not available or unreasonably expensive’ (sub. DR157, p. 1).

Summary

There is some evidence that, for certain types of products (such as white goods and consumer electronics), some consumers find it difficult to access relevant information about product repairability and durability when making purchasing decisions. Such information gaps could contribute to premature obsolescence by preventing consumers from selecting more repairable or durable products based on their preferences, and reducing manufacturers’ incentives to develop these products. However, there is mixed evidence that this information gap is a significant cause of premature obsolescence.

Significance of environmental externalities associated with short-lived products

As noted in section 6.2, government measures to reduce the environmental impacts associated with the production, consumption and disposal of products have both benefits and costs. Therefore, the outcome that achieves the highest net benefits for the community overall will not necessarily involve eliminating all of the environmental impacts in question. This is important to keep in mind when interpreting studies used to support policies to reduce environmental impacts by extending product lifespans, as they can often omit or do not fully consider some important trade-offs from intervention.

Most studies that examine the environmental impacts of premature product obsolescence use ‘life cycle analysis’. Life cycle analysis measures the specific environmental impacts throughout each stage of a product’s life cycle from raw materials acquisition, through to production, use and disposal. The contribution of each stage to a product’s overall environmental impact will differ across products. For example, for consumer electronics, most greenhouse gas (GHG) emissions occur during the production stage, whereas for washing machines and vacuum cleaners, most GHG emissions occur during the use phase (Bachér et al. 2020, pp. 19, 33–34).

Analyses typically take the form of a comparative analysis of products with shorter and longer lifespans. For example, Prakash et al. compared the ecological performance of short- and long-lived household products (such as washing machines, laptops and

televisions) over a set period using environmental indicators (such as global warming potential, cumulative energy demand and water depletion) (2020, p. 224).⁸⁵

Such studies consistently find that products with longer lifespans tend to have lower environmental impacts than products with shorter lifespans, which is mainly driven by a reduction in emissions in the production phase. For example, Bontinck et al. estimated that extending the lifespans of mobile phones, televisions, computing equipment and large household appliances by 10 per cent in Australia would result in 226 000 less tonnes of carbon emissions equivalent globally in 2030 (2021, p. 40). Montalvo et al. also noted that for decades the practice of life cycle analysis has provided product-specific assessments of environmental impacts, such that the body of work on the environmental impact from longer product lifespans is ‘sizable’ (2016, p. 42).

For instance, changing the toaster market by extending the lifetime by 10% would net a savings of around 4000 tonnes of CO₂ equivalent and prevent around 60 tonnes of waste per annum. The greatest benefits to be gained for global warming potential from a longer lifetime would be through a 10% change in the market for the T-shirt, which would result in a reduction of circa 100 000 tonnes of CO₂ equivalent per annum ... (Montalvo, Peck and Rietveld 2016, p. 42)

Prakash et al. similarly concluded:

The outcomes of the ecological comparative calculation paint a clear picture. In all product groups investigated, long-life products do better than short-life variants in all environmental categories. This remains the case even having considered retrofitting options/repairs to long-life products with replacement parts (including their manufacturing impact) alongside the enhanced energy efficiency of new devices and the higher manufacturing impact of the long-life product.

... for notebooks, the long-life product (life-time of 6 years) produces almost 300 kg less CO₂e than the short-life variant over a given period of 12 years. The acidification potential environmental indicator is 49% higher for a short-life notebook (life-time of 3 years) compared to the long-life variant. The cumulative energy demand of a short-life notebook is 25% higher and the global warming potential is 36% higher compared to a long-life notebook. (2020, p. 32)

Life cycle analysis is often used to support policy intervention (such as product design standards and improved consumer information) to prevent premature obsolescence. Despite its practical advantages, life cycle analysis has several major limitations as a tool for estimating external costs and informing policy decisions about premature obsolescence (box 6.7). For example, life cycle analysis does not differentiate between externalities and impacts that have already been internalised through direct policy intervention (section 6.2). Life cycle analysis may indicate that products with longer lifespans have lower carbon emissions than shorter-lived products. However, if a country that manufactures a product already has policies in place for reducing emissions, product prices may already partly reflect

⁸⁵ Further, when comparing short- and long-lived products, there can be trade-offs between GHG emissions in the production and use stage — newer products can be more energy efficient but require production emissions in order to replace functioning inefficient products (Montalvo, Peck and Rietveld 2016, p. 36).

the added impacts that shorter-lived products have on carbon emissions.⁸⁶ Consequently, if such policies exist, life cycle analysis will tend to overstate the externalities.

Further, life cycle analysis does not consider the economic and social impacts that also matter to consumers, businesses, and the community (Curran 2014, p. 192; Udo de Haes et al. 2008, p. 20). For example, it does not consider the costs associated with the additional regulations (such as mandatory product design standards) that may be needed to achieve longer-lasting products, such as increased product prices and reduced consumer choice (discussed below). Therefore, life cycle analysis should be used in tandem with other research techniques to inform government policy.

Box 6.7 Limitations of life cycle analysis for measuring external costs

Life cycle analysis (LCA) measures the specific environmental impacts throughout a product's life cycle from raw materials acquisition, through to production, use and disposal. LCA can be informative for assessing the environmental costs associated with a specific product. However, it alone cannot be used to inform government policy as it suffers from a number of limitations.

- LCA cannot differentiate between externalities and impacts that have already been internalised through other policy interventions (such as a carbon price) and so may overstate any environmental externalities if such policies exist.
- LCA does not account for the location of emissions. For example, urban air pollution has a higher external cost to society than pollution in less populated areas. The addition of imports and exports further complicates this problem. For instance, if Australia reduces consumption of a product that is produced overseas, there may be minimal external benefits to Australia as most air and water pollutants in the production process — the notable exception being greenhouse gases — have localised effects on human health and the environment.
- LCA does not take time into consideration. The environmental costs may occur over a long period of time — in general, the community places greater value on avoiding emissions today rather than tomorrow. In a cost–benefit analysis this would be reflected using discount rates. Therefore, LCA can overstate environmental externalities.

Source: PC (2006, pp. 447–449).

⁸⁶ Moreover, where a country has a binding emissions cap, regulations to reduce emissions in one part of the economy (such as through mandatory product design standards) might be offset by an increase in emissions in other parts of the economy. That is, reduced demand for carbon credits by industry A will tend to reduce the economy-wide carbon price. The reduction in the carbon price will mean industries B, C and D will then expand production of emissions-intensive products until the carbon price rises again to ration demand.

FINDING 6.1 EVIDENCE ON PREMATURE OBSOLESCENCE IS MIXED

There is growing community concern in Australia and overseas that product lifespans are becoming unnecessarily short ('premature obsolescence'), with detrimental impacts on consumers and the environment.

However, the evidence is mixed on whether premature obsolescence is a significant problem.

- While it is not possible to exclude that some manufacturers engage in strategies to intentionally reduce product lifespans, such practices are unlikely to be widespread.
- The lifespans of some products are becoming shorter, but this is often driven by consumers choosing to replace their products with newer ones rather than the products breaking; indeed, some products are becoming more durable.
- For certain types of products (such as white goods and consumer electronics), some consumers find it difficult to access relevant information about product repairability and durability when making purchasing decisions. Such information gaps could contribute to premature obsolescence by preventing consumers from selecting more repairable and durable products based on their preferences, and reducing manufacturers' incentives to develop these products.

6.4 Are reforms needed to prevent premature product obsolescence?

This section assesses the following policy options for preventing premature product obsolescence.

- Expanding consumer protection laws.
- Mandatory product design standards.
- Tax incentives and subsidies.
- Product labelling.

Expanding consumer protection laws

Several participants to this inquiry proposed expanding consumer protection laws to explicitly address unfair conduct and consumer harm associated with *planned* obsolescence. Many of these suggestions involved outright bans on planned obsolescence, including the designing of products to have poor durability (Australian Democrats, part 1, sub. 100, p. 41; comment 162; Planert, sub. 36, p. 1; QUT Centre for a Waste-Free World, sub. DR172, pp. 13–14; South Australian Repair Café Coordinators, sub. 46, p. 5; WALGA, sub. 86, p. 4; WWF, sub. 54, p. 4). Of these, the most detailed proposal came from the ACCC.

The ACCC argued that, although it has seen little evidence of manufacturers designing products to fail, the incentives for planned obsolescence are likely to increase as more products are computerised, and the information and power imbalances between manufacturers and consumers grow (sub. 106, pp. 4–5). It argued that regulators should be equipped with an appropriate legislative framework to investigate new and emerging practices that may harm consumers. To this end, the ACCC advocated expanding laws to protect consumers from several potential harms relating to planned obsolescence, which include:

- manufacturers strategically planning future obsolescence that results in unnecessary costs for customers who cannot easily switch product providers
- manufacturers failing to adequately disclose how long they plan to support the product for, such that consumers are unable to meaningfully assess the value of alternative products prior to purchase.

The ACCC argued that such matters are not adequately addressed by the current ACL and fair-trading provisions (sub. 106, p. 5). For example, it noted that there is no express obligation on manufacturers to support a product for a minimum period or to tell consumers about it.⁸⁷ It argued that introducing a principles-based, economy-wide prohibition on unfair trading practices could potentially address issues such as:

- undisclosed planned obsolescence that relies on high switching costs to force consumers to regularly purchase additional or replacement products
- businesses not disclosing that, as a result of internal decisions on future support, a product will be obsolete in an unreasonably short period of time
- a business not providing security updates for smart products for a reasonable amount of time, thereby putting sensitive consumer information at risk.

The ACCC noted that the scope of a prohibition on unfair trading practices would need to be carefully developed to ensure it is sufficiently defined and targeted, with appropriate legal safeguards and guidance drawn from comparable jurisdictions with existing unfair trade practices laws.

On 6 November 2020, the Consumer Affairs Forum (a meeting of state, territory and federal ministers responsible for consumer law) agreed that unregulated unfair practices warrant further exploration through a regulation impact assessment process. This process is still ongoing as of 2021 (ACCC 2021b).

The Law Council of Australia strongly opposed any laws prohibiting planned obsolescence (sub. 114, pp. 8–9). It argued that regulations that attempted to distinguish between planned obsolescence and the natural evolution of products would run into a serious risk of errors,

⁸⁷ While the ACL currently requires that the manufacturer take reasonable action to ensure that facilities for repair, and parts for the product, are reasonably available for a reasonable period after the product is supplied, the law is unclear as to whether this requirement also covers software updates. The Commission has recommended that manufacturers be required to provide reasonable software updates for a reasonable period of time after the product has been purchased (chapter 3).

such that consumers could end up worse off. It also noted that the ACL already provides significant protections against consumer harm resulting from any planned obsolescence (through the use of consumer guarantees, and preventative effects of provisions such as those prohibiting unconscionable conduct and misleading or deceptive conduct). It noted that reliance on these provisions would avoid needing to tackle ‘vexed questions’ such as:

- how to define planned obsolescence
- how to accurately determine what types of conduct harms consumers (outside of the bounds of the current consumer law) such that remedies are required, while avoiding ‘Type I’ (false positive) and ‘Type II’ (false negative) errors
- how to design remedies that best ameliorate consumer harm while avoiding imposing undue costs on manufacturers and stifling innovation.

On balance, the Commission considers there is insufficient evidence to warrant additional consumer protection measures to address planned obsolescence. The evidence that planned obsolescence is prevalent in Australia is mixed (section 6.3). Further, existing consumer protection laws, combined with inquiry recommendations to increase consumers ability to access their rights, may already address some of the behaviours associated with planned obsolescence. The ACCC has raised concerns and brought a number of cases against manufacturers and retailers for misleading, deceptive and unconscionable conduct that some people might associate with planned obsolescence (ACCC 2018a, 2018d, 2019b). For example, as noted earlier, the ACCC has successfully brought a case against HP PPS Australia for misleading behaviour relating to firmware updates in its printers (2018c).

Although the proposal outlined by the ACCC could increase consumer protections, more detail is required to understand how a general prohibition on unfair trading practices (or other measures to address unregulated unfair practices) would operate in practice with respect to planned obsolescence. This would help clarify whether the practical challenges identified by the Law Council of Australia could be overcome, and the extent to which the law could strike a balance between the interests of consumers and business. For example, the drafting of unfair practices laws that provide scope for an overly broad interpretation of ‘unfairness’ or planned obsolescence⁸⁸ may lead to unfairly penalising business and cause significant uncertainties about how the law will be applied. Accordingly, the Commission is unable to determine whether such general prohibitions on unfair trading practices would effectively address planned obsolescence. Introducing further powers for the ACCC (as proposed) solely to address the potential harms associated with planned obsolescence would seem to be a disproportionate response.

⁸⁸ This might arise if the general law was complemented with specific prohibitions that listed planned obsolescence.

Mandatory product design standards

Another option for preventing premature obsolescence suggested by inquiry participants was to mandate that products meet certain design requirements regarding durability and/or repairability. The Australian Democrats proposed government banning or heavily restricting the sale of consumer electronics that cannot be repaired in Australia and developing and enforcing a minimum standard for repairability (sub. 100, part 1, p. 21). The Design Institute of Australia and QUT Centre for Waste-Free World both noted that product design standards, such as those under the EU Ecodesign Directive, should be considered for similar categories of electrical and electronic products in Australia (sub. 108, p. 5; sub. DR172, p. 14) (box 6.8).

To date, the EU Ecodesign regulations for repairability have mainly focused on improving access to repair supplies, particularly for spare parts and repair information. The Commission has assessed the case for similar repair supply obligations in Australia (chapter 8). The regulations also include design standards, such as ensuring spare parts can be replaced using commonly available tools.

Other EU Ecodesign requirements are aimed at increasing product durability, such as ensuring television software updates are available for at least eight years after the last unit of product is sold on the market. As noted earlier, the Commission has recommended that reasonable software updates be available for consumer products for a reasonable period (chapter 3).

Mandating additional product design standards relating to repairability or durability could mean that people would pay more for products and have less choice. For example, mandating that all ink-jet printers have exchangeable containers for the residual ink to prevent claimed ‘printer death’ (box 6.4 above) might mean that manufacturers no longer provide printers at a low price point. In the case of ‘essential items’, like fridges, such regulations might also raise affordability concerns for low-income households.⁸⁹ The impact analysis for the new Ecodesign regulations (which includes energy efficiency standards) for washing machines noted that:

Price increases are a consequence of — inter alia — redesign efforts, including investment and updating the existing production lines, the enhancement of the intrinsic quality of the appliances, as well as the additional profit motive per se. If the volume of sales were significantly affected by the increase in the purchase price, this could have a magnified effect on the household washing machine and household washer dryer sector, and the whole supply chain ... (EC 2019b, p. 134)

⁸⁹ As the new Ecodesign product design regulations relating to repairability only came into effect in early 2021 and cover a limited number of products, there is very limited data with which to assess the effects on product prices. Although the European Commission undertook impact assessments for the new Ecodesign regulations, the analysis includes a broad range of regulations other than mandatory product design standards relating to repair and durability, making it difficult to isolate the predicted impacts.

Box 6.8 EU Ecodesign Directive

The EU Ecodesign Directive was established in 2009 and sets regulations aimed at improving the environmental performance of energy-consuming products. Historically, the Ecodesign regime has focused on energy efficiency requirements, but in recent years has been used as a tool to promote the circular economy (Brown and Hemmings 2019).

On 1 October 2019, the European Commission adopted new Ecodesign requirements related to increasing the repairability and recyclability of household products. After committing to these regulations prior to Brexit, the United Kingdom has since also implemented most of these regulations (DBEIS 2021). These regulations cover washing machines, dishwashers, fridges and electronic displays (televisions), and are the first to introduce repair and maintenance provisions for consumer goods in the European Union (besides motor vehicles) (Brown and Hemmings 2019; Mikolajczak 2021). The main repair requirements that manufacturers and/or importers must adhere to from March 2021 include:

- ensuring certain spare parts are available to professional repairers (including software for televisions, dishwashers and washing machines) for a specified period of time after the products have been placed on the market (for example, a minimum of seven years for fridges) and within a specified maximum delivery time (for example, 15 working days)
- providing professional repairers with access to repair and maintenance information
- providing certain repair and maintenance information (instructions, spare parts etc.) on freely accessible websites
- ensuring products are designed so that spare parts can be replaced with commonly available tools without permanently damaging the device (EU regulations 2019/2023, 2019/2022, 2019/2019 and 2019/2021).

These repair regulations also distinguish between repairs that can be commonly performed by purchasers and repairs that should be performed by professional repair workers. For example, the washing machine regulation requires manufacturers to make available to individuals and professional repairers the following parts: door, door hinge and seals, other seals, door locking assembly and plastic peripherals such as detergent dispensers (FTC 2021b, p. 49). The regulation, however, requires manufacturers to make additional parts available only to repair professionals.

Some other Ecodesign requirements aim to increase product durability.

- New rules for electronic displays require the latest software update to be available for at least eight years after placing the last unit of the product on the market (EU regulations 2019/2021).
- Minimum product life requirements for a limited number of product categories, such as the components of vacuum cleaners (minimum operational motor lifetime: 500 hours) (EC 2019a, p. 6).
- Requirements that software and firmware updates do not result in a deterioration of energy consumption for washing machines, dishwashers, televisions and fridges (EU regulations 2019/2023, 2019/2022, 2019/2019 and 2019/2021).

A common counter to this point is that mandatory product design standards to increase repairability or durability would provide consumers with financial benefits that offset the costs to some degree (such as cost savings from less frequent product replacement). However, such benefits may be illusory as product life is also a function of consumer behaviour. For instance, consumers may (and frequently do) still replace a product before

the end of its useful life in preference for the latest model — in this situation consumers would face higher costs overall.

Another counterargument is that mandating product design standards for increased repairability or durability would provide broader public benefits that justify any reduction in consumer choice (and impacts on affordability). For example, governments often use mandatory products standards where there is an immediate risk to human safety or the environment and there are few other policy options for mitigating those risks.

However, the case for using mandatory design standards relating to durability and/or repairability to address premature obsolescence is much less convincing. First, as discussed in section 6.3, the evidence on the extent of the problem for consumers and the environment is mixed. Second, there can be trade-offs between repairability and durability: a product that is more durable may be less repairable and vice versa. For example, the Ai Group observed:

In some cases, it is wasteful to build an extremely durable product, knowing that due to technological innovation it is unlikely to remain in use after a few years. In this case, a less durable design may conserve resources, while delivering a more affordable product to the consumer. When combined with effective product stewardship options for end of life, this may be a more desirable option to repairability (in some cases). (sub. 32, p. 11)

Third, there may be more effective ways of addressing consumer protection or environmental concerns associated with premature obsolescence than mandating that products meet minimum design standards regarding durability and/or repairability. If the policy concern is reducing the environmental impacts associated with the production, consumption and disposal of products (such as carbon emissions), Australia could extend existing policies that directly address those specific environmental impacts (section 6.2). The advantage of this approach is that:

- **it would target each environmental concern directly and transparently.** For example, policies such as a carbon price directly discourage emissions-intensive activities and products. In contrast, mandatory product design standards rely on there being a strong relationship between product durability/repairability and the environmental impact of concern. However, studies show the relationship between product features (such as durability, modularity and repairability) and different environmental impacts are highly complex. It is not always a case of more is better. Proske and Jaeger-Erben undertook case studies on selected smart phones and concept phones (Fairphone, Puzzle Phone, and Google ARA) that showed there is no ‘one-size-fits-all’ design to fulfil consumers’ needs and reduce environmental impacts with regards to different user habits (2019, p. 65). For example, they noted that while a modular phone can increase product lifespan by allowing upgrades over time, it should not be so modular that consumers are constantly upgrading parts, so that the environmental benefits of longer use are no longer realised (Proske and Jaeger-Erben 2019, p. 64)
- **it would provide greater scope to minimise the overall cost of meeting the environmental objective.** Mandatory product design standards are inherently inflexible and thus provide limited scope to minimise the cost of meeting the environmental

objective. For example, if the objective is to reduce carbon emissions, a mandatory design standard essentially forces all carbon abatement to come from the limited set of products that are subject to the standards. In contrast, a more broadly based policy (which covers a range of activities) and directly targets emissions is likely to be much more efficient as it allows least cost abatement. At the very least, the cost of abatement through mandatory standards should be compared with other options.

Finally, there is already some movement from volume purchasers (such as large companies and governments) to influence product design through their procurement policies to improve repairability and extend product lifespans through longer product use cycles. Some evidence suggests that private businesses are purchasing more environmentally-friendly products as consumer demand and global trends change (Baxmann 2021; Riihimäki 2020). For example, TCO Development noted that:

... we need to move away from this typical three to four year use cycle ... We're seeing more and more procurement contractors extending that use phase now to five to six years ... [and] we're seeing ... that volume demand from institutional procurement is starting to drive product design that allows for better repairability in the longer term. (trans., pp. 183–184)

Further, Australian Government procurement policies already require agencies to consider environmental impacts when purchasing goods and services, and the Australian Government released a Sustainable Procurement Guide to provide practical assistance on how to evaluate these impacts (DAWE 2020d, p. 7). For example, this guide suggests the need to consider purchasing goods that can be reused, repaired and recycled at the end of their life (DAWE 2020d, p. 15).

Tax incentives and subsidies

Several inquiry participants suggested exploring whether tax incentives could increase the rate of repair (for example, Erin Lewis-Fitzgerald, sub. 75, p. 2; LGNSW, sub. 97, p. 11; WWF, sub. 54, p. 5). Suggestions included exempting repair services and spare parts from the goods and services tax, tax deductibility for repair costs, and subsidies to support repairers. Several European countries are trialling different forms of tax incentives and subsidies (box 6.9).

Participants suggested that tax incentives or subsidies for repair could reduce the environmental impacts of high rates of product replacement (such as waste to landfill) by reducing the price of repair relative to replacement in order to encourage repair (for example, NSROC, sub. 117, p. 10; WMRR, sub. 85, p. 4). In principle, this strategy aims to adjust prices because the current prices of new products do not necessarily take into account these environmental impacts, causing an overconsumption of replacement products and an underconsumption of repairs (section 6.2).

However, tax incentives and subsidies appear unlikely to be an effective or direct way of increasing the rate of repair to reduce environmental impacts, with the costs likely to outweigh the benefits and causing their own distortions.

The benefits may be limited. Depending on their size, tax incentives and subsidies are only likely to increase demand for repair at the margin. For example, evidence from Europe suggests that reduced value-added tax rates and tax deductibility are not necessarily effective at influencing many additional consumers to undertake repairs (box 6.9).

Further, the cost of funding tax incentives and subsidies are quantifiable and can be significant because they are difficult to target. Given that tax incentives and subsidies for repair are generally available to everyone, this requires subsidising consumers who would have repaired their products anyway. This is a high cost to achieve limited additional demand for repair. For example, a policy proposed in Sweden to extend a 50 per cent tax deduction on labour for the repair, rental and sale of used products is expected to cost €180 million per year (box 6.9) (Moula, Sorvari and Oinas 2017, p. 92). Tax incentives also create further complexity in the tax system, which imposes additional compliance and monitoring costs.

Finally, if the aim of tax incentives and subsidies is to reduce environmental impacts, like mandatory product design standards (above), this funding could instead be used to pursue policies that directly and transparently address those specific environmental impacts (section 6.2).

On balance, the Commission does not support the introduction of tax incentives and subsidies to encourage repair.

Box 6.9 European tax incentives and subsidies for repair

Value-added tax (VAT) rate reductions

Since 2009, the European Union has allowed member countries to permanently apply reduced VAT rates to certain labour-intensive local services, including minor repairs of bicycles, shoes and clothing (EC 2009). At least ten countries have since applied these reduced rates (Avalara 2021; Hughes 2021; vatglobal 2019). For example, Belgium reduced its standard VAT from 21 to 6 per cent for certain repairs (Avalara 2021).

However, some evidence suggests that reduced VAT rates may not significantly increase repair services. In a Swedish study which interviewed ten shoe or bicycle repairers, half claimed there was no change in the number of repairs following the VAT reduction, and while the other half noticed an increase, most of those believed this was due to less competition in the area rather than the VAT reduction (Dalhammar et al. 2020, pp. 36–38). Another study, in the Czech Republic, asked 317 labour-intensive service businesses (restaurants, hairdressers, and shoe and bicycle repairers) how they would react if the VAT was reduced (Randová, Krajňák and Friedrich 2013, pp. 508, 511). Most of the respondents, particularly repairers, claimed that they would not decrease prices. This would therefore be unlikely to increase demand for these services. Instead, most respondents stated that they would invest the additional funds in their business or increase profits.

(continued next page)

Box 6.9 (continued)**Tax deductions for the cost of labour**

In addition to reducing the VAT rate for minor repairs from 25 to 12 per cent, in 2017 Sweden introduced a tax deduction which allows consumers to claim up to 50 per cent of repair labour costs for white goods (and updated rules for information technology (IT) devices) (Dalhammar et al. 2020, p. 34). The tax deduction for white goods was expected to cost about SEK 190 million in lost taxes per year (The Local Sweden 2016).

A study that interviewed five white good and seven IT repairers found that the Swedish tax deduction had mixed results (Dalhammar et al. 2020, pp. 38–40). On the one hand, none of the white good repairers believed there had been a change in the number of repairs since the updated tax deduction was implemented, suggesting that this was largely because the high cost of replacement is the main driver of repair. On the other hand, four out of seven IT repairers claimed that the number of repairs had increased, although they noted that it was hard to know if this was linked to the tax deduction.

Sweden recently proposed a new ‘hyber deduction’ policy which would extend the 50 per cent tax deduction on labour to the repair, rental and sale of used products (Dalhammar et al. 2020, p. 21). This is expected to cost the Swedish budget up to €180 million per year (Moula, Sorvari and Oinas 2017, p. 92).

‘Repair bonus’ subsidy

In addition to reducing the VAT rate for minor repairs from 20 to 10 per cent, several states in Austria have implemented a ‘repair bonus’ which reimburses consumers up to 50 per cent of the cost of electrical appliance repair, up to a maximum of €100 (Piringer and Schanda 2020).

Product labelling

There is some evidence that, for certain types of products (such as white goods and consumer electronics), some consumers find it difficult to access relevant information about product durability and repairability when making purchasing decisions (section 6.3). Such information gaps could contribute to premature obsolescence by preventing consumers from selecting more repairable and durable products based on their preferences, and reducing manufacturers’ incentives to develop these products. This can also add to concerns about the environmental costs associated with shorter-lived products.

One means of addressing this concern would be to supplement or aggregate relevant information on product repairability and durability in a comparable format, such as through product labelling.

A pilot product labelling scheme should be implemented

There was widespread support for a product labelling scheme from consumer and environmental groups, and some government agencies (for example, ACCC, sub. DR214, p. 7; CHOICE,

sub. DR232, p. 28; CPRC, sub. DR212, p. 2; DAWE, sub. DR211, p. 2; E-waste Watch Institute, sub. DR221, p. 1; South Australian Repair Café Coordinators, sub. 46, p. 15).

There has also been momentum towards repairability and durability labels internationally. France recently implemented a mandatory repairability index for certain electronic products and white goods, and plans to expand the scheme to include more products and information on product durability (box 6.10).⁹⁰ Other European countries, such as Spain (La Moncloa 2021), have committed to implementing the French repairability index and it is likely that the French labelling scheme will form the basis of a future European-wide scheme. Indeed, in November 2020, the EU parliament voted for the European Commission to:

... develop and introduce mandatory labelling, to provide clear, immediately visible and easy-to-understand information to consumers on the estimated lifetime and [repairability] of a product at the time of purchase. (European Parliament 2020)⁹¹

However, some manufacturers argued that consumers already have access to repairability and durability information and expert advice for some products (such as gas heaters and cars), and therefore requiring a new label for these products would have little benefit to consumers and impose unnecessary costs on manufacturers (IGEA, sub. DR180, p. 15; Rheem, sub. DR167, p. 4; VACC, sub. DR218, p. 17). Other manufacturers expressed some concerns about the difficulty of designing a repairability or durability label. For example, differences in climate (Picker, trans., p. 316) and consumer behaviour (Ai Group, sub. DR238, p. 2) can make it difficult to estimate product life.

While product labelling could fill some information gaps, these benefits need to be compared with the costs of such a scheme. Initially, there would be design and implementation costs. There would also be annual running costs, including administration and monitoring costs. The annual running costs for a somewhat comparable scheme — the water efficiency labelling scheme (WELS) — ranged from \$1.44–2.81 million from 2012 to 2015 (box 6.11) (WELSR and DAWR 2015, p. 38). While the WELS provides a reasonable estimate, the cost of a product labelling scheme (and who bears it) will depend on the scheme design, such as the type of information and number of products included in the scheme.

⁹⁰ Some early evidence suggests that firms are already competing on repairability aspects. For example, after the implementation of the French repairability index, Samsung started offering free French-language repair manuals for the Galaxy S21+ in order to increase its repairability score (Purdy 2021a).

⁹¹ To this end, the European Commission has conducted a study on product repairability and the development of a scoring system, and another study on the effects of repairability scoring on consumer behaviour (EC 2021a).

Box 6.10 The French repairability index

In developing the 2018 French Circular Economy roadmap, Agence de la transition écologique (ADEME) initially investigated developing a durability label to show the lifespans of products. However, ADEME did not proceed with this proposal in part due to industry concerns that it would (at that time) be too costly and difficult to design, and risked confusing product lifespan with warranty time frames (ADEME, pers. comm, 9 September 2021).

Since then, ADEME has developed the repairability index label. This index may have been more straightforward to design and implement than a lifespan label as some of the information — such as the availability of spare parts — was already required to be available under the EU Ecodesign Standards (box 6.8). The repairability index was implemented in January 2021 and applies to smart phones, laptops, televisions, washing machines and electric lawn mowers (Ministère de la Transition Écologique 2021). The index is mandatory and monitoring of compliance will begin in 2022 (Right to Repair 2021). The index aims to:

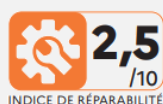
- increase consumer awareness about the possibility of extending their products' lifespans and encourage consumers to purchase more repairable products, to help reduce e-waste and encourage the circular economy (Ministère de la Transition Écologique 2021)
- reduce product obsolescence — planned or not — to help preserve the natural resources required for production (Ministère de la Transition Écologique 2021)
- achieve a 60 per cent repair rate for electrical appliances within five years (currently the French repair rate is about 40 per cent) (Spareka 2021).

The index is a score ranked out of 10 (figure below) and must be displayed near the product at the point of sale, and online next to the price of the product (Right to Repair 2021). The score is self-declared by the manufacturer — regulated through the French market surveillance authorities (Right to Repair 2021). The score covers five criteria (to be made available to consumers upon request), each worth 20 per cent of the final score:

- documentation: availability of technical documentation
- disassembly: ease of disassembly of the product for repair and the types of tools needed
- availability of parts: the duration of spare parts availability and the time taken to deliver them
- price of spare parts: the ratio of the sale price of spare parts to the price of the product
- product-specific criteria: a score determined by product-specific sub-criteria. For example, for smart phones, laptops and televisions this criterion includes software information aspects (Ministère de la Transition Écologique 2021).

The repairability index is expected to be extended to tablets, top-loading washing machines, dishwashers, vacuum cleaners and high-pressure hoses (ADEME, pers. comm, 9 September 2021). In 2024, the repairability index is scheduled to be augmented with a durability index to include some durability information on the same subset of products (Ministère de la Transition Écologique 2021). Work is currently underway to determine what type of durability information should be included and how it would interact with the repairability index (ADEME 2021, p. 9) — such as whether it will be a separate index or be combined with the repairability index.

French repairability index product labels



Box 6.11 **The water efficiency labelling scheme**

The water efficiency labelling scheme (WELS) covers showers, certain tap equipment, flow controllers, toilets, urinals, dishwashers and washing machines. It is a mandatory scheme, which is co-funded by the Australian, state and territory governments, and industry (through product registrations fees). Up to 2015, the Australian Government and industry each contributed about 40 per cent of the funding, with the remainder covered by state and territory governments.

Some of the costs associated with the WELS include:

- design and implementation costs — such as determining the metrics used in the scheme
- annual government operational and administration costs — the size of this cost varies greatly due to changing operating expenses and registration revenue. In 2014-15, government contributions (net of registration fees) were expected to be \$392 000
- direct costs to industry — this includes registration fees, which were \$81 per product on average in 2014-15. But this cost would vary depending on the number of products sold by a business. It also includes product testing and labelling costs, and any time taken to renew product registrations. Product testing costs were estimated to be between \$500 and \$3000 per new product registration
- costs to consumers — any costs borne by manufacturers will generally be passed onto consumers, however, this cost is small given the volume of products sold is large.

Source: WELSR and DAWR (2015, pp. 2, 5–6, 38).

On balance, there is sufficient evidence of an information gap for some product categories, such as white goods and consumer electronics, to warrant government further exploring the merits of product labelling. In light of some uncertainty about how much consumers value specific aspects of repairability and durability for specific products, and the potential compliance costs of a product label, the Commission recommends first introducing a pilot labelling scheme on a limited number of products where the benefits are likely to be the greatest. This would help build up the evidence base on the benefits and costs of labelling and inform how to improve and potentially expand the scheme in the future. However, several design elements need to be further clarified before any scheme could be implemented.

A roadmap to introduce a product labelling scheme

The Australian Government should develop a product labelling scheme for product repairability and/or durability information in three key stages:

1. commit to introducing a product labelling scheme within five years and establish a working group to steer its development
2. design and implement a pilot scheme for products where it is likely to have the most benefits (such as white goods and consumer electronics)
3. review the pilot scheme within two years of commencement to assess its effectiveness and whether it should be modified or expanded to include additional products in the formal scheme.

Stage 1: Commit to developing a product labelling scheme and establish a working group

The Australian Government should articulate its intention to introduce a product labelling scheme that provides information about product repairability and/or durability within five years. This will provide credibility and accountability for the development of the scheme, thereby encouraging stakeholders to work constructively toward its formation.

As part of this commitment, the Australian Government should establish a working group to steer the development of a pilot scheme. The working group should be comprised of relevant government agencies such as the Department of Treasury, the Department of Industry, Science, Energy and Resources, the Department of Agriculture, Water and the Environment and the ACCC. The working group should consult on scheme design with a separate advisory group comprised of consumer, industry and environmental stakeholders.

Stage 2: Design and implement a pilot scheme by conducting further research

The working group should design and implement a pilot product labelling scheme. This will require carefully designing the scheme so that it effectively targets the key information gaps and maximises the net benefits to the community. To inform the design, the working group should undertake certain actions to develop a better understanding of the:

1. specific products affected by information gaps and the types of information consumers value for those products
2. most effective way of communicating information
3. most effective governance arrangements.

Action 1: Improve the understanding of the specific products affected by information gaps and the types of information consumers value for those products

Evidence indicates that consumers face gaps in repairability and/or durability information for some white goods (such as washing machines and dishwashers) and consumer electronics (such as smart phones and televisions). However, further market and consumer research is required to target the specific products that face the greatest information gaps and identify the specific type of information that consumers value for those products. For example, this information could be the price of replacement batteries for smart phones, or the expected lifetime for washing machines under normal use.

Research should involve consultation with the advisory group, as well as consumer testing. This research would increase the pilot scheme's effectiveness and help to determine whether the scheme needs to include different information for different products or if there are similar information gaps across products.

Action 2: Improve the understanding of the most effective way of communicating information

Once the working group has identified the relevant products and information for a pilot scheme, further research should be conducted to determine effective ways of communicating this information to consumers.

To ensure it is effective, information should be provided in a clear, understandable and comparable format. It should also be provided at the key decision-making moment — such as the point of purchase or otherwise available to consumers during their product research. This could be on a product label or online (or both). The choice of label may partly depend on how similar information gaps are across products.

There are different ways that the information could be presented. For example, it could be a:

- specific measure of repairability or durability — for example, the expected product lifetime under normal use, presented in years. This option may be effective at presenting a specific feature that consumers value for that product. Depending on the measure, this may go a long way to filling the information gap for that product. However, a single measure may ignore other important factors that contribute to the repairability or durability of a product
- composite rating summarising a number of different measures — such as a star rating calculated from several measures of repairability or durability (for example, availability of repair manuals and price of key spare parts). This option allows multiple complex measures to be presented to consumers as a simple aggregated score. However, the calculation of composite ratings can sometimes be contentious (ZWV, sub. DR234, p. 5). For example, iFixit noted that the composite rating used in the French repairability index:

... isn't perfect. Its first limitation is how easy it is to obtain a good grade. This is for instance the case for smartphones and laptops: by indicating simply the nature of software updates (corrective, upgradable or mixed), manufacturers can gain 1 point out of 10. This is a free point as this information does not limit software obsolescence whatsoever. By being too generous, the index risks not differentiating enough between more and less repairable products, reducing its usefulness for consumers. (sub. 107, p. 25)

The interaction between a repairability or durability label and other product labels should also be considered in its design. For example, washing machines and dishwashers already use labels for water and energy efficiency. It is also important to consider whether the scheme could be harmonised with other product labels to improve comparability and avoid unnecessary compliance costs. This could include Australia's star rating labels or the French repairability index, or both (such as converting French index scores into a star rating label).

Further research on these design aspects would also clarify the extent of monitoring and compliance that is required. For example, a composite rating based on many measures may require greater monitoring to ensure manufacturer representations are accurate.

Action 3: Improve the understanding of the most effective governance arrangements

For the pilot scheme to be effective and credible, the working group will need to consider and articulate various governance arrangements, including the roles and responsibilities of participants. Key principles that inform the design of the governance arrangements include:

- transparent methodology — consumers are more likely to use the label if they are confident it is based on robust metrics. Governance arrangements can support this goal through measures such as publishing the underlying information and methodology used to calculate the label score
- strong industry uptake — if very few manufacturers use the labels it will be difficult for consumers to compare products. While a mandatory scheme could impose greater compliance costs for suppliers and block entry for smaller new suppliers, compared with a voluntary scheme, it might need to be considered to ensure there is sufficient uptake
- accountability — it will be important for manufacturers to be held accountable for meeting their requirements under the label. This would require regular monitoring and enforcing compliance. These roles could be assigned to a specific regulator, which could be industry- or government-run (similar to WELS), or through a co-regulatory arrangement (such as the National Television and Computer Recycling Scheme (chapter 7)). Alternatively, enforcement could rely on the false and misleading statements provision in the ACL, which requires that statements representing a product are true, accurate and able to be substantiated (ACCC 2021g)
- resourcing — it is important that the scheme — whether it be industry, government or jointly funded (similar to the WELS) — is adequately funded to ensure its long-term viability and credibility. For example, there are concerns that the French market surveillance authority may not have adequate resources to extensively check manufacturer compliance with the repairability index (Right to Repair 2021).

Stage 3: Review the pilot scheme and modify or expand as necessary

Within two years of commencement, the pilot scheme should be reviewed to assess its effectiveness and whether it should be modified or expanded to include additional products in the formal labelling scheme. Key indicators of success to consider could include:

- whether governance arrangements are effective
- consumer surveys to measure awareness, confidence with, and use of the scheme
- change in the average label score or proportion of products which receive a high score (if a scoring system is used) — for example, an increase in the proportion of products achieving four stars or higher. This is an important ongoing measure to monitor. If the average label scores have substantially improved to the point where there is little difference between most products, the scoring system may need to be re-weighted. This will ensure that consumers can continue to compare differences in product repairability or durability and manufacturers have an incentive to compete on these characteristics

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- qualitative evidence on improved access to repair supplies — for example, evidence of manufacturers providing repair manuals to improve their repairability score.

There should be ongoing monitoring of the pilot scheme to collect data for this review.

Summary

On balance, additional policies to prevent premature product obsolescence — in the form of mandatory product design standards, tax incentives and subsidies, or expanded consumer protection laws — are unlikely to have net benefits for the community. However, a product labelling scheme, particularly for white goods and consumer electronics, is likely to address information gaps in product repairability and/or durability. This would assist consumers to purchase more repairable and durable products that align with their preferences and encourage manufacturers to develop these types of products. Other potential reforms proposed in this inquiry that enhance consumer rights (such as improving access to alternative dispute resolution processes) and improve access to repair supplies (such as requiring reasonable software updates) would also help address some of the concerns associated with premature obsolescence (chapter 3).

FINDING 6.2 INTERVENTIONIST RESPONSES TO PREMATURE OBSOLESCENCE ARE NOT NEEDED

Additional policies to prevent premature product obsolescence — in the form of mandatory product design standards, tax incentives and subsidies, or expanded consumer protection laws — are unlikely to have net benefits for the community. The Commission does not support such proposals.

Mandatory product design standards, as well as tax incentives and subsidies for repair, are costly and unlikely to be an effective way of addressing concerns about the environmental costs associated with premature obsolescence.

Existing consumer protection laws, combined with this inquiry's recommendations — to increase the ability for consumers to access their rights and a new product labelling scheme (recommendation 6.1) — are likely to address some of the behaviours associated with premature obsolescence.

FINDING 6.3 BETTER CONSUMER INFORMATION COULD LEAD TO LONGER-LIVED PRODUCTS

Product labelling is likely to help address information gaps in product repairability and durability for certain products, such as white goods and consumer electronics (finding 6.1). This can assist consumers to purchase more repairable and durable products that align with their preferences and encourage manufacturers to develop these types of products.

RECOMMENDATION 6.1 DEVELOP AND INTRODUCE A PRODUCT LABELLING SCHEME

The Australian Government should develop a product labelling scheme that provides consumer information about product repairability and/or durability. It should develop the scheme in three key stages.

1. Commit to introducing a product labelling scheme within five years and establish a working group (comprising relevant government agencies) to steer its development in consultation with consumer, industry and environmental groups.
2. Design and implement a pilot scheme for products where it is likely to have the most benefits (such as white goods and consumer electronics).
3. Review the pilot scheme within two years of commencement to assess its effectiveness and whether it should be modified or expanded to include additional products in the formal scheme.

7 Managing e-waste

Key points

- Australia's generation of e-waste is increasing relatively quickly compared to other waste streams, but remains less than one per cent of total waste generation.
 - Solar panels and lithium-ion batteries are expected to generate rapidly growing quantities of e-waste over the coming decade.
- Community concerns about e-waste tend to focus on the valuable resources that are 'lost' when e-waste is landfilled, and the risks to the environment and human health caused by hazardous materials in e-waste.
 - Markets provide incentives to prevent the loss of materials when their value exceeds the costs of extraction, but risks from hazardous waste may require government intervention, as those risks are dispersed and typically do not fall on those making disposal decisions.
- All levels of government are involved in e-waste management, with their policies and programs guided by the National Waste Policy. Roughly half of Australia's e-waste is recycled, with the remainder disposed to landfill, and an unknown amount illegally dumped.
 - Although Australia's landfills are generally well-regulated and well-managed, making risks to the environment and human health relatively low, some State and Territory Governments have banned the disposal of e-waste to landfill.
 - Australia's domestic e-waste recycling capacity is limited, partly due to structural barriers — including a small and dispersed population and relatively high labour costs.
 - The lack of cost-effective recycling can increase incentives to stockpile, dump or unlawfully export e-waste, and there is some evidence that these activities are occurring in Australia, despite existing regulations to prevent these outcomes.
- The Australian Government accredits and regulates national product stewardship schemes for the recycling of some types of e-waste, including the National Television and Computer Recycling Scheme (NTCRS), Mobile Muster and the new Battery Stewardship Scheme.
 - These schemes have had some success. However, despite some recent changes to relevant legislation, current scheme design remains focused on e-waste recycling, with minimal emphasis on repair and reuse of products that have been disposed as e-waste. The recycling target for the NTCRS should be adjusted to also count e-waste that has been repaired and reused. There would also be merit in considering different approaches to improve access in regional and remote communities.
 - To better monitor outcomes, the Australian Government should also increase the use of tracking devices to determine the end-of-life locations of e-waste, particularly for items collected for recycling through the NTCRS.
 - As e-waste generation increases, there will be additional pressure to create new co-regulatory or mandatory product stewardship schemes, or expand current schemes. Before this occurs, net benefits to the community should be shown for each proposal.

All products reach the end of their useful life and turn to waste eventually. Some products reach their end because they are broken and cannot be economically repaired, perhaps because repair is considered too expensive by consumers or is not easily accessible, such as due to a lack of suitably skilled repairers or spare parts. Other products are replaced while still working, in favour of newer, more valued models (chapter 2). Repair and maintenance services themselves often generate waste as a by-product from replaced parts. And even well-maintained and well-loved products will eventually break or fail.

Waste electrical and electronic products (including batteries and products with plugs or cords) are commonly referred to as ‘e-waste’. The scope of what is defined as e-waste has expanded over time as more products incorporate electronics and technology. Many of the products considered in this inquiry — including consumer electronics, household appliances and some vehicle parts — fall into the category of e-waste.

The terms of reference for this inquiry suggest that expensive repairs and complex product designs have been accelerating the transfer of consumer products into waste, and that the Commission should examine ‘the effectiveness of current arrangements for preventing ... the proliferation of e-waste, and further means of reducing e-waste through improved access to repairs’. Some inquiry participants also expected increased access to repair services to result in a reduction in the amount of e-waste generated.

A legislated right to repair would be a significant contribution to the reduction of e-waste going to landfill. (IT Professionals Australia, sub. 26, p. 7)

Right to Repair reform is also a step in the right direction for the significant issue of e-waste, reducing emissions and land/air pollution. (Australian Democrats, sub. 100, part 1, p. 45)

Implementing a robust right to repair in Australia would be an important complementary step [with recycling] to minimise the environmental harm caused by e-waste. Enabling people to repair and upcycle the technology they use will reduce the amount of e-waste to be recycled by third parties, or ending up in landfill. (DRW and EFA, sub. DR230, p. 6)

Others were more sceptical of the role that a right to repair could play in reducing e-waste. For example, both the Law Council of Australia (sub. 114, pp. 9–10) and the Australian Information Industry Association (AIIA, sub. 127, p. 22) suggested that a right to repair will have little impact on e-waste generation, as it is only a minor factor, with the AIIA also observing that:

... ultimately products will reach an end of serviceable life and be directed to waste management facilities. The replacement of faulty parts with repaired parts results in the faulty parts and the packaging of replacement parts then having to be directed to e-waste recycling facilities. (sub. 127, p. 22)

To some extent, barriers to repair can contribute to the proliferation of e-waste, by preventing consumers from repairing and reusing products and instead discarding them. Reducing barriers to repair (as proposed in other chapters in this report) may also reduce e-waste generation. However, there are likely to be other, more direct and effective, ways of addressing the harms caused by the generation of e-waste to the community and the environment — which are the focus of this chapter.

In particular, this chapter discusses the impacts of e-waste generation and management, including policies for managing and preventing e-waste.

- Section 7.1 outlines recent trends and drivers in Australia’s generation of e-waste.
- Section 7.2 outlines how the Commission has assessed the benefits and costs of different e-waste management methods and discusses the nature of community concerns about e-waste, particularly the ‘loss’ of resources when e-waste is landfilled and the hazardous nature of e-waste materials.
- Section 7.3 discusses how Australian e-waste is regulated and disposed of (such as through landfilling, recycling and domestic and international stockpiling and dumping) and the associated costs.
- Section 7.4 discusses Australia’s e-waste product stewardship schemes, including ongoing changes to the policy and legislation, as well as opportunities for improvement.

Some participants also raised e-waste issues within the context of the circular economy and broader product design issues. The circular economy and the environmental costs associated with short-lived products (including product design issues) are discussed in chapter 6.

7.1 Australia’s generation of e-waste is growing relatively quickly, but is a small share of total waste

Australia’s annual generation of e-waste is growing relatively quickly compared to other forms of waste (figure 7.1, panel a). Between 2009-10 and 2018-19, the weight of e-waste⁹² generated annually has more than doubled, increasing from 233 to 539 kilotonnes — a 131 per cent increase (ABS 2013, 2020a). By comparison, total waste grew from 53 700 kilotonnes to 75 800 kilotonnes over the same time period — a 41 per cent increase (ABS 2013, 2020a). Analysis for the Australian Government Department of Agriculture, Water and the Environment (DAWE) estimated 521 kilotonnes of e-waste was generated in 2019, with Australians generating 20.4 kg of e-waste per capita (Bontinck et al. 2021, p. 22).

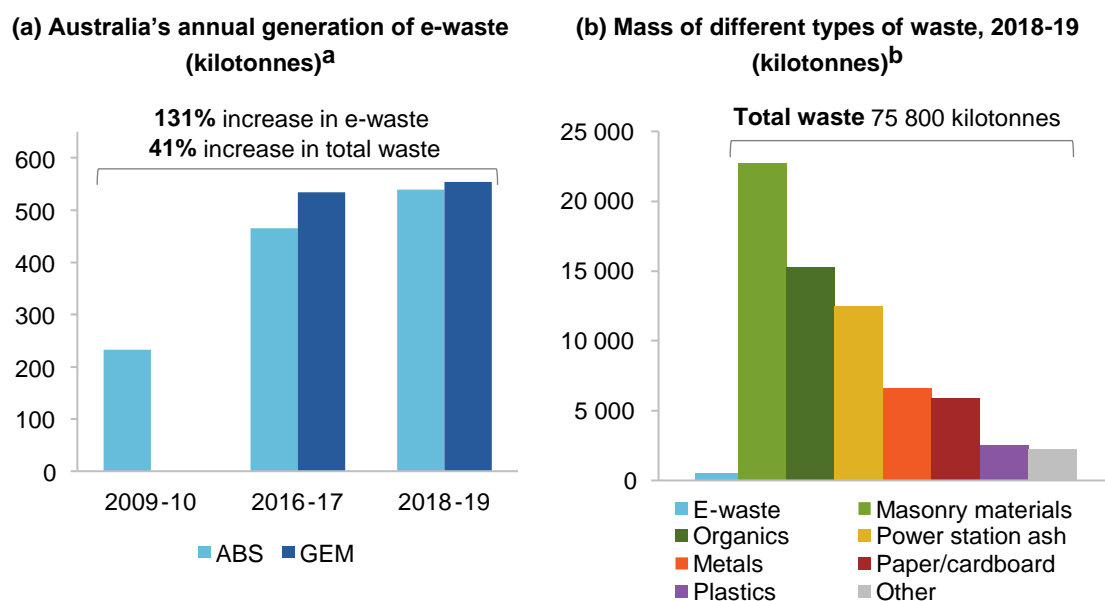
Yet e-waste only represents a small proportion (less than one per cent by weight) of total waste generated annually in Australia (figure 7.1, panel b).

Over the course of the inquiry, the Commission heard stakeholder concerns about the increasing number of solar panels that are expected to reach the end of their life and become e-waste in the near future (BRU, sub. DR198, p. 2; DAWE, sub. DR211, p. 3; GECA, sub. DR222, p. 3; LGNSW, sub. 97, p. 5), as well as concerns about batteries found in electrical and electronic products (comment 56; MTA Queensland, sub. 80, p. 3; Techtronic Industries, trans., p. 152; WWF, sub. 54, p. 2). Estimates of the quantity of these products entering the waste stream are high — 100 kilotonnes of solar panels are expected to require

⁹² E-waste is typically measured by weight (kilotonnes/tonnes), or occasionally by the number of disposed products (thousands/millions of devices).

disposal in 2035 (Equilibrium 2019, p. 20) and up to 180 kilotonnes of lithium-ion batteries are expected to become waste by 2036 (Zhao et al. 2021, pp. 17–18). Together, these estimates amount to over half the weight of e-waste currently generated (ABS 2020a).

Figure 7.1 E-waste generation has grown relatively quickly but is a small share of total waste



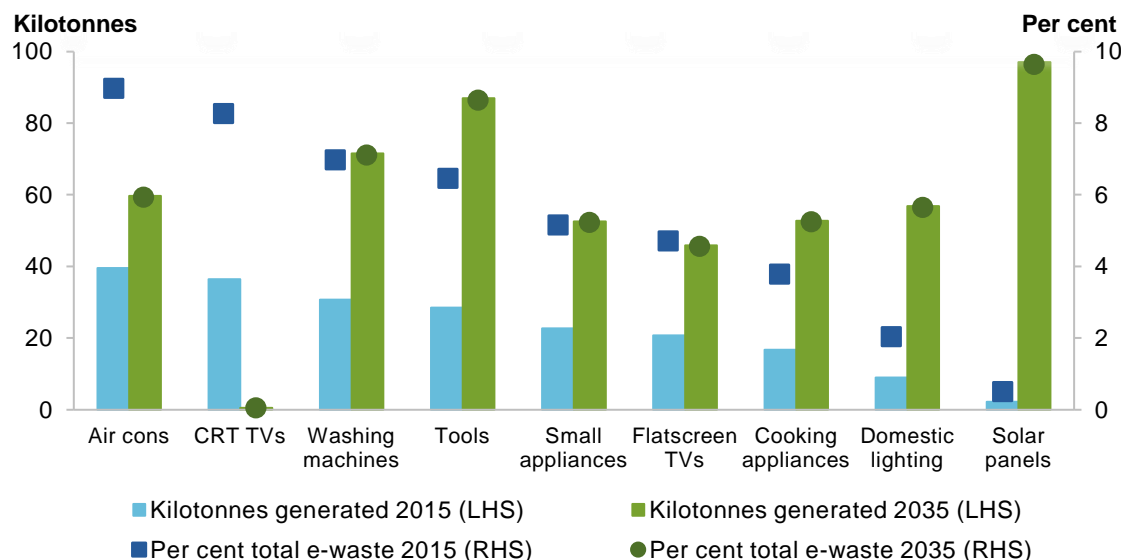
^a GEM refers to the Global E-waste Monitor estimates of Australia's annual e-waste generation. ^b E-waste figures are double counted among the different waste types, as e-waste is not a formal waste stream. 'Other' includes glass, textiles, leather and rubber, and other wastes.

Sources: ABS (Waste Account, Australia, Experimental Estimates, 2013, 2019 and 2020, Cat. no. 4602.0.55.005); Forti et al. (2020).

Analysis for Sustainability Victoria in 2015 (figure 7.2) indicated that, between 2015 and 2035, solar panels were expected to be the fastest growing source of e-waste (increasing from roughly 1 to 10 per cent of total e-waste). Other main sources of e-waste over the period were expected to be tools, washing machines, air conditioners, domestic lighting, small household appliances (such as adapters, irons and clocks) and cooking appliances (such as food processors). Cathode ray tube televisions were anticipated to decrease in prominence between 2015 and 2035, falling from 8 per cent of total e-waste generated to less than 1 per cent (Commission analysis of unpublished data from Sustainability Victoria 2015).⁹³ More recent estimates of e-waste generation found a similar result — waste solar panels, battery storage systems, large household appliances and temperature exchange equipment were estimated to increase substantially between 2019 and 2030 (Bontinck et al. 2021, p. 7).

⁹³ The analysis did not separate out (lithium-ion) batteries as a unique category.

Figure 7.2 Looking back and to the future: major categories of e-waste
Products contributing the most (by weight) to e-waste, 2015 and 2035^a



^a CRT = cathode ray tube; Tools include professional and household tools (welding/soldering equipment, drills, high pressure cleaners); Small appliances include irons, clocks, adapters; Flatscreen TVs = LCD, LED and plasma screen televisions; Cooking appliances include toasters, grills, food processors.

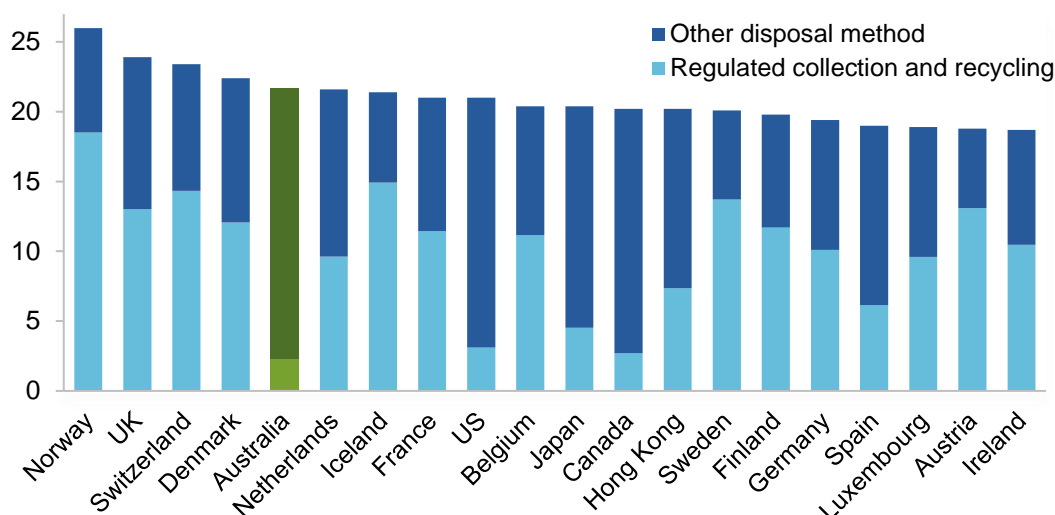
Source: Commission analysis of unpublished data from Sustainability Victoria (2015).

Key drivers of growth in e-waste generation include population growth and economic growth (as higher incomes have been associated with higher e-waste generation), as well as faster product turnovers (linked to consumer preferences), advancements in technology and some shorter-lived products (discussed in chapters 2 and 6) (Islam and Huda 2020, p. 1; Kusch-Brandt and Hills 2017, pp. 6–7; Purchase 2020, p. 2). Growth in e-waste is also driven by the electrification and computerisation of previously simple or analogue products (Knight 2020; LGNSW, sub. 97, p. 5; NSROC, sub. 117, p. 5) — for example, watches, toothbrushes, toys, scooters, furniture, and other ‘Internet of Things’ devices. Over the longer term, the growth in e-waste generation may also slow, as the number of products that can be electrified peaks, although this trend is not yet evident in the data. Unexpected fluctuations in demand can also increase some types of e-waste generation, such as the spike in consumption of IT equipment during the COVID-19 pandemic, as individuals set up home offices (PwC 2020, p. 8).

Compared to most other developed countries, Australia generates a large amount of e-waste per capita. The only countries estimated by the Global E-waste Monitor (GEM) to have higher generation per capita were Norway, the United Kingdom, Switzerland and Denmark, which were all estimated to recycle a higher share of e-waste through regulated schemes than Australia (figure 7.3).

Figure 7.3 Australians are some of the largest generators of e-waste

E-waste (kgs) generated per capita, 2018-19, top 20 countries



Source: Commission analysis, based on Forti et al. (2020).

About half of Australian e-waste is recycled, but e-waste data are patchy

Once e-waste is generated, it can either be recycled, disposed to landfill or, in some cases, illegally dumped (discussed further in section 7.3).

According to the ABS, the proportion of e-waste that was recycled increased from 27 to 50 per cent between 2009-10 and 2018-19, roughly the same rate as all other waste (ABS 2013, 2020a).⁹⁴ The majority of recycled e-waste was estimated to be fridges and other white goods, collected and processed by commercial recyclers (Pickin et al. 2020, p. 88). The remaining 50 per cent of e-waste was landfilled (ABS 2020a), with an unknown amount dumped illegally.

In contrast to the ABS, GEM estimated Australia's e-waste recycling rate as just 10.5 per cent in 2018-19, which was one of the lowest rates among developed nations (figure 7.3 above). One explanation for this discrepancy is that the estimates from GEM only include government-accredited e-waste recycling schemes (discussed in section 7.4), not independent e-waste and scrap metal recyclers operating on a commercial basis, which *are* included in the ABS figures. As such, GEM are likely to have underestimated Australia's true recycling rate.

⁹⁴ Analysis for DAWE estimated that, in 2019, 54 per cent of e-waste was collected for recycling. Only metals were recovered during the recycling process ('low efficiency' recycling) for a large proportion (80 per cent) of this collected e-waste (Bontinck et al. 2021, pp. 8, 21).

This and other discrepancies between the ABS and GEM data (such as the different estimates of annual generation in figure 7.1 above) are also indicative of a broader lack of reliable e-waste data. Current estimates are periodical or experimental (including the ABS estimates), while ever-changing definitional boundaries and significant overlap with more established waste categories (such as metals, plastics and glass) often make e-waste difficult to accurately measure and account for. Models estimating e-waste generation often apply expected product lifetimes to consumption data, which can underestimate new material streams and fail to account for ‘disruptive events’ (DAWE, sub. DR211, p. 3). Some of these data issues were also identified by the Commission in its 2006 inquiry into broader waste management. The Commission recommended improvements, such as adopting common definitions of waste categories and collecting data to facilitate evaluation of waste management policies across jurisdictions (2006, pp. 20–36, 390). More accurate and comparable data greatly assist good policy design.

FINDING 7.1 E-WASTE IS A SMALL BUT GROWING WASTE STREAM

Annual e-waste generation is growing relatively quickly compared to other waste streams (more than doubling by weight between 2009-10 and 2018-19), but is a small share (less than one per cent by weight) of total waste generated in Australia.

Information on e-waste is limited, but available data suggest that:

- the main sources of e-waste (by weight) over the past decade were tools, washing machines, air conditioners, small domestic appliances (such as adapters, irons and clocks), cooking appliances (such as food processors and grills), and cathode ray tube televisions
- solar panels and lithium-ion batteries are expected to generate growing quantities of e-waste over the coming decade.

7.2 Community concerns about e-waste

The relatively fast growth in e-waste generation has led to substantial concerns from some groups in the community, with calls for additional government regulation and intervention, as well as broader cultural changes in waste management. In particular, community concerns typically relate to recovering the value of materials in e-waste and avoiding potential hazardous impacts of e-waste on the environment and human health (discussed below). In examining these concerns, the Commission has assessed the economic costs and benefits of e-waste management policies.

How the Commission assessed e-waste management systems

As the Commission outlined in its 2006 *Waste Management* inquiry, different types of waste (including e-waste) and the various methods of managing waste generate different costs and

benefits to consumers, households, businesses, the environment and to the community more broadly (PC 2006, pp. 61–142).

- Community-wide benefits of e-waste management include any avoided damage to the environment or human health, or loss of social amenity, while private benefits (particularly for businesses) include the financial gains to waste managers from selling valuable recycled materials (both discussed below).
- Yet no waste management system is free, with costs (of collection, transport, storage, processing and disposal) varying across different management methods. These costs accrue to either private companies (from collecting e-waste for access to valuable recycled materials) or to consumers and the broader community (for example, from government mandated or financed waste collection and recycling programs).

Ideally, the best outcome for the community (that is, where net benefits are maximised) will occur when all costs and benefits of managing e-waste are taken into account as consumers, households and businesses decide how to dispose of e-waste.

However, this does not always occur, as some benefits and costs of waste management decisions accrue to the broader community, resulting in distorted outcomes or a ‘market failure’. For example, consumers disposing of e-waste may only consider their private costs (such as financial or time costs to deliver e-waste to landfill), but not the consequences of their choice on others, including the environmental, health and social amenity costs (‘externalities’) of different management methods after the e-waste is generated (‘downstream’ costs).

Where these external costs exist, there may be a role for government intervention to ‘internalise’ the externalities — ensuring that the prices faced by decision makers account for all of the impacts on the community. But the choice of whether or not to intervene needs to be determined by weighing the costs associated with changes to e-waste management against the benefits for the community.

However, weighing up all of the potential costs and benefits to the community is difficult. For one, the relevant external costs are complex to quantify, as they are often unobserved and dispersed broadly throughout the community. One way to get around these difficulties is to ask consumers or other decision makers about their willingness to pay (WTP) to avoid externalities. But WTP surveys are often problematic to use and construct, as imperfectly informed consumers may systematically over- or under-estimate the harm to the environment or human health (box 7.1). An alternative method is to use estimates based on ‘revealed’ preferences — observations of actual behaviour in real world settings — although no such Australian research appears to have been done for e-waste management.

The costs of government intervention can also vary considerably. For instance, some government policies can create adverse or unintended outcomes, as well as regulatory costs for e-waste managers, which may ultimately be passed on to producers and consumers of electrical and electronic products. Other policies can be subject to increasing or decreasing

returns to scale (or sometimes both⁹⁵), making the cost of government interventions more complex to predict. Interventions also need to be well-designed and implemented, to avoid exacerbating issues or creating adverse incentives that lead to greater costs to the community.

Box 7.1 Willingness to pay as a non-market evaluation tool

Willingness to pay (WTP) is a survey method used to assign a monetary value to non-market goods and services (such as avoiding damage to the environment or human health) by asking respondents to place a hypothetical value on the product or service (Kristrom 1990, p. 32; McFadden and Train 2017, p. x).

Although WTP estimates can be useful, limitations and methodological challenges hinder their accuracy and reliability in decision-making processes, including:

- incentives for respondents to overstate their WTP for public goods (such as a clean environment) to signal their values or if they are aware the results will inform policy decisions
- distortions created by incomplete, inaccurate or subjective information given to respondents
- measures that are inaccurate or have limited applicability, as the questions are hypothetical
- poor sampling methodology or interviewer biases (Kristrom 1990, p. 32; McFadden and Train 2017, pp. x–xvii).

Some Australian cost–benefit analyses for e-waste policies have calculated WTP estimates using a survey that asked consumers their recycling preferences (URS 2009, pp. 58–59). The first assessment used WTP as an estimate of the benefits from a recycling scheme for computers and televisions (which became the National Television and Computer Recycling Scheme, discussed in section 7.4). This analysis valued consumer WTP for e-waste recycling at \$1244 per tonne (assuming a 50 per cent recycling rate, 2021 dollars) (Commission analysis, based on PwC and Hyder Consulting 2009). In 2017, the Victorian Government's assessment of its prospective e-waste landfill ban determined a WTP between \$1001–1088 per tonne of e-waste recycled (2021 dollars) (Commission analysis, based on DELWP 2017), although this was not used in the final decision on whether to implement the ban.

A number of participants to this inquiry (such as E-Waste Watch Institute, trans., p. 290; WMRR, trans., p. 64) also suggested that the Commission should place a greater emphasis on ‘upstream’ externalities from electrical and electronic products, before they become e-waste. Upstream externalities can include the environmental costs from mining virgin materials or from carbon emissions during product manufacture and use, and can be reduced through recycling or reusing e-waste in some circumstances (PC 2006, p. 83).

However, interventions are generally less costly when they target the source of the problem directly, rather than trying to intervene at a different point in the supply chain (PC 2006, p. 105). For example, policies to increase recycling and resource recovery from e-waste in order to prevent upstream externalities from mining activities are likely to be less effective (and less responsive to market signals) than more direct alternatives, such as ensuring that

⁹⁵ For example, policies to increase recycling can simultaneously benefit from economies of scale if they require up-front investments (such as in shredding machines), while also suffering from diminishing marginal returns due to increasing costs of collecting and transporting each additional tonne of e-waste.

the price of virgin materials ‘internalises’ those externalities (making recycled products more competitive). For this reason, the Commission concluded in 2006 that ‘waste policy should only be used to address upstream issues where more direct policies are not able to be used, and ... it would be both effective and produce net benefits to the community’ (2006, p. 105). Similarly, as part of this present inquiry, the Commission has focused on the ways effective e-waste management can mitigate and reduce downstream externalities.

Materials in e-waste

In general, community concerns about e-waste tend to focus on the potentially harmful environmental and health effects of the substances within e-waste, as well as the loss of valuable or scarce recyclable resources when e-waste is landfilled.⁹⁶ For example, Green Industries SA noted that:

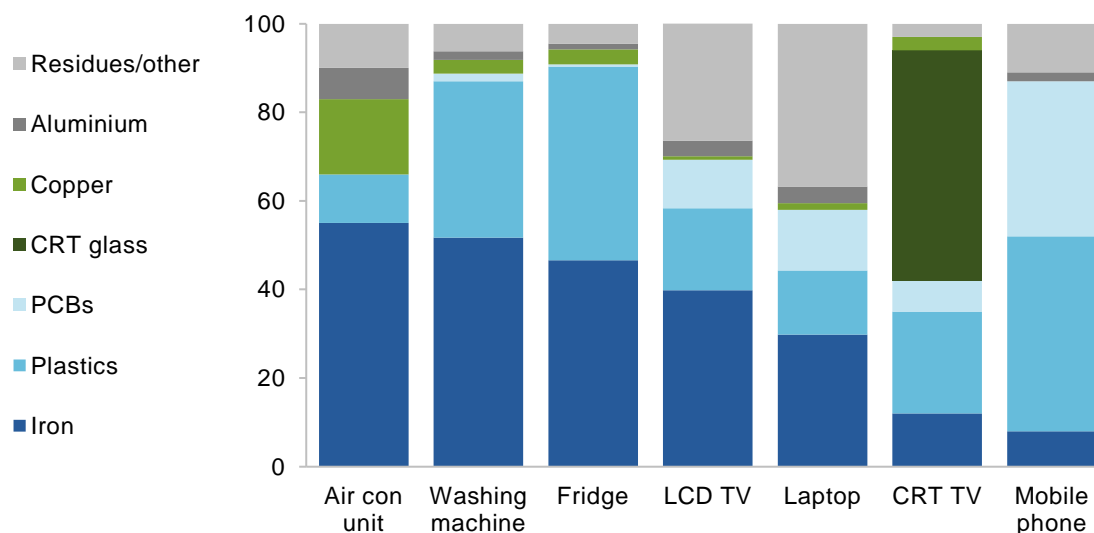
Although there is a concern with e-waste and environmental harm it may cause at the end of life from hazardous substances, and there are moves internationally to remove these hazards from electronic equipment, e-waste will remain a concern because of the loss of various materials, precious metals and rare earth metals along with embodied energy in electronic products. The depletion and draw down of this natural capital has intergenerational costs and impacts. (sub. 113, attach. 1, p. 9)

There is a range of different materials and substances within the broad umbrella of ‘e-waste’ — one study reported more than 1000 different materials within an e-waste sample (Ghimire and Ariya 2020, p. 156). However, the amount of these materials varies by product (figure 7.4) and over time, as product design and demand for different products changes. The value of recyclable substances often varies over time (as market forces change the values of different substances, for instance), while the hazardousness of other substances can differ by method of management or exposure. Some materials are also simultaneously valuable and hazardous (figure 7.5), but the degree of this value or hazard varies between substances.

⁹⁶ Submissions raising these concerns included: Australian Democrats, sub. 100, part 1, p. 22; Bower Reuse and Repair Centre, sub. 48, p. 3; BRU, sub. DR198, p. 2; CESA, sub. 135, p. 1; iFixit, sub. 107, p. 1; Gnieslaw, sub. 91, p. 4; Horan, sub. 11, p. 1; NSW Circular, sub. 93, p. 3; Rattenbury, sub. 133, attach. A, p. 1; WMRR, sub. DR183, p. 7; WWF, sub. 54, p. 2.

Figure 7.4 E-waste contains a range of materials

Per cent of material by weight, 2012^a



^a LCD = liquid crystal display; CRT = cathode ray tube; PCBs = printed circuit boards.

Source: Commission analysis, based on Dias (2019).

Figure 7.5 Examples of recyclable and hazardous materials in e-waste



Sources: Commission analysis, based on Ari (2016), Cima (2018), Dias (2019), Enproc (2001), Partl et al. (2007), Wang et al. (2019).

How valuable are the resources in e-waste?

Many of the substances within e-waste are economically valuable, but may be ‘lost’ for the foreseeable future when e-waste is landfilled or illegally dumped. Estimates of their value vary, due to changes in market prices and the material composition of e-waste products. For example, the value of gold in Australia’s annual e-waste generation could be between about

\$900 million and \$13 billion, while the amount of copper could be worth roughly \$700 million to \$1.4 billion.⁹⁷ Similar analysis has also been conducted by others — for example, in 2014, the resale value of metals in Australia’s e-waste was estimated to be \$1025 per tonne (Commission analysis, based on Golev and Corder 2017; 2021 dollars), equivalent to \$602 million for Australia’s 2018-19 e-waste generation (Commission analysis, based on ABS 2020a, 2021; 2021 dollars). In 2020, the value of recyclable materials in lithium-ion batteries was estimated to be between \$4400 and \$17 200 per tonne of unrecycled batteries, equivalent to between \$603 million to \$4.1 billion per annum (Zhao et al. 2021, p. 18; 2021 dollars). And the total value of *all* materials in Australia’s e-waste generated in 2019 was recently estimated to be \$820 million (Bontinck et al. 2021, p. 30).

While it might seem wasteful to landfill such resources, extracting them from e-waste is only economically viable if the value of the resources exceeds the costs of extraction. Although recycling processes can recover a large proportion of the materials present in e-waste — for example, Mobile Muster’s recycling program reports recovery of 95 per cent of materials in mobile phones (AMTA, sub. 130, p. 8) — most recycling is labour intensive and costly (recycling costs and barriers are discussed in section 7.3). And while some e-waste recycling can be commercially viable — for instance, analysis from 2014 suggested that about 90 per cent of air conditioners and about 60 per cent of refrigerators are collected for commercial recycling by private companies (KPMG 2014, pp. 20–22) — more complex products can be harder to disassemble (Golev and Corder 2017, p. 81).

The viability of extracting valuable resources from e-waste can also vary over time as resource values fluctuate. Some participants suggested that increased e-waste recycling is necessary to manage risks from price changes in global markets (WMRR, sub. DR183, p. 7) or from supply limits on the virgin extraction of materials (E-Waste Watch Institute, trans., p. 290) that have been forecast to generate substantial future increases in the value of some materials within e-waste. These include copper, zinc (Sverdrup, Olafsdottir and Ragnarsdottir 2019), rare earth metals (Keilhacker and Minner 2017, p. 349) and lithium (King, Boxall and Bhatt 2018, pp. 8–10). But any genuine scarcity in these markets would be expected to result in higher market prices, automatically making recycling and reuse more economically viable, as well as encouraging additional resource exploration, greater efficiency of use and substitution to other materials (PC 2006, p. 112).

Reusing materials through recycling can also align with broader goals of creating a ‘circular economy’ (chapter 6), where the economic use of products and materials is sustained for as long as possible. Yet, as the resources within e-waste are buried when landfilled, they do not disappear entirely. For these reasons, ‘landfill mining’ — deconstructing old landfill sites to extract valuable resources — has also been suggested as a potential alternative solution to

⁹⁷ This estimate is based on 3 September 2021 spot market prices — US\$58 877/kg for gold and US\$9.36/kg for copper (LME 2021) — converted to Australian dollars (at AU\$1=US\$0.7423), multiplied by estimates of the prevalence of gold and copper in one tonne of e-waste products — 20–300g and 100–200kg, respectively (Dias 2019, p. 48) — multiplied by total e-waste Australia generated in 2018-19 (ABS 2020a).

supply constraints (Burlakovs et al. 2018, p. 81; Jones 2017; Krook, Svensson and Eklund 2012, p. 518), although costs associated with landfill mining can be considerable.⁹⁸

How hazardous is e-waste to the environment and to human health?

Many of the materials in e-waste — such as glass, silver and aluminium — are relatively inert and no more harmful than general waste. But numerous other materials in e-waste are hazardous to the environment or human health, including some that are carcinogenic or toxic to humans or soil and aquatic organisms (box 7.2). Many components within e-waste are considered hazardous substances under national legislation — the *Hazardous Waste (Regulation of Exports and Imports) Act 1989* — although intact electrical and electronic products are not classified as hazardous by some states, such as Queensland (Queensland Government 2021, p. 20).

Measuring the relative hazardousness of different materials in e-waste is challenging. Ideally, the costs of exposure to the environment, human health and social amenity could be quantified and priced, allowing the benefits from reduction to be weighed against the costs of intervention. In practice, there are several difficulties with quantifying those impacts.

For one, hazardousness often depends on the amount and type of exposure, typically requiring ingestion (through the lungs, throat or skin, for example) in sufficient concentration. Most people who *use* electrical and electronic products are not exposed to hazardous substances in sufficient quantities or conditions to generate harm. Instead, these kinds of risks are more likely to manifest during e-waste management processes, when products are disassembled, broken or collected in large quantities. As an example, exposure to cobalt ‘to the levels normally found in the environment’ is not harmful (ATSDR 2011a), but higher exposure (that might be found in concentrated e-waste disposal sites) can be carcinogenic and toxic for human reproduction, and may cause lasting harm to aquatic life (ECHA 2021b). Even copper — found as electrical wiring in almost all e-waste — is a gastro-intestinal irritant that can cause nausea and diarrhea if ingested in large quantities, despite also being necessary for human health in smaller doses (ATSDR 2011b).

In addition, the hazardousness of products within e-waste will vary over time. One driver of this is changing material composition, as manufacturers find new production methods that avoid using hazardous substances (Robinson 2009, p. 183). For example, Apple has phased out the use of brominated flame retardants in plastics, mercury in display backlighting, arsenic in glass, and beryllium from connectors and springs, replacing them with safer alternatives (Guzzo et al. 2016, pp. 2–3). And LG Electronics has similarly reported reducing the use of brominated flame retardants in some devices, such as smart phones, televisions, laptops and monitors (LG 2020, p. 44). However, this has not occurred across all brands and products — a comparison of a range of smart phones from 2006 and 2015 found a significant increase in the content of toxic materials (Singh et al. 2019, p. 1).

⁹⁸ For example, disturbing closed landfill sites can create new risks of toxic waste and leachate (Logan 2020), particularly in well-designed sites with existing landfill liners and leachate collection systems.

Box 7.2 Hazards to human health and the environment from e-waste

Numerous substances in e-waste can negatively impact human health and the environment.

- Brominated flame retardants (commonly coated on plastics in e-waste) are toxic for reproduction, reducing fertility or leading to risks of birth defects. They are also highly mobile, bio-accumulative and can ‘bio-magnify’ — once in the environment they pose health risks to all organisms up the food chain (O’Driscoll et al. 2016, p. 13 223; Taheran et al. 2017, p. 25).
- Heavy metals (such as cadmium, lead and mercury) are carcinogenic, toxic to reproduction (Orisakwe et al. 2019, p. 7), reduce species diversity and abundance in soil organisms, and growth and reproduction rates in aquatic organisms (de Vries et al. 2007, p. 2).
- Americium (found in smoke detectors) is radioactive (ATSDR 2012).
- Lithium-ion batteries (Liu et al. 2018, p. 1) and zinc (ECHA 2021c) are highly flammable, risking toxic smoke from any resulting fires (DELWP 2018; Robinson 2009, p. 186).
- Chlorofluorocarbons and hydrochlorofluorocarbons release greenhouse or ozone depleting gasses (Gaidajis, Angelakoglou and Aktsoglou 2010, p. 195). Although banned in 1995 and 2016 respectively (Lyones 2018), they remain a legacy issue for products with long lifespans, such as refrigerators and some air conditioners.

Examples of hazardous materials in e-waste

Material	Source in e-waste ^{a,b}	Carcinogenic to humans ^c	Hazard score ^d	Toxic to humans ^e	Toxic to aquatic life ^f
Arsenic	Some lighting	Yes	High	Yes	Very
Beryllium	Motherboards	Yes	High	Yes	No
Cadmium	CRTs, batteries	Yes	High	Yes	Very
Chromium	Cabling	Yes	Extreme	NA	NA
Cobalt	Batteries, CRTs	Probably	Moderate	Yes	Maybe
Lead	Batteries, CRTs	Possibly	Medium	Yes	Very
Mercury	Batteries, lighting	Unknown	Medium	Yes	Very
Nickel	Batteries, CRTs	Yes	Moderate	Yes	No
Selenium	LEDs	Unknown	Medium	Yes	No
Zinc	Circuit boards	NA	Moderate	No	Very

^a Based on Ari (2016); Kiddee et al. (2013); Partl et al. (2007). ^b CRTs = cathode ray tubes. ^c Based on ratings by IARC (2021). ^d Measure of health and environmental hazardousness, based on Latimer (2015). ^e Covers substances deemed toxic to reproduction/unborn children, if swallowed/inhaled, or that may damage organs through prolonged or repeat exposure, based on ECHA’s Summary of Classification and Labelling (2021a). ^f Based on ECHA’s Summary of Classification and Labelling (2021a). NA = Not available.

Another driver of changing hazardousness over time is improved knowledge about materials. For instance, the hazardous nature of asbestos and per- and polyfluoroalkyl substances (PFAS) only came to light over time (ASEA 2021; Australian Government 2021a). Similarly, recent research has led to increased concerns about brominated flame retardants (DAWE 2021c), commonly used on plastics in e-waste. This uncertainty has led some regulators to adopt the ‘precautionary principle’ to account for *potential* hazards, not just proven hazards (Peterson 2006; Weier and Loke 2007). It also means that current estimates of the externalities associated with some e-waste substances are likely to be conservative (or lower-bound) estimates, although determining which in advance is very difficult.

Moreover, the hazardousness of different materials strongly depends on the method of e-waste management, which affects exposure. Some management methods can mitigate most of the dangers posed by these materials — for instance, estimates of the environmental and health impacts of e-waste in landfill range from only about \$12 to \$17 per tonne, in large part due to the mitigating effects of well-regulated landfills (discussed in section 7.3).⁹⁹ Some management processes can even generate additional hazards, such as particulate matter created by mechanical shredding processes at recycling facilities (Robinson 2009, p. 188). In reaction to these concerns about e-waste, most federal and state jurisdictions regulate e-waste, considering it to be its own category of hazardous waste (section 7.3).

7.3 Australia's e-waste regulation and disposal

Australia has a well-developed system for managing waste (including e-waste) across all levels of government. The primary responsibility of managing waste falls to State and Territory Governments, which determine policy and regulatory frameworks. Local governments work within these frameworks to provide waste management services, and to educate the community about service availability. The Australian Government provides national leadership and coordination, and negotiates and implements Australia's international treaty obligations (HRSCIISR 2020, pp. 27–29).

Australia's overarching waste policies are coordinated and supported by the National Waste Policy and the National Waste Policy Action Plan (Australian Government 2018, pp. 3–5, 2019, p. 2), which is implemented by a range of initiatives, including landfill regulations, landfill bans and fees/levies, and product stewardship schemes, among others (discussed below). The National Waste Policy is largely based on the 'waste hierarchy' and some circular economy principles (box 7.3) to create a framework for Australia's waste and resource recovery and reduce policy fragmentation across different jurisdictions (ACG 2009, p. v). The policy's five key underlying principles are: avoiding waste; improving resource recovery; increasing use of and demand for recycled materials; better management of material flows to benefit human health, the environment and the economy; and improved information (Australian Government 2018, p. 11).

Although a full assessment of the efficacy of broader waste management policies and product stewardship schemes is beyond the scope of this inquiry, the Commission has considered the main types of policy approaches and disposal methods used in e-waste management (including landfilling, recycling, stockpiling and international exports), and identified some broad issues associated with their implementation. The Australian Government also accredits a number of 'product stewardship' schemes to manage e-waste (discussed in section 7.4).

⁹⁹ By comparison, the harm caused by each tonne of mercury was estimated at between \$4.8 million and \$11.1 million in 2016 (DELWP 2017, p. 188).

Box 7.3 **The waste hierarchy and the circular economy**

The ‘waste hierarchy’ originated in 1989 from the European Union’s *Community Strategy for Waste Management* (SEC (89) 934) and ranks different waste management options from most to least preferable, such as by preferring the reduction of waste over recycling, and recycling over landfill disposal. The waste hierarchy typically ranks repairing broken items very highly, as it helps to avoid waste creation or to reuse items that would otherwise be wasted (Australian Government 2019, p. 10).

The waste hierarchy often forms part of the transition to what is called a circular economy, which aims to maximise resource efficiency and avoid unnecessary resource consumption and emissions through long-lasting product design and the sharing, maintenance, repair, reuse, remanufacturing, refurbishing and recycling of products (chapter 6).

Although the hierarchy may be a useful heuristic or rule-of-thumb for decision makers, it does little to assess net community benefits of different waste management options (including the costs associated with moving waste up the hierarchy) or to assist policy makers to prioritise public expenditure. And it can sometimes be unclear where different types of waste should sit on the hierarchy (PC 2006, pp. 145–146; Van Ewijk and Stegemann 2016, pp. 125–156). At its worst, strict adherence to the hierarchy could lead to perverse outcomes and greater environmental harm where, for example, more resources are consumed in maintaining a product for reuse, instead of recycling it. Other structural barriers can also prevent the movement of different waste streams higher up the hierarchy, such as limitations on Australia’s recycling capacity.

E-waste in landfill

As part of the National Waste Policy’s focus on the waste hierarchy, much of Australia’s e-waste management policy aims to divert e-waste up the hierarchy, from landfill disposal towards recycling. Half of Australia’s e-waste was landfilled in 2018-19 (section 7.1).

Disposing e-waste to landfill can generate environmental and health costs ...

A key environmental and health concern associated with e-waste in landfills is contaminated waste water, or ‘leachate’ (box 7.4). Landfill leachate has been found to contain roughly 200 different hazardous substances, all of which are detrimental to the health of the environment, with some also deemed to be a risk to human health (Mukherjee et al. 2015, p. 5). E-waste is a large source of contaminants within leachate — it has been estimated to supply 70 per cent of the heavy metals and 30 per cent of polybrominated diphenyl ethers (PBDEs) found in landfill leachate (Kiddee et al. 2014, p. 2293).

The risk of direct exposure to leachate in Australia is likely to be very low, but there may be risks associated with indirect exposure, such as through groundwater contamination. For example, an assessment of groundwater near South Australian landfills with limited leachate management systems found levels of aluminium, arsenic, iron, nickel and lead that exceeded drinking water guidelines (Kiddee et al. 2014, p. 2292), although the proportion of these contaminants that came from landfilled e-waste is unclear. Depending on the use of groundwater and its filtration process, contamination could lead to a range of health and environmental issues (as discussed in section 7.2).

Box 7.4 Leachate from e-waste

Leachate refers to liquid that has passed through solid waste and may be contaminated with metallic, organic and inorganic compounds and toxins (PC 2006, p. xxi). Water that forms leachate can come from rainfall or other liquids within landfilled waste. E-waste leachate generally contains: metals and heavy metals (such as arsenic, cadmium, chromium, copper, lead, nickel and zinc); metal oxoanions (such as arsenate, chromate and selenate); and brominated flame retardants (such as polybrominated diphenyl ethers, or PBDEs) (Dagan et al. 2007, p. 169; Kiddee et al. 2014, pp. 2294–2295; PC 2006, p. 74).

The composition and volume of leachate from a landfill is determined by the local climate and geology, how the landfill is managed and operated, its age, and characteristics of the landfill's waste (Mukherjee et al. 2015, pp. 7–8). There is also some evidence that mixing disposed e-waste and municipal waste (general household rubbish) can increase the toxicity of leachate, as organics in municipal leachate can increase the leachability of PBDEs and other brominated flame retardants found in e-waste (Kiddee et al. 2014, p. 2302).

Disposing e-waste (and other waste) to landfill can also decrease social amenity for nearby neighbourhoods. The expansion and filling of landfills causes noise, litter and increased traffic congestion, reducing amenity. In 2006, the Commission estimated that households and businesses close to landfills faced a loss in amenity of less than \$2 per tonne of general waste added (2021 dollars), depending on landfill management (Commission analysis, based on PC 2006, pp. 75–76). Other estimates of this loss of amenity suggest it is between \$1 and \$13 per tonne of general waste (2021 dollars) (Commission analysis, based on BDA Group 2009, pp. 41–42). Given its low population density, Australia is also unlikely to run out of suitable landfill space in the future. However, transport costs may increase as landfill sites are pushed out of growing cities (PC 2006, pp. 108–109), and some jurisdictions (such as New South Wales) are reportedly facing landfill capacity constraints (E-waste Watch Institute, sub. DR221, p. 2), largely due to planning issues (SECRC 2018, pp. 33–36).

Other environmental and health hazards associated with e-waste in landfill include dust pollution, fire risks and the generation of greenhouse gas emissions (section 7.2). However, the Commission has not found estimates of the costs of environmental and health damage caused by dust pollution or fire risks for e-waste in Australia.

For those that can be quantified, the combined costs of these hazards are estimated to range between \$12 and \$17 per tonne of e-waste disposed to landfill (table 7.1), largely due to leachate. However, as discussed in section 7.2, this is only a conservative estimate of downstream external costs due to a continually evolving understanding of health and environmental impacts. As DAWE noted:

The risks to human and environmental health of landfilling e-waste are not well understood at present — in part due to limited information about the chemical hazards within electronic and electrical products imported into Australia ... landfilling is an uncertain fate for e-waste in Australia — at best — over the long term. (sub. DR211, p. 3)

... but good management and regulation can reduce these impacts

To prevent or reduce risks to the environment and human health, Australian landfills are subject to a range of regulations and guidelines determined by State and Territory Governments (SECRC 2018, pp. 27–31). In general, these regulations aim to ensure that Australian landfills feature industry best-practice systems and management techniques to reduce risks, such as being sited in a geographically suitable location — for example, on stable land (TDPIWE 2004, p. 17) or away from residential zones or dwellings (NSW EPA 2016, p. 4). Well-managed landfills are also designed using long lasting liners,¹⁰⁰ leachate collection systems, gas extraction facilities, and feature post-closure management, such as maintenance of leachate and drainage systems, monitoring of surface and groundwater, and revegetation (NT EPA 2013, p. 47).

As such, there is some evidence that Australian landfills are generally well-managed, offering considerable protection from pollutants and other costs for the community (PC 2006, p. 75; SECRC 2018, p. 30). Broadly effective management and regulation of landfills is one possible explanation for the relatively low estimates of external costs from e-waste in landfill (table 7.1).

However, there is considerable variation in landfill quality across and within jurisdictions — for example, in the past, Queensland’s landfill management and regulatory practices have been singled out by industry bodies for being relatively lax in comparison to the regulatory requirements of surrounding jurisdictions (SECRC 2018, pp. 31–32). Moreover, some older or smaller landfills (often found in regional areas) may not meet updated guidelines for their relevant jurisdictions or modern best-practice design (PC 2006, pp. 173–185; QUT Centre for a Waste-Free World, sub. DR172, p. 9; WCS 2010, p. 11). Relatedly, waste management services are also not provided equally across urban, regional and remote areas in Australia (PC 2006, p. 185). For example, a review of waste management and its effect on the health of Aboriginal and Torres Strait Islander people in regional and remote communities found that service irregularity, limited landfill maintenance and inadequate management of hazardous wastes was placing community health and the local environment at risk (Seemann, McLean and Fiocco 2017, pp. 17–26).

¹⁰⁰ Accepted landfill liners include single, composite or double liner systems — for instance, in the Northern Territory, all medium and large landfills are required to have a composite liner system including a sub-base, clay liner, plastic geomembrane and drainage layer/leachate collection system (NT EPA 2013, pp. 35–37).

Table 7.1 Estimated costs of landfilling and recycling e-waste
Per tonne^a

Type of cost	<i>Managing E-waste in Victoria: Policy Impact Assessment (DELWP 2017)</i>	<i>Decision Regulation Impact Statement: Televisions and Computers (PwC and Hyder Consulting 2009)</i>
Environment and health impacts of landfill	\$16–17	\$12 (includes amenity impacts) ^b
Value of landfilled reusable materials	\$345–505	\$145–185
Landfill management costs ^c	\$16–23	\$12–13
Costs of collecting and processing e-waste	\$509–543 (includes sorting and transport costs)	\$1244

^a Estimates have been inflated to 2021 Australian dollars. ^b This estimate of the environmental and health impacts of landfill was not used in the final cost–benefit analysis. Instead, the results relied on a willingness to pay measure equivalent to \$1244 per tonne of e-waste recycled (assuming a 50 per cent recycling rate, inflated to 2021 dollars — box 7.1). ^c Landfill management costs include: waste collection and transport, land purchase and site preparation, capital investment, operation costs, as well as regulatory costs from site preparation, ongoing environmental management, and post-closure rehabilitation and aftercare.

Bans and levies on e-waste in landfills

Despite Australia’s generally effective landfill regulation and management, some jurisdictions (Victoria, South Australia and the ACT) have banned some, most or all e-waste from landfill (ACT DESD 2011, p. 26; EPA SA 2021; EPA Victoria 2020b). The bans are primarily to reduce the residual hazards from e-waste, but also as a mechanism to support the recycling industry and transition towards a circular economy (DELWP 2017, p. 32).

Although landfill bans are encouraged by the National Waste Policy Action Plan (Australian Government 2019, p. 14), it is not clear whether they are a cost-effective policy solution in the long run. For example, all options considered in Victoria’s impact assessment were expected to generate annual net costs (costs greater than benefits) by 2035 (the final year of the evaluation period). The benefits from the policy option chosen (a ban alongside a ‘medium level’ of access to collection services) were expected to peak in the mid-2020s, with cost increasing steadily during the evaluation period (2017–2035) (DELWP 2017, pp. i–iii), suggesting that over time, the policy would become less beneficial.

Bans can also create unintended consequences (such as stockpiling or unlawful exports) if there is not sufficient capacity for the additional e-waste in domestic recycling (discussed below). Further, bans can have considerable enforcement issues for some e-waste items that are disposed by households in kerbside bins (DELWP 2017, p. 38). As Local Government New South Wales noted:

E-waste can end up in the domestic waste stream predominantly in the kerbside general waste bin. According to a 2019 Southern Sydney Regional Organisation of Council’s kerbside waste

audit of 10 metropolitan councils household's general waste bin, electrical items and peripherals make up 1.17 per cent of the bin by weight and are consistently the most common hazardous items found in the domestic waste stream along with batteries. (sub. 97, p. 7)

In jurisdictions where e-waste is not banned from landfill, levies on waste (including e-waste) are often used to discourage landfill disposal. These levies, which are charged for each tonne of waste landfilled, are determined by State and Territory Governments and are collected from landfill operators (Read and Serpo 2019, p. 7; SECRC 2018, pp. 43–44), with the levy often passed onto landfill users through gate fees, alongside other costs.

In principle, landfill levies could internalise landfill disposal externalities (PC 2006, pp. 220–221), reducing the quantity of e-waste disposed to landfills and increasing recycling rates (SECRC 2018, p. 45). In practice, basing landfill levies on differing externalities is difficult to implement. For one, few landfill levy rates take into account variations in externalities caused by different waste types, landfill types and landfill locations (PC 2006, pp. 222–226). E-waste is typically covered by levies on general or municipal waste, and smaller or more remote landfills (with greater environmental and health risks, discussed above) are normally exempt from levies (Read and Serpo 2019, p. 8).

Further, although accounting for externalities would increase some landfill levy rates (particularly in regional and remote areas), current metropolitan levy rates are generally much higher than estimated externalities — ranging up to \$146 per tonne in 2020 (NSW EPA 2020b). Although these higher rates may be generating additional government revenue or increasing waste diversion, they may also be creating worse outcomes for the community by increasing stockpiling, illegal disposal or unlawful exports (PC 2006, pp. 223–224). Variation across levy rates may also encourage waste managers to transport waste long distances to landfills with lower levies (Read and Serpo 2019, p. 31).¹⁰¹

FINDING 7.2 RISKS FROM E-WASTE IN LANDFILL ARE RELATIVELY LOW

Australia's landfills are generally well-regulated and well-managed, such that risks to the environment and human health from hazardous materials in e-waste are relatively low. That said, landfill quality varies, particularly among smaller and older landfill sites in regional and remote areas, generating increased risks from e-waste in some sites.

¹⁰¹ The Commission has previously found that, as a mechanism to achieve waste diversion targets, landfill levies are not very efficient, given price signals seldom reach households for municipal waste (2006, pp. 222–226). There is considerable evidence to suggest that landfill levies are an effective revenue raising measure though — for example, New South Wales was estimated to raise about nine times more revenue from landfill levies than it cost to manage landfills in 2018-19 (Read and Serpo 2019, p. 11) — but the narrow revenue base can still create distortions in behaviour (PC 2006, pp. 222–226).

Australia's e-waste recycling capacity and barriers to expansion

The primary alternative to landfilling e-waste is to recycle it. Recycling allows materials in e-waste to be processed into new products, or to be used to re-create the original product (SECRC 2018, p. 6).

Although Australia recycles about half of the e-waste it generates (section 7.1), it does not have the capacity to recycle all of its e-waste. In 2010, Australia's e-waste recycling infrastructure was found to be limited to steel, plastics and glass, and while some domestic sorting and dismantling occurred, more complex materials were exported for recycling (such as cables, hard drives, polymers and printed circuit boards) (WCS and Rawtec 2010, pp. 6–9). In the intervening decade, there is little evidence that much has changed — a recent paper deemed Australia's downstream recycling structure 'virtually non-existent for a vast range of commodities' (Dias, Bernardes and Huda 2019, p. 852).

Australia's limited domestic recycling capacity is likely due to the comparatively high costs of domestic recycling, which is driven by a number of factors, many of which are also barriers to the further expansion of capacity.

- Australia has a small and relatively dispersed population. This increases transport costs for collection (Khaliq et al. 2014, p. 172), due to rapidly diminishing marginal returns and decreasing economies of scale for both collection and recycling. A small, dispersed population can also fail to generate a sufficient quantity of some types of e-waste to make investment in some recycling methods (such as mechanical recycling) cost-effective (AIIA, sub. 127, p. 22; ANZRP, sub. 56, p. 5; Golev and Corder 2017, p. 81).
- Australia has a small, highly specialised manufacturing sector with high input costs (Langcake 2016, pp. 31–32), which reduces demand for many basic recycled materials and commodities (Wigley and Gertsakis 2019, p. ii).
- Opposition from local communities about risks from recycling facilities — such as from particulate matter or fumes (Ceballos and Dong 2016, p. 157; Robinson 2009, p. 188) — may also be a barrier to greater recycling capacity.
- Australian recyclers generally rely on manual disassembly for e-waste (Dias 2019, p. 25),¹⁰² incurring substantial labour costs in the process, due to Australia's comparatively high cost of labour (OECD 2020; PC 2015, pp. 181–183). In 2019, it was estimated that labour costs made up more than 90 per cent of Australia's first-stage recycling costs (Dias, Bernardes and Huda 2019, p. 846).
- Contamination can also increase sorting costs for recyclers — in 2020, the average national kerbside recycling bin contamination rate was 13 per cent (by weight) (Pickin et al. 2020, p. 70), while in 2018 contamination rates were found to be as high as 30 per cent (Kaufman et al. 2020, p. 3).

¹⁰² Manual disassembly also means that Australian e-waste recyclers do not use more 'high tech' processes, such as leaching (using liquids to drain metals or minerals) or smelting (extracting metals through different heating and cooling processes), which can reduce ongoing costs (Dias 2019, pp. 132–133). At present, there is also no waste-to-energy processing of e-waste in Australia (Pickin et al. 2020, pp. xi, 19).

Some of these barriers may be reduced by government policies — such as through the National Waste Policy Action Plan (Australian Government 2019) or State and Territory Government funding of e-waste recycling programs (section 7.4). However, other barriers are largely beyond the control of policy makers concerned with waste management — such as Australia’s population density or changes in the market value of raw materials.

A lack of cost-effective domestic recycling can lead to adverse outcomes, especially if recycling capacity grows at a slower rate than e-waste recycling or reuse targets (including from co-regulatory product stewardship schemes or the implementation of landfill regulations, discussed in section 7.4). In particular, lack of recycling capacity can result in domestic stockpiles and illegal dumping, or the unlawful international trade of e-waste.

Domestic stockpiling and dumping

Some e-waste collected for recycling is stockpiled, for a variety of reasons. Recyclers may intentionally stockpile waste to make recycling rarer materials more cost-effective (through economies of scale) or to smooth commodity price fluctuations (DELWP 2018, p. 12). Stockpiling may also be used to avoid or reduce recycling fees, landfill levies (ANZRP, sub. 56, p. 2) or waste transport costs (NSROC, sub. 117, p. 17). Product changeovers (for example, television users switching from CRT to LCD televisions) can also generate unintentional stockpiles (Randell and Latimer 2018, p. 59).

However, some recyclers may not be able to safely maintain their stockpiles, or they may grow beyond the point where risks can be adequately controlled on site. Other e-waste stockpiles can be at high risk of being abandoned, due to high transport and processing costs (EPA SA 2020, p. 9). And the costs of cleaning up abandoned stockpiles often fall on taxpayers (VAGO 2019, p. 17; Vedelago and Preiss 2020).

Broadly, the environmental and health effects of poorly-managed stockpiles can be similar to illegal dumping, as hazardous materials enter the ecosystem without any containment or mitigation. A key concern for e-waste stockpiles are fire risks from batteries (King, Boxall and Bhatt 2018, p. 45) and other flammable substances (Latimer 2015, pp. 59, 98, 108). Estimates of the financial, environmental and health costs of fires in waste management facilities ranged between \$6–100 million per fire (DELWP 2018, p. 6; 2018 dollars).¹⁰³

For these reasons, most States and Territories regulate waste (and e-waste) stockpiling with licensing thresholds, waste stockpiling levies and reporting requirements (Randell and Latimer 2018, pp. 7–33). For example, in South Australia, licensing is required for any waste processing facilities (including transfer stations) that receive or have the capacity to treat more than 100 tonnes of solid waste matter (*Environment Protection Act 1993* (SA), schedule 1, part A, s. 3).

¹⁰³ Ideally, assessments of the environmental and health risks from e-waste disposal would also include the external costs from stockpiling and illegal dumping (Port Phillip EcoCentre, sub. DR190, p. 4).

There is limited evidence on whether Australia has a systemic issue with stockpiling. Despite this, there are some recent incidents that suggest stockpiling can be a significant issue. For instance, in the past three years there have been reports of stockpiling and some fires in e-waste recycling facilities in Melbourne and Sydney, some of which were unlicensed (EPA Victoria 2019; Vedelago 2020b, 2020a, 2021a, 2021b). Some Victorian e-waste recyclers were also ordered by the Victorian Environmental Protection Agency (EPA) to stop accepting materials for recycling due to high fire risks (EPA Victoria 2021b, 2021a). And after one fire, the environmental and health risks from water pollution led the Victorian EPA to issue warnings to the public to avoid contact with bodies of water near the fire (EPA Victoria 2020a).

International dumping and informal recycling

Due to the limits on Australia's recycling capacity, much of Australia's e-waste is processed or recycled overseas. For example, an average of 43 per cent of the weight of e-waste materials collected by the National Television and Computer Recycling Scheme (NTCRS) co-regulatory bodies (discussed in section 7.4) was recycled overseas in 2019-20 (with 53 per cent recycled domestically). Malaysia, Japan and China imported the most e-waste from NTCRS co-regulatory bodies, accounting for roughly 75 per cent (Commission analysis, based on ANZRP 2021; E-cycle Solutions 2021; EPSA 2021; MRI PSO 2021c).

Exporting e-waste for processing and recycling can be a cost-effective and environmentally responsible solution — particularly where Australia's international recycling partners run high-quality and adequately-regulated facilities that minimise local environmental and health impacts.

Informal recycling and the Basel Convention

Despite the potential beneficial impacts of some e-waste exports, other exports can have adverse consequences, particularly in 'informal' recycling facilities (often in developing countries) that lack the necessary infrastructure, regulation and safety net to prevent adverse environmental and health outcomes. For instance, the informal e-waste recycling sector can involve workers burning and acid washing e-waste components to extract precious metals, with the by-products dumped or buried in uncontained sites (Park et al. 2017, p. 2; Purchase 2020; Wang, Qian and Liu 2020, p. 2). Multiple studies of a town in China — Guiyu — have linked pollutants from its informal e-waste recycling sector to high blood levels of lead and cadmium for local children, low child body mass indexes, smaller child head circumferences, high infant mortality, and high rates of male genital diseases (Grant et al. 2013, p. 353; Huo et al. 2007, p. 1113; Kim et al. 2020, p. 1; Walters and Santillo 2008, p. 6; Wang, Qian and Liu 2020, pp. 6–8; Xu et al. 2013, p. 1).

Due to such risks, the international trade in hazardous wastes (including e-waste) is governed by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, implemented in Australia through the *Hazardous Waste (Regulation of*

Exports and Imports) Act 1989 (Cth).¹⁰⁴ More than 180 countries are signatories or parties to the Basel Convention, which allows countries to export hazardous wastes only if the importing country has given prior informed consent. It also sets minimum environmental, health and safety standards for waste management, requiring exported hazardous waste to be recycled at high-quality facilities. In Australia, those wanting to export e-waste require a permit, with permit fees costing between \$6300 to \$13 400 (DAWE 2021e). In 2019-20, 33 permits were granted, and one was refused (DAWE 2020b, p. 174).

However, the Basel Convention has enforcement challenges, both in Australia and around the world, and has been criticised as only regulating (rather than banning) the movement of hazardous wastes (Faga 2016, p. 25). Some unlawful shipments of e-waste to the informal recycling sector appear to still occur, sometimes reportedly bypassing the Basel Convention by being deliberately mislabelled as working products for the overseas secondhand market (BAN and IPEN 2020, p. 14; Peluola 2016, p. 4). Due to the unlawful nature of the activity, the true size of Australia's involvement in the overseas informal e-waste recycling market is unclear. However, there is some indication of instances of unlawful exports (box 7.5). Currently, waste exports from Australia are monitored by DAWE, working with the Australian Border Force (ABF). As at the end of June 2020, there were eight matters under active investigation by DAWE (DAWE 2020b, pp. 174–175).

An amendment to strengthen the Basel Convention was introduced in 1995 (the Basel Ban Amendment), which prohibits member states from the OECD and EU from exporting hazardous waste to any countries not in the OECD or EU. In December 2019, three-quarters of parties had ratified the Basel Ban Amendment (BAN and IPEN 2020, p. 4). Australia has not ratified the Basel Ban Amendment, with the Australian Government citing concerns that ratification would mean it can no longer conduct mutually beneficial trades of waste with regional partners, and that the Amendment excludes non-OECD countries with formal recycling capacity, limiting competition and reducing supplies of recyclable materials (ACG 2001, pp. 90–92).

Beyond the Basel Ban Amendment, a number of countries have also eliminated or restricted waste imports more broadly. For example, in September 2020, Thailand banned the import of most e-waste, with reports on the ban citing damage to its environment and citizens' health as justifications (Arunmas 2020). And since 2000, China has significantly restricted its imports of e-waste (Wang, Qian and Liu 2020, p. 12) — although in 2019-20, NTCRS co-regulatory bodies still reported exporting partially disassembled e-waste and e-waste components to China (ANZRP 2021, p. 33; E-cycle Solutions 2021, p. 9; EPSA 2021, p. 3).

¹⁰⁴ E-waste is considered to be hazardous by the Basel Convention, unless it can be shown to not contain: leaded glass; nickel-cadmium and mercury containing batteries; selenium drums; printed circuit boards; fluorescent tubes; brominated flame retardants; waste oils and liquids; asbestos; and waste metal cables coated or insulated with plastics (Forti, Baldé and Kuehr 2018, pp. 18–19).

Box 7.5 **Concerns about Australian exports of e-waste**

Although there are no official data, there have been reports of unlawful e-waste exports.

- Between January 2008 and May 2009, media reporting suggested that 12 ships carrying Australian e-waste without hazardous materials permits were intercepted by Australian Customs and the Department of Environment (Cubby 2009). Similarly, four shipments were reported to have been intercepted between January and May 2011 (Harrison 2021).
- In 2017, a computer monitor from Australia was reportedly found in an e-waste dump in Accra, Ghana, with its serial number traced to a not-for-profit computer resale group in Australia. Children as young as five were reportedly working in the e-waste dump (Le Tourneau 2017).
- An estimated 3580 tonnes of e-waste were exported as used products without a hazardous waste export permit in 2015. These products included laptops, printers, flat display panel monitors and televisions, and small pieces of IT equipment (Commission analysis, based on unpublished data from Sustainability Victoria 2015).
- A study by the Basel Action Network used global positioning system (GPS) trackers to determine the final location of e-waste given to National Television and Computer Recycling Scheme bodies. The study found one of 35 tracked pieces of e-waste was exported to a 'highly polluting primitive circuit board and acid stripping operation in Thailand'. Another two tracked pieces were exported to an informal e-waste recycling factory in Hong Kong, reportedly known for e-waste trafficking and employment of undocumented workers in poor conditions. Another five tracked pieces found their final resting place in a domestic landfill (Palmer, Puckett and Brandt 2018, p. 2).

7.4 **E-waste product stewardship schemes**

E-waste recycling is promoted by the Australian Government through voluntary and enforced 'product stewardship' schemes. Product stewardship is an approach to manage the environmental, health and safety impacts of products, including products that become e-waste. It promotes the shared responsibility of these impacts between consumers, producers, manufacturers and retailers across the full life cycle of a product, from sourcing raw materials to manufacturing products to end-of-life management (Ley 2020, p. 2).

A national approach to product stewardship schemes was established in the *Product Stewardship Act 2011* (PSA), which has since been replaced by the *Recycling and Waste Reduction Act 2020* (WRA). The WRA maintains the three types of accredited product stewardship schemes that were previously established in the PSA.

- Voluntary schemes are established by industries, which may choose to apply for government accreditation. Accredited schemes, such as Mobile Muster, are required to publish annual outcomes, such as collection and recycling rates (WRA, ss. 70–71).
- Co-regulatory schemes are established through Australian Government regulation, which makes importers, manufacturers and distributors of the relevant products 'liable parties' (WRA, ss. 76–82). Regulation defines the scope, minimum outcomes and operational

requirements of the scheme, but industry is largely left to determine how these are achieved. The NTCRS is the only co-regulatory scheme for e-waste.

- Mandatory schemes are also established through Australian Government regulation. These schemes place a legal obligation on industry to take certain actions with little/no discretion on how requirements are to be met (WRA, ss. 92–94). Mandatory provisions have not been used for e-waste products to date, under either the new or old Act.

At present, a range of product stewardship schemes recycle different types of e-waste. This includes existing co-regulatory and accredited voluntary schemes — the NTCRS, Mobile Muster and the anticipated Battery Stewardship Scheme — as well as unaccredited voluntary schemes such as Cartridges 4 Planet Ark and recycling programs run by private companies.

Current e-waste product stewardship schemes

The National Television and Computer Recycling Scheme

The NTCRS is a co-regulatory product stewardship scheme established through the Recycling and Waste Reduction (Product Stewardship — Televisions and Computers) Rules 2021. The NTCRS provides access to industry-funded collection and recycling services for televisions, computers, printers and computer parts. The three objectives of the scheme are to: reduce waste to landfill (especially hazardous materials found in e-waste); increase the safe, scientific and environmentally sound recovery of reusable materials; and provide convenient access to collection services across Australia (DAWE 2021d).

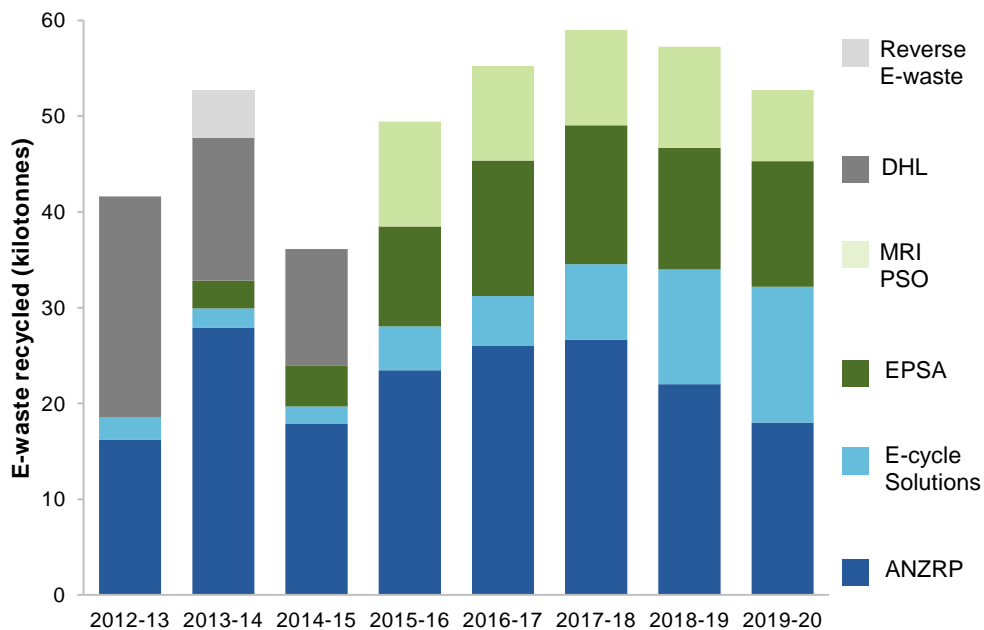
Manufacturers, importers and distributors of products covered by the scheme are considered ‘liable parties’ if they manufacture, sell or import relevant products over certain thresholds. Liable parties are required to fund the scheme as a member of a ‘co-regulatory body’ of their choice (DAWE 2021f). Although two long-standing co-regulatory bodies remained unchanged — Australia and New Zealand Recycling Platform (ANZRP) and E-Cycle Solutions — there were a number of changes to co-regulatory bodies during 2021.

- Approval for one co-regulatory body — MRI PSO — was cancelled by the Minister for the Environment on 15 April 2021 (DAWE 2021d).
- Electronics Product Stewardship Australasia (EPSA) applied to have its approval cancelled, which occurred on 30 June 2021 (DAWE 2021d).
- Two organisations (Sustainable Product Stewards and The Activ Group Solutions) received approval to become co-regulatory bodies on 8 July 2021 (DAWE 2021h).

These bodies are responsible for achieving scheme outcomes, which are determined by the market share of their liable parties (DAWE 2021d). The co-regulatory bodies compete to attract liable parties as members, and use their funding to provide collection and recycling services. Between 2012 and 2015 the cost of running the NTCRS was \$134 million, or about \$34 million per year (DAWE 2020c, p. 15). To provide these services, bodies often partner with both domestic and international recycling services (Dias 2019, p. 129).

Between 2012-13 and 2019-20, the NTCRS recycled more than 404 kilotonnes of e-waste (figure 7.6). In 2019-20, the NTCRS recycled 52.7 kilotonnes of e-waste, or 9.7 per cent of total e-waste generated (based on ABS 2020a). In the same year, all co-regulatory bodies reported recovering at least 90 per cent of materials from recycled e-waste (ANZRP 2021; E-cycle Solutions 2021, p. 6; EPSA 2021, p. 3; MRI PSO 2021c, p. 3).

Figure 7.6 E-waste recycled annually by NTCRS bodies



Source: Commission analysis, based on annual reports from NTCRS co-regulatory bodies, found at DAWE (2021k).

The Australian Government sets the total NTCRS recycling target, which is split between the co-regulatory bodies based on the proportion of products manufactured, imported or sold by their liable parties. In 2019-20, the whole scheme was required to recycle 66 per cent of total in-scope products, or 53 kilotonnes of e-waste.¹⁰⁵ This total target has increased since 2012-13 from 30 per cent (DSWEPC 2011, p. 3), but this has been slower than expected to ‘ensure stability and on-going capacity in the e-waste recycling industry’ (DAWE 2020c, p. 19). Originally, the scheme was intended to meet its 80 per cent recycling target in 2021-22 (DSWEPC 2011, p. 3), but this has been delayed to 2026-27 (DAWE 2020c, p. 14).

Mobile Muster

Mobile Muster is a national voluntary product stewardship scheme established by the Australian Mobile Telecommunications Association (AMTA). The scheme collects and recycles mobile phones and their chargers, batteries and accessories, as well as wireless

¹⁰⁵ Commission analysis, based on annual reports from NTCRS co-regulatory bodies, at DAWE (2021k).

mobile modems and smartwatches (Mobile Muster 2017, p. 18). Among other objectives, Mobile Muster's goals include keeping mobiles out of landfill, optimising resource recovery and educating the community about mobile phone recycling (Mobile Muster 2020a, p. 1).

The AMTA (which manages the scheme for members) established Mobile Muster as a voluntary industry-run and funded scheme in 1998 (AMTA, sub. DR181, p. 2), and it became an accredited national product stewardship scheme in 2014 (Mobile Muster 2021a). Other key parties include industry members (such as handset manufacturers, network carriers and accessory suppliers¹⁰⁶), collection network members and recycling partners.

Between 1998 and 2019, Mobile Muster collected and recycled slightly more than 1500 tonnes of mobile phones and accessories (AMTA, sub. 130, p. 4). Mobile Muster reports its recycling process recovers between 95 and 98 per cent of component materials (AMTA, sub. 130, p. 8; Mobile Muster 2020a, p. 5).

To run its collection service, Mobile Muster has a network of 3500 public drop-off points, which includes retailers, repair shops, schools, workplaces, community organisations and post offices (Mobile Muster 2020a, p. 12, 2021a). The program also allows for individuals to have a collection satchel posted to their address, which can be filled and posted back to Mobile Muster for recycling (Mobile Muster 2020a, p. 12).

Other product stewardship and recycling schemes

A new product stewardship scheme for batteries has recently been accredited by the Australian Government and authorised by the Australian Competition and Consumer Commission (ACCC). From January 2022, the Battery Stewardship Scheme will introduce a levy on the sale of batteries (4 cents per 24 grams) to fund battery collection and recycling (ACCC 2020h; DAWE 2021b). The scheme intends to cover hand-held batteries (including button batteries and batteries that can be replaced by consumers, such as AA or AAA batteries) (DAWE 2021b), and has resulted in the removal of batteries from the Minister's Product Stewardship Priority List (DAWE 2021a). However, despite rapid expected growth of lithium-ion batteries over coming years (section 7.1), the scheme does not yet include lithium-ion batteries (DAWE 2021b).

There are also several unaccredited product stewardship schemes and similar schemes are used overseas (box 7.6). Many individual manufacturers and recyclers also encourage recycling through takeback schemes, typically offering payment or some other reward to participating consumers (and if manufacturers are liable parties, takeback schemes can count towards NTCRS annual targets). Australian takeback schemes include:

- Apple takes back any Apple products and some Android products for free recycling, with some (generally newer) products exchanged for store credit or gift cards (Apple 2021c)

¹⁰⁶ Mobile Muster members include: Alcatel, Apple, Google, HMD Global, HTC, Huawei, Motorola, Oppo, Optus, Samsung, Telstra, TPG Telecom, vivo Mobile, Vodafone and ZTE (AMTA, sub. DR181, p. 2).

- Toyota Australia provides a rebate to customers who return hybrid car batteries for recycling (Toyota Australia, sub. 118, p. 9)
- Normal posts a free satchel for consumers to return unwanted or broken sex toys for free recycling, in exchange for a \$20 store credit (Normal 2021)
- Dell collects up to 50 kg of waste notebooks, monitors and printers (of any brand) for free recycling from new customers (Dell 2021).

State and Territory Governments also support a range of different e-waste product stewardship schemes (box 7.7).

Box 7.6 Other product stewardship schemes

Several e-waste product stewardship schemes operate domestically.

- Established in 1993, Refrigerant Reclaim Australia is an industry-run product stewardship scheme that recovers fluorocarbon refrigerants from fridges and air conditioners. Between 2000-01 and 2017-18, it recovered 6500 tonnes of refrigerant from waste fridges and air conditioners (Refrigerant Reclaim Australia 2021). In 2013-14, KPMG estimated that Refrigerant Reclaim Australia recovered approximately 80 per cent of air conditioner and 30 to 40 per cent of fridge refrigerant gases (KPMG 2014, pp. 21, 24).
- Cartridges 4 Planet Ark is a recycling and remanufacturing program for printer cartridges. Since 2003, it has recycled more than 46 million printer cartridges through a network of public drop-off sites and registered workplace collections (Planet Ark 2021a). The program's recycling partner Close the Loop disposes zero waste to landfill (Planet Ark 2021b, 2021a).
- FluoroCycle is an industry-run collection and recycling scheme for lamps containing mercury, established in 2010 (Lighting Council Australia 2016, p. 3). The scheme gained temporary accreditation as a voluntary product stewardship scheme in 2014 (DAWE 2021j) but is not currently accredited. In 2015-16, the scheme collected 1200 tonnes of lighting waste (estimated to be 12 per cent of total waste lighting), recycling of 117 kg of mercury (Lighting Council Australia 2016, pp. 5–6). FluoroCycle is an industry-run collection and recycling scheme for lamps containing mercury, established in 2010 (Lighting Council Australia 2016, p. 3). The scheme gained temporary accreditation as a voluntary product stewardship scheme in 2014 (DAWE 2021j) but is not currently accredited. In 2015–2016, the scheme collected 1200 tonnes of lighting waste (estimated to be 12 per cent of total waste lighting), recycling of 117 kg of mercury (Lighting Council Australia 2016, pp. 5–6).

Other countries also use product stewardship or other regulation to promote e-waste recycling.

- In Switzerland, consumers are required to return waste electrical and electronic products to collection points. Consumers are also charged an 'advanced recycling fee' at the point of sale to fund e-waste collection, transport and recycling (up to AU\$40). Importers and manufacturers are responsible for collecting and recycling e-waste (and fund part of the costs), and retailers host e-waste collection points (Islam, Dias and Huda 2018, pp. 611–614).
- Japan regulates the role of consumers, manufacturers, importers and retailers in recycling e-waste. Consumers are required to recycle their e-waste and pay a fee at the time of disposal to transport and recycle large appliances (including air conditioning units, televisions and refrigerators). Manufacturers and importers outsource recycling services and liaise with retailers to establish collection points (OECD 2016, pp. 164–167).

Box 7.7 **State and Territory funding for e-waste recycling and reuse**

Some States and Territories fund their own e-waste collection and recycling programs.

- The NSW Government announced \$10 million of funding to establish reuse and recycling programs for solar panels and battery storage systems. Two reuse programs have been allocated funding so far, with additional funding rounds expected (NSW EPA 2020a, 2021).
- The Victorian Government has banned the disposal of e-waste to landfill and provided \$15 million in grants to 'build the capacity and capability' of e-waste managers and improve e-waste collection, storage and reprocessing standards. Grants have been provided to 130 local governments, 50 'e-waste hubs' and four e-waste recyclers (Sustainability Victoria 2021).
- The Western Australian Government has provided \$1 million in funding to support research into processes for e-waste reuse and recycling. Funding has also been provided to local governments and private companies to provide e-waste collection events and permanent drop-off locations (Western Australian Government 2021).
- The ACT Government will report to the Legislative Assembly in early 2022 on different options to expand recycling schemes for solar panels, battery storage systems, electronic vehicle batteries and electrical appliances. Once schemes are established, the ACT's current e-waste landfill ban may be extended to cover these products (Fuller 2021).

The purpose and net benefits of product stewardship schemes

There can be a role for government regulation to support product stewardship schemes where a market failure or policy problem exists and the benefits of intervention are expected to outweigh the costs across the entire community (section 7.2).

For voluntary industry-led schemes (accredited or not), participants have generally made a willing and collective choice that the benefits of participation (including to brand reputation from corporate environmental and social goals) outweigh the costs of the scheme.

The case for government intervention through additional co-regulatory or mandatory schemes is more complex. To some extent, intervention can help to overcome issues with voluntary schemes — such as 'free-rider' problems (ANZRP, sub. 56, p. 6; GISA, sub. 113, attach. 1, p. 11), poor industry coordination, and weak oversight or accountability.¹⁰⁷ Firms running voluntary schemes also bear the cost of addressing a market failure without capturing any of the benefits to society (PC 2006, pp. 263–265), limiting effectiveness. For example, Mobile Muster's annual targets are only about 10 per cent of imported phones (compared to a broadly equivalent target of 66 per cent for the NTCRS) and the targets were met only once between 2015-16 and 2018-19 (Mobile Muster 2019, pp. 16–17).¹⁰⁸

¹⁰⁷ 'Free-rider' issues can occur where suppliers refuse to join voluntary industry schemes, despite their products being collected. Industry coordination can be difficult if there are many individual manufacturers and retailers selling a type of product and small suppliers can quickly enter and exit the industry.

¹⁰⁸ Mobile Muster appears to no longer publish its targets or performance for collections against imports, as of its 2020 annual report, but has stated that targets will be included 'moving forward' (AMTA, trans., p. 103).

However, it is still necessary to ensure that co-regulatory or mandatory product stewardship schemes deliver net benefits to the community. Analysis prior to implementation can help to determine whether these net benefits exist. For example, a 2014 assessment of a potential product stewardship scheme for refrigerators, air conditioners and freezers did not establish that a co-regulatory or mandatory scheme would generate net benefits to the community, so government intervention did not occur (KPMG 2014, pp. 6–9), in part because a voluntary scheme is already running (Refrigerants Reclaim Australia — discussed above).

Even where headline results suggest that the benefits of introducing a scheme outweigh the costs — as with the analysis that led to the introduction of the NTCRS (PwC and Hyder Consulting 2009) — careful interpretation of results may be necessary. The benefits of e-waste recycling through the NTCRS were estimated both with WTP measures and an estimate of avoided environmental and health costs (at \$1244 and \$12 per tonne respectively — table 7.1). Despite the large discrepancy between the two values, and the limitations of WTP measures (section 7.2), the WTP estimate was relied upon in the headline results.

The use of WTP measures raises considerable uncertainty about whether the NTCRS *originally* generated net community benefits, although this has likely changed in the decade since its implementation.¹⁰⁹ In particular, between 2012-13 and 2018-19, one co-regulatory body halved its e-waste recycling costs (ANZRP 2019, p. 5), which are now lower than the original estimate of the cost of e-waste recycling (PwC and Hyder Consulting 2009, p. 113), and would expect them to decrease further if e-waste processing increased (ANZRP, sub. 56, p. 5). More broadly, increased economies of scale for both collection and downstream recycling partners, improved technology and innovation, and competition between co-regulatory bodies are also likely to reduce the cost of e-waste recycling. Further improvements to the existing product stewardship schemes (discussed below) may help to make net benefits to the community even more likely.

Current scheme design may be leading to adverse incentives

The current design of the NTCRS may be generating adverse incentives that limit the capacity of the scheme to either reduce e-waste or provide high quality recycling and collection services.

Product stewardship is currently limited to recycling

As its name suggests, the NTCRS was designed as a recycling scheme only. Co-regulatory bodies are required to meet annual *recycling* targets, with products only contributing to these targets if they are recycled to a specified standard or its equivalent (DAWE 2020c, p. 22).

¹⁰⁹ In 2006, the Commission also highlighted other concerns about a computer and television recycling scheme, including: limited evidence on environmental and health concerns; assumptions (with limited evidence) that the benefits of resource recovery and waste avoidance will outweigh costs; limited awareness of existing recycling facilities; high labour costs of disassembly; and issues with monitoring and enforcing participation from small producers quickly entering and exiting the market (2006, pp. 295–300).

This focus on recycling means that otherwise functional products are potentially being dismantled and destroyed for their component materials, rather than being repaired and reused, forgoing longer product lifespans and potential environmental benefits. Although evidence on the proportion of e-waste products that could be reused (and their potential resale value) is thin, a sample of 1.5 tonnes of e-waste taken to local governments in Western Australia for recycling found roughly 15 per cent was assessed to be working and suitable for resale (WALGA, sub. DR155, p. 2). Estimates from the United Kingdom and Germany suggest that between 13 and 63 per cent of collected e-waste could be repaired for reuse (Johnson, McMahon and Fitzpatrick 2020, p. 1181).¹¹⁰

Numerous inquiry participants supported changes to the NTCRS scheme targets to encourage repair and reuse, and to expand the scheme beyond recycling.¹¹¹ This change broadly aligns with DAWE's goals for the NTCRS, which include developing a policy position on reuse for the scheme (DAWE 2020c, p. 21), and would also align with modifications to the WRA, which now has a greater emphasis on product stewardship schemes using repair and reuse along with recycling (Farrell 2011, pp. 67–73; Ley 2020).

There is a strong case for Australian Government to modify the NTCRS scheme targets to remove existing barriers and disincentives for repair and reuse. This could be achieved by counting either reused *or* recycled e-waste products towards total annual targets. Such a 'combined' target would ensure scheme rules do not penalise co-regulatory bodies for repairing and reusing items, but would not place any obligation on bodies to reuse products if it is not cost-effective to do so. This type of target has recently been introduced to an extended producer responsibility scheme in Ontario, requiring producers to either reuse, refurbish *or* recycle 55 per cent of products (box 7.8).

As an alternative, a specific reuse target (to sit alongside annual recycling targets) could be introduced to the NTCRS, to provide an active incentive for repair and reuse, rather than just removing existing disincentives. Such reuse targets have been used overseas — for example, Spain has reuse targets for household appliances (3 per cent) and IT equipment (4 per cent), alongside a 50 per cent recycling target for all e-waste (ANZRP, sub. 56, p. 7). Although this would likely lead to faster uptake of reuse (and could be reconsidered if there is minimal change under a combined target),¹¹² it could also result in net costs to the community if products are required to be reused when recycling would have been more cost-effective.

¹¹⁰ Similarly, despite a Mobile Muster survey suggesting roughly 60 per cent of replaced mobile phones still work, the Mobile Muster program recycles all collected phones (although it does encourage some repair and reuse by advertising reuse schemes on its website) (Mobile Muster 2020b, pp. 6–9).

¹¹¹ Supporting submissions included: Ai Group, sub. DR156, p. 7; ALGA, sub. 79, p. 3; ANZRP, sub. DR170, p. 2; E-waste Watch Institute, sub. DR221, p. 1; LGNSW, sub. 97, p. 8; Mend It, Australia, sub. 101, p. 5; NSROC, sub. 117, pp. 17–18; Port Phillip EcoCentre, sub. DR190, p. 6; Tasmanian Government, sub. DR240, p. 2; WMRR, sub. DR183, p. 7; ZWV, sub. DR235, p. 7.

¹¹² It is also not clear whether industry would have a strong incentive to support repair and resale of older products, as this may negatively affect profits from new sales (Johnson, McMahon and Fitzpatrick 2020, p. 1015). NTCRS funding arrangements may also need to be modified (LGNSW, sub. 97, p. 9).

Box 7.8 Ontario's e-waste reuse and recycling scheme

At the end of 2020, Ontario established an extended producer responsibility scheme for waste IT, telecommunications and audio visual equipment. In 2021, producers of in-scope products are required to reuse, refurbish or recycle 55 per cent of the weight of products supplied in Ontario. Producers' annual targets are reduced if they engage in sustainable practises (such as using recycled materials in new products or providing repair information, tools and parts to consumers at no charge or on a cost-recovery basis). Lighting will be added to the scheme in 2023.

To encourage producers to reuse and refurbish e-waste locally, products reused or refurbished in Ontario are counted as two times their actual weight for the annual target. But, once a product has been counted for reuse, it is not counted if recycled or reused again — although the enforcement mechanism for this remains unclear.

Under the scheme, e-waste repairers are required to meet the 'R2v3 Standard', administered by Sustainable Electronics Recycling International. Alternatively, repairers must give documented proof of key criteria (such as warranty provision and testing products prior to resale) (RPRA 2020).

Source: Ontario Regulation 522/20: Electrical and Electronic Equipment, part IV, rr. 14, 17, 18.

There are several implementation challenges to overcome prior to enacting changes, which will require careful consideration to minimise risk, but should not prevent adoption overall.

- One such challenge is the 'gaming' of scheme targets. Although some double-counting is inevitable and desirable over a long time period (as the purpose of reuse is only to extend the life of a product, not make it last forever), there are risks that the same product can be cycled through and counted towards scheme targets dozens of times in a short period. As such, 'reuse' activities would need to be clearly and carefully defined, to avoid such gaming. To resolve this issue, the Ontario scheme uses the R2v3 Standard for reuse (box 7.8 above), similar to the NTCRS's current use of recycling standards.
 - The Ontario scheme also deliberately frontloads double-counting within its design, by permitting reused products to be counted as twice their weight in the period they are reused, but to not count at all when recycled at a later date (box 7.8 above). However, a centralised data collection system may be required to implement this (as suggested by ANZRP, sub. DR170, p. 3), to monitor reused products.
- There is a risk that inclusion of reuse within the NTCRS could lead to unlawful exports of e-waste. While some inquiry participants supported exporting products for repair and reuse (such as ANZRP, sub. 56, p. 7), this can generate additional risks of adverse health or environmental outcomes in recipient countries (particularly as exports for reuse or repair are already a known enforcement issue — section 7.3). For example, some exported products may be recycled in the 'informal' sector at the end of their extended lives (labelled a 'disappointing' outcome by the AIIA, sub. 127, p. 21). This may require limiting repair and reuse outcomes to Australia only, or better monitoring and enforcement of exported e-waste (discussed below).
- There are also risks that concerns about data security may reduce consumer willingness to engage with the schemes once they involve reuse (AMTA, sub. DR181, p. 6). For this reason, at least one former NTCRS co-regulatory body advertised data wiping services

as part of its recycling process (MRI PSO 2021a, 2021b). One potential solution could be education — for example, Mobile Muster offers instructions on how to wipe data from devices (Mobile Muster 2021b). Alternatively, individuals could be given the option to mark their own products as ‘for recycling/destruction’ or ‘for repair/reuse’ (which may also reduce sorting costs for co-regulatory bodies).

The Commission is aware that the NTCRS is currently undergoing considerable change, following the recommendations of the recent review of the PSA. This review found that the NTCRS was generally successful and had strong stakeholder support, but also made 13 recommendations aimed at promoting a ‘level playing field’ for all co-regulatory bodies, broadening the focus and scope of the NTCRS (to address products’ full life-cycle and include additional products) and improving the calculation of annual recycling targets (DAWE 2020c, pp. v–vii). Implementation of these recommendations is ongoing, including through consultations by DAWE ‘on the prevalence, management, and stewardship options for e-waste’ (DAWE, sub. DR211, p. 4). Notwithstanding those reforms, there remains a strong case for the NTCRS (and all future product stewardship schemes, where practical) to count repaired and reused products within scheme targets, particularly as this ‘reinforces’ the PSA review’s recommendation for DAWE to ‘examine opportunities to recognise reuse and other waste avoidance activities’ in the NTCRS (DAWE, sub. DR211, p. 3).

RECOMMENDATION 7.1 INCLUDE REUSE WITHIN NTCRS ANNUAL RECYCLING TARGETS

The Australian Government should amend the Recycling and Waste Reduction (Product Stewardship — Televisions and Computers) Rules 2021 to count e-waste products that have been repaired and reused towards the annual targets of the National Television and Computer Recycling Scheme (NTCRS) co regulatory bodies.

The exact design features that need to be incorporated into the NTCRS to enable reuse options should be determined in consultation with the scheme’s liable parties and co regulatory bodies. The changes should be designed in a way that minimise any adverse incentives, including risks from:

- manipulating (or ‘gaming’ of) scheme targets, when the same products cycle through the scheme without legitimately being reused
- unlawful exports for reuse that result in more products in the informal recycling sector, generating worse health and environmental outcomes
- consumer concerns about data security for repaired and reused products.

Any future product stewardship schemes should also include repair and reuse as options within their targets, where practical.

How reasonable are ‘reasonable access’ requirements?

As part of this inquiry, submissions from local government associations also raised concerns that the NTCRS fails to provide equitable access in regional and remote areas, compared to

the permanent access available in most metropolitan areas (LGNSW, sub. 97, p. 8; WALGA, sub. 86 and DR155). This echoed concerns during the review of the PSA, which found remote collection services to be ineffective — for instance, more than 60 per cent of remote area collections failed to collect any e-waste between 2013-14 to 2017-18 (DAWE 2020c, pp. 18–19). Poor collection services may increase incentives to stockpile, illegally dump or landfill e-waste (section 7.3). And as discussed above, there can be higher risks of damage to the environment or human health from smaller landfills located in regional areas.

Yet in 2019-20, all four co-regulatory bodies reported meeting their ‘reasonable access’ requirements for regional and remote areas (ANZRP 2021, p. 4; E-cycle Solutions 2021, p. 11; EPSA 2021, p. 3; MRI PSO 2021c, p. 4), suggesting that, to the extent that there is a problem, the issue may instead lie with the NTCRS’ definition of ‘reasonable access’. Currently, varied levels of service are required across metropolitan, regional and remote areas, based on population. For example, metropolitan areas require one collection service for each 250 000 people, whereas remote areas require one collection service per year for every town with a population of more than 2000 people.¹¹³

Although the definition of reasonable access has recently changed (previously remote areas received collection services every two years), one co-regulatory body noted that, historically, other bodies did not adequately advertise collection events, and timed their collection events in remote areas for the end and start of consecutive financial years. This met requirements, but left some areas without collection services for up to 20 months (ANZRP 2020, p. 33).

If collection services do not improve as a result of the modified definition, further changes may be necessary. In particular, the ‘reasonable access’ requirements could be modified, to no longer require every co-regulatory body to run collection services in every region.¹¹⁴ There are a number of possible ways to do this — for example, through a government-supported co-operative arrangement between all co-regulatory bodies (MRI E-Cycle Solutions 2018, p. 3). Alternatively, a well-run tender process (possibly supported by subsidies for the most remote areas) could be used to allocate a single co-regulatory body to each regional and remote area for a given period (supported by ANZRP, sub. DR170, p. 6).

The aim, regardless of the method used, would be to reduce duplication between collection services, while improving the quality and frequency of services. As a former co-regulatory body noted, ‘the benefit of competition in driving innovation and cost-effectiveness between arrangements in outer regional and remote areas is questionable’ (MRI E-Cycle Solutions 2018, p. 3).

¹¹³ Collection services can include annual events, permanent collection stations, and programs where consumers register products to be collected or post them for recycling (Recycling and Waste Reduction (Product Stewardship — Televisions and Computers) Rules 2021, r. 3.2.8).

¹¹⁴ As an alternate solution, ANZRP has suggested that the current regulatory requirements could be tightened, through stronger requirements for advertising, on-site signage, local government notification and minimum collection event duration times (2020, p. 33). However, this would increase costs for all co-regulatory bodies (which could be passed on to consumers), and may also increase expenses for local and federal government (through additional support, monitoring and enforcement).

However, any further changes to the definition of reasonable access and regional collection services also need to consider whether they place additional burdens on local councils. Despite being ‘important and reliable drop-off points’ for the NTCRS (Dias 2019, p. 182), local councils assisting with the collection of e-waste in both regional and metropolitan areas can face ‘significant’ financial and organisation burdens (WALGA, sub. 86, p. 3). Surveyed councils reported annual costs between \$1000–150 000 to facilitate e-waste recycling (between \$200–1000 per tonne of recycled e-waste), and that they have little capacity to budget for these expenses as recycling services are demand-driven (WALGA, sub. DR155, p. 2). Such sums exceed current estimates of the negative externality imposed by landfilling e-waste, and could probably be better directed to other activities that have more significant benefits to the environment.

The effectiveness of current schemes can be limited by data and accountability issues

Other issues also have the potential to reduce the effectiveness of existing e-waste product stewardship schemes.

First, poor data collection can limit understanding of e-waste generation and flows, and the effectiveness of current schemes. Data problems (outlined in section 7.1) mean it remains uncertain how much e-waste is being generated or how it is disposed. Although costly to collect, better data — such as details on the types of e-waste generated — would assist in ensuring the annual collection targets for NTCRS co-regulatory bodies are accurate, as well as allowing for simple estimates of the effectiveness of voluntary schemes. It would also assist in determining the growth and associated costs of different products, allowing for more accurate prioritisation for new product stewardship schemes.

Second, several accountability issues in the NTCRS were raised in the review of the PSA, including inconsistent assessments of co-regulatory bodies’ compliance with scheme requirements, and a failure to identify poor practices.¹¹⁵ More specifically:

- co-regulatory bodies are largely reliant on downstream recyclers (including overseas) to recycle materials into a reusable form. However, bodies are not required to report on downstream recycling (DAWE 2020c, pp. 15–23), so there is little understanding of the final destination of hazardous materials (Dias 2019, pp. 137–143). Further, co-regulatory bodies are not required to audit domestic or international recyclers for quality assurance, and so it is unknown whether the entire recycling process is meeting health and environmental standards (Dias 2019, pp. 126, 143; Dollisson, Vasconi and Baker 2017, p. 24)
- DAWE has stated that it has limited resources to monitor the NTCRS (2020c, pp. 15–23). Inadequate monitoring could potentially result in double-counting e-waste towards targets, stockpiling and improper storage of hazardous wastes (Dias 2019, p. 136). It

¹¹⁵ Accountability issues may be related to concerns that the competitive nature of the NTCRS is encouraging a ‘race to the bottom’, where sub-standard collection and recycling processes are used to reduce costs. These kind of concerns were raised in the review of the PSA (DAWE 2020c, pp. 15–16).

could also mean that some e-waste collectors and recyclers do not meet required standards — for example, in 2018, an assessment of 148 Victorian e-waste collection and storage facilities found almost all did not meet health and safety requirements for at least one category of e-waste (Genever, Randell and Baker 2018, p. 5).

Improving data collection for recycled e-waste through tracking devices

Better awareness of the end-of-life location of e-waste could help to improve the accountability of product stewardship schemes. To provide a supplementary data source for monitoring and compliance, the Commission supports the use of electronic tracking devices within broken (beyond economic repair) e-waste products. Trackers should be used, where practicable, to determine the final destination of Australian e-waste collected for recycling, including whether any recyclers unlawfully export e-waste.

In recent years, environmental groups (such as the Basel Action Network) have used global positioning system (GPS) trackers in e-waste products dropped off at random collection sites to monitor e-waste exports and landfilling (domestically and internationally) (Lee et al. 2017; Palmer, Puckett and Brandt 2018).¹¹⁶ The NTCRS co-regulatory body ANZRP has also reported using some GPS trackers to monitor its compliance procedures (ANZRP, sub. DR170, p. 5).

While there are no systematic assessments of end-of-life outcomes for Australian e-waste, what evidence there is indicates a considerable problem (section 7.3). This suggests that using trackers to target high-risk products or parts of the e-waste supply chain could greatly improve monitoring by creating a dataset on end-of-life outcomes. It could also assist e-waste collectors and recyclers to better understand and audit downstream recycling partners, ensuring recycling outcomes meet required standards. Further, using trackers would align with multiple recommendations from the review of the PSA — to improve administration, compliance and assurance with in the NTCRS, as well as improving material recovery tracking (DAWE 2020c, pp. vi–vii).

Using trackers to better understand the fate of e-waste was supported by a number of inquiry participants (including DAWE, sub. DR211, p. 4; ANZRP, sub. DR170, p. 5; BRU, sub. DR198, p. 3; WMRR, sub. DR183, p. 7). For example, DAWE stated:

The department supports measures to better understand the fate of end-of-life e-waste, especially where there is a high risk of illegal and/or harmful disposal ... trackers in e-waste could provide consumer, government and industry confidence in the recovery and recycling markets, through increased traceability. (sub. DR211, p. 4)

¹¹⁶ The television show ‘War on Waste’ also placed GPS trackers in six televisions and monitors and dropped them at NTCRS collection points in Queensland. Five of the tracked products were delivered to recycling facilities in Australia, after which two were exported to South Korea for formal recycling. One product appeared to be informally reused after being taken from a collection site (Boylan and Welkerling 2018).

However, there are some potential implementation difficulties to consider when using trackers to monitor the domestic movements and exports of e-waste.

One issue is cost, including the costs of the equipment and trackers themselves — in 2018, one GPS tracker was reported to cost US\$300 (Palmer, Puckett and Brandt 2018, p. 9) and it is unlikely any of the trackers would be recovered. There would also be administrative costs from data analysis and follow-up investigations (Lee et al. 2017, p. 8). However, the size of any such program is inherently scalable to the desired costs, so a program could range from using a dozen trackers, to several hundred. Funding could be provided by the Australian Government or obtained from the parties being monitored, such as through fees or charges. Using other types of trackers (such as radio frequency identification devices) may also reduce costs, with the choice depending on the type of waste products to track and the length of time the tracker batteries need to last.

Some stakeholders also raised issues with privacy and State and Territory legislation against the use of tracking devices (ANZRP, sub. DR170, pp. 5–6; DAWE, sub. DR211, p. 4; Elliot, sub. DR185, p. 1). The risk of privacy breaches for individuals is likely to be low (as trackers are intended for use within waste products beyond the possibility of economic repair) (Lee et al. 2017, p. 3). A more substantial issue is that the use of surveillance devices (including tracking devices) is prohibited in several states and territories (New South Wales, Victoria, South Australia, Western Australia and the Northern Territory). But this legislation often has exemptions, with trackers generally permitted for use in an object if the person in possession or control of that object has given their express or implied consent. Prohibitions on the use of tracking devices also typically do not apply if the installation, use or maintenance of a tracking device is in accordance with a law of the Commonwealth.

As such, despite these constraints on the use of surveillance devices, the Government's ongoing regulation of product stewardship schemes appears to provide considerable scope to use tracking devices to monitor end-of-life outcomes within the NTCRS (and potentially in future product stewardship schemes). However, this will require careful design and implementation, as well as further consultation. One possible avenue is for DAWE to simply seek the consent of co-regulatory bodies for the use of tracking devices by DAWE (or its nominated auditor). This would require strong cooperation between DAWE and co-regulatory bodies, as well as co-regulatory bodies seeking out the consent of their downstream recyclers and logistics providers.

Another option is to change the auditing and reporting requirements in the NTCRS Rules to mandate that all NTCRS co-regulatory bodies should run tracking programs for their downstream recyclers and logistics providers — similar to the existing program run by ANZRP¹¹⁷ — and report these data to DAWE. Ideally, any tracking programs should also be conducted by independent third-party auditors, using risk-based sampling that focuses on the types of products and supply chains most likely to result in unlawful exports or disposal of e-waste.

¹¹⁷ ANZRP has reported using 'Recycling Services Agreements' to obtain consent from recycling partners to meet State and Territory legislative requirements, and notifies logistics providers and specific drivers if they are in possession of a GPS tracking device (ANZRP, sub. DR170, p. 5).

However, the prohibitions on the use of tracking devices suggest that broader monitoring of *all* e-waste by DAWE — including items outside of the scope of product stewardship schemes — is likely to be difficult, unless there were changes to State and Territory legislation or to Commonwealth legislation. In particular, DAWE does not directly regulate or monitor downstream e-waste recyclers and logistics providers, potentially making consent for tracking devices more difficult to obtain. That said, this lack of oversight across broader e-waste streams also suggests a greater need for e-waste tracking outside of product stewardship schemes, to obtain a better understanding of as-yet unknown risks.

RECOMMENDATION 7.2 USE TRACKING DEVICES TO MONITOR E-WASTE EXPORTS

The Australian Government should make greater use of electronic tracking devices to determine the end-of-life outcomes of Australian e-waste collected for recycling.

- At a minimum, the Government should increase the National Television and Computer Recycling Scheme's use of tracking devices, to better monitor co-regulatory bodies and their downstream recyclers and logistic providers.
- The Department of Agriculture, Water and the Environment should also examine different ways to use tracking devices in e-waste products outside the scope of product stewardship schemes, taking into account constraints on the use of surveillance devices in some states and territories.

Where possible, tracking should be conducted by independent third-party auditors, using risk-based sampling that focuses on the types of products and supply chains that present the highest risk of unlawful export or disposal of e-waste.

The future of product stewardship

Ongoing growth in e-waste generation (section 7.1) may create new pressures on existing waste management systems — particularly for the types of e-waste that are growing the fastest (such as solar panels) — leading to calls for expanding the scope of existing product stewardship schemes, or creating new schemes for new products.

To some extent, this pressure has already expanded product stewardship schemes (such as through the inception of the new Battery Stewardship Scheme). Further, under the WRA, the Minister for the Environment retains the requirement to annually table a priority list of products to be considered for voluntary accreditation or co-regulatory and mandatory schemes in Parliament (s. 67), as well as reviewing co-regulatory schemes every five years (s. 86). All past priority lists have included some form of e-waste, beyond what the existing schemes cover (DAWE 2013, 2014, 2015, 2016, 2017, 2020a, 2021a).

As discussed previously, the costs and benefits of any new or expanded co-regulatory or mandatory product stewardship schemes should continue to be assessed prior to implementation. Previous assessments have found some new or expanded schemes would

not deliver net community benefits, given the sizeable costs involved in establishing and running schemes for select products, although new assessments may reach different conclusions, given ever-changing products, markets and technologies.

Moreover, despite the small number of schemes currently operating, there is already a relatively high level of overlap between them. Further proliferation of the number of schemes may add to this overlap, generating confusion for consumers. For example, the NTCRS recycles end-of-life printers and cartridges, while cartridges are the sole recycling product of Cartridges 4 Planet Ark. And Mobile Muster and the NTCRS both recycle computer and mobile phone accessories such as chargers and small lithium-ion batteries.

The alternative option is for existing product stewardship schemes to be expanded to cover more types of e-waste. For example, Mobile Muster recently received funding from DAWE to develop a business case for expanding its scope beyond mobile phones, wireless mobile modems and smartwatches into products not covered by current schemes (DAWE 2021g). Consideration of how to expand the NTCRS's scope to cover other types of e-waste was also recommended in the recent review of the PSA (DAWE 2020c, p. 17), and supported by some inquiry participants (ALGA, sub. 79, p. 3; ANZRP, sub. 56, p. 5; LGNSW, sub. 97, p. 5). To this end, the Australian Government 'has committed to assess the options, costs and benefits of developing a product stewardship arrangement (including recycling at end of life)' for other types of electrical and electronic equipment (beyond the NTCRS), and DAWE is currently consulting on stewardship options (DAWE, sub. DR211, p. 4). In any case, optimising the NTCRS for its current scope — including the balancing of reuse, repair and recycling — will be important to consider before it is expanded to cover other products.

8 Are broader right to repair laws needed?

Key points

- The right to repair movement is gaining momentum around the world. In the European Union and United States, right to repair reforms have tended to involve new standalone obligations on manufacturers to provide access to repair supplies ('repair supplies obligations'), such as information, tools and spare parts.
- There is a role for similar reforms in Australia. However, to ensure that the best possible outcome is achieved, any new repair supplies obligation should be: evidence-based, fit for purpose, proportionate and targeted.
- An economy-wide repair supplies obligation should not be adopted at this stage. There is considerable variation in market dynamics for different products and, in most markets, there is insufficient evidence to substantiate the need for new obligations. At this stage, a uniform or generic approach would not be a cost effective or proportionate response to the problems identified — though this could change in the future.
- A more targeted approach to applying a repair supplies obligation would avoid the downsides of an economy-wide approach and allow for a more effective policy response by focusing attention on the repair supplies that matter most. This approach requires a case-by-case analysis to address identified problems in particular product markets where there is evidence that competition is restricted and consumers are harmed from limited access to repair supplies. It also requires an assessment of whether such an obligation is the most appropriate policy response.
 - A repair supplies obligation for motor vehicle repair information is due to commence in July 2022. This scheme should be evaluated three years after its commencement to assess whether it is effectively meeting its objectives to improve competition and choice, whether the benefits outweigh the costs, and whether any changes are required.
 - A repair supplies obligation for agricultural machinery is likely to be beneficial, given the extent of harm resulting from restricted access to repair supplies in this market. It is also likely to be a more targeted approach than other policies. The Australian Government should introduce such an obligation on suppliers to provide access to repair information and diagnostic software tools to machinery owners and independent repairers on fair and reasonable commercial terms. Design of the scheme should commence by the end of 2022. The scheme should be evaluated three years after its commencement to assess its effectiveness and determine whether any changes are required, including extending the scheme to cover spare parts.
 - In other repair markets, there is not enough evidence at this point in time to indicate that the benefits of a repair supplies obligation are likely to outweigh the costs. However, as markets evolve and the evidence base develops, there could be a case for introducing a repair supplies obligation for other products in the future, such as mobile phones and tablets or medical devices.

Previous chapters in this report considered the extent to which existing regulatory regimes enable consumers to access repair and repair services at a competitive price, and identified options for reform to those regimes that would lower unnecessary barriers to repair.

However, these reforms stop short of what some would consider a full ‘right to repair’ (chapter 1, box 1.1). Around the world, right to repair reforms have tended to involve new standalone obligations on manufacturers to provide access to spare parts, tools and repair information (chapter 1, box 1.2). Many participants to this inquiry advocated that similar positive obligations should be introduced in Australia (box 8.1) — in addition to reforms to the regimes that govern consumer law, competition, intellectual property and product design (chapters 3–6).

This chapter examines the case for introducing in Australia a new ‘repair supplies obligation’ — that is, an obligation on original equipment manufacturers to provide access to certain repair supplies. Section 8.1 outlines a decision-making framework for designing a repair supplies obligation and for assessing whether such an obligation should be imposed.

Section 8.2 applies this framework to assess whether an obligation should be imposed on an economy-wide basis. Overall, it finds that an economy-wide repair supplies obligation should not be adopted at this stage. Instead, a repair supplies obligation should be adopted on a targeted basis in particular industries. Section 8.3 discusses two product markets in which a repair supplies obligation has been, or should be, used to provide greater access to repair supplies: motor vehicles and agricultural machinery.

8.1 Considerations for imposing a repair supplies obligation

The touchstone for determining whether to impose a new repair supplies obligation is the question of whether it will result in the best overall outcome for the community.

In principle, this requires an assessment of whether the benefits of imposing a repair supplies obligation exceeds the costs. On the one hand, a repair supplies obligation could be expected to benefit consumers by improving access to repair supplies and therefore to repairs overall — which could manifest as greater choice of repairers, lower priced repairs and improved convenience. Independent repairers could also benefit from such an obligation if it improves access to, or lowers the cost of accessing, key inputs for their businesses. On the other hand, a repair supplies obligation would also impose regulatory costs on manufacturers, including compliance costs (such as the cost of holding and providing access to spare parts and tools, and disseminating repair information). Though some of these costs may be recouped from third parties who access repair supplies, they could also be passed on to consumers through higher upfront prices (appendix B).

Box 8.1 **Support for new obligations for repair supplies**

Stein and Crosby:

[Manufacturers] must be required to make accessible relevant repair and/or maintenance software information to independent repairers (and/or consumers, depending on the type of product in question). (sub. 51, p. 2)

Small Business Development Corporation:

The [Small Business Development Corporation] strongly supports the introduction of a mandatory scheme for the sharing of information in the motor vehicle service industry as we believe this will better assist small business repairers and provide increased options for consumers choosing who services and repairs their vehicles. (sub. 99, pp. 1–2)

Transition Town Sunshine Coast:

Introduce mandatory schemes for manufacturers of new products to provide spare parts and repair manuals for a mandated period of time, such as has been legislated in France and is being introduced across Europe. (sub. 28, p. 1)

Western Australian Local Government Association (WALGA):

A positive obligation on manufacturers to provide greater access to repair supplies similar to that in existence in Europe would be beneficial to Australian consumers. (sub. DR155, p. 3)

QUT Centre for a Waste-Free World:

Consumers' right to repair should be supported by laws mandating access to repair supplies, in order to prolong the use of their purchased products. These repair supplies would include digital materials, such as software updates. (sub. 172, p. 11)

Interactive Pty Ltd:

[We support] legislation that expressly requires manufacturers to openly provide unrestricted access to any necessary input for a repair (including, in the present context, firmware updates) both consumers / users and third party providers (ie regardless of whether the consumer has a repair contract with the manufacturer or otherwise chooses to obtain repair services from the manufacturer) ... (sub. DR175, p. 5)

Wiseman and Kariyawasam:

[W]e believe that original equipment manufacturers should be obliged to provide access to repair, spare parts and repair information and supplies to third-party repairers. (sub. DR208, p. 3)

CHOICE:

I think providing more parts, more information, and more repair tools to third part[ies] will address a lot of the problems that people are seeing. So I can't see a reason from a consumer lens not to do it, it would actually be incredibly helpful, and could actually deal with some of the frustrations ... (trans., p. 26)

Dr Muhammad Zaheer Abbas:

There is need for more regulation and more clarity on positive obligations of corporations with regard to right to repair ... It is the duty of the Australian Government to intervene through policy and legislative layers when the public interest is actually or potentially undermined. There is definitely a need to restore competition in the repair market and after-sales market, in order to ensure consumer welfare and to have a sustainable future for planet Earth. (trans., p. 74)

Minister Shane Rattenbury, MLA:

We have to find solutions that help people — consumers and the environment, and these vexed situations of clashing of rights and principles. We do need to prioritise consumers and the environment in my view. We also support in principle the development of a positive obligation on manufacturers to make repair supplies available to third parties. (trans., p. 360)

But as a practical matter, decision makers will also need to consider how the obligation should be designed — including what products and repair supplies are covered, who the obligation is owed to and when the obligation applies (box 8.2).

Box 8.2 Options for designing a repair supplies obligation

What products are covered?

An obligation could be broad (applying economy-wide and covering all industries) or targeted. There are several ways to design a targeted obligation. For example, the obligation could:

- apply to certain industries (as does the Motor Vehicle Service and Repair Information Sharing Scheme (MV Scheme))
- apply to certain classes of products (as in the case of the consumer guarantees in the Australian Consumer Law, which covers products whose purchase price is less than \$100 000; products purchased for personal, domestic or household use; and certain vehicles and trailers — chapter 3)
- be targeted towards product manufacturers that meet certain criteria.

What repair supplies are covered?

A range of different inputs are needed for repairs, including information, tools and spare parts. An obligation could be designed to cover some or all of these inputs (for example, the MV Scheme covers repair information only). The scope of repair supplies covered could be expressed in a principles-based manner (for example, only ‘critical components’) or prescriptively (for example, by listing specific parts that are within scope).

Who is the obligation owed to?

The obligation could be expressed as being owed to consumers, independent repairers or both. For instance, the obligation in the Australian Consumer Law relating to spare parts (s. 58(1)) is owed to consumers (purchasers of the product), whereas under the MV Scheme the manufacturers’ obligations are in favour of independent repairers.

Consideration should be given to who is likely to be able to use the relevant repair supply — this will likely depend on the nature of the primary product. Moreover, this decision has implications for who can compel a manufacturer to provide access to a repair supply. For example, if the obligation is owed to purchasers of the primary product only, this would not necessarily allow independent repairers to access the relevant repair supply directly from the manufacturer.

When does the obligation apply?

An obligation could be expressed as applying for a defined time period, whether that be principles-based (such as a ‘reasonable’ period of time) or prescribed (such as 10 years). Alternatively, the obligation could be constructed so as to apply under certain circumstances (for example, a manufacturer could be required to provide access to spare parts if they hold the part or themselves have access to the part).

This is because decisions about design have implications for the relative costs and benefits of such an obligation (and therefore whether the obligation has overall net benefits). For example, the scope of the obligation defines when consumers or independent repairers can

invoke their rights under, and therefore when they can benefit from, a repair supplies obligation. It will also implicitly determine the cost of compliance for manufacturers.

Achieving the best overall outcome for the community is far more likely when policy proposals follow basic principles of good regulatory practice (Australian Government 2013, 2014; NSW Treasury 2019; Queensland Government 2019; VCEC 2015). In particular, the following rules of thumb will help ensure that benefits of a repair supplies obligation are maximised, and the costs minimised.

1. The proposed obligation should address a clearly defined policy problem, and be **evidence based** (PC 2010, pp. 1–2). In the context of repairs, this means that there should be evidence of unmet demand for repair or repair supplies, as well as evidence of harm or detriment resulting from the lack of access to repair supplies.
2. The proposed obligation should be **effective** (Australian Government 2013, p. 3), meaning that it will address the identified policy problem.
3. It should also be **fit for purpose**, in the sense that the policy problem is not better addressed through a different mechanism, such as existing regulatory regimes (or a differently designed obligation).
4. The proposed obligation should be a **proportionate** response to the problem (VCEC 2015, p. 17). This includes targeting the obligation to products and industries where there is evidence of a problem, as well as repair supplies that are likely to make the biggest difference. This could involve distinguishing between repair supplies that are critical and those that are merely ‘nice to have’.

Finally, there may also be some challenges associated with the implementation of a repair supplies obligation, either in certain industries or in relation to certain repair supplies. To begin with, a repair supplies obligation could be accompanied by risks that would need to be addressed through the way it is implemented or designed. For example, providing third-party repairers with access to repair supplies could have wider implications for safety¹¹⁸, security and privacy, and environmental outcomes (chapter 4, section 4.3).

In addition, consideration should be given to how a new obligation would interact with existing regulatory regimes. For example, some repair supplies are likely to be subject to intellectual property laws (chapter 5). Changes to the rights of intellectual property holders may be subject to, or constrained by, Australia’s international obligations (such as those under the Agreement on Trade-Related Aspects of Intellectual Property Rights) and any re-assignment of property rights, such as intellectual property rights, may require compensation to be paid to the rights holder (under the Australian Constitution s 51(xxxi)). These interactions should be taken into account in the design and implementation of a repair supplies obligation.

¹¹⁸ Several participants expressed general concern about the safety risks associated with unskilled persons performing repairs (Ai Group, sub. DR156, p. 2, trans., pp. 159–164; AREMA and Refrigerants Australia, trans., pp. 314–6; Rheem, sub. DR167, p. 2; Techtonic Industries, trans., pp. 151–152; Tractor and Machinery Association of Australia, sub. DR228, pp. 2–4, trans., p. 349; VACC, sub. DR218, p. 11).

In light of these principles, the following sections consider the case for the adoption of a repair supplies obligation in Australia — either on an economy-wide basis (section 8.2) or in relation to targeted products or industries (section 8.3).

8.2 Is there a case for an economy-wide obligation?

As outlined in section 8.1, the decision to introduce any new repair supplies obligation should be made on the basis that it is the best way to deliver better outcomes for the community. To this end, some participants suggested that, because issues with accessing repairs and repair supplies span across many products, a new repair supplies obligation should be applied broadly across industries. For example, Dr. Matthew Rimmer supported ‘a more general system regarding the sharing of repair information for all technologies and industries’ (sub. DR168, p. 5).

However, the merits of an economy-wide obligation hinge on whether it is possible to design a uniform or generic approach that fits the needs of, and provides benefits in, each industry that it covers. This is because, if there are industries that would not benefit or industries where additional obligations are not needed, an economy-wide obligation would not represent an effective or proportionate response in those industries.

As a threshold matter, a uniform or generic approach is more likely to be appropriate where there is pervasive and consistent unmet demand for repair supplies across the board. This is an indicator of whether the nature of the policy problem to be addressed, and the type of intervention needed, also varies between those products and markets. Beyond this, a uniform approach also presupposes that a new obligation would have roughly the same effect and impost across all industries (including the nature and magnitude of compliance costs, and their effect on the behaviour of manufacturers).

But the evidence suggests that this is unlikely to be the case. To begin with, the evidence suggests that the nature of unmet demand for repair supplies varies between industries, including for the following reasons.

- There are differences in what repair supplies are needed for repairs. For example, the *Motor Vehicle Service and Repair Information Sharing Scheme* (MV Scheme) is premised on the view that the key barriers to repair can be addressed by ‘mandating access to diagnostic, service and repair information’ (Sukkar 2021a, p. 3). By contrast, in relation to consumer goods, several participants said that difficulties in accessing spare parts impeded them in undertaking repairs (box 8.3).
- The dynamics around access to repair supplies can also vary for different products. In some cases, manufacturers may already voluntarily provide access to some repair supplies (as claimed, for example, by John Deere, sub. DR176, p. 1) and, in others, there may already be considerable pressure for manufacturers to do so (Nelson 2021). And developments in 3D printing may also address issues around spare part availability in certain markets such as meat processing (Australian Manufacturing 2021) and medical

devices (Abbas, sub. DR209, p. 2) — though this can be subject to intellectual property protections (chapter 5). In addition, there can be instances where it is reasonable for repair supplies not to be available, such as spare parts for products that have been out of production for a long time or if supply is not practicable or economical (for example, due to disruptions to the supply chain).

- For certain products, there are already legal obligations regarding access to repair supplies, which mitigate the extent of unmet demand. In particular, the Australian Consumer Law provides for consumer guarantees for products whose purchase price is less than \$100 000; products purchased for personal, domestic or household use; and certain vehicles and trailers (chapter 3). For these products, there is an automatic guarantee that the manufacturer ‘will take reasonable action to ensure that facilities for the repair of the goods, and parts for the goods, are reasonably available for a reasonable period after the goods are supplied’ (s. 58(1)).¹¹⁹

In addition, a repair supplies obligation is likely to impact different industries in different ways, due to different market characteristics. Indeed, the Commission’s competition analysis has found that in general market dynamics vary considerably for different products (chapter 4, table 4.1). This includes variation in the number of manufacturers in the primary market, the expected lifespan of the product, the size of the repair market, and consumer preferences in relation to repairs. For example, whereas purchasers of agricultural machinery are likely to plan for several cycles of maintenance and repair at the time of purchase, purchasers of small household appliances and white goods are less likely to consider repair costs.

The regulatory impost, including the compliance cost to manufacturers, is also likely to vary between industries. For example, the cost of storing individual spare parts depends on the product and market (chapter 3, box 3.3) — they will likely be higher per unit if products are large and require more storage space (such as for motor vehicles) compared with if they are small (such as for mobile phones).

For these reasons, the Commission does not support the adoption of an economy-wide approach to introducing a new repair supplies obligation in Australia at this time (though circumstances could change in the future). As such, the introduction of a repairs supplies obligation should be considered and implemented on a case-by-case basis, taking into account the characteristics for different products and product markets. As Ai Group noted:

[S]uccess in the motor vehicle repair space would not necessarily translate to the same requirements being fit for purpose for a positive obligation in other product classes. (sub. DR156, p. 3)

¹¹⁹ That said, the role of s. 58(1) is relatively narrow: it does not mandate the availability of spare parts per se — rather, it provides that there is a consumer guarantee about spare part availability (chapter 3). Moreover, because s. 58(1) sits within a framework that protects the rights of consumers in relation to product purchases, it only confers rights in relation to spare parts on consumers and not independent repairers.

Box 8.3 **Difficulties accessing spare parts for consumer goods**

The Commission heard from multiple consumers who faced difficulties in accessing spare parts for consumer goods (including Barr-Hyde, sub. DR147; Deighton, sub. 72; Forster, sub. DR150; Held, sub. DR157; Holmes, sub. DR154; Mathie, sub. DR201; Thorpe, sub. 8). For example:

My daughter dropped an electronic tablet onto my open oven door and smashed the internal layer of glass in the oven door ... I phoned the oven company and they told me parts were no longer being manufactured for that model. (Deighton, sub. 72, p. 6)

A number of retailers do not offer the option to repair ... Aldi is particularly prone to this with no spare parts whatsoever being available through any channel that is able to be discovered by me. I have only on one rare occasion managed to identify the same product, branded differently, and been able to secure a part. The failure to supply any parts at all or any repair service at all contributes substantially to an increase in waste. (Witherby, sub. 134, p. 1)

I own a Dyson Cinetic Musclehead vacuum. Recently it lost suction ... I could not order a replacement part because Dyson does not offer these parts online. (Holmes, sub. DR154, p. 1)

But there does not appear to be a single underlying reason for why it is difficult to access spare parts for consumer goods. In some cases, it appears that spare parts are not produced or held at all. In others, it appears that access is the issue:

I have a broken coffee machine ... [I] discovered that it needed a small plastic tube with a brass fitting which was available from JURA, the Swiss manufacturer. When I contacted them they refused to supply me direct but would only supply me through a recommended repair outlet. (Bernsten, sub. 138, p. 1)

Some participants also reported that manufacturers sometimes refuse to supply spare parts to third-party repairers (Free Software Melbourne, sub. 43, p. 3; Holmes, sub. DR154, p. 1; MD Solutions Australasia, sub. 41, p. 4; Peters, sub. 19, p. 1; Pleszczynski, sub. 63, p. 1; Santos, sub. DR204, p. 1; Witherby, sub. 134, p. 1). For example:

MDS has made many attempts to purchase parts, components and equipment from [manufacturers] and these have been flatly rejected. (MD Solutions Australasia, sub. 41, p. 4)

And, in light of the evidence discussed in previous chapters, the problem cannot be traced back to a single regulatory gap that wholly accounts for the difficulties of accessing spare parts for consumer goods. For example, consultation with consumer groups and regulators did not uncover systemic issues with the provisions relating to spare parts in the Australian Consumer Law (chapter 3). Nor did it appear that competition laws are inadequate to address commercial decisions not to supply spare parts (chapter 4). Similarly, there was no evidence to suggest that manufacturers are exploiting intellectual property laws to restrict access to spare parts on a systemic basis (chapter 5).

Similarly, the Interactive Games and Entertainment Association said:

[T]here is no evidence of systemic competition problems in repair markets ... [therefore, a repair supplies obligation] should not be applied across all product markets, but targeted only towards product markets where competition issues have clearly been identified. (sub. DR180, p. 10)

The following section considers some candidate product markets that could benefit from the introduction of a targeted repair supplies obligation.

8.3 A targeted obligation is preferable

A more targeted approach to applying a repair supplies obligation would avoid the downsides of an economy-wide approach, and allow for a more effective policy response by focusing attention on the repair supplies that matter most. This approach requires a case-by-case analysis to address identified problems in particular product markets where there is evidence that competition is restricted and consumers are harmed from limited access to repair supplies. For example, while access to spare parts may be a significant issue in one industry, in another it may be a minor issue compared with access to repair information.

There are two product markets in which a repair supplies obligation has been, or should be, used to provide greater access to repair supplies. This section discusses:

- motor vehicle repair — where an obligation has been established, which aims to improve access to repair information for motor vehicles
- agricultural machinery repair — where the Commission’s assessment of this market indicates that restricted access to repair supplies is causing material consumer harm (finding 4.3) and that a repair supplies obligation would be beneficial.

For other product markets, the Commission’s competition analysis shows that, at this time, there is not enough evidence to justify other product-specific policy interventions, including a repair supplies obligation (chapter 4). However, as markets evolve and the evidence base develops, there could be a case for introducing a repair supplies obligation in other product markets, such as mobile phones and tablets or medical devices, where this is the most appropriate policy option. The end of this section provides direction for how to assess the case for new repair supplies obligations in the future.

Motor vehicle repair information

A repair supplies obligation was recently established in Australia, which aims to expand access to repair information for motor vehicles. In 2021, the Australian Government passed legislation to establish the MV scheme to help improve competition in motor vehicle repairs (box 8.4). The scheme is scheduled to commence in July 2022 and will require manufacturers to share vehicle diagnostic, service and repair information on fair and reasonable commercial terms.

The MV scheme follows similar regulations in the United States and Europe (chapter 1). There has been some (albeit limited) evidence of the effects of these regulations on competition, lower repair prices or greater choice of repairer. One study estimated that the Massachusetts scheme increased the market share of small auto repair shops by 2.4–3.3 percentage points on average (Kahane 2021, p. 1). And an evaluation of the European regulation found that it allowed for more effective competition (EC 2016b, p. 5).

However, it is too early to assess how effective the MV scheme will be in Australia. A formal cost–benefit analysis or regulation impact statement was not conducted prior to the

introduction of the scheme legislation. The Australian Competition and Consumer Commission (ACCC) market study noted that the form of regulation ‘will require careful consideration of the costs and benefits of alternative approaches and is beyond the scope of this study’ (2017b, p. 132). Treasury ‘certified’ the ACCC’s market study into new car retailing as ‘equivalent to a Regulation Impact Statement’ (Sukkar 2021a, pp. 3–4).

Box 8.4 Motor Vehicle Service and Repair Information Sharing Scheme

In 2017, the Australian Competition and Consumer Commission conducted a market study into new car retailing. It found that car manufacturers have an incentive to limit access to repair information for independent repairers, limiting their ability to compete and causing increased costs, inconvenience and delays to consumers (2017b, pp. 10–12). It concluded that the 2014 voluntary *Agreement on Access to Service and Repair Information for Motor Vehicles* had not effectively facilitated access to repair information. It recommended a mandatory scheme be introduced for car manufacturers to share technical information on commercially fair and reasonable terms to improve competition for motor vehicle repairs.

In response, in June 2021, the Australian Parliament passed legislation to establish a *Motor Vehicle Service and Repair Information Sharing Scheme*. The scheme requires manufacturers (and other ‘data providers’) to share vehicle diagnostic, service and repair information on fair and reasonable commercial terms with independent repairers and Registered Training Organisations. The aim of the obligation is to promote competition in the motor vehicle repair market and provide consumers with greater choice. The scheme is scheduled to commence on 1 July 2022 and applies to all passenger and light goods vehicles manufactured from 2002 onwards. Those that fail to comply with the scheme face a maximum penalty of \$10 million for a body corporate or \$500 000 for an individual (Sukkar 2021a, pp. 2–3, 5, 7, 36).

There are also some exclusions as well as uncertainty about how the scheme will operate in practice.

- The scheme excludes some types of information. Examples of exclusions include trade secrets, GPS data and most automated driving systems (Sukkar 2021a, pp. 10, 26–27, 33). Other ‘safety and security’ information — including information on hydrogen, electric and hybrid engines — can only be provided to those determined to be ‘fit and proper’. While this may provide scope for large amounts of information to be restricted, the scheme includes a ‘scheme adviser’ to help mediate any disputes.
- The scheme excludes access to some repair supplies. For example, the scheme excludes spare parts, which the ACCC suggested may make it ‘less effective if the parts required to complete repairs or servicing are not made available’ (2017b, p. 139).
- There is some uncertainty about the sharing of copyright information. Data providers (including data aggregators and dealerships) must share copyright information, even if doing so would infringe on Australian copyright law, as long as the information is required by the scheme and the data provider compensates the copyright holder (Sukkar 2021a, pp. 1, 23, 34). It is unclear how this requirement will work in practice, or interact with international copyright law.

-
- There is some uncertainty about the compliance costs of the scheme. Treasury estimated that the annual regulatory burden on manufacturers would be about \$1.5 million (Sukkar 2021a, p. 3). However, the Federal Chamber of Automotive Industries (sub. 115, att. 1, p. 6) estimated the costs could be significantly higher (\$43 million to establish and \$29 million per year thereafter). Most of these costs are likely to be passed onto independent repairers or consumers, either through fees to access repair information or through higher prices on motor vehicles, spare parts or other manufacturer goods and services. To reduce some of this cost, the Australian Government will provide a \$250 000 grant to an industry-led organisation to help establish a voluntary online portal to facilitate access to, and supply of, information, as well as verify that those accessing safety and security information meet the required criteria (2021b, p. 2).

The MV scheme has also been designed so that it can be extended to include other types of vehicles (such as motorcycles, heavy vehicles and buses), subject to consultation and regulatory impact assessments (Sukkar 2021a, p. 13). However, any extension of the scheme to include other types of repair supplies (such as spare parts) or additional repair information would require further legislative amendments. Some participants noted that spare parts for motor vehicles are generally available (FCAI, sub. DR223, p. 8; VACC, sub. DR218, p. 7), many of which are made by suppliers who are not the original equipment manufacturer (AAAA, sub. 81, p. 5), indicating that the scheme may not need to extend to spare parts at this stage. Other participants suggested that the scheme could be adapted to loosen restrictions on who can access electric vehicle and alternative fuel data within the scheme, and extended to include telemetry information¹²⁰ (Geotab Australia, sub. DR210, pp. 1–2; Wiseman and Kariyawasam, sub. 105, pp. 4–5).¹²¹

Given the importance of motor vehicle repair to consumers and uncertainty about some aspects of the scheme's operation, it is important that the government evaluate the MV scheme in a transparent and timely manner. The Australian Government should commence an independent evaluation of the scheme once it has been in operation for three years. The report of the evaluation should be made public. This timing balances the need for the scheme to have enough time and certainty to affect the market, while also ensuring it is evaluated. Several inquiry participants supported an evaluation of Australia's MV scheme (AADA, sub. DR205, p. 4; CALC, sub. DR229, p. 10; CHOICE, sub. DR232, p. 5; FCAI, sub. DR223, p. 3; MTAA, sub. DR234, p. 23; MTAQ, sub. DR171, p. 2; QLS, sub. DR231, p. 4; Tasmanian Government, sub. DR240, p. 2; Wiseman, sub. DR208, p. 3).

The evaluation should assess whether the scheme is effectively meeting its objectives to improve competition and choice, whether the benefits outweigh the costs, and whether any changes are required (including whether the scheme should continue including in that form or be expanded). The evaluation should also consider the interactions (including gaps and

¹²⁰ Data that are automatically generated and transmitted to the manufacturer, such as diagnostics.

¹²¹ The Center for State Policy Analysis in the United States claimed that telematics are unlikely to have a major impact on repairs in the short term, as 'telematics systems are relatively new and don't yet contain large amounts of repair-relevant data' (2020, p. 2). Nevertheless, in November 2020, Massachusetts voters approved amendments to their motor vehicle right to repair legislation to include telematics (chapter 1).

overlaps) between the MV scheme and the consumer guarantee protections for motor vehicles under the Australia Consumer Law. An evaluation would also help to provide insights for any further repair supplies obligations. Several measures could be used to inform the evaluation, including:

- measures of competition (such as changes in market share)
- industry feedback (such as surveys of user satisfaction)
- volume and cost of information provided by data providers, and affordability for users
- compliance with the scheme (such as penalties imposed)
- number and nature of disputes, as well as effectiveness of dispute resolution.

RECOMMENDATION 8.1 EVALUATE THE MOTOR VEHICLE INFORMATION SHARING SCHEME

The Australian Government should establish an independent evaluation of the Motor Vehicle Service and Repair Information Sharing Scheme, once it has been in operation for three years. The report of the evaluation should be made public.

The evaluation should assess whether the scheme is effectively meeting its objectives to improve competition and choice, whether the benefits outweigh the costs, and whether any changes are required.

Agricultural machinery repair supplies

As discussed in chapter 4, agricultural machinery repair is one industry in which manufacturer and dealer restrictions on access to repair supplies are harming machinery owners (typically farmers) through higher repair prices, reduced access and choice, and greater financial risks from repair delays. There is a strong case for additional measures to increase access to repair supplies (finding 4.3).

In considering whether a repair supplies obligation for agricultural machinery is an appropriate measure, and what form it should take, it is necessary to consider:

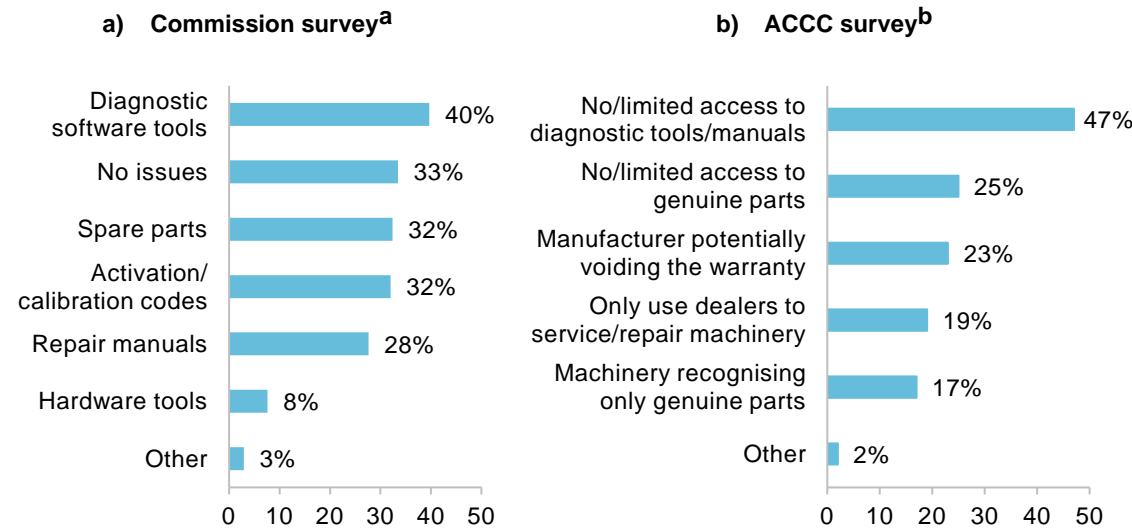
- which repair supplies are difficult to access
- the cost of targeting different repair supplies
- ways to manage any risks to safety
- how to design the scheme to be flexible.

Farmers are concerned that it is difficult to access repair supplies

For agricultural machinery, the main concerns appear to be that both farmers and independent repairers have limited access to repair information (such as manuals) and diagnostic software tools, as well as spare parts. The Commission's online survey of farmers

found that most issues were in relation to difficulties accessing diagnostic software tools and other repair information, such as calibration/activation codes and repair manuals (figure 8.1, panel a). There were also 22 instances in submissions that related to limited access to repair supplies for agricultural machinery, most of which were concerned about access to tools and equipment (45 per cent) and repair information (32 per cent), with the rest concerned about spare parts (23 per cent) (chapter 4, figure 4.3). The ACCC also previously found that restrictions on access to repair information and diagnostic software tools were a particular concern (figure 8.1, panel b).

Figure 8.1 Access to diagnostic software tools and repair manuals are a key concern for agricultural machinery owners



^a Respondents were asked to tick all repair supplies for which access was a problem. ^b Respondents were asked: Have you, or an independent business that you have engaged, experienced any of the following? Select all that apply.

Sources: ACCC (2021d, p. 16); online survey conducted by the Productivity Commission (chapter 4).

While agricultural machinery manufacturers have stated that they already provide some access to repair supplies (TMA, sub. DR228, pp. 4–6), the concerns of farmers remain and the evidence suggests that restrictions on repair supplies are causing material harm to farmers and other machinery owners (chapter 4).

Farmers also emphasised the need to be able to undertake some repairs themselves. For example, the National Farmers’ Federation noted that ‘if you can get the parts and if you can diagnose the problem you would like to deal with it yourself. If it was too complex then you’d use a third party operator’ (trans., p. 198). The Commission’s online survey found that about 71 per cent of respondents who used an authorised repairer would have preferred to use an alternative if they had access to the necessary repair supplies — with about half preferring to make the repair themselves and the other half preferring an independent repairer.

Introducing an obligation to provide repair information could be a starting point

Obligations to provide different repair supplies come with different costs, risks and practical considerations that can influence how best to design a repair supplies obligation.

Access to repair information and diagnostic software tools appears to be a key concern for farmers and independent repairers. Disseminating existing information (such as manuals) and software for a reasonable period of time may not create many additional costs to manufacturers, apart from some initial fixed costs to set up the sharing process, and largely passed on to the farmers who are willing to pay for it. The aggregate cost of setting up an information sharing scheme for agricultural machinery is expected to be somewhat lower than the motor vehicle scheme as there appear to be fewer brands of machinery that would need to comply.

While agricultural machinery manufacturers have stated their intention to voluntarily provide greater access to repair information, there is reason to believe this is likely to be insufficient (chapter 4). A mandatory scheme is likely to be more effective. Nevertheless, the scope of a mandatory scheme (including whether a mandatory scheme is no longer beneficial) may be informed by the extent to which additional voluntary information sharing occurs prior to its introduction.

While many farmers expressed concern about a lack of availability of spare parts (for example, NSW Farmers, sub. 239, pp. 1–2 and VFF, sub. 60, p. 3), it may be worthwhile delaying the inclusion of spare parts in the repair supplies obligation for several reasons. First, it may take some time to investigate how (and whether) a spare parts obligation could overcome any conflicts with Australia's international law obligations relating to intellectual property — such as those under the Agreement on Trade-Related Aspects of Intellectual Property Rights (chapter 5, box 5.13). Second, providing access to information and software (including activation or calibration codes) may improve farmers' ability to make use of generic spare parts, increasing the availability of substitutes. Finally, the cost to manufacturers of providing access to physical tools and spare parts, particularly for large pieces of agricultural machinery, is likely to be greater than providing information or software as it requires additional ongoing production, storage and distribution costs.

The characteristics of the agricultural machinery repair market mean that other policies are unlikely to fully resolve issues with access to repair supplies. In particular, while an individual business' conduct may not necessarily contravene competition law (Part IV of the *Competition and Consumer Act 2010* (Cth)), the actions of multiple agricultural machinery businesses to restrict access to repair supplies can potentially lead to poor competition in the market overall (chapter 4). Further, there are considerable costs and a high evidentiary bar for bringing cases under these provisions, which can discourage smaller businesses (such as farmers) from taking action (finding 4.7).

Similarly, some participants suggested that new obligations could instead be implemented through amendments to the Australian Consumer Law — in particular, by extending the coverage of the consumer guarantees to include agricultural machinery owners (chapter 3).

In principle, this would mean that purchasers of agricultural machinery would have some protections in relation to spare parts and repair facilities (s. 58(1)). However, this option would likely fall short in practice: the remedies available under the consumer guarantees are not targeted towards repairs per se (as opposed to refund or replacement), nor do they enable those repairs to be undertaken by a third party.

Overall, the Commission considers that there is a *prima facie* case for a repair supplies obligation on manufacturers of agricultural machinery to provide access to certain repair supplies. It is important to note that a repair supplies obligation should not require that manufacturers provide repair supplies for free, but at a fair and reasonable price. It appears prudent to initially design a repair supplies obligation to provide farmers and independent repairers with access to repair information and diagnostic software tools. In the future, the scheme could be evaluated for its effectiveness and assessed to determine whether to include spare parts and/or other tools.

Safety concerns can be managed through scheme design

Manufacturers and dealers of agricultural machinery expressed concern that a repair supplies obligation may lead to unintended consequences, particularly risks to safety, as well as the environment, innovation and brand reputation (Eglinton, sub. DR164, p. 7; John Deere, sub. DR176, p. 6; TMA, sub. DR228, pp. 6–7). These stakeholders were concerned that providing access to repair supplies would facilitate lower-quality repairs and enable farmers to modify (rather than repair) their machinery, potentially at the cost of safety. The Tractor and Machinery Association of Australia noted that agriculture has one of the highest fatality rates of any industry, that agricultural machinery can be complex, and that authorised repairers undergo professional training and monitoring (sub. DR228, pp. 4–6).

In terms of systematic differences in quality, safety or security between dealerships and independent repairers, it is important to note that the manufacturer will not have visibility over the standard of work of an independent repairer. TMA members regularly audit the dealers of their products and engage with customers to gauge their satisfaction with the service they received. (TMA, sub. DR228, p. 4)

While repair-related safety concerns are legitimate, these risks can be overstated for many products and types of repair (chapter 4), including agricultural machinery. In particular:

1. Many accidents are likely caused by general farm-related duties, rather than modifications or poor-quality repair.¹²²
2. There is no evidence to show that highly skilled and experienced farmers or independent repairers perform systematically lower-quality repairs for agricultural machinery.

122 From 2010 to 2014 there were 221 agricultural worker fatalities (SWA 2016, pp. 9–13). About 76 per cent of fatalities involved vehicles (mainly tractors and quad bikes) and 6 per cent involved non-vehicle machinery, plant and transport. It is not clear how many fatalities were *caused* by issues with repair or general farm-related duties. For example, about 29 per cent of vehicle fatalities occurred while workers were driving on a farm ‘undertaking general farm-related duties’. About 9 per cent of fatalities occurred during vehicle repair or maintenance activities, but it is not possible to determine whether these were dealer, third-party or DIY repairs.

-
3. As noted by the Federal Trade Commission, providing appropriate information can enable consumers (such as farmers) and independent repairers to safely repair their products (2021b, p. 29).
 4. A repair supplies obligation would not be expected to change who is liable for the safety consequences of modified or poor-quality repairs made by a third party (chapter 4) — this could also be clarified within the scheme itself.
 5. John Deere submitted that it could be subject to ‘significant damage to their brand and reputation caused by potential safety and performance issues that could arise from third party modifications to embedded code’ (sub. DR176, p. 6), but this risk may be overstated. Indeed, the market for agricultural machinery had strong growth in 2020 (TMA, sub. DR228, p. 17), and remains highly concentrated among a few prominent manufacturers — including John Deere (chapter 4) — despite some evidence that a significant amount of modification activity may already occur.

Information received from the US Western Equipment Dealers Association (WEDA), shows one third of dealers have reported equipment has been modified and half of all equipment in the shop has been modified. (TMA, sub. DR228, p. 7)

... the Australian market is replete with advertisements and offers to remap, chip or tune diesel engines, without regard to the impact on dealer and Deere emissions obligations, manufacturer warranty and engine durability. (John Deere, sub. DR176, p. 6)

There are also ways to mitigate safety risks (and hence risk of liability and damage to brand reputation) through the scheme’s design. Both farmers and manufacturers appear to be open to increasing access to agricultural machinery repair information and consider that it will be possible to alleviate legitimate safety concerns by negotiating on the type of information that manufacturers are obliged to provide and who it is provided to.

... safety concerns cannot be used to justify inaction on the right to repair. Again, a measured right-to-repair regime would and should be limited by genuine safety issues and concerns. This should be a key aspect in the creation and implementation of this right. (NFF, sub. DR226, p. 4)

We do not oppose information sharing providing it is reasonable in how it is implemented, for both the user and the manufacturer. Our priority would be to preserve the integrity of the machinery (from both a safety and performance aspect) so there would need to be some assurances that information could not lead to proliferation of tampering. (TMA, sub. DR228, p. 9)

The MV scheme provides an example of how it may be possible to balance these concerns, by limiting some types of scheme information to appropriately credentialled users. Indeed, several other stakeholders also suggested that information should only be provided to users with appropriate credentials (MTAQ, sub. DR171, p. 4; MTAA, sub. DR234; VACC, sub. DR218, p. 14). A system based on credentials should be risk based, and would require an assessment of what type of information should be made available and to whom. This system may require consultation with stakeholders as well as an independent umpire with sufficient expertise, similar to the scheme adviser in the MV scheme. For example, one approach may be to have a tiered system, whereby general information is shared among all scheme users but certain safety and security information is limited to people determined to

be ‘fit and proper’ (as is the case in the MV scheme). In designing any approach, it will be important to consider that there may be a cost to assessing the suitability (in terms of skills and relevant qualifications) of the users accessing repair supplies.

The scheme should be designed with flexibility in mind

Several participants supported the inclusion or consideration of agricultural machinery in the MV scheme as a way of implementing a repair supplies obligation for this product market (ASBFEO, sub. DR225, p. 1; MTAA, sub. DR234, p. 14; Tasmanian Government, sub. DR240, p. 1). The ACCC also recommended this path be considered upon the initial review of the MV scheme (2021c, p. viii). Indeed, this scheme already exists and has been designed so that it can be extended to include other types of vehicles (such as farm vehicles), subject to consultation and regulatory impact assessments (Sukkar 2021a, p. 13).

However, it will be necessary to investigate the feasibility of this option because agricultural machinery and motor vehicles are different industries with different problems.

A right to repair regime that is modelled on the motor vehicle framework must consider some key distinctions between the repair market for motor vehicles and farm machinery. In the farm machinery market, the ability to self-repair is much higher, and issues of access to affordable spare parts more pertinent. These need to be accounted for if the right to repair regime for farm machinery uses the motor vehicle framework as its basis. (NFF, sub. DR226, p. 2)

First, there is a stronger case to require that manufacturers share repair supplies with farmers rather than just independent repairers (in contrast to the MV scheme, box 8.4). This is because farmers tend to undertake more repairs themselves, relative to motor vehicle owners (AAAA, trans., p. 137; NFF, sub. DR226, p. 2). In part, this is because many farmers live in regional areas with relatively ‘thin’ repair markets that have few accessible repairers (chapter 4), whereas motor vehicle owners tend to live in major cities where there is generally a wide network of repairers. A combined scheme that covers both motor vehicles and agricultural machinery could be complex and, in any event, would likely require each industry to be ‘partitioned off’ from the other, so as to enable bespoke arrangements and avoid unintended outcomes — such as allowing farmers to access motor vehicle repair information or extending repair supply access to motor vehicle consumers.

Second, any scheme that covers agricultural machinery should be designed with the potential to extend the obligation to spare parts in the future (to the extent that it is possible to overcome conflicts with intellectual property arrangements). The lack of access to spare parts appears to be a more significant issue in agricultural machinery than motor vehicles (NFF, sub. DR226, p. 2; VACC, sub. DR218, p. 7). For example, for motor vehicles, the Australian Automotive Aftermarket Association noted that ‘we ... didn’t report any issues necessarily about access to parts ... we don’t find spare parts availability to be the heart of our problem’ (trans., p. 137). Further, most motor vehicles are likely to be covered by the consumer guarantees, meaning that purchasers are guaranteed that manufacturers will provide reasonable access to spare parts. In contrast, agricultural machinery, for the most part, is not covered by the consumer guarantees (chapter 3). Therefore, it will be necessary

to consider how a combined scheme could be extended in the future to provide access to agricultural machinery spare parts, without also extending this obligation to motor vehicles more broadly. This may not be desirable if the costs of doing so were to outweigh the benefits (MTAQ, sub. DR171).

If it is found to be beneficial to include spare parts within the scheme in the future, one way to limit the additional costs involved could be to specify that access must be provided for certain critical components only. This process would likely require negotiation between industry stakeholders, with input from a scheme adviser. Another way to limit unnecessary costs to manufacturers could be to have the obligation apply for a ‘reasonable’ time period rather than a minimum time period, because the latter could be difficult to determine for different parts. This design feature would allow the obligation to operate flexibly, while also providing an avenue for farmers to raise disputes about what time period is considered reasonable on a case-by-case basis.

An alternative option for implementation is to develop a similar standalone scheme for agricultural machinery which could provide greater scope to be extended in the future. This could be modelled on the MV scheme and implemented as a legislative amendment to the *Competition and Consumer Act 2010* (Cth). Alternatively, it could be modelled on existing mandatory industry codes of conduct prescribed under Part IVB of that Act. One potential downside of this approach is that a separate scheme increases the complexity of legislation, particularly if additional schemes are required in the future. However, this may also be desirable if it sets a higher threshold for any additional industry schemes in the future, which will require a case-by-case analysis of their merits.

Summary

In summary, the Australian Government should introduce a repair supplies obligation on agricultural machinery. Design of the scheme should commence by the end of 2022. This timing provides a window of opportunity for the industry to progress voluntary information sharing, which could potentially reduce the scope of a repair supplies obligation. As part of its development, the government should investigate whether it will be possible to include agricultural machinery in the MV scheme without limiting the ability to extend the scheme in the future, such as by including spare parts. In the case that this appears very complex, it may be prudent to develop a standalone scheme. The scheme should be evaluated once it has been in operation for three years, to assess its effectiveness and determine whether any changes are required, including extending the scheme to cover spare parts.

RECOMMENDATION 8.2 INTRODUCE A REPAIR SUPPLIES OBLIGATION ON AGRICULTURAL MACHINERY

The Australian Government should introduce a repair supplies obligation on agricultural machinery that requires manufacturers to provide access to repair information and diagnostic software tools to machinery owners and independent repairers on fair and reasonable commercial terms.

Design of the scheme should commence by the end of 2022. To inform scheme design and implementation, the Australian Government should:

- monitor developments in the Motor Vehicle Service and Repair Information Sharing Scheme, as well as voluntary information sharing within the agricultural machinery industry, to determine the scope of the information to be included
- consider whether this obligation should be implemented through an extension of the Motor Vehicle Scheme or through a separate scheme.

The scheme should be evaluated after it has been in operation for three years, to assess its effectiveness and determine whether any changes are required, including extending the scheme to cover spare parts.

What about other industries?

At this stage, the Commission has not recommended introducing broader ‘right to repair’ laws in other industries. This is because, based on the information available, there was insufficient evidence to support a new repair supplies obligation in those markets. This includes evidence about, first, whether there is a problem in the repair market and, second, the nature and extent of that problem.

However, as markets evolve and the evidence base develops, there could be a case for introducing a repair supplies obligation in other industries. In assessing candidate markets, decision makers should consider the following questions to determine whether there is a *prima facie* case for introducing a new repair supplies obligation.

- **Is there a problem with the repair market?** This should be informed by the available evidence. For product markets with a broad consumer base, it may be appropriate for this evidence to be gathered through a market study by the competition regulator. For example, mobile phones and tablets are one market for which more evidence should be gathered (recommendation 4.1). But for certain specialised products (such as medical devices), it may more appropriate for a review to be undertaken by a body or committee with the relevant technical capabilities (recommendation 4.2).
- **What is the nature of that problem?** There could be a number of reasons why product owners are unable to access repairs, including: products not being repairable, lack of supply of repair services, spare parts not being produced, or manufacturers refusing to provide access to repair supplies. It is likely that a repair supplies obligation would only

address the latter of those issues. This consideration will help ensure that any regulatory interventions are effective.

- **How is the problem best addressed?** This involves identifying what is the regulatory gap that has given rise to the problem above, and an assessment of what regulatory interventions are needed, to ensure that any regulatory interventions are fit for purpose. Some problems may be best addressed through existing laws (such as provisions against anti-competitive conduct, chapter 4 and appendix B) or amendments to existing regulatory mechanisms. In some cases, the development of voluntary or mandatory codes of conduct may be most appropriate. And in yet others, there may be a need for a new repair supplies obligation — or even other types of ‘positive obligations’.

If the prima facie case is made out, decision makers will then need to assess whether the imposition of a new repair supplies obligation will result in net benefits — as discussed in section 8.1. This will depend on the dynamic and characteristics of the market in question, as well as the way in which the repair supplies obligation is designed (box 8.2). And, in line with recommendations 8.1 and 8.2, the implementation of any new obligations should be informed by learnings from previous schemes (including the MV scheme and the recommended agricultural machinery scheme) and should be subject to regular review to ensure that the scheme remains effective and fit for purpose.

A Public consultation

The Commission has actively encouraged public participation in this inquiry. This appendix outlines the consultation process undertaken and lists the organisations and individuals that have participated in this inquiry.

- Following the receipt of the terms of reference on 29 October 2020, an advertisement was placed in *The Australian*, and a circular was sent to identified interested parties.
- An issues paper was released on 7 December 2020, to assist those wishing to make a written submission to the inquiry. The Commission received 146 submissions prior to the release of the draft report and 97 submissions after the release of the draft report, for a total of 243 submissions (table A.1). The Commission also received a total of 243 brief comments. The submissions and brief comments are available online at www.pc.gov.au/inquiries/completed/repair/submissions.
- Consultations were held with representatives in Australia and internationally, including from Australian, State and Territory Government agencies, manufacturers, suppliers and their peak bodies, industry groups, consumer and community groups, waste management bodies, and academics and researchers (tables A.2 and A.4).
- Three days of public hearings were held between 19 and 21 July 2021 (table A.3).

The Commission would like to thank everyone that has participated in this inquiry.

Table A.1 Submissions

<i>Participants</i>	<i>Submission^a</i>
Abbas, Dr Muhammad Zaheer	34, DR209
ACT Government	DR224
Adelaide Appliance Repairs	102
Agney, Terry	109
Alcock, Ralph	104
Apple	132
Assistive Technology Suppliers Australia Ltd (ATSA)	23
Australia and New Zealand Recycling Platform (ANZRP)	56, DR170
Australian Automotive Aftermarket Association (AAAA)	81, DR206
Australian Automotive Dealer Association (AADA)	98, DR205
Australian Competition and Consumer Commission (ACCC)	106, DR214
Australian Computer Society (ACS)	66
Australian Copyright Council	DR189
Australian Democrats	100
Australian Film/TV Bodies	DR173
Australian Government Department of Agriculture, Water and the Environment (DAWE)	DR211
Australian Government Department of Health (DoH)	121
Australian Government Department of Home Affairs (DHA)	DR213
Australian Industry Group (Ai Group)	32, DR156, DR238
Australian Information Industry Association (AIIA)	127
Australian Local Government Association (ALGA)	79
Australian Mobile Telecommunications Association (AMTA)	130, DR181
Australian Small Business and Family Enterprise Ombudsman (ASBFEO)	59, DR225
Australian Water Heating Forum (AWHF)	94, DR192
Bader, Dean	146
Barr-Hyde, Jeremy	DR147
Barwon South West Waste and Resource Recovery Group	33
BehaviourWorks Australia	95
Bersten, Ian	138, 139
Bower Reuse and Repair Centre	48
Brisbane Residents United Inc (BRU)	DR198
Brisbane Tool Library	73
Brunswick Tool Library	77
Buckingham, Brett	22
Bugden, Con	DR149
Calidad	145 *
Canegrowers Herbert River	12
Caravan Industry Association	76
Carmichael, Otis	17

(continued next page)

^a An asterisk (*) indicates that the submission contains confidential material not available to the public.

Table A.1 (continued)

<i>Participants</i>	<i>Submission^a</i>
CHOICE	126, DR232
Chu, Crystal	10
City of Melbourne	20
CNH Industrial Australia Pty Limited (CNHI)	116
Communications Alliance	131, DR219
Cole, Craig	9
Consumer Action Law Centre (CALC)	119, DR229
Consumer Electronics Suppliers Association (CESA)	25, 135
Consumers Federation of Australia (CFA) and CHOICE	DR242
Consumer Policy Research Centre (CPRC)	DR212
Cooper, Amy	67
Copyright Agency	DR182
CS Watch Repairs	88, DR197
Czajka, Michael	DR152
Darebin Repair Café (DRC)	69
Das, Chironjit	31
Davies Collison Cave Pty Ltd	141
Davis, Karen	DR148
Deighton, Kath	72
Design Institute of Australia (DIA)	108
Digital Right to Repair Coalition (Repair.org)	DR160
Digital Rights Watch (DRW) and Electronic Frontiers Australia (EFA)	DR230
Dilday, Melanie	143
Downes, Jenni	96
Dux Manufacturing Ltd	21
Dyer, Robert	1
E-Waste Watch Institute	DR221
Eastern Waste Management Authority (East Waste)	18
EcoWaste	DR158
Eglinton, Malcolm	5, DR164
Electronic Frontiers Australia (EFA)	65
Ellades, Dimitrios	DR199
Elliott, Jennifer	DR185
Federal Chamber of Automotive Industries (FCAI)	115, DR223
Fitzgerald, Leon	142
Forelle, Dr MC	DR177
Forster, Rob	DR150
Free Software Melbourne	43

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^a An asterisk (*) indicates that the submission contains confidential material not available to the public.

Table A.1 (continued)

<i>Participants</i>	<i>Submission^a</i>
Fusinato, Daniel	6
Gas Appliance Manufacturers Association of Australia (GAMAA)	58, DR191
GEOTAB Australia Pty Ltd	61, DR210
GiveGet	35
Gnieszlaw, Simon	91
Good Environment Choice Australia (GECA)	DR222
Grain Producers Australia (GPA)	27
Green Industries SA (GISA)	113
Hamilton, Carrie	57
Hamilton, Maureen	3
Harland, John	DR162
Held, Udo	DR157
Helstroom, Robert	30
Holmes, Steve	DR154
Honey Bee Manufacturing Ltd	2
Horan, Anita	11
iFixit	107, DR236
Insurance Council of Australia (ICA)	120
Interactive Pty Ltd	DR175
Interactive Games and Entertainment Association (IGEA)	103, DR180
IT Professionals Australia	26
JB HI-FI	124, DR207 *
Janday, Brigitte	37
John Deere Limited (JDL)	84, DR176
Johnston, Derek	49
Keulemans, Dr Guy	144
Law Council of Australia (LCA)	114, DR151
Legal Aid Queensland (LAQ)	68, DR163
Leighton, Laura	82
LG Electronics Australia Pty Ltd	38
Lewis-Fitzgerald, Erin	75
Local Government NSW (LGNSW)	97
Loh, Ken	DR178
MacLeod, Kirsteen	DR161
Marriott, Jason	16
Mate, Kirsty	70
Mathie, Wayne	DR201
May, Karl	129
McGrath, Glenn	15
McIntosh and Sons	24

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^a An asterisk (*) indicates that the submission contains confidential material not available to the public.

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<i>Participants</i>	<i>Submission^a</i>
MD Solutions Australasia	41
Medtronic Australasia	DR186
Mend It, Australia	101, DR227
Millicer, Helen	DR193
Moodie, Thomas	64
Motor Trades Association of Australia (MTAA)	DR234 *
Motor Trades Association Queensland (MTA Queensland)	80, DR171
Muradian, Shane	47
National Association for the Visual Arts (NAVA)	DR166
National Farmers Federation (NFF)	55, DR226
Newman, Peter	DR215
Norris, Brendan	89
Northern Sydney Regional Organisation of Councils (NSROC)	117
NSW Circular	93
NSW Farmers	DR239
NSW Young Lawyers	DR220
Nuske, John	DR159
O'Farrell, Sean	DR188
Osborne, Luke	7
Park, Dr Miles	52
Peters, Rodger	19
Pirate Party Australia	74, DR179
Planert, Dorte	36
Pleszczynski, Mark	63
Port Phillip EcoCentre	DR190
Proctor, Nathan	92, 128
Product Stewardship Centre of Excellence	123
Queensland Consumers Association (QCA)	122, DR165
Queensland Law Society (QLS)	DR231
Quealy, Walter	40
QUT Centre for a Waste-Free World	DR172
Rattenbury, Shane MLA, ACT Minister for Consumer Affairs	133, DR224
Refrigerants Australia and the Air Conditioning and Refrigeration Equipment Manufacturers Association (RA & AREMA)	62
Repair Café Hobart	14
Repair Café Redcliffe Peninsula	DR184
Repair Café Woolloongabba	42
Revitt, Oliver	DR203
Rheem Australia	53, DR167
Rimmer, Matthew	DR168
Rinnai Australia Pty Ltd	71, DR195

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^a An asterisk (*) indicates that the submission contains confidential material not available to the public.

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<i>Participants</i>	<i>Submission^a</i>
Rossmann, Louis	DR216
Santos, Joao	DR204
Scallan, Shaun and Gertsakis, John	125
Screenrights	DR174
Shaw, Russell	4
Sir Charles Gairdner Hospital, Department of Medical Technology and Physics	DR233
Smith, Brendan	DR237
South Australian Repair Café Coordinators	46, DR187
Stein, Dr Jesse Adams and Crosby, Dr Alexandra	51
Storer, Judi	140
Stryker South Pacific	87
Stuart, Katherine	29
Sustainable Australia Party	DR169
Tasmanian Government	DR240
TCO Development	137
Tobin, Steve	39
The Phone Spot	50
Thorpe, David	8
Toyota Australia	118
Tractor and Machinery Association of Australia (TMA)	111, DR228, DR243
Transition Town Sunshine Coast	28
Veck Effects Co	DR241
Victorian Automotive Chamber of Commerce (VACC)	136, DR218
Victorian Farmers Federation (VFF)	60
Vintage Time Australia	13, DR194
Waste Management and Resource Recovery Association of Australia (WMRR)	85, DR183
Watch and Clockmakers of Australia Inc (WCA)	83, DR196
Watch and Clockmakers of Australia Victoria Division (WCA Vic Div)	110, DR202
Western Australian Local Government Association (WALGA)	86, DR155
Western Australian Small Business Development Corporation	99
Whapshott, Curtis	DR153
Witherby, Angus	134
Wilson, Edwin	78
Williams, Philippa	112
Wiseman, Prof Leanne and Kariyawasam, Dr Kanchana	105, DR208
World's Biggest Garage Sale	45
WWF Australia (WWF)	54
Zero Waste Victoria (ZWV)	90, DR235
Zyllberberg, Catalina and McDonnell, Dominique	44

^a An asterisk (*) indicates that the submission contains confidential material not available to the public.

Table A.2 **Public consultations**

Participants

ACT Chief Minister and Treasury Economic Development Directorate
Agence de l'Environnement et de la Maîtrise de l'Énergie (ADEME)
Apple
Ascend Waste and Environment
Australia and New Zealand Recycling Platform (ANZRP)
Australian Automotive Dealer Association (AADA)
Australian Competition and Consumer Commission (ACCC)
Australian Government Attorney General's Department
Australian Government Department of Agriculture, Water and Environment (DAWE)
Australian Government Department of Foreign Affairs and Trade (DFAT)
Australian Government Department of Health — Therapeutic Goods Administration (TGA)
Australian Government Department of Home Affairs (DHA)
Australian Government Department of Industry, Science, Energy and Resources (DISER)
Australian Government Department of Infrastructure, Transport, Regional Development and Communications (DITRDC)
Australian Government Department of Prime Minister and Cabinet (DPMC)
Australian Government Department of Treasury
Australian Industry Group (Ai Group)
Australian Mobile Telecommunications Authority (AMTA)
Australian Repair Summit
Australian Retailers Association (ARA)
Australian Securities and Investments Commission (ASIC)
Australian Water Heating Forum (AWHF)
Basel Action Network (BAN)
BehaviourWorks Australia
Blue Environment
Boomerang Alliance
Bower Centres
Brown, Charlie (Life & Technology, CBN Media)
Cabrini Technology Group
Calidad
Cass-Gottlieb, Gina
CHOICE
Consumer Action Law Centre (CALC)
Consumer Affairs Victoria
Consumer Electronics Suppliers Association (CESA)
Consumer NZ

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Table A.2 (continued)

Participants

Cooper, Glenn
Customer Service NSW
Environmental Protection Authority Victoria (EPA Victoria)
Epson
E-waste Watch Institute
Federal Chamber of Automotive Industries (FCAI)
Gas Appliance Manufacturers Association of Australia (GAMAA)
Grain Growers
Green Industries SA
Heads of EPA Australia and New Zealand, National Waste Working Group
Home Appliance Europe
iFixit
Institute of Patent and Trade Mark Attorneys
Insurance Council of Australia (ICA)
IP Australia
Law Council of Australia (LCA)
MRI PSO
National Farmers Federation (NFF)
Northern Territory Consumer Affairs
Northern Territory Department of Corporate and Digital Development
Northern Territory Department of Environment, Parks and Water Security
Northern Territory Department of Industry, Tourism and Trade
NSW Department of Planning, Industry and Environment
Organisation for Economic Co-operation and Development (OECD)
Planet Ark
Queensland Department of Child Safety, Youth and Women
Queensland Department of Education
Queensland Department of Employment, Small Business and Training
Queensland Department of Environment and Science
Queensland Department of Housing and Public Works
Queensland Department of Justice and Attorney-General
Queensland Department of Local Government, Racing and Multicultural Affairs
Queensland Department of Public Safety Business Agency

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Table A.2 (continued)

Participants

Queensland Department of Regional Development and Manufacturing
Queensland Department of Youth Justice
Queensland Office of Industrial Relations
Queensland Treasury
Randell Environment Consulting
Rattenbury, Shane MLA, ACT Minister for Consumer Affairs
Repair.eu
Rimmer, Matthew
RMIT, Arcadis and One Planet Consulting
Small Business Commissioner South Australia
South Australia Consumer and Business Services
South Australia Environment Protection Authority
Sustainability Victoria
Tasmanian Department of Justice
The Repair Association
Total Environment Centre
Tractor and Machinery Association of Australia (TMA)
Transport Canberra and City Services
United States Public Interest Research Group (US PIRG)
Ventere, Jean-Paul and Baguet, Ophélie
Victorian Department of Environment, Land, Water and Planning (DELWP)
Victorian Department of Jobs, Precincts and Regions
Victorian Farmers Federation (VFF)
Waste Management and Resource Recovery Association (WMRR)
Western Australia Department of Mines, Industry, Resources and Safety
Western Australia Department of Transport
Western Australia Department of Treasury
Western Australia Department of Water and Environmental Regulation
Western Australia Economic Regulation Authority
Western Australia Small Business Development Corporation
Wiseman, Leanne
WWF Australia

Table A.3 **Public hearings**

Participants

19 July 2021 – Sydney (held online)

CHOICE

iFixit

Wiseman, Prof Leanne

Abbas, Dr Muhammad Zaheer

Rimmer, Dr Matthew

Waste Management and Research Recovery Association (WMRR)

Stein, Dr Jesse Adams

Australian Mobile Telecommunications Association (AMTA)

Australian Information Industry Association (AIIA)

Watch and Clockmakers of Australia (WCA)

Mend It, Australia

20 July 2021 – Melbourne (held online)

Australian Automotive Aftermarket Association (AAAA)

Zero Waste Victoria (ZWV)

Techtronic Industries

Ai Group

Consumer Action Law Centre (CALC)

TCO Development

National Farmers Federation (NFF)

Mend It, Australia

Australia and New Zealand Recycling Platform (ANZRP)

Australian Democrats

Watch and Clockmakers of Australia – Victoria Division (WCA Vic Div)

Sony

21 July 2021 – Canberra

Canadian Repair Coalition

World's Biggest Garage Sale

E-waste Watch Institute

Australian Digital Alliance

Interactive Pty Ltd

Refrigerants Australia and the Air Conditioning and Refrigeration Equipment Manufacturers Association (AREMA)

Australian Automotive Dealer Association (AADA)

Australian Academy of Technology and Engineering

Tractor and Machinery Association of Australia (TMA)

ACT Government

Motor Trades Association of Australia Limited (MTAA)

Consumer Electronics Suppliers Association (CESA)

Mend It, Australia

Jones, Andrew

Table A.4	Consumer goods roundtable
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Participants

Ai Group

Air Conditioning & Refrigeration Equipment Manufacturers Association of Australia (AREMA)

Australian Competition and Consumer Commission (ACCC)

Australian Government Department of Home Affairs

CHOICE

Consumer and Business Services, South Australia

Consumer NZ

Electronic Frontiers Australia (EFA)

Harrison, Dr Paul (Deakin University)

Law Council of Australia

B Competition theory and policy in aftermarkets

This appendix contains material to support the analysis of competition in repair markets in chapter 4. It is structured as follows.

- Section B.1 reviews aftermarket competition theory to develop the Commission’s framework for assessing competition in repair markets. The framework is then summarised into a ‘checklist’ to guide the competition analysis in chapter 4.
- Section B.2 uses available data to analyse one aspect of the framework for repair markets — high-level competition indicators, such as market concentration, profit margins, and entry and exit rates.
- Section B.3 uses available data to analyse another aspect of the framework — whether firms that raise repair prices compete away those additional profits by lowering new product prices in the primary market (termed the ‘waterbed effect’).
- Section B.4 examines how aftermarket competition theory influences the application of competition law in repair markets, through the existing provisions of the *Competition and Consumer Act 2010* (Cth) (CCA).

B.1 Framework to assess competition in repair markets

‘Aftermarkets’ are markets for the supply of products or services (‘secondary products’) used in connection with an existing product that has already been acquired (‘primary products’) (Coppi 2007; OECD 2017). Aftermarkets are very common, and may involve:

- consumable products — such as ink for printers or spare parts for cars
- complementary products — such as games for game consoles or blades for razors
- related services — such as repair and maintenance.¹²³

There is a significant body of literature discussing the economics of aftermarket competition (BIAC 2017; Borenstein, Mackie-Mason and Netz 2000; OECD 2017; Shapiro 1995; Voortman 1993). The main cause for competition concerns is the incentives that manufacturers have to restrict competition from non-authorised firms in the aftermarket for that product, particularly from independent repairers. This is mainly because manufacturers inherently have control over their products — such as product design, repair information and

¹²³ From here on, this appendix uses the term ‘product’ to mean either products or services (including repair).

spare parts — and they may have an incentive to leverage this primary market position into the aftermarket by either raising prices for the aftermarket product or restricting output.

Broadly, economic literature suggests that assessing competition concerns requires answering two threshold questions.

1. Is there evidence that competition in repair markets is restricted?
2. If so, is there harm to consumers?

The first step requires assessing evidence of a lack of competition in repair markets either through high-level market indicators or specific cases of manufacturers engaging in anti-competitive behaviour. If the first step uncovers reason for concern, the second step involves assessing to what extent consumers are harmed by the lack of competition. In some cases, the behaviour may be justified if it safeguards against risks to consumers (such as safety or security) or if competition in the primary market compensates for any potential harm in the repair market.

Is there evidence that competition in repair markets is restricted?

There are two sources of evidence which can indicate that competition in repair markets is restricted. One source involves analysing high-level market measures (such as market concentration) that may indicate that a repair market for a particular product is not competitive. Another way involves identifying the specific methods that manufacturers use to restrict access to repair markets and any evidence that manufacturers are engaging in this type of anti-competitive behaviour. Both sources of evidence should be used where possible.

Do high-level measures indicate a lack of competition?

There are several market characteristics that can provide an indication of whether a manufacturer has market power in repair markets and whether competition from other firms constrains its ability to exercise market power (ACCC 2008, pp. 33–50).

Market concentration refers to the number and size of firms in a market. Markets that are concentrated around one or few firms provide greater opportunities for those firms to engage in anti-competitive behaviour because there are fewer substitutes available to consumers. That said, even one other firm that is a vigorous and effective competitor can be enough to provide competition in a highly-concentrated market.

Profit margins refer to profits as a proportion of sales revenue. In general, an increase in price will result in a corresponding increase in profit margins. Therefore, a firm's ability to significantly and sustainably increase profit margins may indicate a lessening of competition. For example, a manufacturer may be able to raise the prices at which it sells spare parts to competing repairers, thereby increasing its profit margins. However, profit margins alone are not a conclusive indicator of a manufacturer's ability to exercise market

power, because other factors may influence profit margins. For example, firms may increase their profit margins by selling innovative new products or increasing their scale of operations to reduce average costs (economies of scale).

High barriers to entry can prevent new firms from entering the market and competing with incumbents. Even one new entrant that is a strong and vigorous competitor, or the credible threat of a new entrant, can prevent an existing firm from raising prices. There are several types of barriers to entry:

- legal or regulatory — such as licensing conditions or intellectual property rights (for example, a smartphone manufacturer enforcing its intellectual property rights to prevent a new independent repairer from accessing repair manuals)
- structural or technological — such as high consumer switching costs (which may limit the viability of entry) or access to key products or technologies (for example, restricting access to spare parts for new independent repairers)
- strategic barriers — such as deliberate consumer switching costs through contracting (for example, claiming to void warranties if repair is undertaken by a non-authorised repairer).

Entry and exit rates show the number of new and exiting firms as a proportion of total firms. These rates can be useful indicators to show whether: new firms are able to enter the market; many firms are forced to exit the industry; and exiting firms are replaced by new ones.

The Commission has used available data to analyse these indicators for repair industries (section B.2).

Are there specific cases of manufacturers restricting competition?

Anti-competitive behaviour in aftermarkets typically involves firms engaging in practices to exclude rivals from being able to enter or compete effectively in the aftermarket. Restricting competition allows the firm to profitably raise prices above the competitive outcome or reduce non-price dimensions of its offering (such as quality, range or service). Common exclusionary practices include ‘refusal to deal’ and ‘tying’ (OECD 2017, pp. 26–28).

Refusal to deal covers a range of exclusionary practices which typically involve a manufacturer limiting its competitors’ access to repair supplies, including:

- refusal (or delays) to supply spare parts or other inputs to repair (such as specialised tools)
- refusal to license intellectual property rights
- refusal to disclose necessary technical information relating to the product
- charging excessively high prices to repair market competitors.

Tying involves a manufacturer making a sale of the primary product conditional on purchasing the aftermarket product. For example, offering consumers a warranty (the tying

product) on a new car on the condition that the car is exclusively serviced (tied product) at an authorised dealership.

The Commission has examined cases of manufacturer behaviour that could constrain competition in particular repair markets. It concluded that there is evidence of some manufacturers limiting third-party access to repair supplies (typically through refusal to deal) and that terms which void manufacturer warranties after any non-authorised repair can deter consumers from seeking independent repair (chapter 4).

Is there harm to consumers?

The second step of the Commission's framework looks at the extent to which consumers are harmed by a lack of competition. This involves assessing several factors that may affect the likelihood and magnitude of harm, including the ability of consumers to limit or counteract harm.

Do market characteristics encourage higher prices in repair markets?

A threshold question to consider is whether the manufacturer will find it profitable to restrict competition in the repair market. If it is possible to demonstrate that manufacturers do not have the incentive to restrict the repair market, then there is likely no competition problem.

There are several market characteristics that provide firms with an incentive to engage in anti-competitive behaviour to increase repair prices. The Commission has considered these characteristics in its assessment of competition (chapter 4).

Consumers are 'locked in' to the repair market

Lock-in occurs when consumers are unable to substitute to other aftermarket products without incurring substantial switching costs (Coppi 2007, p. 55). For example, a consumer may need to purchase a different primary product (such as a different brand of machinery), incurring high switching costs, in order to use a competing aftermarket product (such as using an independent repairer). The cost of switching can be particularly high for:

- high-cost durable products (such as tractors or cars) that cost a lot to replace (this can be alleviated somewhat if consumers can recoup some costs through secondhand markets)
- products that appreciate in value, because it may be costly to replace with a like-for-like product to the same value, or the replacement product will have lower value
- consumers who have invested significantly in a particular brand's ecosystem, because other brands may not be compatible with the existing brand ecosystem (ACCC, sub. 106, p. 4)
- consumers who need to spend time and effort learning how to use a replacement product
- consumers who may lose personal or paid content, such as contacts or e-books
- consumers who are locked into a contract to use a particular brand, with high exit fees.

Lock-in gives manufacturers the ability, and in some cases the incentive, to engage in anti-competitive behaviour.

... incentives depend on whether monopolisation of the aftermarket could be profitable for the manufacturer of the primary good. This depends on the trade-off between the increased profits from exploitation of locked-in customers in the aftermarket and the potential loss of sales in the primary market, due to existing customers switching to other primary goods ... (OECD 2017, p. 8)

However, if the manufacturer's reputation is likely to be significantly damaged from exploiting its locked-in customers, then future primary product customers (such as new or upgrading customers) may choose competing firms instead. If this 'reputation effect' is stronger than the lock-in effect, then anti-competitive behaviour is less likely to occur. The reputation effect is likely to be stronger for manufacturers that are active in several markets because the repercussions are likely to be broader. It is also likely to be stronger for manufacturers that tend to place a higher value on future profits (low discount rate) compared with short-term profits. One example could be products (such as online marketplaces) that rely on 'network effects' — whereby growing the number of users improves the value of the product leading to even more users — which creates significant long-term gains. The internet and social media have provided customers with additional means (such as reviews) to express displeasure against lock-in.

One indicator to assess the strength of the lock-in and reputation effects is the ratio of locked-in to new customers. A high ratio of locked-in customers reduces the influence of the reputation effect, increasing the likelihood of anti-competitive behaviour. Primary markets that are declining in value are unlikely to have a strong reputation effect, and thus offer a better opportunity to exploit locked-in customers. One option to gain insight into the ratio of locked-in customers is to measure customer loyalty, such as from consumer surveys.

Consumers face difficulties estimating repair costs

The 'lifecycle cost' of a product involves the cost of the initial purchase of the primary product as well as the cost of operating and maintaining the product (secondary products) over the course of its life. For example, consumers may calculate the lifecycle cost of a car — the initial purchase price plus the ongoing cost of running, servicing and repairing the car (based on risks of damage or failure) — and compare substitute bundles at the time of the initial purchase.

If consumers adequately consider the lifecycle costs of products they are better able to compare the value of product offerings across firms. This limits the ability of a manufacturer to charge higher prices in the aftermarket, and facilitates competition between firms at the point of the initial purchase to deliver the best-value bundle to consumers.

However, if consumers do not fully consider lifecycle costs (often termed 'consumer myopia'), they tend to be more sensitive to upfront costs than to future aftermarket costs (OECD 2017, p. 13). In this case, manufacturers have a greater incentive to charge higher prices in the aftermarket because they will not need to reduce prices for the primary product

in order to compete on the best-value bundle to consumers. There are several barriers that may prevent consumers from considering the full lifecycle costs of products.

- Lack of information — in some cases, consumers may not have access to the high-quality information needed to properly assess the lifecycle cost of a product. This includes if there is a significant time, effort or monetary cost to search for this information. For example, consumers may not be able to easily find information on the likelihood that a product needs repair or the cost of repairing different problems. The incentive for consumers to search for information would be expected to increase as the price of the product increases. There is some concern that manufacturers deliberately hide or obscure information from consumers (termed ‘shrouding’) to make it difficult to estimate lifecycle costs (OECD 2017, pp. 13–14).
- Complexity and uncertainty — even if the information is available, estimating lifecycle costs may be too complex or uncertain. For example, consumers may find it difficult to assess the likelihood that they will need something repaired.
- High discount rates — some consumers simply disregard or excessively discount future costs and instead make an assessment largely based on upfront prices — making them less sensitive to repair prices in the future. For example, some studies have shown that consumers apply excessive discount rates that are inconsistent with their preferences when choosing between different models of electrical appliances (Orbach 2004, pp. 16–17).

One way to assess the extent to which consumers consider lifecycle costs is to identify if these characteristics exist in specific product markets. For example, it is naturally more difficult to calculate lifecycle costs for products with unpredictable maintenance or repair needs. Another way is to consider the type of consumer. For example, large businesses likely have greater capabilities (such as in-house expertise or the ability to obtain advice) to calculate lifecycle costs, whereas smaller businesses and households may find it relatively more difficult. Therefore, a low ratio of households to business consumers may assist in determining the extent of the problem. As long as a large enough proportion of consumers consider lifecycle costs, this can be enough to constrain manufacturer behaviour.

The repair market is large

The larger the size of the aftermarket (relative to the primary market) of the product — in terms of revenue or profits — the greater the potential gain to manufacturers from increasing prices for aftermarket products, and the lower the potential cost of losing primary product customers. The size of a *related* aftermarket may also be relevant. For example, manufacturers may have an incentive to restrict competition in the video game aftermarket if it is large, which could indirectly impede repair.

Expensive products (such as motor vehicles and machinery) are more likely to have larger repair markets because the relative cost of replacement is high (chapter 2), they are typically held for a long time, and they involve ongoing maintenance.

Market characteristics inform market definition

Defining the ‘relevant market’ is an important step in competition cases for assessing whether a manufacturer is engaging in anti-competitive behaviour. This involves determining whether the aftermarket is considered separate to the primary market. In general, there are three possible ways to define relevant markets for competition cases involving aftermarkets, ranging from completely separate (narrow) to completely integrated (broad) markets (table B.1).

Table B.1 Market definition relies on market characteristics

<i>Relevant market</i>	<i>Broad or narrow</i>	<i>Definition</i>	<i>Example</i>	<i>Conditions</i>	<i>Risk of competition concerns</i>
Systems market	Broad	A single market comprising of both the primary and secondary products	One market for all cars and all car repairs	<ul style="list-style-type: none">• Consumers consider lifecycle costs• Reputation effects are strong enough to limit consumer lock-in	Least likely to result in competition concerns
Dual markets	Middle ground	A single market for primary products and a distinct aftermarket for secondary products	One market for all cars and a separate aftermarket for all car repairs	<ul style="list-style-type: none">• Consumers can choose any combination of primary and secondary products (all secondary products are compatible with all primary products)	Somewhat likely to result in competition concerns
Multiple markets	Narrow	A single market for the primary product and multiple separate aftermarkets for each primary product	One market for all cars and separate aftermarkets for car repairs for each car brand	<ul style="list-style-type: none">• Consumers are locked in to using a restricted number of secondary products	Most likely to result in competition concerns

Source: OECD (2017, pp. 19–23).

The Australian Competition and Consumer Commission’s (ACCC) approach to defining the relevant market generally relies on identifying its appropriate product and geographic dimensions (2008, pp. 13–21). In doing so, it assesses how easily consumers can substitute to alternative products if a firm attempts to increase prices (or how easily other firms can pivot to producing a substitutable product). If consumer lock-in is high and/or consumers do not consider lifecycle costs, markets are more likely to be defined in a narrow sense and therefore more likely to result in competition concerns.

Competition regulators around the world have typically defined relevant markets for aftermarket products as ‘dual’ or ‘multiple markets’, including for repair. For example, in a prestige watch repair case, the European Commission ‘defined multiple separate markets for spare parts, each associated with a particular watch brand’ (OECD 2017, p. 23). In another example, in a motor vehicle spare parts case, the Competition Commission of India ‘defined multiple markets for spare parts, diagnostic tools and after-sale repair and maintenance services of separate brands’ (OECD 2017, p. 23). There have been some cases in which a ‘systems market’ was defined. For example, in a computer maintenance case, the UK Office

of Fair Trading ‘concluded that there was a single market for the supply and maintenance of computer equipment with ICL mainframe functionality in the UK’ (OECD 2017, p. 23).

Manufacturers have financial ties to the repair market

It is important to determine whether manufacturers have the practical ability to extract profits from the aftermarket. This depends on the extent to which manufacturers are vertically integrated across both the primary market and aftermarket. Broadly, there are three ways in which manufacturers may be engaged in aftermarkets: integrated, separated, and semi-integrated.

Manufacturers that are fully integrated in the aftermarket (that is, manufacturers that repair their own products) may have the ability to directly extract profits from restricting aftermarket competition (such as raising repair prices). Many manufacturers are active in aftermarkets, directly operating their own service and repair operations. Examples include some game console manufacturers (IGEA, sub. 103, pp. 14–15) and Nikon, the latter of which terminated its authorised repair program in the United States in 2020, and now only conducts repairs in-house (PetaPixel 2019).

Manufacturers that are completely separated from aftermarket firms have less ability to directly receive profits from raising aftermarket prices. For example, this can occur in repair markets largely made up of independent repairers, such as repair for some clothing and footwear products. However, in this case, manufacturers may still be able to extract profits from repairers by raising the price of repair inputs, such as spare parts or repair information, if they are the only supplier of those inputs. If alternative repair inputs exist (such as generic spare parts), then manufacturers may have an incentive to restrict the use of those alternative inputs (such as by designing products that limit the compatibility of generic spare parts) in order to profit from the sale of authorised repair inputs.

The ability to extract aftermarket profits is less clear for the many manufacturers that are semi-integrated in the aftermarket, such as by authorising third parties to repair their products. The process of authorising repairers may be a way for manufacturers to extract profits from the aftermarket without the need to directly provide repairs itself. Manufacturers often impose conditions on authorised repairers — such as the use of specialised training and tools — to enable them to access its market for repairs.¹²⁴ This relationship may involve agreements, contracts or licensing fees, which allow the manufacturer to extract profits from the aftermarket. Many product repair markets in Australia involve authorised repairers, such as motor vehicles, smartphones and agricultural machinery (chapter 4). That said, manufacturers may not have any arrangements in place to extract profits from authorised repairers, in which case they would have little incentive to restrict aftermarket competition.

¹²⁴ For example, authorised repairer and dealership agreements — like those used by Apple (2021b) or car manufacturers (ACCC 2017b, p. 32) — often specify obligations relating to authorised spare parts or facilities (such as layout and showroom requirements), and may require the business to actively promote the brand, making multi-brand storefronts difficult.

Therefore, it is important to assess the level of vertical integration between manufacturers and aftermarket firms (such as repairers) to determine their ability to extract aftermarket profits. However, the Commission has had limited ability to assess the nature of these relationships because authorised repair networks can vary considerably by product type and brand, and contracts with manufacturers are seldom public (chapter 4).

Are consumers compensated by lower prices in the primary market?

The degree of consumer harm from restricting competition in aftermarkets can depend on the level of competition in the primary market (Cabral 2014, p. 61; Klein 1996, p. 143; Shapiro 1995, p. 485). In principle, if primary market competition is high, firms will have an incentive to ‘compete away’ any profits they earn in the aftermarket by lowering prices in the primary market (BIAC 2017, p. 10). This balance of low primary market prices (and profits) and high aftermarket prices (and profits) is known as the ‘waterbed effect’ (Davis, Coppi and Kalmus 2012, pp. 4–5). An example could be high-priced printers and low-priced printer cartridges. In the context of repair, a waterbed effect would result in lower primary product prices (and profits) and higher repair prices (and profits).

The existence of a waterbed effect is critical to assessing consumer harm from anti-competitive behaviour in repair markets, and therefore the merits of introducing competition regulation. While there is strong theoretical support for the waterbed effect (BIAC 2017; Coppi 2007; Davis, Coppi and Kalmus 2012), there is limited empirical evidence on whether it exists and its magnitude (section B.3).

The degree to which consumers are compensated for high repair prices through lower primary product prices can be categorised as incomplete or complete.¹²⁵

- An incomplete waterbed effect does not fully compensate consumers for higher repair prices (the overall lifecycle cost of the product increases).
- A complete waterbed effect fully compensates consumers for higher repair prices (the overall lifecycle cost of the product does not change).

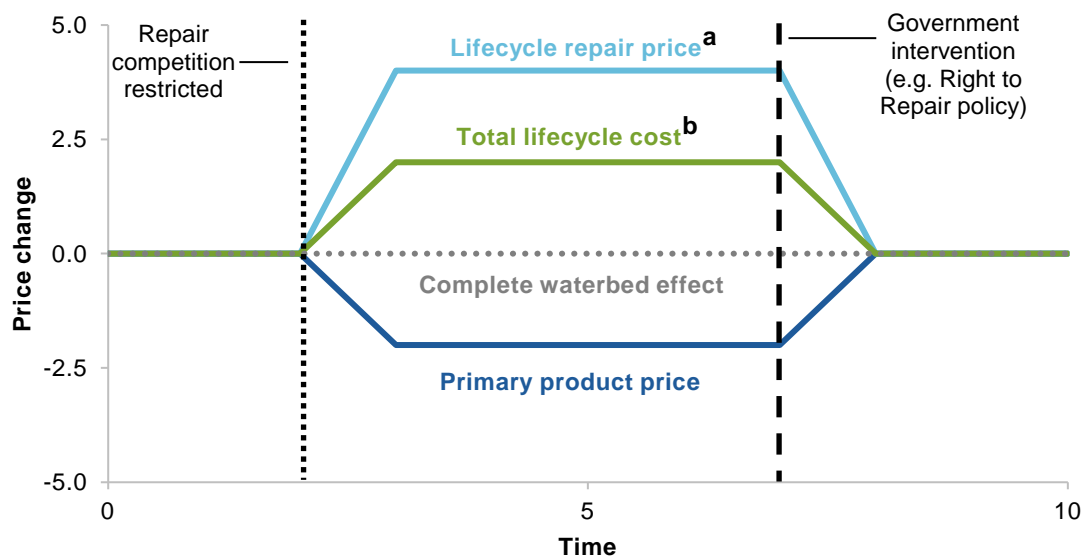
Figure B.1 shows a stylised model of an incomplete waterbed effect. A firm decides to restrict aftermarket competition in order to profit from increasing the price of repairs. The firm will then have an incentive to use these additional repair profits to lower the price of the primary product in order to compete for consumers in the primary market. Other firms are also likely to follow this strategy in order to compete. This competitive process therefore lowers the price of the primary product further, but it is not necessarily strong enough to

¹²⁵ In principle, the waterbed effect can also be ‘overcomplete’. This could occur when there are increasing returns to scale or network effects, and customers are locked in. These factors cause intense competition in the primary market as firms try to attract more customers, reducing the firm’s overall profitability (Davis, Coppi and Kalmus 2012, p. 12). However, this can have long-term implications for competition in the primary market as larger firms aggressively undercut smaller firms to gain new customers, resulting in a small number of dominant firms in the industry (Davis, Coppi and Kalmus 2012, pp. 52–53, 70). An overcomplete waterbed effect can be expected to occur less often.

completely offset higher repair prices. In this scenario, consumers are only partially compensated on price, such that the overall lifecycle cost of the product is higher. Therefore, there may be some merit for government intervention because it is more likely to result in lower product lifecycle costs.

Figure B.1 An incomplete waterbed effect does not fully compensate consumers through lower primary product prices

A stylised model of an incomplete waterbed effect

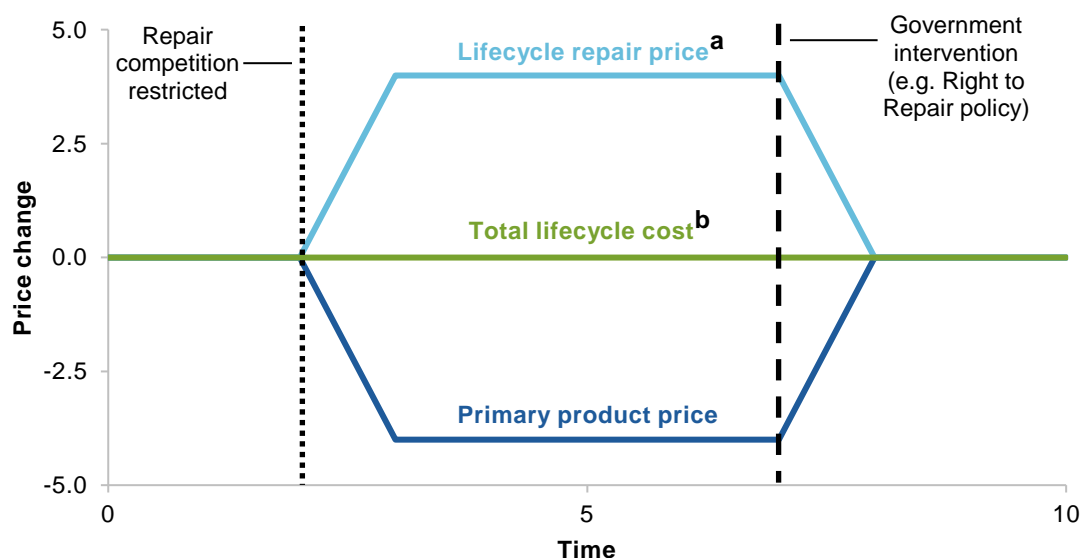


^a The lifecycle repair price is the repair price multiplied by the number of repairs. ^b The change in the total lifecycle cost is the net effect of changes to both the lifecycle repair price and primary product price for a product.

Figure B.2 shows a stylised model of a complete waterbed effect. In this scenario, once a firm increases the price of repairs, the competitive process is strong enough to lower the price of the primary product to the point where it completely offsets the higher repair price. In this scenario, consumers are fully compensated on price such that the overall lifecycle cost of the product remains constant. Firms may engage in this strategy if they are uncertain as to whether the waterbed effect would be complete, or to drive out competitors that cannot maintain low primary product prices. Without consumer harm, there is less merit for government intervention based on price concerns. In theory, a complete waterbed effect will occur when there is perfect competition in the primary market.

Figure B.2 A complete waterbed effect fully compensates consumers through lower primary product prices

A stylised model of a complete waterbed effect



^a The lifecycle repair price is the repair price multiplied by the number of repairs. ^b The change in the total lifecycle cost is the net effect of changes to both the lifecycle repair price and primary product price for a product.

There is an emerging consensus in the literature that anti-competitive behaviour in the aftermarket will likely result in some consumer harm (an incomplete waterbed effect) whenever consumers are locked in. However, whether the magnitude of this harm is sufficient to justify regulation is heavily debated (BIAC 2017, p. 9; Coppi 2007, p. 68). Some authors argue that consumer harm will be small as primary market competition is usually strong enough to adequately compensate consumers from higher aftermarket prices (Cabral 2014, p. 61; Klein 1996, p. 143; Shapiro 1995, p. 485). Others argue that some primary market characteristics result in insufficient competition to create enough downward pressure on prices, resulting in greater consumer harm. For instance, product differentiation can limit competition in the primary market (Coppi 2007, p. 60). Further, if only some firms can maintain higher aftermarket prices, then only those firms will have the capacity to compete down primary market prices, limiting price competition in the primary market (Voortman 1993, pp. 162–163).

The less competitive the primary market, the more likely the waterbed effect will be incomplete and result in consumer harm (BIAC 2017, p. 10; Coppi 2007, p. 70; OECD 2017, p. 42). Competition regulators and policymakers can assess the level of primary market competition — and therefore the likelihood of an incomplete waterbed effect — using general competition indicators, such as market concentration, profit margins and barriers to entry (discussed above).

The literature also points to several other market characteristics that may influence the completeness of the waterbed effect. For instance, network effects and increasing returns to scale in the aftermarket can result in a fairly complete or even overcomplete waterbed effect (footnote 3). A high proportion of locked-in customers, relative to new customers, is also more likely to result in an incomplete waterbed effect (Davis, Coppi and Kalmus 2012, pp. 69–70).¹²⁶

Are there adverse non-price outcomes for consumers?

Even if consumers are compensated on price in the primary market, anti-competitive behaviour can still lead to adverse non-price outcomes for consumers — such as reduced choice and convenience of repairs — and alter consumer purchasing decisions.

A less competitive repair market may result in fewer independent repairers and a larger market share for manufacturer authorised repairers. Inquiry participants have raised concerns that this can diminish consumers' choice of repairer, and increase the time and travel costs of repair (Fusinato, sub. 6, p. 1; Proctor, sub. 92, p. 2). For example, long delays for repair can be particularly detrimental for products relied upon for work, such as agricultural machinery. While consumers can purchase business interruption insurance to mitigate these risks, this comes at a cost. Such concerns were a key factor resulting in the ACCC's recommendation for mandating the sharing of motor vehicle repair information.

... the ACCC's view is that consumers benefit from competitive aftermarkets for the repair and servicing of new cars, and they also benefit from having a choice of providers to repair and service new cars. (2017b, p. 132)

While non-price impacts in major urban centres may be small, they can be much larger in regional and remote areas (ACCC 2017b, p. 118, 2021c, p. 22). Authorised repairers may help fill the void left by fewer independent repairers to some extent. However, some authorised repairers are exclusive to one or a few brands (depending on their agreement with the manufacturer) making their customer base smaller, and therefore many stores may be uneconomical. For these reasons, many of the concerns about consumer choice and access have focused on the repair of agricultural machinery (chapter 4).

Higher repair prices and lower new product prices (as a result of the waterbed effect) can lead to consumers undertaking fewer repairs and buying more new products (chapter 2), compared with a situation where both markets are competitive. This can have unintended consequences. For example, purchasing more new products typically generates greater environmental impacts (such as additional e-waste that can have a negative effect on the environment if not managed well — chapter 7) compared with repair and continued use of existing products (chapter 6). Calculating the environmental impact is complex and varies by product, the manufacturing process, and the way the product is disposed of. Another

¹²⁶ This is because when there is a high proportion of locked-in customers, firms are less likely to lose customers (and therefore profits) from raising aftermarket prices. Thus, the incentive to reduce the price in the primary market to attract new customers decreases, resulting in an incomplete waterbed effect.

potential outcome is that lower primary product prices can provide more consumers (including those with lower incomes) with the opportunity to purchase the product.

Are there valid reasons for restricting third-party repair?

Restricting third-party repair may be justified if it is necessary to safeguard against the risks from poor-quality repair or to provide additional benefits to the community, including:

- safety — some products, such as medical equipment or motor vehicles, may present a greater risk to consumer safety if they are repaired to a lower standard
- security and privacy — restricting access to repair can reduce the risk of data and software breaches, as well as protect consumer privacy
- quality control — controlling the quality of the primary product, such as by restricting the use of inferior spare parts in repair, can protect a manufacturer's brand and reputation and provide a more accurate signal of product quality to consumers. It may also reduce the time and cost of determining fault, which may ultimately be passed on to consumers
- safeguarding environmental standards — preventing consumers from modifying or disabling software can ensure products remain compliant with emissions standards
- innovation — restricting access to their intellectual property provides manufacturers with incentives to invest and innovate, which can have wider community benefits (chapter 5)
- efficiency — manufacturers can use their ability to adjust primary and aftermarket prices as a way to charge customers differently based on their usage of the system (termed 'metering') (Borenstein, Mackie-Mason and Netz 2000, p. 185; Coppi 2007, pp. 61–63; Tirole 2005, p. 16). Customer demand for aftermarket products can be used as a measure of their willingness to pay for the primary product. This allows the manufacturer to charge higher prices to customers who are willing to pay more overall and lower prices to customers who are willing to pay less, increasing overall output. For example, manufacturers may earn more per car from repairs for fleet customers if they tend to use their cars more often.

While restricting repair may reduce some of these risks to consumers, it is necessary to weigh this against any consumer harm caused. In some cases, the benefits may be small or the risks overstated. And there may be other ways to manage these risks without having to restrict competition. The Commission has examined many of these reasons for restricting competition in its assessment (chapter 4).

Checklist to identify competition issues in repair markets

The above framework can be summarised in a checklist of factors that may indicate a competition problem (figure B.3). The Commission has used this checklist to assess the state of competition in repair markets at a high level and identify which product repair markets are likely

to have competition concerns that may warrant further investigation (chapter 4). It can also be used to guide a more in-depth assessment of those particular product markets of concern.

Figure B.3 **Checklist to identify competition issues in repair markets**

A. Is there evidence that competition in repair markets is restricted?

Do **high-level measures** indicate a lack of competition?

☐ Highly concentrated aftermarket

☐ High barriers to entry

☐ High or increasing profit margins

Are there **specific cases** of manufacturers restricting competition?

☐ Refusal to deal (limits on third-party access to repair supplies)

☐ Tying (can only buy the primary product if they buy the secondary product)

B. Is there harm to consumers?

Do market characteristics encourage **higher prices in repair markets**?

☐ Consumers are locked-in to the repair market (high switching costs)

☐ Consumers face difficulties estimating repair costs (lack of information, complexity)

☐ The repair market is large (relative to the primary market)

☐ Manufacturers have financial ties to the repair market (vertical integration)

Are consumers compensated by **lower prices in the primary market**?

☐ Lack of competition in the primary market (incomplete waterbed effect)

Are there **adverse non-price outcomes** for consumers?

☐ Reduced access, convenience or choice

☐ Altered consumer purchasing decisions (negative environmental impacts)

Are there **valid reasons** for restricting third-party repair?

☐ Quality, safety and security

☐ Protection of intellectual property

☐ Environmental safeguards

☐ Other efficiency rationales (metering)

B.2 Analysis of high-level competition indicators

The Commission has analysed high-level measures to assess the state of competition in repair markets, including indicators of market concentration, profit margins, and barriers to entry and exit.

However, data limitations meant that the Commission was unable to investigate individual *product* markets (such as mobile phones or washing machines). Available data sources did not disaggregate to the level needed for such an analysis. Instead, the Commission analysed these indicators at the repair *industry* level (aggregations of multiple similar product markets,

such as appliances or electronics).¹²⁷ While an industry-level analysis may provide some high-level insights, it is limited because consumers cannot necessarily substitute between all repairers in an industry. For example, consumers of agricultural machinery repair cannot necessarily substitute to repairers of mining machinery.

This high-level analysis of competition across repair industries does not indicate an obvious systemic competition problem. However, this reinforces the conclusion that a case-by-case investigation is needed to assess individual product repair markets (chapter 4). Therefore, without deeper investigation it is not possible to dismiss competition concerns in specific product markets. For example, the ACCC identified some potential competition concerns in motor vehicle and agricultural machinery repair markets, including limited access to independent repair (2017b, 2021c).

Market concentration

The Commission used the Herfindahl–Hirschman Index (HHI) as a measure of market concentration in repair industries. The ACCC uses the HHI measure of concentration to indicate the likelihood that a merger will raise competition concerns, thereby requiring more extensive analysis (2008, p. 35). The HHI is calculated by adding the sum of the squares of each firm's market share (in terms of total sales) in the relevant market.¹²⁸ The ACCC notes that it will generally be more likely to identify competition concerns when the HHI is greater than 2000.

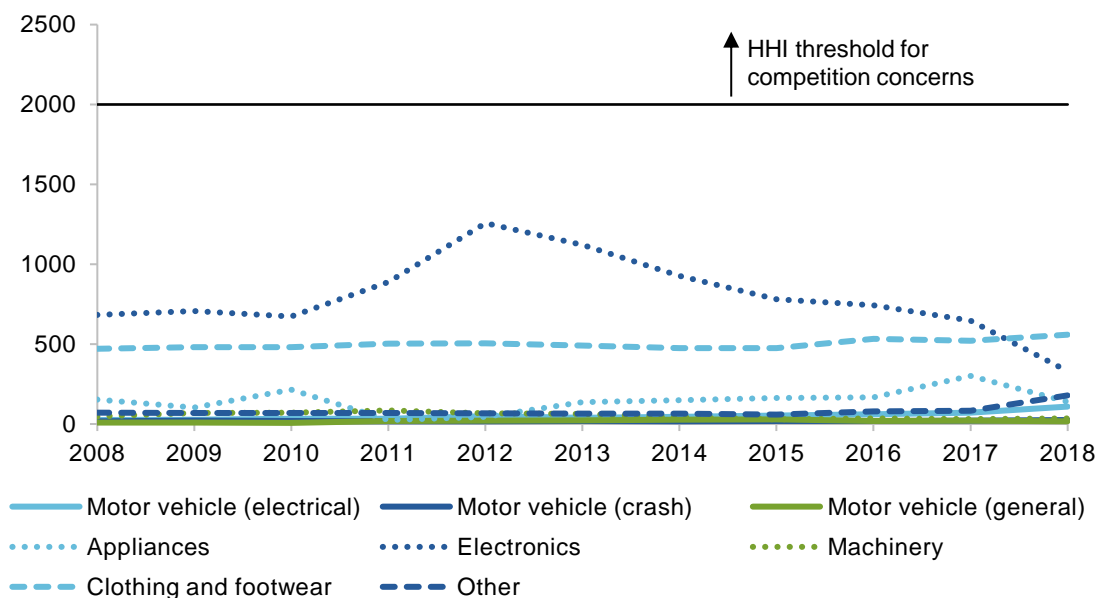
Calculating the HHI at the industry level, rather than the product level, can be problematic. The HHI is calculated in such a way that it is possible for each product market to have high concentration, but once aggregated to the industry level, show low concentration. Nevertheless, if the HHI at the industry level had a high market concentration, this would provide a strong indication that at least one product market within that industry is highly concentrated.

The Commission did not find that any industry had a high market concentration (figure B.4). Therefore, it is not possible to immediately conclude that there is significant market concentration within particular product markets. Further analysis at the product level would be required.

127 The Commission used the ABS Business Longitudinal Analysis Data Environment (BLADE) dataset to analyse some indicators. Detail about this dataset and its limitations can be found in chapter 2.

128 The formula for the HHI is: $HHI = s_1^2 + s_2^2 + s_3^2 + \dots + s_n^2$ where s_n^2 is the market share percentage of sales revenue for firm n (expressed as a whole number, not a decimal). This measure gives greater weight to firms with larger market shares than other measures, such as a simple concentration ratio that adds up pure market share percentages.

Figure B.4 Market concentration is not an immediate cause for concern
Herfindahl–Hirschman Index (HHI)^a by repair industry^b



^a HHIs were calculated using total sales from Business Activity Statements submitted to the Australian Taxation Office. ^b Repair industries based on the four digit ANZSIC class codes within the (94) Repair and maintenance subdivision.

Source: ABS (*Business Longitudinal Analysis Data Environment, BLADE*, 2018-19, Cat. no. 8178.0, Microdata).

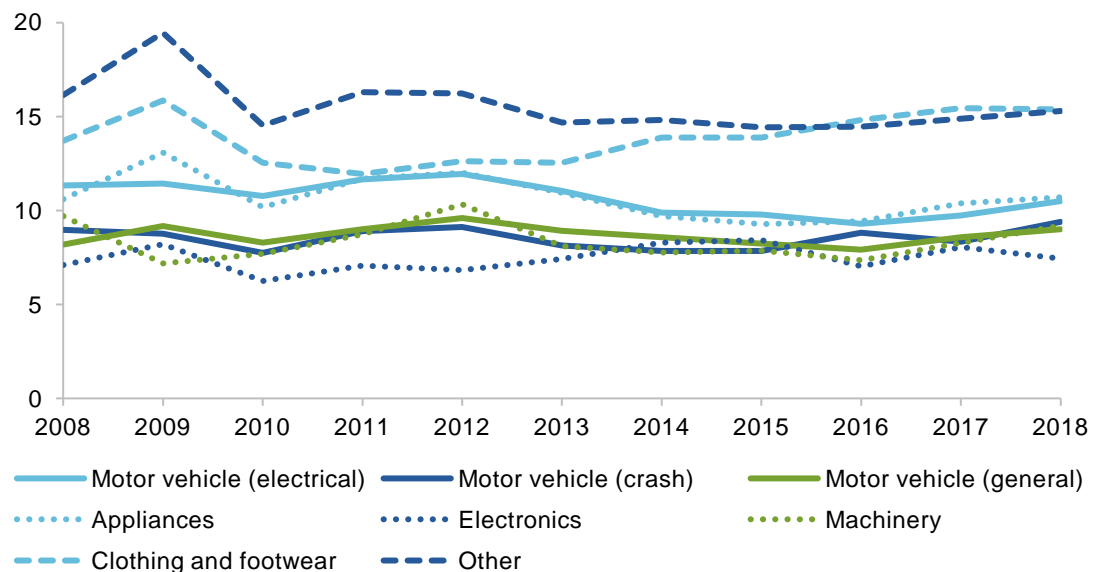
Further, given the data limitations, market concentration may be underestimated for two reasons. First, HHIs were calculated across all of Australia, rather than smaller geographic markets (such as states or territories). This is because some repair businesses service many areas but only report sales in one or a few areas (such as a head office), which would significantly overestimate HHIs in those areas. However, using this large geographic market is also not an accurate reflection of market concentration because consumers are unlikely to substitute to alternative repairers in other states or territories. This may be more problematic for some products (such as cars) than others (such as cameras) that may be posted to repairers elsewhere in the country. Second, industries with many franchised businesses with separate Australian Business Numbers — a potential example being the 279 Toyota dealership sites across Australia (Toyota Australia, sub. 118, p. 3) — may be counted separately, rather than grouped, depending on whether they report to the Australian Tax Office (ATO) separately or through a single ‘GST group’.

Profit margins

In principle, increasing profit margins over time may indicate that businesses are able to profitably raise prices by restricting competition.

Profit margins do not appear to be growing at the industry level (figure B.5). However, again, this may mask significant variation in levels and trends of profit margins within specific product markets.

Figure B.5 Profit margins have remained stable
Profit margins by repair industry (per cent)^{a,b}



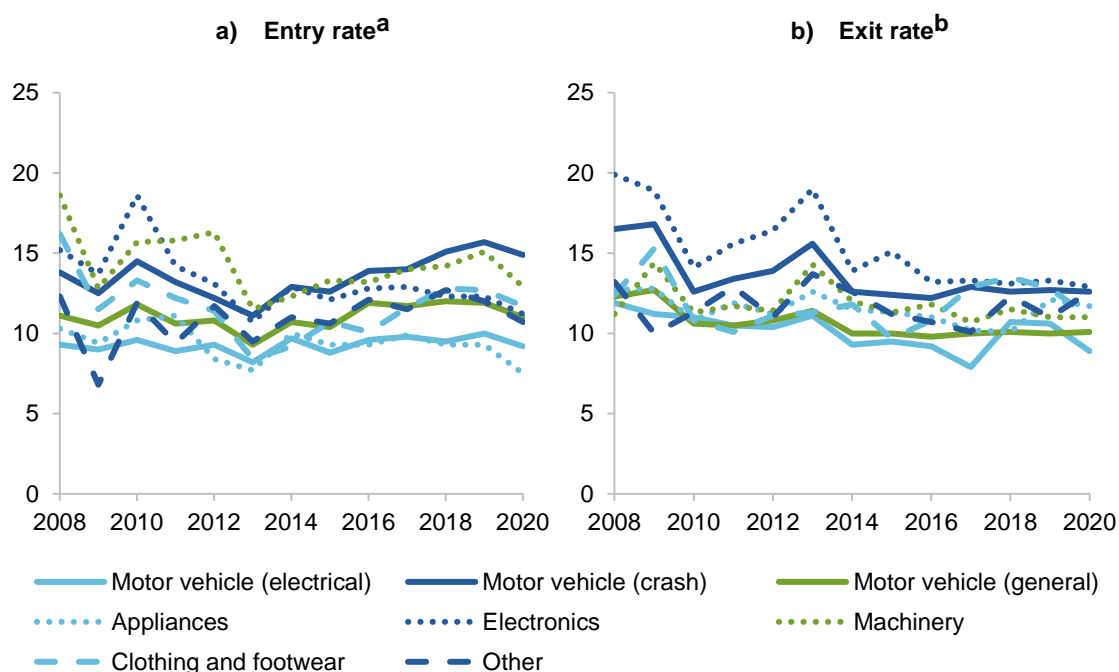
^a Profit margins were calculated using total profits divided by total income from Business Income Tax forms submitted to the Australian Taxation Office. ^b Repair industries based on the four-digit ANZSIC class codes within the (94) Repair and maintenance subdivision.

Source: ABS (*Business Longitudinal Analysis Data Environment, BLADE*, 2018-19, Cat. no. 8178.0, Microdata).

Entry and exit rates

Barriers to entry can enable firms to exercise their market power by restricting competition from new repairers entering the market. From 2008, between 7–19 per cent of repairers were new entrants each year (figure B.6). This is broadly in line with the 8–20 per cent of repairers that exit each year. This high rate of turnover indicates that it is possible for new repairers to enter (and potentially compete) across industries, and that this has remained steady over the past decade. Entry and exit rates appear broadly comparable with average rates across the rest of the economy.

Figure B.6 Entry and exit rates indicate low barriers to entry
Per cent of businesses entering and exiting the repair industry each year



^a Number of entries divided by the number of businesses operating at the end of the financial year. ^b Number of exits divided by the number of businesses operating at the end of the financial year.

Source: ABS (*Counts of Australian Businesses, including Entries and Exits, 2011–2021*, Cat. no. 8165.0).

B.3 Analysis of the waterbed effect

The waterbed effect should be considered when assessing the extent of consumer harm from anti-competitive behaviour in repair markets (section B.1). If primary market competition is sufficient to compensate consumers for higher repair prices, there is less merit for competition regulation. While there is strong theoretical support for the waterbed effect, the Commission found no empirical research showing the waterbed effect in repair markets. Several international studies have examined it in other contexts and found mixed results (box B.1). Due to the lack of empirical evidence, the Commission conducted an analysis to test the existence of the waterbed effect in repair markets.

Box B.1 **Empirical evidence of the waterbed effect**

There are many products with low primary market prices (and profits) and relatively high aftermarket prices (and profits). For example, printers (low price) and cartridges (high price), razors and blades, game consoles and games (OECD 2017, p. 10). The ACCC also found that car dealerships generally earn low profit margins on car sales and higher profit margins on repair and servicing (2017b, p. 45).

While such examples are an expected outcome of the waterbed effect, there is limited empirical evidence to show that the waterbed effect is the underlying cause. Some studies have tested the waterbed effect in telecommunications and credit card markets.

Telecommunications

Several studies examined the regulation of mobile termination rates (MTRs) and their impact on the mobile retail prices charged to consumers. MTRs are the wholesale payments made by an operator (such as Telstra) whose customer initiates the call, to another operator (such as Optus) whose customer receives the call. MTRs are set by the company who receives the call. Many countries regulate MTRs due to concerns of operator monopoly power resulting in high MTRs (Genakos and Valletti 2009, p. 2; Growitsch, Marcus and Wernick 2010, pp. 119–120). However, regulations that reduce MTRs may result in higher retail prices for customers (a waterbed effect). Some studies found empirical evidence of the waterbed effect (Genakos and Valletti 2009, p. 25, 2011, p. 15; Growitsch, Marcus and Wernick 2010, p. 134; Jongyong and Duk Hee 2012, p. 16). However, Veronese and Pesendorfer found no relationship (2009, p. 4).

Credit cards

One study examined how regulating credit card fees changed the interest charges consumers received. Agarwal et al. examined the *US Credit Card Accountability, Responsibility, and Disclosure (CARD) Act of 2009*, and its effectiveness on lowering borrowing costs to consumers (2013, pp. 1–2). The CARD Act aimed to reduce card fees charged to consumers, but this could also cause an increase in interest charges (a waterbed effect) as banks try to recoup lost fee revenue. No change in interest charges was found because of the CARD — meaning there was no waterbed effect detected (Agarwal et al. 2013, pp. 28–30).

Methodology

In section B.1, the waterbed effect was described as the extent to which high repair prices are offset by low primary product prices. However, to empirically test for a waterbed effect, it is necessary to pinpoint a ‘shock’ to the market — such as a policy intervention — which affects prices. Given that most aftermarket competition policy interventions aim to reverse the outcomes of the waterbed effect — by placing downward pressure on aftermarket prices — it is possible to test for the waterbed effect by observing the extent to which falling repair prices are offset by rising primary product prices.

The Commission used the car market to test for the waterbed effect because a relevant policy intervention exists — a ‘right to repair’ policy for cars has operated in the United States for

several years.¹²⁹ Further, repair and new car price data were available, and the primary market appears reasonably competitive (ACCC 2017b, p. 4; IBISworld 2021b).

In the United States, Massachusetts voted to implement ‘right to repair’ legislation (hereon MAS) for cars in November 2012. Under the MAS, manufacturers were required to share with independent repairers and car owners the same repair and diagnostic information and tools available to dealerships, at a fair and reasonable price. This eventually led to a similar nationwide memorandum of understanding (MOU) in January 2014.

The Commission analysed whether the MAS and the MOU resulted in lower repair prices and higher new car prices in the United States. While the MAS was only implemented in Massachusetts, it is possible (and perhaps likely) that manufacturers changed their national pricing strategies in anticipation of more states implementing similar policies (such as the MOU), resulting in a spillover effect to the rest of the United States.

In order to examine the effects of the MAS and the MOU, it is necessary to consider how trends in prices would have prevailed if they were not implemented. Therefore, the Commission compared US price trends with a control group. Australia was chosen as the control group because it is a country that shares similar characteristics to the United States and does not have a similarly effective motor vehicle right to repair policy.¹³⁰

The Commission used the difference-in-differences technique to estimate the effect of the MAS and the MOU (box B.2). This involved comparing new car and repair prices in the United States (the treatment group) with prices in Australia (the control group) before and after the MAS and the MOU were implemented. The hypothesis is that, after the MAS or the MOU was implemented, a waterbed effect would cause (all else equal):

- US new car prices to increase relative to Australia; and
- US motor vehicle repair prices to decrease relative to Australia.

The following difference-in-differences model for country i , at month t , was estimated using ordinary least squares.

$$y_{it} = \beta_0 + \beta_1(country_i) + \gamma_t + \beta_2(policy * country_i) + \beta_3(country_i * time_t) + \beta'X_{it} + \varepsilon_{it}$$

¹²⁹ Jurisdictions such as the United States, Canada and the European Union have implemented repair information sharing schemes for motor vehicles. The US right to repair policy was chosen for the analysis because it is the most commonly cited right to repair policy and has the best publicly available data.

¹³⁰ Although Australia implemented a voluntary motor vehicle repair information sharing scheme in 2014, this was deemed ineffective by the ACCC (2017b, p. 92), and was less restrictive than the US MOU and MAS. Australia recently announced a repair information scheme for motor vehicle repairs, but this is not due to come into operation until 1 July 2022 (Sukkar 2021a, p. 3).

Box B.2 The difference-in-differences method

Difference-in-differences is a statistical technique that makes use of longitudinal data to estimate the effect of a specific intervention or treatment (such as a passage of law or enactment of policy). The technique compares changes in the variable of interest among a population that is subject to the treatment (the treatment group) and a population that is not (the control group).

In order to estimate a causal effect using a difference-in-differences method, several assumptions must be satisfied. Most notably, this approach requires that in the absence of the treatment, the difference between the 'treatment' and 'control' group is constant over time (common trend assumption). However, additional control variables can be added to the specification to account for time-varying factors that might affect the difference between the two groups over time. Other assumptions are that the treatment is unrelated to outcomes before the treatment, and that the composition of treated and control groups is stable over time.

Source: PC (2020, p. 338).

Table B.2 provides descriptions of the variables. Two different dependent variables (y_{it}) were used — the new car price and the repair price. United States and Australian consumer price index (CPI) data were used for both variables.¹³¹ β_2 is the coefficient of interest, and shows the impact of the MAS (or the MOU) on US repair and new car prices, compared with Australia. β_2 is expected to be negative for repair prices and positive for new car prices.

This model also includes country (β_1) and month (γ_t) fixed effects, and country-specific linear time trends (β_3). Country fixed effects control for any time-invariant differences across countries, such as their geography (remoteness of the country). Time fixed effects control for trends in factors over time that affect prices across both countries, such as the changing technology in cars. Country-specific linear time trends control for different time trends in the prices for each country.

Three empirical specifications were used for the two dependent variables (table B.2):

- specification 1 — baseline specification (monthly observations from 2000–2019),¹³² which includes month and country fixed effects
- specification 2 — baseline specification with country-specific linear time trends
- specification 3 — baseline specification with country-specific linear time trends and macroeconomic controls.

Specification 3 is the preferred estimation.

¹³¹ The Australian *motor vehicle CPI* includes new cars and new motorcycles (given the share of motorcycles is small, it is likely a good proxy). The US *new car CPI* only includes new cars. *Motor vehicle repair and maintenance CPI* data were used as a proxy for car repair prices (although it includes maintenance as well as repair). The US *repair and maintenance CPI* includes motor vehicle body work, maintenance and repair. All indexes are seasonally adjusted.

¹³² The time period of 2000–2019 was chosen to remove noise in the trends for new car prices in Australia from the late 1980s to the late 1990s.

Table B.2 Model variables and parameters

Variable/ parameter	Variable or parameter descriptions	Included in specification:		
		(1)	(2)	(3)
y_{it}	Dependent variable. ^a Repair price ^b or new car price ^c for country i at month t , measured as indexes from the Consumer Price Index (CPI, indexed at the average price level of 1995)	✓	✓	✓
β_0	Intercept	✓	✓	✓
$country_i$	Country dummy variable (1 = United States)	✓	✓	✓
β_1	Country fixed effects	✓	✓	✓
γ_t	Monthly time dummy variables (time fixed effects)	✓	✓	✓
$policy * country_i$	An interaction variable between the country dummy variable and the MAS (or the MOU) ^d dummy variable (MAS = 1 from November 2012 onwards; MOU = 1 from January 2014 onwards)	✓	✓	✓
β_2	The coefficient of interest (difference-in-differences effect) which shows the impact of the MAS (or the MOU) on US new car or repair prices	✓	✓	✓
$country_i * time_t$	An interaction variable between the country and a time trend variable, to account for country-specific linear time trends		✓	✓
β_3	Vector of coefficients corresponding to country-specific linear time trends		✓	✓
X_{it}	Vector of controls to account for macroeconomic conditions, including the average monthly indirect exchange rate, quarterly Gross Domestic Product (GDP) growth, car tariffs and luxury car tariffs			✓
β'	Vector of coefficients corresponding to each control variable			✓
ε_{it}	Idiosyncratic error	✓	✓	✓

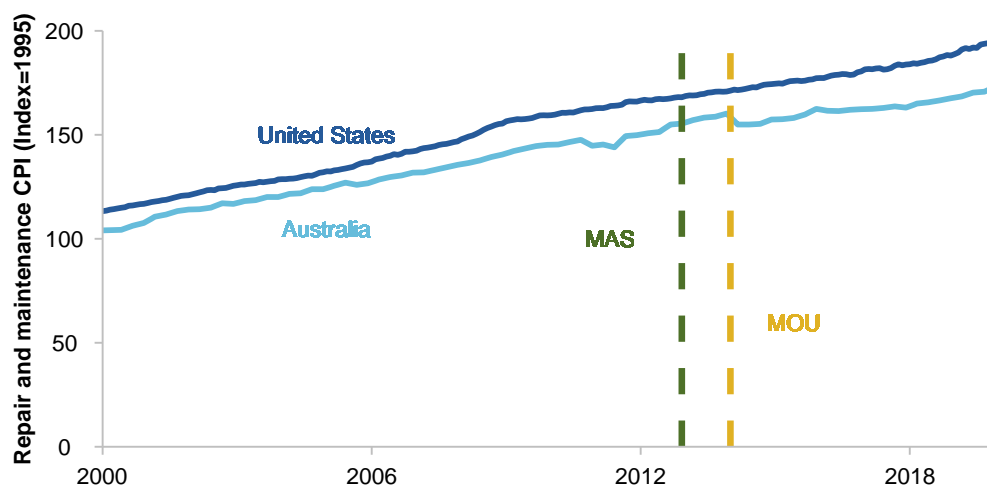
^a Two dependent variables are used for each model specification. The first uses new car prices and the second uses repair prices. Both are indexed to the average price level of 1995. ^b Repair and maintenance CPIs are used as a proxy for repair prices. ^c Motor vehicle CPI is used for Australia as a proxy for new car prices. Australian CPI data are measured quarterly and were converted into monthly observations via linear interpolation. ^d MAS =Massachusetts 'right to repair' legislation. MOU = memorandum of understanding.

Results

Descriptive trends

Figures B.7 and B.8 show pre- and post-MAS (and MOU) CPI trends for repair and new cars. These trends indicate that the common trend assumption (box B.2) might not hold. Before the MAS or the MOU were implemented, US repair prices increased slightly faster than Australia (figure B.7). And Australian new motor vehicle prices decreased slightly faster than the United States (figure B.8). These differences in trends were accounted for by including country-specific linear time trends in specifications 2 and 3 of the model.

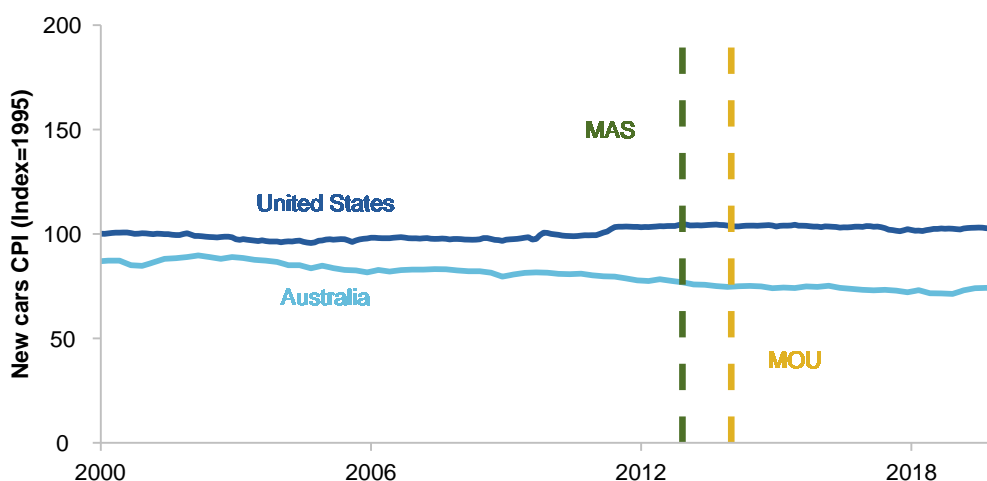
Figure B.7 Car repair prices over time^a
 Australian and US Consumer Price Index (CPI) for car repair and maintenance



^a The MAS (Massachusetts) legislation was passed in November 2012. The MOU (Memorandum of Understanding) was implemented in January 2014.

Sources: Commission estimates based on ABS (*Consumer Price Index, Australia*, September 2020, Cat. no. 6401.0, table 9) and U.S. Bureau of Labor Statistics (*CPI for All Urban Consumers*) data.

Figure B.8 New car prices over time^a
 Australian and US Consumer Price Index (CPI) for new cars



^a The MAS (Massachusetts) legislation was passed in November 2012. The MOU (Memorandum of Understanding) was implemented in January 2014.

Sources: Commission estimates based on ABS (*Consumer Price Index, Australia*, September 2020, Cat. no. 6401.0, Table 9) and U.S. Bureau of Labor Statistics (*CPI for All Urban Consumers*) data.

The price trends suggest that the introduction of the MAS or the MOU did not reduce repair prices and increase new car prices in the United States compared with Australia, as there was no significant deviation from pre-MOU price trends. However, the next section examines whether there is evidence of the waterbed effect after controlling for various factors outlined in table B.3.

Regression results

The regression results show that the MAS increased new car prices *and* decreased repair prices in the United States compared with Australia — that is, a statistically significant waterbed effect in specifications 1, 2 and 3 (table B.3). The preferred specification (3) estimated that the MAS increased US new car prices by 6.8 percentage points on average and decreased US repair prices by 4.1 percentage points (based on 1995 prices), compared with Australia.

The regression results for the MOU (the alternative treatment point) show that it increased new car prices, but did not decrease repair prices (table B.3). The preferred specification (3) estimated that the MOU increased US new car prices by 3.4 percentage points on average, compared with Australia (based on 1995 prices), but did not have a statistically significant effect on US repair prices. This statistically insignificant result suggests that the initial impact on repair prices may have been captured by the earlier MAS treatment.

Overall, this shows that implementing regulations to reduce repair prices may result in higher new product prices, providing some evidence of a waterbed effect.

However, after conducting a number of robustness tests the results appear to be sensitive to the treatment point used. Also, the analysis is subject to a number of limitations (discussed below), which likely reduce the accuracy and confidence of the results.

Table B.3 Regression results^a

	<i>Specification 1 (Baseline: time and country fixed effects)</i>	<i>Specification 2 (Baseline with country-specific linear time trends)</i>	<i>Specification 3 (Baseline with country-specific linear time trends and macroeconomic controls)</i>
MAS treatment^b			
New car prices^c			
Effect of MAS	13.88***	4.83***	6.79***
Standard error	(0.50)	(0.56)	(0.54)
R-squared	0.94	0.98	0.99
Observations	480	480	480
Repair prices^d			
Effect of MAS	6.35***	-2.58***	-4.14***
Standard error	(0.46)	(0.43)	(0.47)
R-squared	0.99	0.99	0.99
Observations	480	480	480
MOU treatment^e			
New car prices^c			
Effect of MOU	12.93***	1.48**	3.38***
Standard error	(0.68)	(0.61)	(0.79)
R-squared	0.91	0.97	0.98
Observations	480	480	480
Repair prices^d			
Effect of MOU	7.40***	0.68	0.68
Standard error	(0.43)	(0.44)	(0.64)
R-squared	0.99	0.99	0.99
Observations	480	480	480

^a Results using monthly data from January 2000 to December 2019. The results (effect of the MOU (Memorandum of Understanding) and the MAS (Massachusetts legislation)) show the average percentage point change in new car/repair prices in the United States compared with Australia. ^b The MAS was passed in November 2012. ^c The dependent variable is the CPI (Consumer Price Index) for new cars, indexed at the average of 1995. ^d The dependent variable is the CPI for motor vehicle repair and maintenance, indexed at the average of 1995. ^e The MOU was implemented in January 2014. * p<0.1, ** p<0.05, *** p<0.01.

Sources: Commission estimates based on ABS (*Consumer Price Index, Australia*, September 2020, Cat. no. 6401.0, Table 9), Federal Reserve (*Foreign Exchange Rates*), OECD (*Quarterly GDP indicator*), U.S. Bureau of Labor Statistics (*CPI for All Urban Consumers*) data.

Robustness checks

To examine whether the regression results were robust, the Commission analysed the sensitivity of the results by varying the:

- time periods for the observed sample

- treatment points, by changing the treatment points to before the MAS policy change
- index years for the CPI.

The results were robust across different index years and time periods. However, the results were not robust when testing different treatments points — November 2008 and 2010 (table B.4). This test found that changes in new car prices were also positive and statistically significant prior to the MAS and the MOU policy changes. This implies that time trends in the data may be driving the results for new cars because there are diverging trends in new car prices across both countries — new car prices increased over time in the United States and decreased over time in Australia (figure B.8). However, the magnitude of the new car effect was increasing up until the point of the MAS policy change (table B.4), suggesting car manufacturers may have been adjusting their pricing strategies around this time in anticipation of the law change.

Table B.4 Robustness check using different treatment points^a
Specification 3 dependent variable results using different treatment points

<i>Regression</i>	<i>Nov 2008</i>	<i>Nov 2010</i>	<i>MAS^d (Nov 2012)</i>	<i>MOU^e (Jan 2014)</i>
New car prices ^b	2.37***	6.61***	6.79***	3.38***
Repair prices ^c	1.07*	-0.33	-4.14***	0.68

^a Results using monthly data from January 2000 to December 2019. The results show the average percentage point change in new car/repair prices in the United States, compared with Australia, as a result of the treatment point used. ^b The dependent variable for the new car regressions is the Consumer Price Index (CPI) for new cars, indexed at the average of 1995. ^c The dependent variable for the repair regressions is the CPI for motor vehicle repair and maintenance, indexed at the average of 1995. ^d MAS =Massachusetts 'right to repair' legislation. ^e MOU = memorandum of understanding. * p<0.1, ** p<0.05, *** p<0.01.

Sources: Commission estimates based on ABS (*Consumer Price Index, Australia*, September 2020, Cat. no. 6401.0, Table 9), Federal Reserve (*Foreign Exchange Rates*), OECD (*Quarterly GDP indicator*), U.S. Bureau of Labor Statistics (*CPI for All Urban Consumers*) data.

Limitations of the analysis

While the difference-in-differences model found some evidence that the US right to repair policies resulted in some waterbed pricing, there are several limitations to the analysis.

- Figures B.7 and B.8 indicate that the common trend assumption (box B.2) may not hold. While the use of country-specific linear time trends may alleviate this problem to some extent, it cannot fully correct for the lack of a common trend — a key assumption of the difference-in-differences model.

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- There is only one treatment and one control group, meaning that other country-specific policy changes coinciding with the treatment point may affect the results.¹³³
 - It was difficult to find high-quality controls for the model that were consistent across both countries, such as the proportion of cars that are imported. Some of the basic controls used in the regression analysis, such as Gross Domestic Product and exchange rates, may alleviate this problem to some extent.
 - The waterbed effect can show up in ways other than changes in new car or repair prices, which would not be observed in the model. For example, through lower quality of the new cars, or through shorter or less generous warranties.
 - The analysis also does not show the ‘completeness’ of the waterbed effect. The completeness of the waterbed effect cannot be determined because the lifecycle repair price cannot be calculated (that is, the total repair expenditure over the life of the car), and CPIs were used in the model instead of dollar values.¹³⁴

Conclusion

Overall, these results show some evidence of a waterbed effect from the implementation of a right to repair policy in the United States. The model using the Massachusetts right to repair legislation as a treatment point resulted in higher new car prices and lower repair prices in the United States relative to Australia. The model using the nationwide memorandum of understanding in the United States as a treatment point resulted in higher new car prices in the United States relative to Australia, but had no significant impact on repair prices.

However, the results are subject to a number of limitations and are specific to the car repair market, with limited applicability to other repair markets. Also, the results are not robust across varying treatment points, although this may be explained by manufacturers changing their pricing strategies in anticipation of the policy changes.

The empirical approach outlined above may provide some guidance to competition policy makers and regulators about how to analyse the waterbed effect in repair markets. For example, this approach could be used in the future to analyse the waterbed effect in Australia’s motor vehicle market once the Australian Government implements its proposed Motor Vehicle Service and Repair Information Sharing Scheme (chapter 8). This would help

¹³³ For example, Australia entered into free trade agreements with major car producing countries (such as Republic of Korea in December 2014 and Japan in January 2015), which could lower new car prices in Australia (through lower tariffs) relative to the United States. Adding other countries, such as European nations and Canada, into the model may help alleviate this. However, right to repair policies differ across jurisdictions (for instance, Canada’s policy is not legislated and there is little evidence of its effectiveness).

¹³⁴ To determine the completeness of the waterbed effect, one would need to calculate the average new car price and the average repair price, as well as the average number of times a consumer repairs their car over its product life. Then one would compare the change in new car prices (average new car price times the percentage change in new car CPI from the regressions) with the change in lifecycle repair price (average repair price times average number of repairs times the percentage change in repair CPI).

policy makers better understand the impact of their decisions and make more informed decisions when implementing policy.

B.4 From theory to practice: existing anti-competitive conduct provisions

Where analysis of a repair market shows that a competition problem exists, the existing restrictive trade practices provisions in Part IV of the CCA can be used to prevent anti-competitive behaviour by manufacturers or authorised repairers, protecting consumers and small businesses from harm, and improving Australia's economic dynamism. As the ACCC noted:

Part IV of the CCA includes prohibitions relating to ... exclusive dealing and misuse of market power. Some of these prohibitions could apply to aftermarket repair markets if businesses were to leverage their market power or engage in conduct such as exclusive dealing that has the purpose, effect or likely effect of substantially lessening competition. (sub. 106, p. 6)

This section outlines these provisions within the CCA that prohibit: anti-competitive agreements (s. 45); misuse of market power (s. 46); and exclusive dealing (s. 47). Further discussion of the effectiveness of these provisions (including how they are enforced and concerns from stakeholders) are discussed in chapter 4.

Anti-competitive agreements (s. 45)

While agreements and contracts between business entities are essential to support economic activity, s. 45 of the CCA prohibits any contracts, arrangements, understandings or concerted practices that have anti-competitive impacts (including verbal arrangements, inferred agreements, or evidence of a 'meeting of minds') (ACCC 2021e).¹³⁵

To be considered anti-competitive, such arrangements must be shown to have the 'purpose, effect or likely effect of substantially lessening competition'. Although there is no legislative definition of what this test — referred to as the 'SLC test' — means in practice, there is a considerable amount of case law outlining how it has been applied by the courts (box B.3). The SLC test is common to a number of CCA provisions (including the misuse of market power and exclusive dealing provisions, both discussed below).

From September 2019, the application of s. 45 has been expanded, following the recommendation of the 2015 Competition Policy Review (also known as the Harper Review).¹³⁶ The review recommended repeal of s. 51(3), which provided an exemption for contraventions of the restrictive trade practices provisions (other than ss. 46, 46A and 48)

¹³⁵ Unlike some other CCA provisions, legal proceedings under s. 45 do not require that parties be competitors, and thus can capture both vertical and horizontal agreements (Clarke 2019).

¹³⁶ Implemented by *Treasury Laws Amendment (2018 Measures No. 5) Act 2019* (Cth).

where the contravention is related to intellectual property protections, including the imposition of certain licence conditions (Harper et al. 2015, pp. 105–110, 113). Further interactions between intellectual property protections and repair are discussed in chapter 5.

Box B.3 **The substantial lessening of competition test**

Courts have provided guidance on how to interpret each of the terms within the ‘purpose, effect or likely effect of substantially lessening competition’ test — the SLC test:

- ‘*purpose*’ refers to a firm’s intention to achieve a particular result
- ‘*effect or likely effect*’ refers to the consequences (or likely consequences) of a firm’s conduct
- ‘*substantially*’ means an impact that is relatively meaningful or non-negligible, but is specific to the context (such as the size of the market)
- ‘*lessening competition*’ means that the process of rivalry is diminished, hindered or reduced, or the competitive process is compromised or impacted, such as through raising barriers to competition or to entry into a market (ACCC 2018b, pp. 7–8, 2020f).

When examining conduct under the SLC test, courts will typically consider counterfactual scenarios as part of their analysis — either the outcome that would have occurred in the present (the ‘but for’ test), or future states ‘with and without’ the proposed conduct (Clarke 2016). In both instances, it is generally necessary to define a ‘market’ for the purpose of this analysis (mechanisms for doing so are discussed below). Although each case is considered on its merits and in context, the Australian Competition and Consumer Commission regards some types of conduct as having a greater potential to breach the SLC test, such as refusals to deal or tying and bundling arrangements (ACCC 2018b, p. 8).

Although the Commission has not been able to find any court cases involving the application of s. 45 provisions to contracts related to competition in repair markets, some of the behaviours that have generated community concern involve agreements or contracts between different businesses (such as claims of geographic restrictions on authorised repairs — chapter 4). Any evidence that such restrictions exist and are having an anti-competitive impact on repair markets could potentially be pursued under s. 45, as could similarly anti-competitive agreements between manufacturers and authorised repair networks.

Misuse of market power (s. 46)

Although it is not unlawful to have, or to seek to obtain, market power by offering the best products and services, misusing that power through anti-competitive conduct is prohibited under s. 46 of the CCA. To determine whether there has been a misuse of market power, the courts will generally consider the following questions.

1. What is the relevant ‘market’ that the business operates in?
2. Does the business have a ‘substantial degree of power’ in that market?
3. Has the business misused that power by engaging in anti-competitive conduct?

For repair markets, the latter two questions are complex, but no more so than in most other markets.

- A ‘substantial degree of power’ in a market is considered on a case-by-case basis, but indicators can include: the market share and financial strength of the business; the ability of the business to consistently restrict competition; how difficult it is for competitors to enter the market; and the business’s ability to behave with little regard to what its competitors, suppliers or customers do (ACCC 2020f).
- From November 2017, the SLC test (box B.3 above, also referred to as the ‘effects test’) has also been used to determine whether anti-competitive conduct has occurred under s. 46, following changes recommended by the Harper Review (Harper et al. 2015, p. 348).¹³⁷ To date, the new effects test has only been considered by the courts in a few cases, all relating to ports (Carver, Clark and Kemmery 2019). In the ACCC’s first proceedings (*ACCC v Tasmanian Ports Corporation Pty Ltd*) the Federal Court declared by consent that Tasmanian Ports Corporation Pty Ltd engaged in conduct that had the likely effect of substantially lessening competition in the markets for towage and pilotage services in northern Tasmania (ACCC 2021i).

However, the nature of repair markets makes the first question — determining the relevant ‘market’ — complex, due to the relationship between the primary markets and repair markets (discussed in sections B.1 and B.3). In particular, it can be difficult to determine whether there is a separate secondary market for brand- or product-specific parts and repairs, or if there is only one relevant market for the supply of all primary products, together with parts and ancillary services. When defining markets, courts typically consider a number of factors — many of which are the same as those discussed in section B.1 — such as whether there is low switching costs and sufficient information on product lifecycle costs (Clapperton and Corones 2006, p. 695).

The most prominent example of the market definition question being applied to a repair market in Australia is that of *Regent’s Pty Ltd v Subaru (Aust) Pty Ltd* [1998] FCA 730, which involved Subaru refusing to supply branded spare parts to a distributor (chapter 4). In this instance, the Federal Court found that the spare parts aftermarket was merely a subset of the broader market, and that competitive pressures in the primary market constrained Subaru’s ability to exploit consumers in the market for spare parts. Since then, several other cases have examined whether the behaviour of firms operating at one functional level of a market (such as in a repair market) has a substantial constraining effect on the behaviour of firms at another functional level (such as in the primary market), with the courts generally rejecting attempts to define a ‘market’ in terms of a single trademarked product or copyright (Clapperton and Corones 2006, p. 694; Miller 2020b, pp. 109–111).

¹³⁷ Prior to the introduction of the effects test, only conduct related to a specific purpose was prohibited for firms with substantial market power. The prohibited purposes included: eliminating or substantially damaging a competitor; preventing entry of a person into that or any other market; or deterring or preventing a person from engaging in competitive conduct (Clarke 2017b).

Internationally, in some prominent cases, courts have found that aftermarket constitute a *separate* market. For example, in *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 US. 451 (1992) in the United States the Supreme Court found that Kodak's small share of the primary market did not prevent anti-competitive behaviour in the repair market. And in *Hugin Kassaregister AB v. Commission of the European* [1979] ECR 1869, the European Court of Justice found that a Swedish cash-register maker was restricting access to repairs despite substitutability with other brands (Clapperton and Corones 2006, p. 694; OECD 2017, p. 23). However, most other international cases, particularly in recent years, have not followed these precedents and have instead made a ruling consistent with the approach taken by Australian courts, finding that primary and secondary markets constitute a single 'systems' or 'cluster' market (OECD 2017, p. 40).

Exclusive dealing (s. 47)

Broadly speaking, exclusive dealing (also referred to as 'vertical restrictions') occurs when one person trading with another imposes restrictions on the other's freedom to choose with whom, in what, or where they deal. More specifically, under the CCA (s. 47), exclusive dealing includes circumstances where a business only supplies or acquires products on the condition that the other party agrees to only acquire products from that business (or a related business), or to not supply goods to a competitor. Like anti-competitive agreements (s. 45) and the misuse of market power (s. 46), exclusive dealing is only prohibited when the conduct meets the SLC test (above). The ACCC noted that 'as a general guide, the more exclusive the product and the more powerful the supplier, the more likely it is that the competition will be affected' (2020d). The Commission has not been able to find any exclusive dealing cases pursued in relation to repair markets in the past two decades.

Notification and authorisation

One possible explanation for a lack of recent exclusive dealing cases is that firms can provide 'notification' to the ACCC of prospective actions that may be considered exclusive dealing. Once the notification is submitted, the entity cannot be held to be in breach of s. 47 (helping firms to manage their legal risks) unless the ACCC objects (also referred to as a type of 'exemption'). Under s. 93 of the CCA, the ACCC can only object to a notification on the basis that the conduct is both likely to breach the SLC test and has no net public benefit.¹³⁸

One example of a recent exclusive dealing notification for conduct related to repair markets is Mitsubishi's recent application for its offer of a 10-year or 200 000 km (whichever occurs first) extended warranty to purchasers of new Mitsubishi vehicles, on condition that the purchaser exclusively acquires aftermarket servicing from a Mitsubishi affiliated dealer or service centre (box B.4). Although the ACCC did not object to Mitsubishi's notification, it

¹³⁸ According to the ACCC, common public benefits that may offset the detriment from anti-competitive conduct include: more efficient business operations (for example, through economies of scale), improved product quality and whether the conduct addresses an externality (ACCC 2017a, pp. 5–6, 2019a, pp. 43–49).

noted that it is able to revoke the notification, and that it would consider ‘the ongoing viability of independent mechanics’ and ‘the extent to which other vehicle manufacturers seek to engage in similar conduct’ in any revocation decision (2020g).

Box B.4 Mitsubishi 10-year warranty

In September 2020, Mitsubishi Motors Australia Limited (MMAL) lodged an exclusive dealing notification with the Australian Competition and Consumer Commission (ACCC). The notification involves MMAL offering a 10-year or 200 000 km (whichever occurs first) warranty to purchasers of new Mitsubishi vehicles on condition that the purchaser exclusively acquires servicing (but not repairs) from an MMAL dealer or service centre. This conditional extended warranty is in addition to MMAL’s existing five-year warranty, under which purchasers of new Mitsubishi vehicles can choose to use independent service centres without affecting their warranty (provided the vehicle is serviced in accordance with Mitsubishi’s specifications).

In December 2020, the ACCC decided not to object to the notification, as it was ‘not satisfied ... that the Notified Conduct has the purpose, effect or likely effect of substantially lessening competition in any market’. However, the ACCC noted that:

If appropriate evidence should come to light that the notified conduct is adversely affecting the ability of independent mechanics to compete on their merits to a substantial degree, and at that time, the ACCC does not consider the public benefits of the Notified Conduct outweigh the public detriments, including from a lessening of competition, the ACCC is able to move to revoke the notification. (2020g, p. 2)

Sources: ACCC (2020e, 2020g).

Another form of exemption is an ‘authorisation’ (under s. 88 of the CCA), where an entity can seek permission from the ACCC to engage in anti-competitive conduct, if they can provide evidence that the conduct is likely to result in a net public benefit (or if the ACCC determines it would not be anti-competitive conduct anyway). For example, the ACCC recently granted an authorisation for the Battery Stewardship Council to collect a levy on all battery imports (chapter 7), as the environmental and other benefits of the associated product stewardship scheme outweigh the competitive detriments caused by the obligation on members of the scheme to only deal with other members (ACCC 2020c, p. 1).

Unlike notifications, authorisations are available for a wide range of conduct, including not only exclusive dealing, but also anti-competitive agreements and misuse of market power (ACCC 2019a). However, the burden of proof for an authorisation is on the applying entity (not the ACCC), so notifications tend to be more frequently used for exclusive dealing conduct (Clarke 2017a).

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