



Australian Government
Productivity Commission

Right to Repair

Productivity Commission Issues Paper

December 2020

The Commission has released this issues paper to assist individuals and organisations to prepare submissions.

It contains and outlines:

- the scope of the inquiry
- the Commission's procedures
- matters about which the Commission is seeking comment and information
- how to make a submission.

The Issues Paper

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- the scope of the inquiry
- the Commission's procedures
- matters about which the Commission is seeking comment and information
- how to make a submission.

Participants should not feel that they are restricted to comment only on matters raised in the issues paper. The Commission wishes to receive information and comment on issues which participants consider relevant to the inquiry's terms of reference.

Key inquiry dates

Receipt of terms of reference	29 October 2020
Due date for submissions	1 February 2021
Release of draft report	June 2021
Draft report public hearings	June/July 2021
Final report to Government	End October 2021

Submissions can be lodged

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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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1 What is this inquiry about?

Consumer products can break, malfunction, or require maintenance. Once a product fails, consumers face a choice: they can choose to repair or maintain their product, replace it with a new one, or live without it. A range of factors influence this choice. These factors include the quality, cost and convenience of repair; the availability of, and consumer preferences for, newer and better products; and concerns about resource use and the environment.

Over the past two decades, there has been rapid growth in the number of products that incorporate sophisticated technology — it is now commonplace for cars, mobile phones, refrigerators, and even coffee machines to have software and computers embedded within them. 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 and difficult to repair, such as some mechanical watches. Partly as a result of this complexity, consumers often have to rely on manufacturers or their authorised repairers to fix or maintain their products.

In recent years, concerns have been raised around the world that repairs of consumer products are becoming more difficult (sometimes impossible), and that this is resulting in costly and wasteful outcomes for both consumers and broader society. In part, this has led to the creation of numerous ‘repair cafes’ around Australia and a growing network of self-repair hobbyists.

Difficulties with repair have also led to calls for government to introduce a ‘right to repair’. Although there is no universal definition of a ‘right to repair’, nor is there a single policy that would enable it, in essence a ‘right to repair’ relates to the ability of consumers to have their products repaired at a competitive price by the repairer of their choice (box 1). Enabling a right to repair may involve various policies, such as a requirement for manufacturers to make repair information and tools available to third-party repairers, or to produce spare parts for a certain period.

A key issue in the debate about a right to repair is how to balance the benefits and costs to consumers, suppliers and manufacturers. Proponents say that a right to repair will lead to increased competition in repair markets, greater consumer choice, and improved environmental outcomes due to less resource use and waste. Manufacturers and some suppliers raise concerns about consumer safety, data security risks, the quality of repairs, and the protection of their intellectual property.

The Commission has been asked to assess the costs and benefits of a right to repair in Australia and the impact that regulatory or policy changes could have on market offerings for repair services and replacement products. In undertaking the inquiry, the Commission will examine:

- whether there are regulatory or manufacturer-imposed barriers to accessing repair services, including the role of embedded software, intellectual property and

commercially-sensitive knowledge in limiting access to repairs, as well as trade-offs with more competitive markets and innovation

- the impacts of waste (especially e-waste generated from the disposal of consumer electronics and household goods) on the environment and community, and the current arrangements for the disposal and management of e-waste. This will include the examination of the effect of premature and planned product obsolescence on the growth of e-waste.

The full terms of reference for the inquiry are in attachment A.

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

Although there is no single definition of a right to repair, in essence it relates to the ability of consumers to have their products repaired at a competitive price. This implies that there are no unnecessary barriers to repair. In practice, there are different interpretations of how a right to repair should be reflected in policy, with a wide range of reforms connected to right to repair policies around the world. Many of these changes have been concentrated in the United States and the European Union, which have taken different approaches.

- In the United States, much of the debate has focused on consumer and competition issues, particularly access to necessary spare parts, tools and information for consumers and independent repairers, and the tension this can create with intellectual property rights.
 - The term ‘right to repair’ appears to have originated from legislation in Massachusetts to reduce barriers for vehicle repairs, which has since been adopted more broadly through an industry-wide agreement. Some US states have also proposed wider right to repair legislation for digital products, such as household appliances and mobile phones.
- In Europe, a right to repair is more commonly associated with product design (‘reparability’) and resource management, and is generally pursued through European Union environmental regulations, to maximise a consumer’s opportunity to repair their goods and avoid creating additional waste (including e-waste).

INFORMATION REQUEST 1

What would a ‘right to repair’ entail in an Australian context? How should it be defined?

The Commission’s approach to the inquiry

In assessing the case for a right to repair in Australia, the Commission will take a community-wide view, balancing the (sometimes competing) interests of consumers, manufacturers, suppliers and repairers, to achieve the greatest benefits for the community as a whole (including the environment). This will include consideration of the effects of policy intervention over time, including on incentives for product innovation and international trade. If the Commission establishes that a regulatory response to enable a

right to repair has merit, it will also need to demonstrate that any potential new regulation delivers net benefits to the community.

Identifying unnecessary barriers to repair

As part of this community-wide approach, the Commission's focus will be 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 will be on *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 to repair or replace their products. That said, strong competition in the primary market for the product may offset the effects of lack of competition in repair markets. Another form of market failure relates to information asymmetry — where the supplier of a product has more information than the buyer, for example in relation to the durability or reparability of products. Regulations can also pose a barrier to repair where they are poorly targeted or there are gaps in the arrangements.

Defining the scope of products the Commission will consider

The inquiry's focus will mainly be on repair services for *physical* products, given the inherent difficulty of 'repairing' intangible goods or services. That said, the increasing prevalence of software (and firmware) embedded within goods can blur the line between a physical product and an intangible good, and the purchase of physical products under a rental or leasing arrangement is generally considered a service.

In practice, the inquiry is likely to focus on some products and repair markets more than others, depending on where barriers to repair are of greatest concern, including those articulated to the Commission in meetings and submissions.

- High-cost durable goods (such as motor vehicles and some household appliances) may be a focus. The significant and infrequent outlay required for replacement of these types of products can make the consequences of barriers to repair costly and salient to consumers.
- Goods with proprietary technology and embedded software can have added repair complexities, potentially warranting a particular focus on these types of products.
- The proliferation of consumer electronics (including smartphones and computers) and a variety of concerns around them may also mean a greater focus on their associated repair markets.

Where relevant, the Commission will also consider unique issues in repair markets for products that are primarily purchased by businesses, such as commercial vehicles or machinery.

INFORMATION REQUEST 2

- a) *What types of products and repair markets should the Commission focus on?*
 - b) *Are there common characteristics that these products share (such as embedded technology and software or a high/low degree of product durability), and which characteristics would allow policy issues to be considered more broadly?*
 - c) *If there are particular products that the Commission should focus on, what are the unique issues in those product repair markets that support such a focus?*
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The inquiry process and approach to consultation

The Commission encourages interested parties to engage with the inquiry by making a submission (including short comments) in response to this issues paper. The Commission will invite further submissions and participation in public hearings following the release of a draft report in June 2021. The Commission is interested in hearing from anyone with an interest in this inquiry, this includes — but is not limited to — consumers, repairers, suppliers (including retailers), manufacturers, waste managers, and environmental groups. Information on how to make a submission or brief comment is provided at the end of this paper (attachment B).

The Commission's strong preference is for participants to make a public submission, but it will consider requests for confidentiality — due to commercially or personally sensitive information — on case-by-case basis, after discussion with the participant.

Participants should also be aware that the Commission cannot investigate individual cases. Instead, the Commission is interested in understanding the underlying regulatory and policy settings that are driving current outcomes, including proposals to address any unnecessary barriers to repair and to improve the overall regulatory environment.

2 Are there unnecessary barriers to repair?

In recent years, concerns have been expressed that consumers face unnecessary barriers to accessing competitive repair services, including barriers relating to:

- the scope and limitations of existing consumer rights under the Australian Consumer Law (ACL) and the ability of consumers to enforce those rights
- conduct by manufacturers and authorised repair networks that inhibits competition from independent repairers
- legal and technical measures used by manufacturers to protect their intellectual property from unauthorised use

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- manufacturers adopting strategies that mean products rapidly become obsolete and require a replacement (which include designing products in a way that prevents repair).

Others have contested these concerns and have put forward various reasons for why such actions may be in the interests of consumers, including product safety, quality and innovation. The Commission is seeking information on the magnitude and effect of these or other types of barriers in the Australian context, but also drawing on international experience where relevant.

Existing consumer rights in consumer law

The ACL provides consumers with some limited rights to repair goods that are defective or not fit for purpose, as well as access to repair facilities and spare parts (box 2). However, the availability of repairs under the ACL may be limited by several factors, including:

- consumer awareness of their rights and their ability to enforce those rights
- consumer-caused damage (including from ‘abnormal use’)
- goods used for business purposes if purchased for more than \$40 000 (increasing to \$100 000 on 1 July 2021), such as many agricultural machinery products (ACCC 2020a)
- repair facilities and spare parts are only required to be ‘reasonably’ available for a ‘reasonable’ amount of time, where the terms ‘reasonably’ and ‘reasonable’ are not further defined in the law itself
- the ability of manufacturers to ‘opt out’ of the requirement to provide spare parts and repair facilities, by advising the consumer at the time of purchase that repair facilities and spare parts will not be available after a specified time.

Although repair remedies are generally free of charge, consumers seeking remedies for defects under consumer guarantees and warranties in the ACL may not have the choice of repairer, as they are often required to use the supplier’s or manufacturer’s specified repairer.¹

Moreover, in some instances, replacement or refund of the defective product may be the preferred option, due to the relative cost of repair to the supplier or the inconvenience or loss of income to the consumer while the product is repaired. Such actions, however, possibly generate external costs for the environment and society (such as through the production of e-waste, discussed below). Ideally, when determining the best course of action, all costs need to be considered.

¹ Similar issues are also common for faulty products covered by insurance, as insurers often have a preferred or required repairer (PC 2005).

Box 2 Australian Consumer Law

Consumer guarantees

The Australian Consumer Law (ACL), set out in Schedule 2 of the *Competition and Consumer Act 2010* (Cth), covers a range of consumer protection issues, including consumer guarantees of purchased goods. These guarantees create a basic set of assurances for Australian consumers who acquire goods in trade or commerce.

Suppliers and manufacturers guarantee that goods will be of acceptable quality, match their description and satisfy any express warranty. They also need to have spare parts and repair facilities reasonably available for a reasonable period, unless the consumer is advised otherwise. If the manufacturer does not have an Australian office, then the importer is responsible for meeting the manufacturer's guarantees.

Suppliers are also required to guarantee that goods are fit for any particular purpose that the consumer made known or the supplier made claims that it would be fit for, match the sample or demonstration model, and that the consumer has full title and undisturbed possession of the goods.

All purchases are covered by these guarantees if the goods cost less than \$40 000 (increasing to \$100 000 from July 2021). If the goods cost more than \$40 000 but are normally used for personal, domestic or household purposes, the guarantees will still apply. Vehicles and trailers are also covered, irrespective of cost, provided they are used mainly to transport goods on public roads. This means the consumer guarantees can apply to purchases that a business might make.

Remedies available to consumers under the ACL

Where these guarantees are not met, consumers have a right to be provided with a remedy by the supplier or manufacturer or importer. For 'major' problems, consumers are entitled to their choice of replacement, refund or compensation for the drop in value. If the product has a 'minor' problem, the supplier can choose between providing repairs, a replacement or a refund. Consumer enforcement issues often centre around determining whether the problem is a major or minor defect.

Warranties

Some suppliers also provide a 'manufacturer's warranty', which is a time-limited warranty against defects, and usually requires the supplier to repair or replace the goods or provide compensation to the consumer. While warranties are offered voluntarily, they become a right that can be enforced under the consumer guarantees once the product is purchased.

A number of recent reviews have recommended changes to ACL policy settings,² including a 2017 review by Consumer Affairs Australia New Zealand (CAANZ) and the Commission's 2017 study on ACL enforcement (CAANZ 2017; PC 2017). Among other things, these reviews noted the ongoing difficulty of enforcing consumer guarantees under the ACL, as it is often up to consumers to be aware of their rights and to pursue a remedy in

² For example, the 2017 review of the ACL by CAANZ recommended changes to introduce 'lemon laws' and prevent consumers getting stuck in 'cycles of failed repairs' for products with numerous minor failures (CAANZ 2017). The reforms have been partially progressed (CAANZ 2018). Separately, the Queensland Government has progressed parallel changes and introduced lemon laws for motor vehicles from 1 September 2019 (QLACSC 2015; Queensland Government 2019).

the first instance. Recourse through tribunals or courts can also be costly or limited to certain transactions (CALC 2018, p. 19; PC 2017).

The Commission is also interested in any emerging repair issues, particularly with regards to developments in the digital economy. For example, the growth in online shopping has increased the prevalence of the ‘practical and legal difficulties’ of enforcing guarantees for goods imported directly by consumers (ACCC 2015). Similarly, the recent introduction of new forms of payment technologies, such as ‘buy now pay later’, may also be interacting with consumer access to repairs.

A broad examination of ACL policy settings is beyond the scope of this inquiry. However, the Commission will consider the adequacy of the ACL provisions as they relate to a right to repair. Some of the potential policy options that could be considered include:

- the provision of additional information to consumers at the point of sale, such as information relating to consumer rights, product reparability or warranties
- clarification of what ‘reasonable’ means in relevant ACL provisions (such as in relation to the availability and time period of repair supplies) for given products
- the rationale for use of ‘opt-out’ clauses for the provision of spare parts and repair facilities
- the availability of consumer guarantees for business products over the value of \$100 000
- compliance with, and enforcement of, consumer guarantees as they relate to consumers’ ability to obtain repairs.

INFORMATION REQUEST 3

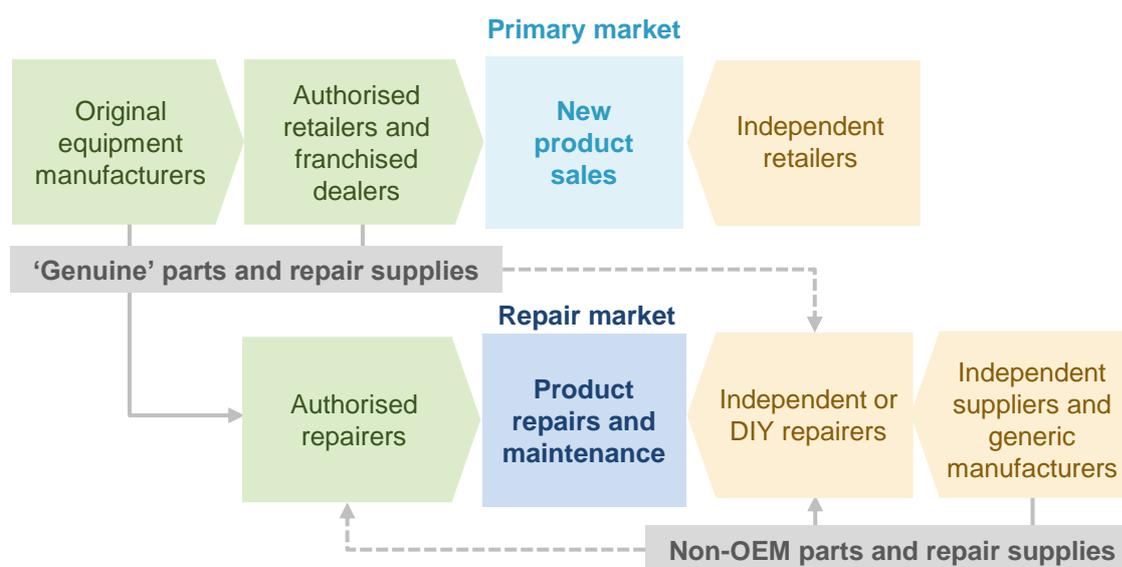
- a) Do the consumer guarantees under the ACL provide adequate access to repair remedies for defective goods? If not, what changes could be made to improve access to repair remedies? Are there barriers to repairing products purchased using new forms of payment technologies, such as ‘buy now pay later’?*
 - b) Is the guarantee of available repair facilities and spare parts effective in providing access to repair services and parts? Or is the opt-out clause being widely used, making the guarantee ineffective?*
 - c) Should consumer guarantees seek to balance the broader societal costs of remedy choices (such as the environmental impacts of replacements) with consumer rights, and if so how? For example, should repairs be favoured as a remedy?*
 - d) Are consumers sufficiently aware of the remedies that are available to them, including the option to repair faulty products, under the ACL’s consumer guarantees?*
 - *If not, would more information and education be a cost-effective measure to assist consumers understand and enforce guarantees? What would be the best way to deliver this information? What other measures would be more effective?*
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Competition issues in repair markets

Repair markets vary by product, but most are heavily influenced by the producer of the primary good — the original equipment manufacturer (OEM). OEMs are typically the major (or in some cases, the only) supplier of spare parts and tools to the repair market. They often operate their own maintenance and repair arm or contract a network of ‘authorised’ repairers.

Competing with these authorised repair networks are a wide variety of independent firms that do not have a financial or contractual relationship with the OEM, including repair service providers and suppliers of parts, tools and information (figure 1). These independent operators range from small repair shops (including some DIY or self-repairers) to large businesses, such as Australia-wide automotive repair firms like mycar Tyre & Auto (formerly Kmart Tyre & Auto). While available data is limited, the number of businesses and employees in the repair industry appears to have declined over recent years (box 3).

Figure 1 Interaction between the primary product and repair markets



Source: Commission analysis, based on ACCC (2017, p. 25).

Box 3 **Australia's repair industry**

Australia's repair industry includes businesses and workers that repair and maintain automotive vehicles, household appliances, electronics, clothing, footwear and other products.

- There were over 65 000 businesses in the Australian repair and maintenance industry in June 2019, of which about 44 000 conducted automotive repairs and maintenance (ABS 2020c).
- The value added to Australia's gross domestic product by the repair and maintenance industry was about \$15.6 billion in 2018-19, an increase from \$14.3 billion in 2017-18 (ABS 2020d).
- About 209 100 people were employed in the repair and maintenance industry in Australia in May 2020, down from 233 800 in May 2019 (ABS 2019, 2020b).

Repairs are also undertaken by manufacturers and these services may not be included in the businesses and jobs reported above.

The strength of competition between authorised and independent operators in the repair market can influence the cost and accessibility of repairs for consumers. The terms of reference for this inquiry note that a 'lack of competition' in repair markets is inhibiting consumers' rights to repair. Consumer groups and regulators in Australia and overseas have also raised concerns that some OEMs are using their dominant position in repair markets to engage in practices that hinder competition and harm consumers (box 4). Concerns such as these in the motor vehicle repair market have led to the Australian Government proposal for a mandatory scheme for sharing motor vehicle repair information (box 5).

In practice, however, it is not always clear whether OEM conduct substantially affects competition in repair markets or imposes costs on consumers. Some of the methods that OEMs engage in may represent an efficient business strategy that benefits consumers. For example, many automotive dealers offer 'capped price servicing' with the purchase of a new vehicle (a form of 'tying' or 'bundling'³), which can drive greater competition between authorised and independent repairers.

³ 'Tying' refers to a supplier selling one product on the condition that the purchaser buys another product, while 'bundling' occurs when a supplier offers two products as a package or for a lower price if purchased together (ACCC 2018a).

Box 4 **Examples of competition issues in repair markets**

There can be a range of ways in which the activities of manufacturers may impede competition in repair markets. In Australia, concerns have been raised in relation to:

- original equipment manufacturers (OEMs) and authorised repairers restricting third parties from accessing supplies needed to carry out repairs, including spare parts, specialised tools, repair manuals, technical information, diagnostic software and updates for firmware. Without these repair supplies, independent operators can struggle to effectively carry out repairs. This concern was raised in motor vehicle repairs by the Australian Competition and Consumer Commission (ACCC), which found that access to repair information is limited and that this is imposing costs on consumers in terms of inconvenience, delays, unexpected expenses and a reduction in choice (ACCC 2017, p. 92).
- contractual arrangements between OEMs and authorised repairers that create local monopolies through non-compete clauses between authorised repairers operating in a defined geographic area. Concerns of this nature have been raised in the ACCC’s discussion paper on agricultural machinery (ACCC 2020a, p. 14).
- authorised repairers refusing to repair products that have been previously serviced by an independent repairer (even where the authorised repairer is the only provider capable of carrying out the subsequent repairs), implicitly discouraging independent repairs. One example of this conduct occurred when Apple customers experienced a software fault after updating their device and Apple declined to provide consumers with a remedy if their device had previously undergone independent repair (ACCC 2018b).⁴
- warranty terms that void the warranty if repairs are undertaken by a non-authorised repairer, implicitly discouraging independent repairs, even where the repairs are unrelated to a subsequent fault covered by the warranty. Possible examples of these terms can be found in manufacturer warranties for some game consoles (Microsoft 2020, p. 3; Nintendo 2020). There are also concerns that consumers are being misled about the existence of these terms in other industries, such as for automotive warranties (CHOICE 2020).

Further, businesses are generally entitled to choose whether or not they will supply or deal with another firm, including a competitor. One reason why an OEM may be unwilling to deal with independent repairers is to ensure repairs are conducted to a high standard, and to protect their brand reputation (as poor-quality repairs may result in consumers blaming subsequent faults on the original product). Other reasons may include the protection of intellectual property rights (discussed further below) or maintaining data security for goods with embedded software, as well as safeguarding the health and safety of consumers and repair technicians.

⁴ In this instance, 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 2018b).

Box 5 The proposed scheme for sharing motor vehicle information

In 2017, the Australian Competition and Consumer Commission (ACCC) conducted a new car retailing market study, which recommended the implementation of mandatory regulations to help facilitate more competitive car repairs (ACCC 2017, p. 3). The ACCC concluded that the 2014 voluntary *Agreement on Access to Service and Repair Information for Motor Vehicles* had not been effective in facilitating the sharing of repair information between original equipment manufacturers (OEMs) and independent repairers (ACCC 2017, p. 10). The ACCC found that most OEMs were still not fully sharing technical information, impeding competition in the aftersales market, creating increased costs and time delays for consumers and reducing the choice of repairers (ACCC 2017, pp. 10–11).

In response, the Australian Government agreed to establish a mandatory code of conduct under the *Competition and Consumer Act 2010*, which would specify standards for OEMs to share vehicle service and repair information on commercial terms with independent repairers (Treasury 2019, p. 3). Similar to the ‘right to repair’ legislation from Massachusetts, the Australian scheme would aim to improve consumer choice of repairs through greater access to service and repair information for independent repairers. It also aims to protect vehicle security, safety and environmental information, ensure fair and reasonable dealings between all parties in the industry, and provide a mechanism to implement service and repair information sharing rules (Treasury 2019, p. 3).

Instances of higher prices in repair markets are also not necessarily evidence of harm to consumers. For example, the price of repairs from authorised repairers can signal higher quality services, as they have been certified by the OEM. Higher prices for repairs may also be used to cross-subsidise lower prices in the market for the original product, although there is much debate about whether this occurs in practice (box 6).

Nonetheless, where OEMs seek to control repair markets and this substantially reduces competition and harms consumers, there are remedies available under the *Competition and Consumer Act 2010* (Cth) (CCA) — in particular relating to anti-competitive contracts (s. 45), misuse of market power (s. 46), and exclusive dealing (s. 47).

In principle, these provisions cover competition issues in repair markets, although their application in repair markets is challenging and requires demonstration that the conduct has the purpose, effect or likely effect of substantially lessening competition. Under the CCA, exclusive dealing only occurs when one party in a trade imposes restrictions on the other’s freedom to choose with whom, in what, or where they deal, and the conduct has the purpose, effect or likely effect of substantially lessening competition (ACCC 2020b). Similarly, the CCA only prohibits contracts and arrangements if they have the purpose, effect or likely effect of substantially lessening competition (ACCC 2013). And a firm is only engaged in a ‘misuse of market power’ if it has substantial market power — normally interpreted to include power in both the primary market for the original product and the secondary (repair) market — and its conduct has the purpose, effect or likely effect of substantially lessening competition (ACCC 2020c).

Box 6 **The interaction of primary and repair markets**

The influence of primary product market competition on the extent of consumer harm from non-competitive repair markets is subject to debate (OECD 2017), although there is limited empirical evidence to demonstrate the effects on consumers in practice.

Economic theory suggests that consumer harm (such as from repair prices that are higher than they would be in a competitive market) is likely to be limited if the market for the primary product is highly competitive. In this instance, manufacturers will use any profits from the repair market to bid for new customers by reducing prices for the primary product (Cabral 2014, p. 61; Klein 1996, p. 143; Shapiro 1994, p. 485). The aggregate result is a neutral effect for consumers — they face similar product lifecycle costs as they would under competitive repair markets.

However, primary market imperfections may prevent consumers from being fully compensated. For one, many product markets may not have sufficient competition to create downward pressure on product prices, while product differentiation can also decrease competitive pressures (Borenstein, Mackie-Mason and Netz 2000, p. 163; Coppi 2007, p. 60; OECD 2017, p. 10). Primary market compensation for consumers can also rely on all competing brands maintaining non-competitive repair markets — if only some firms can obtain excess profits from higher prices in repair markets, then only some firms will have the capacity to compete down primary market prices, making price competition less likely (Voortman 1993, pp. 162–163).

In 2017, the Australian Competition and Consumer Commission examined the effect of competition in the new car market on consumer harm from non-competitive aftermarkets, and found that:

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. (ACCC 2017, p. 129)

A key issue for this inquiry will be considering whether the behaviour of manufacturers represents an efficient business strategy that benefits consumers, or anti-competitive conduct that reduces competition and harms consumers and thus may warrant a policy response. Detailed consideration of the competitiveness of particular repair markets is likely to be beyond the scope of this inquiry. However, the Commission is seeking to understand whether there are unique competition features of repair markets that point to the potential need for a specific policy response. As part of this, the Commission is seeking to determine whether competition in the primary market is sufficient to offset the effects of any OEM control in the repair market, including considering the impact of switching costs, lock-in and information limitations on consumer decision making.

INFORMATION REQUEST 4

a) The Commission is seeking information on the nature of repair markets in Australia, including detailed data on the repair markets for specific products, covering:

- market size — by employment, revenue, number of businesses, profit margins*
- market composition — such as market share between authorised, independent and DIY repairers.*

(continued next page)

INFORMATION REQUEST 4

- b) *Is there any evidence of a difference in quality, safety or data security between authorised repair networks and independent repairers? Are there ways to address concerns around quality, safety or data security while promoting a vibrant independent repair market?*
- c) *Are there available examples of the contracts between OEMs and authorised repairers? Do these contracts limit effective competition in repair markets (such as by limiting the number and reach of authorised repairers or requiring authorised repairers to not be authorised by a competing brand)?*
- *What is the process to become authorised? Is it open and competitive?*
- d) *Are there specific examples or other evidence of practices by OEMs or their authorised repairers that create barriers to competition in repair markets?*
- *Do other factors also create barriers to competition in repair markets, such as short-sighted consumer behaviours, switching costs, poor information availability or consumer lock-in?*
- e) *What is the relationship between the intensity of competition in the primary product market and the risk of consumer harm from a lack of competition in repair markets? Can competitive primary markets compensate for non-competitive repair markets?*
- *Is an absence of effective competition in the primary market a necessary condition for consumer harm from non-competitive repair markets?*
 - *To what extent would measures that enhance competition in the primary market address concerns about a lack of competition in repair markets?*
- f) *Are the restrictive trade practices provisions of the CCA (such as the provisions on misuse of market power, exclusive dealing or anti-competitive contracts) sufficient to deal with any anti-competitive behaviours in repair markets?*
- g) *What policy changes could be introduced if there is a need to increase competition in repair markets and improve consumer access to, and affordability of, repairs?*
- *What are the costs and benefits of any such proposal to the community as a whole? How does it balance the rights of manufacturers and suppliers, with those of consumers and repairers?*
-

Intellectual property protections

Manufacturers use a range of legal and technological measures to protect their intellectual property (that is, proprietary knowledge, creations, and ideas) from unauthorised use. These measures include intellectual property (IP) rights (such as copyright, patents and trademarks), technological protection measures (TPMs) (also known as digital rights management), and end-user licensing agreements (EULAs) (box 7).

Box 7 **Examples of measures for protecting intellectual property**

Intellectual property rights — Intellectual property rights are the legally enforceable rights given to persons over their creations (IP Australia 2020). They usually give the creator an exclusive right over the use of their creation for a certain period of time (WTO 2020). IP rights include registered rights (patents, trademarks, designs and plant breeder's rights), which require formal application and examination before a person can claim a right to ownership, and unregistered rights (copyright, circuit layout rights), which automatically attach to eligible creations. Individuals may use a range of IP rights to protect different aspects of the same product or service. Businesses' choice of which types of IP rights to use will depend on their operating environment.

Technological protection measures (TPMs) (also known as digital rights management) — Technologies used by copyright owners to prevent infringement of their copyrighted material and to control the use of that material. TPMs include password protection, file permissions, encryption, and copy controls (House of Representatives Standing Committee on Legal and Constitutional Affairs 2006, p. 8).

End user licence agreements (EULAs) — Agreements that set out the terms and conditions by which users can access products (particularly software). Typical clauses in EULAs include prohibiting copyright infringement (such as reproduction), no reverse engineering of products or circumvention of TPMs, and the termination of the licence for product misuse (Apple 2020; John Deere Shared Services Inc 2016; Samsung Electronics 2018; Sony Corporation 2009). EULAs can sometimes impose post-sale usage, repair and modification restrictions on consumers (Hanley, Kelloway and Vaheesan 2020, p. 14). EULAs include: 'click wrap' licences whereby users agree to a EULA through a digital click box and 'shrink-wrap' licences whereby agreements to the EULA are effective the moment the user takes off the shrink wrap or similar product packaging (Lindsay 2002, pp. 70–75).

Some commentators have expressed concern that IP protections could act as an unnecessary barrier to the repair of products. Commonly-cited barriers include:

- **Manufacturers using IP rights to prevent consumers or third parties accessing, and reproducing repair information.** Obtaining information necessary to undertake repairs (such as product manuals and diagnostic software) can be difficult because some OEMs refuse to provide such information to non-authorized repairers (Hicks 2012; Montello 2020, p. 170; Wiens 2013).⁵ For example, several commentators cite an instance where Toshiba stopped an Australian hobbyist repairer from possessing and publishing their laptop manuals online for other repairers to access on the basis it infringed the company's copyright (unauthorized dissemination) and other proprietary rights (box 8) (The Tech Journal 2012; Wiens 2012, 2013).
- **Manufacturers using IP protections to prevent consumers and third parties accessing embedded software to repair everyday products.** Everyday products, such as fridges, consumer electronics, and cars, increasingly have software and computer chips embedded within them (Lumbard, Ahuja and Snell 2020, p. 1; Montello 2020, p. 165). Often, repairing these products requires access to, or copying of, this embedded software, which

⁵ In response to these types of concerns, the Australian Government has agreed to implement a mandatory scheme requiring automotive manufacturers to make diagnostic, repair and servicing information and tools available to independent repairers on a commercial basis (discussed above).

can risk consumers and third party repairers infringing copyright. Further, manufacturers have traditionally used TPMs and EULAs to restrict access to and use of software and digital material (such as music), which are often low cost to reproduce (Wiseman 2018). However, there are concerns that manufacturers are increasingly applying these protections to software for physical products and preventing consumers and third parties undertaking routine maintenance and repairs (Wiseman 2018). For example, in the US, there have been reports that farmers seeking to make simple repairs to their John Deere tractors were unable to do so without going to an authorised repairer who had access to passwords necessary to undertake repairs (Wiens 2015; Wiseman 2018).

Box 8 How copyright protection can prevent repair

OEM's repair manuals and other service documentation are protected under copyright in Australia as 'literary works' (where the manuals incorporate original expression via diagrams, charts, worded instructions, layout, look and feel, and are not merely facts and procedures). As such, OEMs have exclusive rights to prevent their release and dissemination (and there is also no obligation that OEMs release, sell or otherwise provide copyrighted repair information).

For example, Toshiba does not make publicly available any laptop service documentation. This is common practice for many other laptop manufacturers (Wiens 2013). In one case from Australia, a hobbyist repairer hosts a website containing a range of laptop service manuals, including over 300 Toshiba manuals. The website has significant demand, with over 50 gigabytes worth of manuals downloaded every day (Wiens 2012). Toshiba sent a cease and desist letter to the man demanding he remove the manuals from his site. They argued that the possession and distribution of copyright repair manuals, without prior written authorisation from Toshiba, infringed their copyright. The repairer was required to remove the manuals from the website and destroy all copies held (Toshiba Australia 2012). Without access to this repair documentation, repairing Toshiba laptops is more difficult (and potentially impossible if such information cannot be found elsewhere).

There are several international examples where businesses and academics have argued that OEM IP protections are a significant (and potentially unnecessary) barrier to repair. For example, some suggest that Apple's use of trademark laws to prevent the importation of what Apple alleged were counterfeit iPhone screens to the US and EU also prevents the importation of refurbished OEM screens (Koebler 2018; Montello 2020, pp. 172–173; Van der Velden 2020).⁶ However, there is currently limited information (including case law) with which to determine the extent to which IP protection is a major barrier to repair in Australia. This might in part reflect that litigation of IP disputes can be a lengthy and costly process, such that there is a strong incentive for both parties (but particularly individuals and small businesses) to avoid such cases reaching the courts and thus coming to public attention. The Commission is seeking further information to better understand if IP protections are a barrier to repair and, if so, the case for government action (if any).

⁶ By marking internal product parts with microscopic registered trademarks (not intended to be seen by consumers and used to identify and distinguish products), they allege that refurbished genuine and grey-market imported parts bearing the trademarks (even if they are covered up or not advertised as being OEM) were counterfeit, resulting in their seizure by customs officials.

To the extent it can be demonstrated that some IP protections are a significant barrier to repair in Australia, one way of addressing this barrier is by introducing new defences or exceptions to IP laws for repairs. For example, some stakeholders have suggested the possibility of introducing a new fair dealing exception to the *Copyright Act 1968* (Cth) to allow for non-infringing uses of copyright material for the purpose of repair (Rimmer 2019, p. 12). Another potential option could be to clarify or expand existing exceptions in IP laws that partially cover product repair to provide certainty for consumers and third-party repairers. Current exceptions in IP laws that could potentially apply to repairs include the ‘spare parts’ defence in the *Designs Act 2003* (Cth)⁷ and the ‘experimental use’ defence in the *Patents Act 1990* (Cth). Some of the Commission’s recommendations relating to improving Australia’s broader IP arrangements in the 2016 inquiry into Intellectual Property Arrangements may also be of relevance in addressing IP-related repair barriers (box 9).

Such proposals would need to be considered in light of the potential trade-offs for the broader community. A key rationale for affording OEMs protection for their proprietary information is to provide ‘opportunities to creators of new and valuable knowledge to secure sufficient returns to motivate their initial endeavours or investment’ (PC 2016, p. 43) and to encourage the continued development of innovations that benefit wider society. Common arguments against attenuating IP protections to facilitate repair (for example, Montello 2020, pp. 174–175; Grinvald and Tur-Sinai 2019, pp. 124–127) include that it would:

- reduce the diversity of products or services in the market by imposing unreasonable liabilities and risks on OEMs (such as increasing vulnerabilities to cyber-attacks) and dampening incentives for investment
- undermine product safety and quality, and environmental standards by enabling non-professionals to undertake repairs without appropriate technical qualifications or regulatory oversight.

Proposals would also need to be considered with respect to how they would affect the operation and coherence of the IP system as a whole, and their consistency with Australia’s international obligations relating to IP laws.

⁷ This defence has only been tested in court once (in *GM Global Technology Operations LLC v SSS Auto Parts Pty Ltd* (2019)).

Box 9 2016 Intellectual Property Arrangements inquiry

In 2016, the Productivity Commission undertook an inquiry into Intellectual Property Arrangements, which included making recommendations to ensure Australia's IP arrangements achieve an appropriate balance between access to ideas and products, and to encourage innovation, investment and the production of creative works.

Several recommendations and findings from the inquiry are potentially relevant to product repair. For example, the Commission recommended several changes to Australia's copyright protections that could increase consumers' ability to access repair information. In particular it proposed amending the *Copyright Act 1968* (Cth) to:

- make unenforceable any part of an agreement restricting or preventing a use of copyright material that is permitted by a copyright exception ('contracting out' provisions) (recommendation 5.1 of PC 2016, p. 32)
- replace Australia's narrow, purpose-based exceptions with a principles-based fair use exception, similar to the system operating in the US and other countries (recommendation 6.1 of PC 2016, p. 9, 33).

In August 2020, the Government announced several measures that it will progress through proposed copyright reforms and that these measures will finalise its response to the copyright recommendations of the Productivity Commission (DITRDC 2020). The Government decided against introducing a broad fair use exception (recommendation 6.1) in favour of more specific, targeted reforms to the current fair dealing and specific exceptions framework. The Government also decided against introducing additional regulation in the form of specific restrictions in the *Copyright Act 1968* on 'contracting out' (recommendation 5.1) but intends to make clear via legislative amendment that section 47H does not imply that an agreement may exclude or limit the operation of another provision of the Act. The default position under the *Copyright Act 1968* is that all copyright exceptions apply. An exposure draft of the reforms is expected to be released for public consultation in early 2021 (DITRDC, pers. comm., 24 November 2020).

INFORMATION REQUEST 5

- a) To what extent do current IP laws already facilitate repairs by consumers or independent third parties (e.g. the spare parts defence under the Design Act)?*
- b) Are there any aspects of IP laws where consumers' rights with respect to repairs are uncertain?*
- c) Do current IP protections (e.g. intellectual property rights, technological protection measures, end-user licencing agreements) pose a significant barrier to repair in Australia? If yes, please comment on any or all of the following:*
 - *the specific IP protections that prevent consumers from sourcing competitive repairs and/or inhibit competition in repair markets*
 - *the types of products or repair markets these barriers mainly affect*
 - *the prevalence of these barriers*
 - *the impacts of these barriers on third party repairers and consumers (e.g. financial cost, poorer quality repairs)*

(continued next page)

INFORMATION REQUEST 5

- *options for reducing these barriers and their associated benefits, costs and risks (including potential impact on market offerings).*
- d) *In what ways might government facilitate legal access to embedded software in consumer and other goods for the purpose of repairs? What are the pros and cons of these approaches?*
-

Planned product obsolescence strategies

The way products are designed and the pace with which they become obsolete can also affect the reparability of products. The terms of reference ask the Commission to consider the ‘effectiveness of current arrangements for preventing premature or planned product obsolescence’. Planned product obsolescence refers to the strategy of producing consumer goods that rapidly become obsolete and thus require a replacement purchase of the same or similar product (Wrbka and DiMatteo 2019, pp. 911–912).⁸

Ways in which planned product obsolescence may occur include:

- designing products to have poor durability (such as by using components that have a high likelihood of failing after a moderate level of product use)
- frequently releasing new models of a product
- restricting or terminating the supply of spare parts or support services
- designing or manufacturing products so they are difficult to repair (such as by gluing in components to make the product difficult to disassemble)
- software updates for electronic products that reduce the performance of older models.

A number of academics and consumer and environmental groups have raised concerns about the negative impacts of planned obsolescence, such as in Harris (2020) and Orbach (2004, p. 9, 29–30, 47). One concern is that premature product obsolescence leads to inefficient resource use and environmental costs by promoting a culture of disposal and waste (AELA 2020; Giurco and Benn 2014). Another concern is that consumers are not getting what they pay for with respect to product durability and reparability and incur additional costs associated with replacing products. Some suggest consumers may not be fully informed, and in some cases misled, about the durability and reparability of products that they purchase (Kurz 2015, p. 513). For example, there have been several legal complaints internationally about OEMs releasing software updates that have reduced the expected lifespan and performance of older model smartphones (box 10).

⁸ For the purposes of this paper, the Commission has taken ‘planned product obsolescence’ and ‘premature product obsolescence’ to be synonymous.

On the other hand, continual development of new products in response to changing consumer preferences and technological capabilities (and the obsolescence of older product models) is a feature of a dynamic and efficient market economy. Such innovation has provided profound economic, social and environmental benefits to Australians. It can be difficult to distinguish between the rapid change of products in response to technological change compared to deliberate attempts to reduce a product's lifespan.

Box 10 Legal complaints against software obsolescence

Complaints about software updates affecting the functionality of older model smart phones and tablets have been pursued by courts internationally, resulting in manufacturers being fined for misleading consumers.

Apple and Samsung were issued fines of €5 million each in 2018 by the Italian competition regulator for unfair commercial practices in violation of the Italian consumer code related to the issuing of software updates that reduced the performance of older devices (AGCM 2018). Samsung denied that its software updates reduced the phone's performance (Gibbs 2018). Apple stated in 2017 that it slowed the performance of software for phones with degraded batteries to prevent the demands of software updates from causing batteries to shut down (Gibbs 2018).

In France, a complaint was filed against Apple for the same issue under its law against planned obsolescence. The French regulator did not find evidence proving Apple intentionally reduced the lifetime of the product and instead fined Apple for deceptive commercial practice by omission for not informing iPhone owners that the updates would likely cause their device to run slow (DGCCRF 2020).

France introduced laws (through amendment to its consumer code) in 2015 to prevent planned obsolescence by making it a crime.⁹ The policy prohibits the use of techniques to deliberately reduce the lifespan of a product in order to increase its replacement rate.¹⁰ The Commission understands that the provision has been used twice in the courts to date — a complaint against Apple, which was not upheld, and a complaint against Epson is pending (Boring 2020; HOP 2018).

In other jurisdictions (including Australia), governments have introduced policies that may discourage planned obsolescence or mitigate its potential adverse effects, though this is rarely (if ever) the explicit aim. Examples include:

- consumer guarantees that make manufacturers liable for product failures for a reasonable period (for example, under the Australian Consumer Law, discussed above)

⁹ A translation of article L454-6 of the French consumer code states that the offence is punishable by two years imprisonment and a fine of 300 000 euros.

¹⁰ Translation of article L441-2 of the French consumer code.

-
- regulations that require manufacturers to provide access to spare parts for a reasonable period (under the Australian Consumer Law) or for a set period (for example, as part of EU ecodesign regulations)¹¹
 - product standards that improve reparability (for example, EU ecodesign regulations will require manufacturers to design some household appliances to be repairable using commonly available tools)¹²
 - product labelling and other regulations that improve consumer information about product reparability (for example, manufacturers selling products in France are required to report how long they will produce spare parts, and a reparability rating will be used for electrical and electronic products at point of purchase).¹³

A key challenge in assessing the effectiveness of measures that prevent planned obsolescence (or mitigate its effects) is determining the extent to which planned obsolescence is occurring, relative to other factors. A range of other considerations — aesthetics, function, miniaturisation and costs — might explain the inclusion of particular design features that make a product difficult to repair (such as a sleek shape and waterproof casing for a digital device).

Similarly, technological advances have led to rapid and profound changes in consumer electronics such as smartphones and wearable devices providing health and training information. A basic mobile phone may still be working today, despite its obsolescence due to major technological improvements in newer models.

The Commission invites ideas about quantitative or qualitative evidence that could inform this assessment.

In addition to understanding the effectiveness of current (and potential) measures for preventing or mitigating the effects of planned obsolescence, the Commission is also interested in information on the benefits and costs associated with such policies. For example, introducing regulations to ensure product reparability would impose compliance costs on OEMs and potentially reduce the types and range of product offerings to consumers (particularly given Australia imports most of its consumer goods).

¹¹ Obligations to provide spare parts for a minimum period of seven years after placing the last unit of a model on the market will apply in the European Union from March 2021 for new models of refrigerators, televisions and dishwashing machines (EU regulations 2019/2023, 2019/2022, 2019/2019 and 2019/2021). For washing machines the minimum will be 10 years.

¹² EU regulations 2019/2023, 2019/2022, 2019/2019 and 2019/2021.

¹³ Article L111-4 of the consumer code and article 16 of law number 2020-105.

INFORMATION REQUEST 6

- a) *What evidence is there of planned obsolescence in Australian product markets? Do concerns about planned obsolescence principally relate to premature failure of devices or in them being discarded still working when more attractive products enter the market?*
 - b) *How can the Commission distinguish between planned product obsolescence and the natural evolution of products due to technological change and consumer demand?*
 - c) *How does planned obsolescence affect repairers, consumers and the broader community in Australia?*
 - d) *What measures do governments currently use to prevent planned obsolescence or mitigate its effects (in Australia and overseas)? How effective are these measures?*
 - e) *What are the benefits, costs and risks of Australia adopting measures similar to those currently used overseas, such as product design standards and reparability ratings?*
 - f) *Do consumers have access to good information about durability and reparability when making purchases? If not, how could access to information be improved?*
-

3 The implications of repair issues for e-waste

When broken or discarded products are not repaired, they generally become waste products. Many of the goods within the scope of this inquiry — including consumer electronics, household appliances and some vehicle parts — constitute ‘e-waste’, which refers to electrical and electronic equipment at the end of its useful life, including batteries and products with plugs or cords. In 2018-19, Australia generated roughly 539 000 tonnes of e-waste — more than double the amount generated in 2009-10, but equivalent to less than 1 per cent of total waste generated (ABS 2013, 2020a).

Although much of the volume of e-waste consists of inert plastics and metals (similar to other forms of general waste), e-waste can also contain hazardous substances that can be damaging to the environment and human health (box 11). These substances include arsenic, brominated flame retardants, cadmium, fluorocarbons, lead, mercury and zinc (Forti et al. 2020, pp. 58–61; Grant et al. 2013, p. 351). However, the environmental and health effects of e-waste are difficult to measure, with significant measurement challenges and methodological differences.

Box 11 Health and environmental impacts of hazardous e-waste

Depending on the disposal method, hazardous substances in e-waste can be transferred into the environment through leachate (polluted ground and surface water from runoff) (Kiddee et al. 2014, p. 2293), from dust or small particles generated from handling, dismantling and shredding (Cayumil et al. 2016, pp. 16–17), or via smoke if e-waste is burned (Gangwar et al. 2019, p. 195). Once there, e-waste can pollute local ecosystems and lead to, for example, reduced species diversity, damaged fish gill functions, and constrained growth rates for plants, soil and aquatic organisms (de Vries et al. 2007, pp. 1–2, 5).

Human exposure to these substances — either directly (in landfills or at recycling facilities) or indirectly (through contaminated soil or groundwater) — can also have negative health effects. Many of the substances found in hazardous e-waste are carcinogenic, and can impact a person’s brain, eyes, lungs, heart, stomach, blood, muscles, liver, skin, bone, kidneys, immune system and joints (DELWP 2017, pp. 27–28; Forti et al. 2020, pp. 64–67).

The prevalence and severity of these effects will depend on a range of factors, most notably the way in which hazardous e-waste is managed. For example, Australia’s landfill sites are generally well designed and effectively managed (WCS 2010, pp. 8–11), reducing the quantity of leachate released (Akgun and Daemen 2013, pp. 1–4, 17–18; DELWP 2017, p. 26). The impact of any leachate on the environment also varies by the concentration of pollutants in the leachate, the local climate and how different substances are transferred between leachate, soil and plants (PC 2006, pp. 74–75; Uduma and Jimoh 2013, pp. 187–188).

Current management of e-waste in Australia

Current e-waste management policy in Australia largely aims to redirect e-waste away from landfill, towards recycling solutions. The amount of e-waste that was recycled in Australia increased between 2009-10 and 2018-19, from 27 per cent to 50 per cent of the total, with the rest going into landfill (ABS 2013, 2020a).¹⁴

At the federal level, the Australian Government supports the development of mandatory, co-regulatory and voluntary regulatory schemes for the management of e-waste through the *Product Stewardship Act 2011* (Cth) (PSA). The PSA was established to manage the lifecycle environmental, health and safety impacts of products, with a focus on end-of-life disposal. Current product stewardship schemes include the National Television and Computer Recycling Scheme and Mobile Muster (DAWE 2020c, p. 3, 6), while a battery scheme was recently announced (ACCC 2020d). A scheme covering ‘electrical and electronic products’ has also been listed as a focus for future accreditation or regulation under the PSA on several occasions (DAWE 2016, 2017, 2020a).

Following a review of the PSA earlier this year, the Australian Government has agreed to broaden product stewardship beyond a sole focus on ‘end of life’ disposal, towards product

¹⁴ By comparison, 51 per cent of general waste was collected for recycling in 2018-19 (ABS 2020a), although these are likely overestimates of Australia’s recycling rates, as comprehensive information on the quantity of illegal dumping is difficult to determine.

design and reuse as well (Australian Government 2020, p. 6). To this end, the Government has introduced the Recycling and Waste Reduction Bill 2020 into Parliament, to replace the PSA.

Primary responsibility for waste collection, landfill management, and waste disposal services generally rests with a combination of state, territory and local governments, supported by coordinating policy from the Australian Government (Environment and Communications References Committee 2018, pp. 21–26). For example, the National Waste Policy Action Plan directs all governments to establish a common approach to restricting disposal of e-waste to landfill by 2021 (Australian Government 2019, p. 14). South Australia, Victoria and the ACT have already banned certain types of e-waste from landfill disposal (Total Green Recycling 2020). Some states also have additional e-waste recycling initiatives — for example, New South Wales is providing \$10 million of funding for a solar panel recycling program (NSW EPA 2020).

However, Australia does not have the domestic capacity required to recycle all its own e-waste, so much of it is transported to recycling facilities overseas. For example, 52 per cent of e-waste collected by the National Television and Computer Recycling Scheme was exported for recycling in 2017 (Dias 2019, p. 134). Exports of e-waste are subject to the terms of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (DAWE 2020b). In practice though, export regulations for e-waste are often difficult to enforce, as e-waste exports can easily be misclassified as non-hazardous waste or reusable electronics (Salehabadi 2013, pp. 18–22). While many overseas recyclers are high quality — able to cleanly recycle the component products without many external costs — others are poorly regulated, and concerns have been raised that some of Australia’s e-waste is being exported (with allegations that this is unlawful) to informal recycling facilities and ‘e-waste dumps’ in vulnerable countries, creating significant environmental and health issues for nearby communities and ecosystems (BAN 2018, pp. 3–5; Diss 2019; Le Tourneau 2017).

The limited capacity for e-waste recycling in Australia can also lead to excessive amounts of e-waste being stockpiled for recycling or illegally dumped. In turn, improper storage of e-waste can expose it to the weather or create fire hazards, risking damage to the local environment and nearby communities (EPA SA 2020; EPA Victoria 2020; Vedelago 2020).

The Commission is seeking feedback on the scope of e-waste issues that would be beneficial for us to cover in our inquiry. The terms of reference ask us to consider means of reducing e-waste through improved access to repairs and increased competition in repair markets. This limited scope does not necessarily require detailed consideration of broader e-waste issues (such as its external impacts on the community and the effectiveness of current policy responses to deal with the disposal of e-waste). This would be a significant task that is beyond the scope of an inquiry into a right to repair. However, some understanding and assessment of these issues would be useful context for considering the role and effectiveness of policy to reduce the proliferation of e-waste (including a right to repair).

INFORMATION REQUEST 7

- a) *What data are available on the amount of e-waste generated in Australia?*
- *What data is there on the composition of e-waste in terms of particular materials (such as hazardous materials) by product type?*
 - *How does hazardous e-waste compare to hazardous general waste in its prevalence and risks? Is there merit in distinguishing between hazardous e-waste and non-hazardous e-waste? And if so, how could this be done in practice?*
- b) *What estimates are available on the costs of e-waste disposal on the environment, human health and social amenity, in Australia and internationally?*
- *How do the impacts differ by disposal type, or by the type of product or hazardous material?*
- c) *How much of Australia's e-waste is shipped overseas for recycling? Is there evidence of circumstances where this creates problems for recipient countries?*
- *Are there barriers to the expansion of domestic recycling facilities or the adoption of new recycling technologies in Australia (such as plasma arc incinerators)?*
- d) *What are Australia's current policy settings for managing the potential environmental and health effects of e-waste (such as landfill bans, the National Television and Computer Recycling Scheme or Mobile Muster)? Are these policy settings broadly right — that is, are they proportional to the impacts of e-waste on the community?*
- e) *How can a right to repair policy further reduce the net costs of e-waste in Australia, and would such an approach be an effective and efficient means of addressing the costs of e-waste to the community?*
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4 Possible policy options to address barriers to repair

In the previous sections, the Commission has identified a number of potentially unnecessary barriers to repair, on which it is seeking further information and input. These potential barriers range from concerns about OEM controls on copyright repair information or the use of other practices that may discourage competition, to concerns that product design and planned obsolescence may be reducing durability or reparability.

The Commission has also identified a range of possible policy options to address these barriers to repair (discussed above). Depending on the nature of the barrier, policy options to facilitate repair might include additional regulatory requirements (such as improved information standards for consumers), or reforms to current arrangements for competition policy, intellectual property law or consumer law. In exploring the potential options, the Commission will also examine approaches used overseas, including in the United States and the European Union, where a number of policies relating to a 'right to repair' have been implemented (table 1).

The Commission’s initial list of barriers and possible policy options is not intended to be comprehensive, nor does it represent a view on whether the barrier warrants a policy response, or what that response should be. Stakeholders are encouraged to suggest any other relevant barriers or policy options not mentioned in this issues paper.

Table 1 Examples of international approaches to a ‘right to repair’

<i>Policy</i>	<i>International example</i>
Duty to deal – requirements for OEMs ^a to provide independent repairers fair access to parts, tools and/or repair information	Vehicle repair legislation in Massachusetts; EU vehicle repair regulation; EU Ecodesign Directive regulations for appliances
Obligations on manufacturers to produce spare parts for a specific period	EU Ecodesign Directive regulations for appliances
Product design standards for easy product disassembly	EU Ecodesign Directive regulations for appliances
Product information and labelling about reparability and product durability	French law requires manufacturers to report how long they will produce spare parts. France will require firms to display a reparability rating for electrical and electronic products at the point of purchase
Laws prohibiting planned product obsolescence	French law
Extended guarantee periods and longer periods where burden of proof of fault lies with firm	Sweden, Finland and Portugal
Subsidies for repair	Subsidies and tax concessions to households in Sweden, Austria and France

^a OEM = Original equipment manufacturer.

Sources: EU regulations 692/2008, 2019/2023, 2019/2022, 2019/2019 and 2019/2021; articles L111-4 and L441-2 of the French consumer code and article 16 of French law 2020-105; Rreuse (2017, pp. 1–2); Commonwealth of Massachusetts (2013); Svensson et al. (2018, p. 11).

INFORMATION REQUEST 8

- a) What policy reforms or suite of policies (if any) are necessary to facilitate a ‘right to repair’ in Australia?*
- b) Are there any other barriers to repair and/or policy responses that the Commission should consider?*
- c) What are the costs and the benefits of the various policy responses that have been proposed to facilitate repair (such as those outlined in table 1)?*
- d) Are there other international policy measures or proposals that the Commission should consider as part of this inquiry?*

Attachment A: Terms of reference

Right to repair

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 research study

The Productivity Commission is to examine of 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;

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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 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]

Attachment B: How to make a submission

How to prepare a submission

Submissions may range from a short letter outlining your views on a particular topic to a much more substantial document covering a range of issues. Where possible, you should provide evidence, such as relevant data and documentation, to support your views.

Generally

- Each submission, except for any attachment supplied in confidence, will be published on the Commission's website shortly after receipt, and will remain there indefinitely as a public document.
- The Commission reserves the right to not publish material on its website that is offensive, potentially defamatory, or clearly out of scope for the inquiry or study in question.

Copyright

- Copyright in submissions sent to the Commission resides with the author(s), not with the Commission.
- Do not send us material for which you are not the copyright owner — such as newspaper articles — you should just reference or link to this material in your submission.

In confidence material

- This is a public review and all submissions should be provided as public documents that can be placed on the Commission's website for others to read and comment on. However, information which is of a confidential nature or which is submitted in confidence can be treated as such by the Commission, provided the cause for such treatment is shown.
- The Commission may also request a non-confidential summary of the confidential material it is given, or the reasons why a summary cannot be provided.
- Material supplied in confidence should be clearly marked 'IN CONFIDENCE' and be in a separate attachment to non-confidential material.
- You are encouraged to contact the Commission for further information and advice before submitting such material.

Privacy

- For privacy reasons, all **personal** details (e.g. home and email address, signatures, phone, mobile and fax numbers) will be removed before they are published on the website. Please do not provide a these details unless necessary.

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- You may wish to remain anonymous or use a pseudonym. Please note that, if you choose to remain anonymous or use a pseudonym, the Commission may place less weight on your submission.

Technical tips

- The Commission prefers to receive submissions as a Microsoft Word (.docx) files. PDF files are acceptable if produced from a Word document or similar text based software. You may wish to research the Internet on how to make your documents more accessible or for the more technical, follow advice from Web Content Accessibility Guidelines (WCAG) 2.0 <<https://www.w3.org/TR/WCAG20/>>.
- Do not send password protected files.
- Track changes, editing marks, hidden text and internal links should be removed from submissions.
- To minimise linking problems, type the full web address (for example, <http://www.referred-website.com/folder/file-name.html>).

How to lodge a submission

Submissions should be lodged using the online form on the Commission's website. Submissions lodged by post should be accompanied by a submission cover sheet.

Online* www.pc.gov.au/inquiries/current/repair

Post* Right to Repair
 Productivity Commission
 4 National Circuit
 Barton ACT 2600, Australia

* If you do not receive notification of receipt of your submission to the Commission, please contact the Administrative Officer.

Due date for submissions

Please send submissions to the Commission by **Monday 1 February 2021**.

References

- ABS (Australian Bureau of Statistics) 2013, *4602.0.55.005 - Waste Account, Australia, Experimental Estimates, 2009-10*.
- 2019, *6227.0.30.001 - Education and Work 2019*.
- 2020a, *4602.0.55.005 - Waste Account, Australia, Experimental Estimates, 2018-19*.
- 2020b, *6227.0.30.001 - Education and Work 2020*.
- 2020c, *8178.0 - Microdata: Business Longitudinal Analysis Data Environment 2018-19*, TableBuilder, Canberra.
- 2020d, *8155.0 - Australian Industry 2018-19*.
- ACCC (Australian Competition and Consumer Commission) 2013, *Anti-competitive conduct*, www.accc.gov.au/business/anti-competitive-behaviour/anti-competitive-conduct (accessed 2 December 2020).
- 2015, *Buying parallel imports*, www.accc.gov.au/consumers/sales-delivery/buying-parallel-imports (accessed 29 September 2020).
- 2017, *New car retailing industry market study*.
- 2018a, *Guidelines on misuse of market power*.
- 2018b, *iPhone and iPad misrepresentations cost Apple Inc \$9 million in penalties*, Media Release, 19 June.
- 2020a, *Agricultural Machinery: After-Sales Markets*, Discussion Paper.
- 2020b, *Exclusive dealing*, www.accc.gov.au/business/anti-competitive-behaviour/exclusive-dealing (accessed 7 September 2020).
- 2020c, *Misuse of market power*, www.accc.gov.au/business/anti-competitive-behaviour/misuse-of-market-power (accessed 15 September 2020).
- 2020d, *Voluntary battery stewardship scheme granted authorisation*, www.accc.gov.au/media-release/voluntary-battery-stewardship-scheme-granted-authorisation (accessed 8 October 2020).
- AELA (Australian Earth Laws Alliance) 2020, *Challenging Consumption & Planned Obsolescence*, www.earthlaws.org.au/our-programs/challenging-consumption/planned-ob/ (accessed 1 October 2020).
- AGCM (Autorita' Garante della Concorrenza e del Mercato) 2018, PS11009-PS11039 - Apple and Samsung fined for software updates that have caused serious troubles and/or have reduced functionality of some mobile phones, Media Release, 24 October, Roma.
- Akgun, H. and Daemen, J. 2013, 'Landfill Leachate Control', *Encyclopedia of Sustainability Science and Technology*, 1st edn, Springer, New York, NY, pp. 5747–5772.
- Apple 2020, *Licensed application end user license agreement*, www.apple.com/legal/macapps/stdeula (accessed 19 November 2020).

-
- Australian Government 2019, *National Waste Policy Action Plan 2019*.
- 2020, *Australian Government response to the Review of the Product Stewardship Act 2011*.
- BAN (Basel Action Network) 2018, *Illegal export of e-waste from Australia: A story told by GPS trackers*.
- Borenstein, S., Mackie-Mason, J.K. and Netz, J.S. 2000, 'Exercising market power in proprietary aftermarkets', *Journal of Economics & Management Strategy*, vol. 9, no. 3, pp. 157–188.
- Boring, N. 2020, *France: Watchdog Agency Fines Apple for Deceitful Practice*, www.loc.gov/law/foreign-news/article/france-watchdog-agency-fines-apple-for-deceitful-practice/ (accessed 11 August 2020).
- CAANZ (Consumer Affairs Australia and New Zealand) 2017, *Australian Consumer Law Review - final report*, March.
- 2018, *Australian Consumer Law Review: Clarification, simplification and modernisation of the consumer guarantee framework*, Decision Regulation Impact Statement.
- Cabral, L. 2014, 'Aftermarket power and foremarket competition', *International Journal of Industrial Organization*, vol. 35, pp. 60–69.
- CALC (Consumer Action Law Centre) 2018, *Lemon-aid - Why it's time for Australia to introduce 'lemon laws'*, June.
- Cayumil, R., Khanna, R., Rajarao, R., Ikram-ul-Haq, M., Mukherjee, P.S. and Sahajwalla, V. 2016, 'Environmental Impact of Processing Electronic Waste – Key Issues and Challenges', *E-Waste in Transition - From Pollution to Resource*, IntechOpen.
- CHOICE 2020, *Car warranties and dealer servicing*, www.choice.com.au/transport/cars/maintenance/articles/car-warranties-and-dealer-servicing (accessed 7 October 2020).
- Commonwealth of Australia 2017, *Australian Government Response to the Productivity Commission Inquiry into Intellectual Property Arrangements*, August.
- Commonwealth of Massachusetts 2013, *An Act Relative to Automotive Repair*, H3757.
- Coppi, L. 2007, 'Aftermarket monopolization: The emerging consensus in economics', *The Antitrust Bulletin*, vol. 52, no. 1, pp. 53–71.
- DAWE (Department of Agriculture, Water and the Environment) 2016, *2016-17 Product List*, www.environment.gov.au/protection/waste-resource-recovery/product-stewardship/legislation/product-list-2016-17 (accessed 8 October 2020).
- 2017, *2017-18 Product List*, www.environment.gov.au/protection/waste-resource-recovery/product-stewardship/legislation/product-list-2017-18 (accessed 8 October 2020).
- 2020a, *2020-21 Product List*, www.environment.gov.au/protection/waste-resource-recovery/product-stewardship/legislation/product-list-2020-21 (accessed 7 August 2020).
- 2020b, *Hazardous Waste (Regulation of Exports and Imports) Act 1989*, www.environment.gov.au/protection/hazardous-waste/about (accessed 28 September 2020).
- 2020c, *Review of the Product Stewardship Act 2011*.

-
- DELWP (Department of Environment, Land, Water and Planning) 2017, *Managing e-waste in Victoria: Policy impact assessment*.
- DITRDC (Department of Infrastructure, Transport, Regional Development and Communications) 2020, *Copyright access reforms*, www.communications.gov.au/departamental-news/copyright-access-reforms (accessed 19 November 2020).
- DGCCRF (Direction générale de la concurrence, de la consommation et de la répression des fraudes) 2020, *Transaction avec le groupe APPLE pour pratique commerciale trompeuse*, Media release, 7 February, www.economie.gouv.fr/dgccrf/transaction-avec-le-groupe-apple-pour-pratique-commerciale-trompeuse (accessed 5 November 2020).
- Dias, P.R. 2019, 'Waste electrical and electronic equipment (WEEE) management in Australia and Brazil', Universidade Federal Do Rio Grande Do Sul and Macquarie University.
- Diss, K. 2019, 'Recycled electronics are turning Thailand into a "dumping ground for hazardous waste"', *ABC News*, 16 July.
- Environment and Communications References Committee 2018, *Never waste a crisis: The waste and recycling industry in Australia*, June, Commonwealth of Australia, Canberra.
- EPA SA (Environment Protection Authority South Australia) 2020, *Guideline for stockpile management*, October.
- EPA Victoria (Environment Protection Authority Victoria) 2020, *Reprocessing e-waste*, Environment Protection Authority Victoria, www.epa.vic.gov.au/for-business/find-a-topic/manage-e-waste/reprocessing-ewaste (accessed 16 November 2020).
- Forti, V., Baldé, C.P., Kuehr, R. and Bel, G. 2020, *The Global E-waste Monitor 2020: Quantities, flows and the circular economy potential*, United Nations University, United Nations Institute for Training and Research, International Telecommunications Network, International Solid Waste Association.
- Gangwar, C., Choudhari, R., Chauhan, A., Kumar, A., Singh, A. and Tripathi, A. 2019, 'Assessment of air pollution caused by illegal e-waste burning to evaluate the human health risk', *Environment International*, vol. 125, pp. 191–199.
- Gibbs, S. 2018, 'Apple and Samsung fined for deliberately slowing down phones', *The Guardian*, 24 October.
- Giurco, D. and Benn, S. 2014, 'Explainer: what is the circular economy?', *The Conversation*, 25 February.
- Grant, K., Goldizen, F.C., Sly, P.D., Brune, M.-N., Neira, M., Berg, M. van den and Norman, R.E. 2013, 'Health consequences of exposure to e-waste: a systematic review', *The Lancet Global Health*, vol. 1, no. 6, pp. e350–e361.
- Grinvald, L.C. and Tur-Sinai, O. 2019, 'Intellectual property law and the right to repair', *Fordham Law Review*, vol. 88, no. 1, pp. 63–128.
- Hanley, D.A., Kelloway, C. and Vaheesan, S. 2020, *Fixing America: Breaking Manufacturers' Aftermarket Monopoly and Restoring Consumers' Right to Repair*.

-
- Harris, J. 2020, 'Planned obsolescence: the outrage of our electronic waste mountain', *The Guardian*, 15 April, www.theguardian.com/technology/2020/apr/15/the-right-to-repair-planned-obsolescence-electronic-waste-mountain (accessed 5 November 2020).
- Hicks, T. 2012, *Toshiba laptop service manuals and the sorry state of copyright law*, *Future Proof*, 10 November, www.tim.id.au/blog/2012/11/10/toshiba-laptop-service-manuals-and-the-sorry-state-of-copyright-law/ (accessed 3 November 2020).
- HOP (Halte à l'Obsolescence Programmée) 2018, *Imprimantes: le coût de la panne*, www.halteobsolescence.org/obsolescence-programmee-imprimantes-le-cout-de-la-panne/ (accessed 19 November 2020).
- House of Representatives Standing Committee on Legal and Constitutional Affairs 2006, *Review of technological protection measures exceptions*, February.
- IP Australia 2020, *Types of IP Protection*, www.ipaustralia.gov.au/tools-resources/ip-toolkit/types-ip-protection (accessed 9 September 2020).
- John Deere Shared Services Inc 2016, License agreement for John Deere embedded software.
- Kiddee, P., Naidu, R., Wong, M.H., Hearn, L. and Muller, J.F. 2014, 'Field investigation of the quality of fresh and aged leachates from selected landfills receiving e-waste in an arid climate', *Waste Management*, vol. 34, no. 11, pp. 2292–2304.
- Klein, B. 1996, 'Market power in aftermarket', *Managerial and Decision Economics*, pp. 143–164.
- Koebler, J. 2018, *DHS Seizes Aftermarket iPhone Screens From Prominent Right-to-Repair Advocate*, www.vice.com/en_us/article/evk4wk/dhs-seizes-iphone-screens-jessa-jones (accessed 16 September 2020).
- Kurz, R.D. 2015, 'Quality, obsolescence and unsustainable innovation', *Ekonomski vjesnik/Econviews - Review of Contemporary Business, Entrepreneurship and Economic Issues*, vol. 28, no. 2, pp. 511–522.
- Le Tourneau, R. 2017, 'Australian e-waste ending up in toxic African dump, torn apart by children', *ABC News*, 9 March.
- Lindsay, D. 2002, *The law and economics of copyright, contract and mass market licences*, Research Paper, Centre for Copyright Studies.
- Lumbard, K., Ahuja, V. and Snell, M. 2020, *Open Agriculture and the Right-to-Repair Community Movement*, Association for Information Systems.
- Microsoft 2020, *Product Warranty: Xbox One console*, <https://support.microsoft.com/en-au/help/4551743/xbox-one-standard-limited-warranty> (accessed 7 October 2020).
- Montello, S.K. 2020, 'The Right to Repair and the Corporate Stranglehold over the Consumer: Profits over People', *Tulane Journal of Technology and Intellectual Property*, vol. 22, pp. 165–184.
- Nintendo 2020, *Manufacturer's Warranty*, www.nintendo.com.au/manufacturers-warranty (accessed 7 October 2020).

-
- NSW EPA 2020, *Grants to increase recycling of solar panel and battery storage systems*, Media release, 20 August, www.epa.nsw.gov.au/news/media-releases/2020/epamedia200820-grants-to-increase-recycling-of-solar-panel-and-battery-storage-systems (accessed 13 October 2020).
- OECD (Organisation for Economic Co-operation and Development) 2017, *Competition issues in aftermarkets*, Background note, June, DAF/COMP(2017)2.
- Orbach, B. 2004, 'The Durapolist Puzzle: Monopoly Power in Durable-Goods Market', *Yale Journal on Regulation*, vol. 21, no. 1.
- PC (Productivity Commission) 2005, *Smash Repair and Insurance*, Report no. 34, Canberra.
- 2006, *Waste Management*, Report no. 38, Canberra.
- 2016, *Intellectual Property Arrangements*, Report no. 78, Canberra.
- 2017, *Consumer Law Enforcement and Administration*, Research Report, Canberra.
- QLACSC (Queensland Legal Affairs and Community Safety Committee) 2015, '*Lemon*' Laws - Inquiry into consumer protections and remedies for buyers of new motor vehicles, No. 17, Queensland Parliament.
- Queensland Government 2019, *Lemon laws*, www.qld.gov.au/law/laws-regulated-industries-and-accountability/queensland-laws-and-regulations/fair-trading-services-programs-and-resources/consultation-regulatory-reform/past-reviews-and-consultations/2015/lemon-laws (accessed 29 September 2020).
- 2020, *About Queensland's waste levy*, www.qld.gov.au/environment/pollution/management/waste/recovery/disposal-levy/about/overview (accessed 8 October 2020).
- Rimmer, M. 2019, *The Right to Repair: Mandatory scheme for the sharing of motor vehicle service and repair information*, Submission to Treasury consultation for a mandatory scheme for the sharing of motor vehicle service and repair information.
- Rreuse 2017, *Reduced taxation to support re-use and repair*.
- Salehabadi, D. 2013, *Transboundary Movements of Discarded Electrical and Electronic Equipment*, Green Paper, 25 March, Solving the E-waste Problem (StEP), p. 36.
- Samsung Electronics 2018, *End-user software license agreement: Samsung Electronics Co., Ltd. Windows Software Product*, www.samsung.com/us/Legal/WindowsTabletEULA/ (accessed 19 November 2020).
- Shapiro, C. 1994, 'Aftermarkets and consumer welfare: Making sense of Kodak', *Antitrust LJ*, vol. 63, p. 483.
- Sony Corporation 2009, *End user license agreement for certain software to be used with your Sony television*.
- Svensson, S., Richter, J.L., Maitre-Ekern, E., Pihlajarinne, T., Maigret, A. and Dalhammar, C. 2018, 'The Emerging "Right to Repair" legislation in the EU and the U.S.', presented at Going Green CARE INNOVATION 2018, Vienna, Austria.
- The Tech Journal 2012, *Toshiba Refuses To Let Laptop Manual Site Host Its Manuals*, thetechjournal.com/internet/toshiba-refuses-to-let-laptop-manual-site-host-its-manuals.xhtml (accessed 2 November 2020).

-
- Toshiba Australia 2012, *Letter from Toshiba to Mr Hicks*, 31 July, www.wired.com/wp-content/uploads/blogs/opinion/wp-content/uploads/2012/11/toshiba_timhicks_takedownletter.jpeg (accessed 5 November 2020).
- Total Green Recycling 2020, *Why we need to ban e-waste from landfill now*, www.totalgreenrecycling.com.au/why-we-need-to-ban-e-waste-from-landfill-now (accessed 17 August 2020).
- Treasury 2019, *Mandatory scheme for the sharing of motor vehicle service and repair information: Consultation paper*, Canberra.
- Uduma, A.U. and Jimoh, W.L.O. 2013, 'Sequential extraction procedure for partitioning of lead, copper, cadmium, chromium and zinc in contaminated arable soils of Nigeria', *American Journal of Environment, Energy and Power Research*, vol. 1, no. 9, pp. 186–208.
- Van der Velden, M. 2020, *Apple uses trademark law to strengthen its monopoly on repair*, repair.eu/news/apple-uses-trademark-law-to-strengthen-its-monopoly-on-repair/ (accessed 16 September 2020).
- Vedelago, C. 2020, *E-waste recycler under pressure from EPA before fire erupted*, www.theage.com.au/national/victoria/e-waste-recycler-under-pressure-from-epa-before-fire-erupted-20200812-p5512z.html (accessed 4 September 2020).
- Voortman, J.J. 1993, 'Curbing aftermarket monopolization', *The Antitrust Bulletin*, vol. 38, no. 2, pp. 221–291.
- de Vries, W., Lofts, S., Tipping, E., Meili, M., Groenenberg, J.E. and Schütze, G. 2007, 'Impact of Soil Properties on Critical Concentrations of Cadmium, Lead, Copper, Zinc, and Mercury in Soil and Soil Solution in View of Ecotoxicological Effects', *Reviews of Environmental Contamination and Toxicology*, Springer, New York, NY, pp. 47–89.
- WCS (Wright Corporate Strategy) 2010, *Review of the application of landfill standards*, Australian Department of the Environment, Water, Heritage and the Arts, p. 103.
- Wiens, K. 2012, *The Shady World of Repair Manuals: Copyrighting for Planned Obsolescence*, www.wired.com/2012/11/cease-and-desist-manuals-planned-obsolence/ (accessed 3 September 2020).
- 2013, 'Using copyright to keep repair manuals secret undermines circular economy', *The Guardian*, 21 December.
- 2015, 'New High-Tech Farm Equipment Is a Nightmare for Farmers', *Wired*, 2 May.
- Wiseman, L. 2018, *Do Australian Farmers need a Right to Repair?*, news.griffith.edu.au/2018/11/23/do-australian-farmers-need-a-right-to-repair/ (accessed 3 September 2020).
- Wrbka, S. and DiMatteo, L.A. 2019, 'Comparative Warranty Law: Case of Planned Obsolescence', *University of Pennsylvania Journal of Business Law*, vol. 21, no. 4, pp. 907–977.
- WTO (World Trade Organization) 2020, *What are intellectual property rights?*, www.wto.org/english/tratop_e/trips_e/intel1_e.htm (accessed 6 October 2020).