Australian Government

Department of Sustainability, Environment, Water, Population and Communities

REGULATION IMPACT STATEMENT

Material Recovery under the National Television and Computer Recycling Scheme

Prepared by the Department of Sustainability, Environment, Water, Population and Communities

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Contents

1. Background

National Waste Policy and Product Stewardship Act 2011

On 5 November 2009, all Australian governments, through the Environment Protection and Heritage Council (EPHC), agreed to a new national policy on waste and resource recovery. The *National Waste Policy: Less Waste, More Resources* sets the strategic agenda for reducing waste and managing waste as a resource to deliver economic, environmental and social benefits to 2020. The policy was endorsed by the Council of Australian Governments in 2010. The aims of the National Waste Policy are to:

- avoid the generation of waste;
- reduce the amount of waste (including hazardous waste) for disposal;
- manage waste as a resource;
- ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner; and
- contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency and the productivity of the land.

Under Strategy 1 of the National Waste Policy, the EPHC agreed that the Australian Government would establish national product stewardship framework legislation. The *Product Stewardship Act 2011* (the Act) was passed by the Australian Parliament on 22 June 2011 and came into effect on 8 August 2011. The objects of the Act are drawn from the aims of the National Waste Policy and seek to address the environmental, health and safety impacts of a product or material across its full life cycle, from manufacture to disposal. The Act provides for three different types of product stewardship (voluntary, co-regulatory and mandatory). The Act is a framework in the sense that it provides a set of overarching rules relating to product stewardship, but details in regulations determine the products and persons that regulatory obligations apply to and a ministerial determination will provide the details for the accreditation of voluntary product stewardship. The National Waste Policy, including the product stewardship legislation, was subject to consultation and a Decision Regulatory Impact Statement (RIS) (The Allen Consulting Group 2009).

Decision RIS on televisions and computers

At the same time as agreeing to the National Waste Policy the EPHC considered a Decision RIS for managing the impacts of television and computer waste (PricewaterhouseCoopers 2009). The RIS showed that 106,000 tonnes (16.8 million units) of televisions, computers and computer products reached their end of life in 2007-08 and only an estimated 10 per cent of these by weight were recycled. According to the RIS, the volume of televisions, computers and computer products reaching their end-of-life is expected to grow to 181,000 tonnes (44 million units) by 2027-28.

The RIS identified that the low recycling rates for these products is an issue because they contain valuable non-renewable resources that can be recycled. They also contain hazardous substances, such as lead, bromine and mercury which present risks and costs

when they are disposed of to landfill. Australia also has international obligations regarding the management of hazardous wastes under:

- *The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*: Australia has obligations under the Basel Convention to minimise the generation of hazardous waste, ensure the environmentally sound management of wastes and to control and minimise international movements of hazardous waste. The *Hazardous Waste (Regulation of Exports and Imports) Act 1989* prohibits the export and import of hazardous wastes into and out of Australia without a permit and televisions and computers are considered hazardous waste under Act. Both the Basel Convention and the Hazardous Waste Act require the management of hazardous wastes in an environmentally sound manner in whatever the location, and applications for permits to export televisions and computers overseas are considered on a case by case basis to ensure the proposed recycling operations are environmentally sound and suitably licensed by the relevant jurisdiction.
- *The Stockholm Convention on Persistent Organic Pollutants* (POPs): Australia has obligations under the Stockholm Convention to protect human health and the environment from the effects of POPs and this includes ensuring the sound management of wastes that contain POPs. In August 2009, nine new POPs were added to the Stockholm Convention's annexes, including two polybrominated flame retardants that are present in some, but not all, electrical and electronic equipment (including the plastics in some televisions and computers).

The RIS identified the costs and benefits associated with establishing a product stewardship scheme for televisions and computers, including recycling and recovering resources, diversion of waste from landfill, and the community's willingness to pay for recycling. The RIS demonstrated that there was a net community benefit to be achieved from establishing a co-regulatory scheme for televisions and computers.

Following extensive consultation and consideration of the RIS, the EPHC agreed that a national collection and recycling scheme for televisions and computers would be the first scheme to be regulated under the Act using a co-regulatory approach. Consistent with the National Waste Policy and the Decision RIS, the primary objectives of the National Television and Computer Recycling Scheme (the Scheme) are to minimise the amount of television and computer materials (particularly hazardous waste materials) sent for disposal to landfill and to maximise the recovery of resources from televisions and computer products in a safe, scientific and environmentally sound manner.

Overview of co-regulatory product stewardship for TVs and computers

Co-regulatory approaches to product stewardship involve a combination of government regulation and industry action, whereby government sets the outcomes and requirements to be met and industry has flexibility in determining how those outcomes and requirements are achieved. In the case of the Scheme, the *Product Stewardship (Televisions and Computers) Regulations 2011* (the Regulations) will identify importers and manufacturers of televisions, computers and computer products as "liable parties", which are required under

the Act to become a member of an "approved arrangement". Approved arrangements are essentially industry-run collection and recycling measures administered by a body corporate (arrangement administrator). An arrangement administrator will be responsible for taking all reasonable steps to meet the outcomes set out in the Regulations, which under the Scheme will include annual recycling targets. Consistent with the RIS, the costs for implementing the Scheme are borne by the television and computer importers and manufacturers. These importers and manufacturers may choose to pass through the costs of the Scheme to consumers in the price of new products.

The Regulations do not place obligations on any entity other than liable parties and arrangement administrators. However, arrangement administrators may reflect these requirements or obligations (e.g. that collection and recycling must meet environmental, health and safety laws) in commercial contracts or other agreements. This is consistent with current practice where the television and computer brands and other organisations include requirements in commercial contracts with recyclers to achieve appropriate levels of performance such as in relation to environmental outcomes and material recovery and also require reporting on these requirements.

Recycling and material recovery

The recycling targets in the Regulations, to be met by arrangement administrators, will result in a specified amount of television and computer waste to be recycled each year. "Recycling" in relation to a product is defined in the draft Regulations as:

> *initial processing of the product for the purpose of recovering useable materials, and includes disassembly or shredding of the product.*

The initial stage of e-waste recycling normally results in a small amount of unusable or low-value material (e.g. fragments of broken glass or plastic) that may go to landfill and a range of commodities and components that are separated and sent for further processing into useable materials (see Figure 1). The "material recovery rate" refers to:

> *the proportion of the weight of material entering recycling that is then sent for further processing into useable materials, as opposed to being sent to landfill.*

For example, if the recycling target stipulates that 1000 tonnes of product be sent for recycling and 900 tonnes of this was recovered for further processing and 100 tonnes sent to landfill, then the material recovery rate would be 90 per cent.

The rate of recovery currently achieved by e-waste recyclers depends on factors such as the method used for recycling, the state of the market for the recovered resources, and the type and composition of the product that is being recycled[1].

[1] The composition of electronic products has changed over time and is expected to do so in the future. Initiatives such as the European Union's Restriction of Hazardous Substances Directive (Directive 2002/95/EC) are driving a reduction in the use of hazardous substances in the manufacture of electronic products, which can make them easier to recycle. The introduction of extended producer responsibility schemes for electronics in a range of countries in Europe, North America and Asia also encourage the reduction of hazardous substances and greater recyclability.

It also depends on the choices that customers of recyclers have made reflecting the extent to which they value different material recovery outcomes, influenced by the capabilities of recyclers and the costs of achieving different material recovery levels. Material recovery rates are not currently regulated by Australian governments. However, companies and state and local governments that currently pay for television and computer recycling often voluntarily specify requirements for material recovery in their contracts with recyclers.

Multiplying the recycling rate by the material recovery rate determines how much waste is ultimately diverted from landfill (i.e. the "diversion rate"). For example, if 50 per cent of all televisions and computer waste is recycled with a 90 per cent material recovery rate, then the diversion rate is 45 per cent.

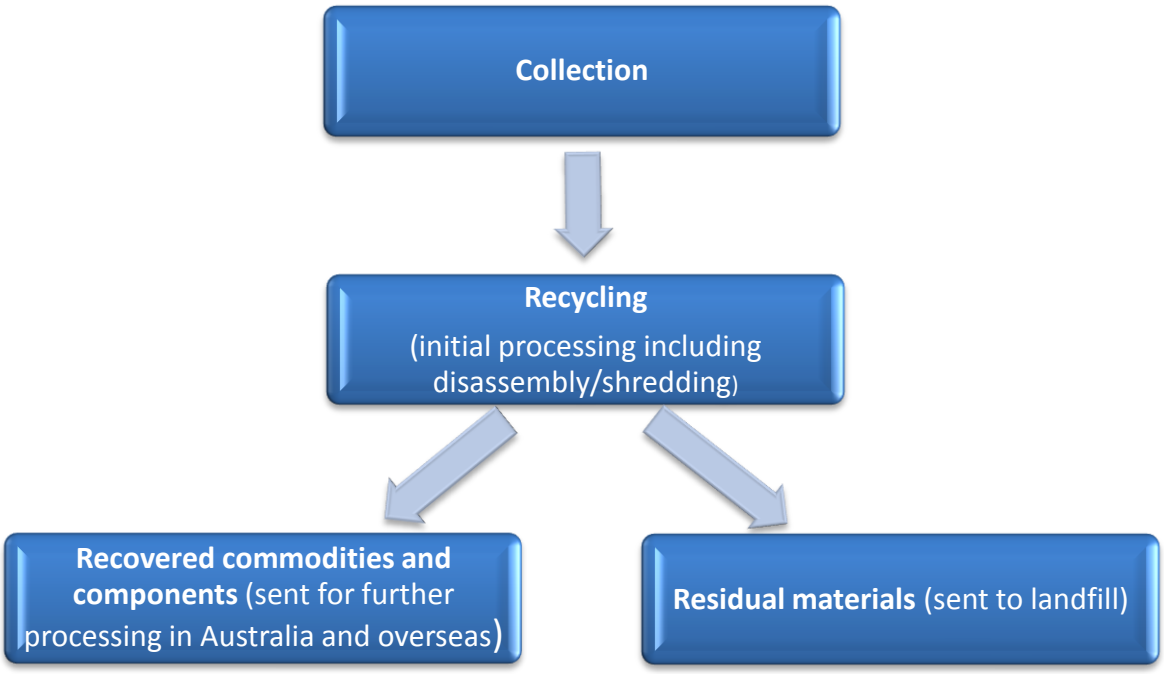

Figure 1. Simplified representation of the e-waste recycling process

2. Problem

The Regulations will require that a specified volume of waste televisions and computers go through a recycling process each year. Currently when waste televisions and computers are recycled in Australia, it is estimated that different recyclers recover between 74-99% of the weight of materials for further processing, with an average rate of approximately 91% (Equilibrium 2011)[2]. The residual materials that are not sent for further processing are sent to landfill.

If the current average standard of recovery is maintained then the Scheme will function as intended, meeting government expectations and providing substantial benefits to the broader community. It will also assist Australia to comply with our international obligations to minimise the generation of hazardous waste and ensure the environmentally sound management of wastes.

However, it is highly likely that material recovery rates will be under downward pressure after the Scheme commences. The risk of this regulatory failure stems from the interventions made by government under the Regulations which create demand from approved arrangements for undertaking recycling of televisions and computers, but do not place requirements around material recovery (in the absence of a specific target for material recovery).

Approved arrangements will be under competitive pressure to implement the Scheme at least cost to attract and retain members. One way of reducing costs will be to contract recyclers that achieve low rates of material recovery. This will put pressure on recyclers to drive down the quality of their recycling processes (that is, the material recovery rate) to levels well below current standards. Without requirements for material recovery in the Regulations, there would be no limit on how low material recovery rates could fall while still being classified as “recycling”. Therefore average recovery rates are likely to fall below the current average rate of recovery being achieved by recyclers (91 per cent), and may even fall below the lowest rate of recovery currently being achieved (74 per cent).

While the reduction of material recovery rates below 74 per cent is difficult to predict, it is useful to consider the drivers of the current 74-99 per cent range. In particular, current customers of recycling in Australia are generally governments with waste management objectives, consumers with sustainability objectives and corporations with social responsibility objectives. There is evidence that this customer type takes an interest in the quality of recycling and is often willing to pay a premium for higher levels of material recovery. The introduction of the Scheme will bring into this market a new customer type – arrangement administrators focussed on meeting their legal obligations while under competitive pressure to minimise their costs. Arrangement administrators may have less interest in material recovery outcomes and less incentive to monitor recycler performance

[2] These figures are described as an estimate because the measurement and reporting methodologies currently adopted by the various recyclers surveyed have some inconsistencies.

than in meeting their primary statutory obligations. Material recovery rates will therefore be under downward pressure.

Low rates of material recovery will result in larger volumes of television and computer materials being sent to landfill, and these are likely to be the lowest-value and/or hazardous materials (note, high rates of material recovery also results in some residual materials, potentially including hazardous materials, being sent to landfill but at a lower volume). Solid non-dispersible hazardous wastes (such as those found in computers) are generally no cause for concern through normal contact, including transportation and manual disassembly recycling practices, but do raise human health and environmental concerns when disposed of to landfill or incinerated (OECD 2003).

Lowered rates of material recovery would be contrary to the objectives of the Scheme and would undermine its integrity. It could result in importers and manufacturers, and ultimately the community, being required to pay for an initial recycling process that does not return the benefits expected from the Scheme.

3. Objectives

The Government's objectives for the Scheme are to minimise the amount of television and computer materials (particularly hazardous materials) that are disposed of to landfill and maximise the recovery of resources from televisions and computers.

The Government's immediate intention is to ensure the rate of material recovery that is being achieved by recyclers of televisions and computers enable the Scheme objectives to be met.

4. Potential options that might achieve these objectives

All options that include a material recovery target (i.e. options 2, 3 and 4) indicate that the target would commence in the 2014-15 financial year, which will be the third full year of the Scheme. This would provide time for measurement and reporting methodologies to be standardised across arrangements and recyclers.

Option 1: No regulation of material recovery rate (Business as usual)

Under a business as usual scenario, the Regulations will specify recycling targets that will need to be met by arrangement administrators, but will not place requirements around material recovery. The material recovery rate will be determined in negotiations between arrangement administrators and recyclers in the context of the costs of recycling. The Regulations will also include mandatory reporting on material recovery rates by arrangement administrators to inform the extent to which the Scheme is meeting its objectives of increasing resource recovery and reducing waste to landfill. Reporting on material recovery is already standard practice in the e-waste recycling industry. The 2009 Decision RIS considered costs of reporting under the Scheme in its cost-benefit analysis.

Option 2: Minimum 75 per cent material recovery target, commencing in 2014-15

A minimum 75 per cent material recovery target will be included as an outcome in the Regulations. This means that an approved arrangement must take all reasonable steps to ensure that at least 75 per cent of the total weight of products recycled by the arrangement each financial year is sent for further processing into useable materials. This rate is at the lower end of current business as usual material recovery rates achieved by Australian e-waste recyclers, but is consistent with the recovery target set by the European Union under its Waste Electrical and Electronic Equipment (WEEE) Directive (directive 2002/96/EC, Article 7).

In practice, arrangement administrators would specify the required rate (or a higher rate) in contracts with recyclers. The 75 per cent material recovery rate would not need to be met by each recycler contracted to the arrangement, but the arrangement administrator would need to ensure it achieves at least this rate on average over a financial year.

Option 3: Minimum 75 per cent material recovery target commencing in 2014-15, increasing to a 90 per cent target in 2016-17

As per option 2, but the material recovery target will be increased in the 2016-17 financial year to 90 per cent. A 90 per cent material recovery target is in line with the current average rate being achieved by Australian e-waste recyclers, which is 91 per cent. As per option 2, the target would not need to be met by each recycler contracted to the arrangement, but the arrangement administrator would need to ensure it achieves at least this rate on average each financial year. This would provide scope for contracting recyclers that achieve rates lower than 90 per cent.

Option 4: Minimum 90 per cent material recovery target commencing in 2014-15

As per option 2, but the material recovery target would commence at 90 per cent (in line with the current average rate) in 2014-15.

5. Impact Analysis

5.1 Approach to impact analysis

This section explains how the impact analysis in this RIS has been undertaken, including outlining the baseline data that has been used as the basis for the analysis. The results of the impact analysis of each option are presented in section 5.2.

The 2009 Decision RIS demonstrated that the net present value (NPV) of the net benefits from establishing the Scheme is $649 million over the period 2008-09 to 2030-31. This was based on the NPV of:

- the costs of collection and recycling associated with the Scheme, estimated at $873 million; and
- the benefits associated with the community's willingness to pay (WTP) to divert 70 per cent of television and computer waste from landfill, valued at $1,522 million.

Directly observable benefits, including the NPV of resources recovered from recycling, direct landfill cost savings and externality landfill cost savings were estimated at $344 million, but these were excluded from the calculation of cost and benefits because these benefits were included in the WTP benefit assessment.

This analysis does not seek to re-calculate the net benefit in the 2009 Decision RIS, since this would involve an estimate of the economic cost savings available if lower material recovery rates are chosen (which cannot be quantified based on currently available data). Rather, it analyses the impact of each option on the WTP benefit and the directly-observable benefits outlined in the 2009 Decision RIS. It also analyses how each relevant stakeholder group would be affected under each of the options.

Groups likely to be affected

The impact analysis in subsection 5.2.2 analyses the potential impacts of each option on the following main groups that are likely to be affected by the options:

- *Arrangement administrators*: bodies corporate responsible for meeting the outcomes in the Regulations (including recycling targets) on behalf of importers and manufacturers of televisions, computers and computer products.
- *Importers and manufacturers of televisions, computers and computer products*: the liable parties under the Regulations responsible for joining an approved arrangement and bearing the costs for implementing the Scheme. Parties importing or manufacturing below the thresholds in the Regulations are exempt from the Scheme, with the intention of limiting the impact on small businesses. The Regulations include a threshold of 5,000 units for televisions, computers and printers, and 15,000 units for computer products.
- *Recyclers*: Arrangement administrators will contract with recyclers to process the televisions and computers they collect. The Regulations do not place any direct requirements on recyclers, but any requirements placed on arrangement administrators related to recycling are likely to be specified in their contracts with recyclers, including material recovery rates. In achieving higher material recovery rates, recyclers will send less waste to landfill and will incur lower landfill fees. A study of Australia's current and future e-waste recycling infrastructure capacity and needs found that there are currently 14 e-waste recycling facilities of significance in Australia, responsible for recycling over 80 per cent of all e-waste recycled in Australia (Wright Rawtec 2010). All sites use a process of disassembly or shredding for recovery of materials, which are the dominant forms of e-waste recycling.
- *Consumers*: The costs for recycling under the Scheme are free to households and small business at point of disposal, but importers and manufacturers of televisions and computers may increase the price of new televisions and computers to cover their costs.
- *Waste management authorities*: Parties responsible for waste management and landfills varies across the country, but includes state government, local councils and some private companies. A reduction in waste going to landfill will reduce costs for these parties.

- *Community*: The reduction of waste, particularly hazardous waste, to landfill benefits the broader community by reducing health, safety and environment risks. The community also places an intrinsic value on the recovery of resources from televisions and computers and reduction of this waste stream to landfill.
- *Australian Government*: The Australian Government bears the cost of administering the Act and the Regulations. It also has international obligations related to hazardous waste under the Basel Convention.

Costs of recycling

The 2009 Decision RIS estimated that approximately 2.4 million tonnes of televisions and computers would be recycled and diverted from landfill under the Scheme from 2008/09 to 2030/31[3]. The quantity of waste that will need to be recycled under the Scheme is the same under all options, but the rate of material recovery will determine the total quantity that will be diverted from landfill (known as the diversion rate, as explained on p.3).

The 2009 Decision RIS indicated that the economic cost of recycling is approximately $700 per tonne (or $970 per tonne including collection and transport). This is based on data provided by recyclers achieving material recovery rates in excess of 90 per cent and using a manual disassembly process (Hyder Consulting 2006, Appendix B, page 42-51). The costs of recycling may vary across the options, as material recovery rates below 90 per cent are likely to be cheaper than assumed in the 2009 Decision RIS (Hyder Consulting 2006). However, the extent to which these costs would change is uncertain and therefore has not been quantified for the purpose of this RIS.

Willingness-to-pay benefits

The Decision RIS incorporated a 2009 study by URS which surveyed the community's WTP for different recycling levels (URS 2009). The RIS assumed that the WTP study accounted for the recovery of the financial market value placed on recovered television and computer components, avoided landfill externality costs and avoided landfill direct costs (and so didn't include these directly observable costs in the calculation of net benefit, to avoid potential double counting). It determined that over the period 2008/09 to 2030/31 the Scheme would achieve benefits which the community values at $1,522 million.

This was based on the community's WTP for 70 per cent diversion of television and computer materials from landfill within 5-9 years (PricewaterhouseCoopers 2009 p.61). For the purposes of the URS study and the RIS, this 70 per cent rate was referred to as the "recycling" or "recovery" rate, but the URS study makes clear that this is the rate of materials that will be recovered and diverted from landfill (i.e. the diversion rate). The meaning of "diversion", as used in the 2009 RIS and this RIS, is different from the meaning of "recycling" in the Regulations, which focuses on the mass of materials put into a recycling process (which is not necessarily the amount diverted from landfill). The diversion rate from

[3] Recent analysis indicates that the amount of waste likely to be recycled may actually be higher than this, due to rapid growth in the number of television and computer units imported(Meta Economics 2011). However, that growth is offset by the extent to which products are getting lighter. For consistency, the 2009 Decision RIS figures are being used for the purpose of this analysis.

landfill under the Regulations can be calculated by multiplying the recycling rate by the material recovery rate. The URS study considered the respondents' valuation of different diversion rates, including 50 per cent and 90 per cent. A summary of these findings is in Table 1.

Table 1. Summary of WTP estimates (derived from PricewaterhouseCoopers 2009, page 66)

Diversion rate	WTP per item ($)	% change in WTP compared to 70 per cent
50 %	18.18 – 27.44	-29 %
70 %	25.60 – 38.64	0
90 %	33.02 – 49.84	+29 %

The analysis conducted by URS has been adapted to estimate what the reduction in the WTP benefit would be under the different options analysed in this RIS, based on the landfill diversion rate they would achieve at maturity (that is, at year 10 of the Scheme, in 2021-22 (Hyder Consulting 2009). This has been done by treating options that achieve at least a 70 per cent diversion rate at maturity as providing the same level of benefit as the RIS. For options that mature at a diversion rate of less than 70 per cent, the WTP benefit has been reduced by a proportion that reflects the extent of the difference between 70 per cent and the rate achieved by the option at maturity (e.g. see the percentage change column in Table 1). This approach was taken because the Decision RIS based its WTP benefit assessment (conservatively) on the achievement of a 70 per cent diversion rate, even though the Decision RIS modelled a higher diversion rate (80 per cent) at maturity (Hyder Consulting 2009).

Table 2 illustrates the estimated landfill diversion rates under each option analysed in this RIS. It shows that options 3 and 4 are relatively consistent with the diversion rate used to determine the WTP benefit in the Decision RIS, whereas options 1 and 2 result in diversion rates that are more consistent with lower WTP per item estimates.

Table 2. Landfill diversion rates under different options

Relevant Option	Scheme recycling target in 2021-22 (A)	Material Recovery rate in 2021-22 (B)	Landfill diversion rate (A x B)
1	80	60% (assumed)	48%
2	80%	75% (min. target)	60%
3	80%	90% (min. target)	72%
4	80%	90% (min. target)	72%

Directly observable benefits

The 2009 Decision RIS estimated that the directly observable benefits from the Scheme, including the direct landfill cost saving, landfill externality cost saving and financial market value of recovered resources, is $344 million (NPV) over the period 2008-09 to 2030-31.

The direct landfill cost saving (NPV) from the establishment of the Scheme comprised $22.1 million of the directly observable benefits and landfill externality cost saving comprised $21.2 million (PricewaterhouseCoopers 2009 p.122). This was based on:

- Direct costs of disposing of waste to landfill of $25 per tonne, based on an estimate by the Waste Management Association of Australia;
- Externality costs associated with disposing waste to landfill of $24 per tonne, based on an estimate by the Productivity Commission (2006); and
- The assumption that the 2.4 million tonnes estimated to be recycled under the Scheme under the assumed recycling rates are diverted from landfill (i.e. it essentially assumed a 100 per cent material recovery rate).

If the material recovery rate achieved under the Scheme is lower than 100 per cent, then the amount of waste to landfill would increase and the landfill cost savings assumed in the Decision RIS would be reduced. A simple approach has been taken to calculating the change in direct landfill costs in this RIS. The material recovery target affects each year of the Scheme from 2014/15 to 2030/31 roughly in proportion. Therefore, this RIS reduces the NPV for direct landfill costs ($43.3 million) to reflect the proportional reduction in the amount of material going to landfill. This approach provides a robust approximation of an approach that separately considers each Scheme year's landfill diversion achievement and applies a discount rate.

A study undertaken by BDA in 2009 provides updated estimates of the full costs associated with disposing of non-hazardous waste to landfill, including both private costs incurred for landfill establishment and operation, as well as impacts on the environment, human health or social amenity (BDA Group 2009). This report estimates that the full costs are between $42-102 per tonne in urban areas and $41-101 per tonne in rural areas. Hazardous waste (which includes televisions and computers) is likely to have a greater cost than this, but has not been quantified in existing studies. These costs were unable to be used at the time the RIS was undertaken, as the BDA report had not yet been published. These have also not been applied for the purposes of the present study in order to retain consistency with the 2009 analysis. However, the BDA work demonstrates that the estimated direct benefits of diverting a tonne of waste from landfill are likely to be under-estimated in both the present RIS and the 2009 Decision RIS.

The RIS also observed that the mid-level financial market value of recovered resources from recycled televisions and computers is approximately $300-400 per tonne, which results in an estimated $300.3 million direct benefit from the Scheme. In this RIS, adjustments have not been made to the direct benefits to take account of lost resource value under lower material recovery rates. This is primarily because the change in direct benefits from lost resource value cannot be properly quantified based on available data (fluctuations in commodity prices ultimately determine the value of recovered resources and it is likely that the value of resources is higher today than what was estimated at the time the Decision RIS was prepared). It may also be the case that the resource value will remain constant under different options on the basis that the highest-value materials will be extracted under every option and that the material disposed of to landfill will be lower-value materials.

5.2 Impact analysis of options

This section provides both a summary of the cost benefit analysis in this RIS, as well as the detailed cost benefit analysis of each option.

5.2.1 Summary of cost benefit analysis

Table 3 provides a summary of the quantitative and qualitative elements of the cost benefit analysis for each option analysed in this RIS using the Decision RIS model as a benchmark. It shows that only options 3 and 4 are likely to be consistent with the net benefit in the Decision RIS, as they succeed in achieving the benchmark willingness to pay value based on a 70 per cent diversion rate. A summary of the impacts of the different options on the main groups likely to be affected by the options is at **Appendix A**. Detailed analysis of each option, including analysis of the predicted impacts on the main groups likely to be affected, is presented in subsection 5.2.2.

Table 3. Summary of cost-benefit analysis of options

Option	**Target?**	**Material recovery rate**	**Quantitative assessment of Option benefits relative to Decision RIS (2008/09 to 2030/31)**			**Qualitative assessment**	
			Change in material recovered (tonnes) [total recovered]	**Change in directly observable benefits (resources [A], landfill direct and externality) [total benefits]**	**Change in Willingness to pay (NPV)**	**Change in costs of recycling**	**Conclusion – net benefit likely to be consistent with $649 million Decision RIS net benefit?**
1	No	Assume 60% outcome	-1.0 million [1.4m t]	-$18 million [$326 million]	-$486 million	Small reduction in costs of recycling.	Far below
2	Yes	75% from year 3	-0.6 million [1.8m t]	-$11 million [$333 million]	-$220 million	Marginal reduction in costs of recycling.	Somewhat below
3	Yes	75% from year 3, 90% from Year 5	-0.3 million [2.1m t]	-$5 million [$339 million]	$0	No change anticipated. Costs should be consistent with current average recycling performance.	Consistent
4	Yes	90% from year 3	-0.2 million [2.2 m t]	-$4 million [$340 million]	$0		Consistent

Notes: (A) Change in directly observable benefits only reflects changes in landfill direct and externality benefits. Resource value is assumed not to change because (a) it is unquantifiable on current data and (b) it would be the next-lowest-valued materials which are recovered when a minimum material recovery target is imposed. This is consistent with not quantifying the change in direct recycling costs relative to the 2009 Decision RIS.

5.2.2 Detailed cost benefit analysis of each option

Option 1: No regulation of material recovery rate (Business as usual)

Under a business as usual scenario, arrangement administrators would have the flexibility to determine the material recovery rate in negotiations with recyclers. As outlined in the problem statement, approved arrangements will face competitive pressure to reduce their costs and one way of doing this would be to contract recyclers that achieve lower material recovery rates, as the direct costs of recycling would be cheaper. While this is likely to reduce the direct costs of recycling, it may be offset by higher costs due to the lack of certainty for arrangements and investors in recycling infrastructure, which may deter investment in the e-waste recycling industry.

Under this option, recyclers achieving lower levels of recovery at cheaper rates would likely expand their market share. Due to the low barriers to entering the e-waste recycling market (identified in Wright Rawtec 2010), it is also likely that new and potentially unscrupulous operators would enter the market and offer cheap recycling services with poor material recovery outcomes to take advantage of the commercial opportunities created by the Scheme.

Recyclers achieving rates of recovery of 90 per cent or more, which are currently in the majority, would likely need to lower their material recovery rates to offer a cheaper recycling service to remain competitive. This would result in investment flowing to cheaper, but less effective, recycling methods and would reduce the overall standard of e-waste recycling in Australia. This would make it much more difficult to improve the performance of Australia's e-waste recycling industry in future.

If this option led to a 60 per cent average material recovery rate, it is estimated that this would reduce the amount of television and computer materials diverted from landfill over the period to 2030/31 to 1.4 million tonnes, a reduction of 42 per cent compared to the 2.4 million tonnes assumed in the Decision RIS. This would reduce the directly observable benefits from the Scheme to $326 million (a reduction of $18 million). This rate would also be below standards expected internationally, such as under the European Union's WEEE Directive. Additionally, e-waste recyclers have confirmed in consultation with the department that the materials sent to landfill under lower material recovery rates would generally be lower value, hazardous materials.

Furthermore, when the Scheme reaches its maximum recycling target of 80 per cent, a 60 per cent material recovery rate would result in a diversion rate of just 48 per cent. This would reduce the WTP benefit in the Decision RIS (which was based on a 70 per cent diversion rate) by 32 per cent, a reduction of $486 million over the period to 2030/31. Therefore it is likely that the overall net benefit NPV for the Scheme would be reduced under this option.

The costs for managing the additional waste sent to landfill under this option would be borne by waste management authorities and may ultimately be reflected in the rates paid by residents in local communities. This would be contrary to the intention of extended

producer responsibility schemes to move the costs for managing waste streams away from the general community to those who produce the products.

The Australian Government would not be subject to higher administration costs under this option, as there would not be any additional regulation. In regards to Australia's international obligations, assuming this option results in a material recovery rate of around 60 per cent, it would assist Australia to meet its international obligations under the Basel Convention to minimise the generation of hazardous waste and ensure the environmentally sound management of wastes, but is unlikely to achieve this to the same extent as the other options which set a minimum target for material recovery.

If this option was pursued, then the need to set a material recovery target could be reviewed in light of future developments. For example, it would leave open the possibility of introducing a material recovery target if there was evidence that material recovery rates were declining. However, if government intervenes after this problem eventuates, it is likely to impose greater costs on arrangement administrators and recyclers than if a material recovery target was to be imposed earlier following the Scheme's commencement. This is because any investments in recycling processes that achieve lower material recovery rates would then need additional investment to achieve the higher material recovery rates. Arrangement administrators may have long-term contracts in place with recyclers that would need to be re-negotiated, which would also result in additional costs. In addition, the delay in introducing a target after the problem is established will result in underachievement of the benefits expected from the Scheme.

Option 2: Minimum 75 per cent material recovery target, commencing in 2014-15

A material recovery target of 75 per cent will require a minimum of 75 per cent of the weight of televisions and computers recycled each financial year to be sent for further processing into useable materials. A 75 per cent rate is at the lower end of current material recovery rates being achieved in Australia and well below the estimated average rate of 91 per cent, so would be easily achievable under current practices.

Given the range of current rates being achieved by Australian recyclers (74-99 per cent), a 75 per cent target would provide some flexibility to approved arrangements to determine the material recovery rate, but would also ensure there is a level playing field to ensure one approved arrangement does not try to undercut its competitor by achieving rates lower than 75 per cent.

Costs for recycling would likely be lower under this option than what was estimated in the Decision RIS (which was $700 per tonne, based on estimates provided by recyclers achieving material recovery rates of 90 per cent or above). This may result in lower costs for liable parties and potentially lower costs passed through to consumers for new products. Costs may be higher under this option than under option 1 because arrangement administrators would not have the option of reducing costs further by achieving rates lower than 75 per cent. However, the greater certainty (for arrangements and investors in recycling infrastructure) provided by the specific target could offset the effect relative to option 1, which has no target and could have deterred investment.

While this option would allow most, if not all, current recyclers to service Scheme arrangements, recyclers that charge less for recycling because they achieve rates of material recovery at or around 75 per cent will be at a competitive advantage. Recyclers that achieve higher rates of material recovery at higher cost (which are currently in the majority) may find it difficult to compete and would have a strong incentive to invest in other less-costly methods that achieve no more than 75 per cent material recovery. This could result in 75 per cent becoming the de facto material recovery rate for the Australian e-waste recycling industry, which is much lower than the current estimated average rate of 91 per cent and would be a perverse outcome of the Scheme. The up to 25 per cent of materials that would go to landfill would likely consist of the most hazardous and low value materials in televisions and computers.

Under a 75 per cent material recovery rate, it is estimated that this would reduce the amount of television and computer materials diverted from landfill over the period to 2030/31 to 1.8 million tonnes, a reduction of 25 per cent compared to the 2.4 million tonnes assumed in the Decision RIS. This would reduce the directly observable benefits from the Scheme to $333 million (a reduction of $11 million).

Furthermore, when the Scheme reaches its maximum recycling target of 80 per cent, a 75% material recovery target would result in a diversion rate of just 60 per cent. This would reduce the WTP benefit in the Decision RIS (which was based on a 70 per cent diversion rate) by 14 per cent, a reduction of $220 million over the period to 2030/31. Therefore it is likely that the overall net benefit NPV for the Scheme would be reduced under this option.

The costs for managing the additional waste to landfill will fall on waste management authorities, although they will have greater certainty on the amount expected to be disposed of to landfill under this option compared to option 1 because of the minimum material recovery rate.

The Australian Government may face slightly higher administration costs under this option than option 1, as it would need to undertake compliance action if material recovery targets were not met. As this option ensures at least 75 per cent of materials in televisions and computers are recovered, it would assist Australia to meet its international obligations under the Basel Convention to minimise the generation of hazardous waste and ensure the environmentally sound management of wastes, although it is unlikely to achieve this to the same extent as options 3 and 4, which set a higher target for material recovery.

<u>Option 3: Minimum 75 per cent material recovery target commencing in 2014-15, increasing to a 90 per cent target in 2016-17</u>

Under this option, a minimum material recovery rate of 75 per cent will apply initially in 2014-15 (year 3 of the Scheme), but will increase to 90 per cent in 2016-17 (year 5 of the Scheme). A rate of 90 per cent is close to the current average rate of 91 per cent, so is considered achievable.

This option provides some flexibility to arrangement administrators to negotiate the recovery rate at commencement of the Scheme. However, from 2016-17 arrangement administrators will essentially be limited in their ability to reduce the material recovery rate to cut costs.

Costs for recycling would likely be higher under this option than under options 1 or 2 as arrangements would not be able to cut costs by reducing material recovery, particularly from 2016-17. However, the costs of recycling would likely be lower than specified in the 2009 Decision RIS in the first 4 years and consistent with the 2009 Decision RIS from year 5 onwards (i.e. approximately $700 per tonne). Therefore costs for liable parties and ultimately consumers may be slightly lower than the estimates in the 2009 Decision RIS.

Recyclers currently achieving material recovery rates lower than 90 per cent will have sufficient lead time to change and improve their processes to achieve higher recovery rates by 2016-17. Recyclers still achieving less than 90 per cent material recovery after 2016-17 could still feasibly be contracted by an arrangement administrator under this option, as the target would be an average annual rate.

This option may send inconsistent signals to firms wishing to invest in recycling capacity. During the 5 year period from Scheme commencement to 2016/17, recyclers will be under pressure to invest in assets enabling them to offer a cheap service that initially achieves low material recovery rates (minimum 75% from 2014/15). From 2016/17, those assets might need to be sold, written off or upgraded to deliver a 90 per cent material recovery rate. If material recovery targets are set initially and maintained over a long term, then investments can be made in assets with longer service life, avoiding potential wastage.

Assuming a 75 per cent material recovery rate was achieved for the first four years of the Scheme and 90 per cent thereafter, it is estimated that this would reduce the amount of television and computer materials diverted from landfill over the period to 2030/31 to 2.1 million tonnes, a reduction of 13 per cent compared to the 2.4 million tonnes assumed in the Decision RIS. This would reduce the directly observable benefits from the Scheme to $339 million (a reduction of $5 million). This option is still likely to result in some hazardous materials being disposed of to landfill, but at a much lower volume than under options 1 and 2.

When the Scheme reaches its maximum recycling target of 80 per cent, a 90 per cent material recovery rate at this time would result in a diversion rate of 72 per cent. This is consistent with the diversion rate of 70 per cent which was used in the Decision RIS to determine the WTP benefit (valued at $1522 million). Therefore it is likely that the overall net benefit NPV for the Scheme under this option would be consistent with the Decision RIS.

Waste management authorities would be responsible for managing any residual waste disposed of to landfill, but the reduction in the amount of materials disposed of to landfill will be more in line with their expectations of the Scheme[4]. The reduced disposal of

[4] Local government has commented during stakeholder consultation processes that they expect this waste stream to be diverted from landfill as much as possible to avoid incurring further costs for its management.

materials to landfill would also benefit waste management authorities and the community due to lower health, safety and environment risks.

The Australian Government may face slightly higher administration costs under this option than option 1, as it would need to undertake compliance action if material recovery targets were not met. As this option ensures at least 90 per cent of materials in televisions and computers are recovered from 2016-17 onwards, it would assist Australia to meet its international obligations under the Basel Convention to minimise the generation of hazardous waste and ensure the environmentally sound management of wastes to a greater extent than options 1 or 2.

Option 4: 90 per cent material recovery target commencing in 2014-15

This option would apply a 90 per cent material recovery target from 2014-15. This is similar to the current estimated average material recovery rate of 91 per cent, so is expected to be achievable.

This option would provide a level playing field so that all approved arrangements are required to achieve the same minimum standard, with limited prospect of one arrangement under-cutting another by achieving much lower material recovery rates. Therefore arrangement administrators would face potentially higher costs for recycling under this option than all other options, but these costs are likely to be consistent with those outlined in the 2009 Decision RIS (which was based on estimates provided by recyclers achieving rates of 90 per cent or above), with similar flow on costs for liable parties and consumers.

Under this option, most, if not all, recyclers will be able to provide services to Scheme arrangements during the 2 years from Scheme commencement, but during the third year will be required by arrangement administrators to achieve a minimum 90 per cent material recovery rate. This ensures that current recycling industry capacity is maximised to meet Scheme targets in the short term, even allowing for the potential that more product is collected and recycled than is required by the recycling targets (Meta Economics 2011). In the long term, investors will have sufficient notice to acquire assets capable of delivering a minimum 90 per cent service at volumes predicted by Scheme targets, and confidence that those assets will remain productive. Importantly, this target is consistent with current industry norms so investors may already know the types and combinations of assets that will achieve at least 90 per cent.

This option would ensure that the current average material recovery rate being achieved by recyclers is not reduced and would therefore avoid the perverse outcomes associated with options 1 and 2. Recyclers achieving lower levels of recovery (such as the recycler that has reported achieving a rate of 74 per cent) could still be contracted by an arrangement administrator under this option because the rate is an annual average. However, if arrangement administrators were to require this rate as a standard in all contracts, recyclers achieving lower rates would find it difficult to compete (which may include those using purely automated processes, which recyclers have advised the department generally achieve lower material recovery). For these recyclers there will be 2 years lead time to

invest in different processes to improve their material recovery performance before the material recovery target commences in 2014-15.

Under a 90 per cent material recovery rate, it is estimated that this would reduce the amount of television and computer materials diverted from landfill over the period to 2030/31 to 2.2 million tonnes, a reduction of 8 per cent compared to the 2.4 million tonnes assumed in the Decision RIS. This would reduce the directly observable benefits from the Scheme to $340 million (a reduction of $4 million). This aligns more closely with the benchmark for directly observable benefits in the Decision RIS than any other option. This option is still likely to result in some hazardous materials being disposed of to landfill, but at a much lower volume than under other options.

When the Scheme reaches its maximum recycling target of 80 per cent, a 90 per cent material recovery rate would result in a diversion rate of 72 per cent. This is consistent with the diversion rate of 70 per cent which was used in the Decision RIS to determine the WTP benefit (valued at $1522 million). Therefore it is likely that the overall net benefit NPV for the Scheme under this option would be consistent with the Decision RIS.

The Australian Government may face slightly higher administration costs under this option than option 1, as it would need to undertake compliance action if material recovery targets were not met. As this option ensures at least 90 per cent of materials in televisions and computers are recovered, it would assist Australia to meet its international obligations under the Basel Convention to minimise the generation of hazardous waste and ensure the environmentally sound management of wastes to a greater extent than other options.

6. Consultation

Consultation RIS for televisions and computers – July 2009

The Consultation RIS for televisions and computers was released on 15 July 2009 (PricewaterhouseCoopers July 2009). The consultation process on this RIS involved public meetings in Adelaide, Perth, Sydney and Melbourne, which were attended by approximately 163 people. It also involved the opportunity to make written submissions, of which 130 were received.

The consultation process was undertaken on the basis that products recycled will be recovered and diverted from landfill. While the issue of material recovery rates and targets were not specifically covered in the Consultation RIS, some submissions[5] (particularly from recyclers) highlighted the issue and recommended that an achievable minimum material recovery rate be included in the Scheme. The suggestions ranged from a minimum 85 per cent material recovery rate to a minimum 95 per cent rate.

[5] Submissions 21, 41, 62 and 77

Consultation paper on proposed Regulations – March 2011

In March 2011 the department released a consultation paper on the proposed design of the Regulations. The consultation process involved 11 public meetings in all capital cities and three regional areas, which were attended by approximately 310 people. It also involved the opportunity to make written submissions on the proposed design of the Regulations, of which 62 were received.

The consultation paper proposed that a material recovery target would not be set in the Regulations, as insufficient information was available to prescribe what a reasonable level of performance would be. Stakeholders, including state government, recyclers, industry groups and environment groups, opposed this proposal and argued that a material recovery target was needed to maintain the integrity of the Scheme and to prevent recyclers from recovering only the highest value materials and sending the low-value materials (including hazardous materials) to landfill.

Those stakeholders that commented on a specific recovery rate (including the Australian Industry Group and Total Environment Centre) suggested that a 95 per cent material recovery rate was industry best practice and achievable.

Exposure draft Regulations – September 2011

The department released an exposure draft of the Regulations on 12 September 2011 for public comment. The consultation process involved public meetings in all capital cities, which were attended by approximately 223 people. It also involved the opportunity to make written submissions on the draft Regulations, of which 29 submissions were received.

The draft Regulations included a 75 per cent material recovery target commencing in 2014-15 (i.e. option 2) and mandatory reporting on material recovery as a basis for consultation with stakeholders. The inclusion of a material recovery target was in response to stakeholder feedback on the consultation paper.

Fourteen submissions, from business and industry groups (other than the television and computer industry), state governments, local governments, a recycler and an environment group, commented on the material recovery target and all welcomed its inclusion. However the state governments, local governments, recycler and a business commented that a 75 per cent rate is too low, and confirmed that it would likely result in 75 per cent becoming the norm in the e-waste recycling industry because recyclers achieving rates of over 90 per cent would need to lower their standards to be competitive. The recycler also confirmed that the 25 per cent of materials that could be disposed of to landfill would likely consist of the materials that were the most uneconomic to recover, generally hazardous materials such as the leaded glass in CRT televisions. The television and computer industry did not specifically comment on the material recovery target in submissions. However, the department has discussed this matter with television and computer industry representatives and it is expected that they will not be opposed to a 90 per cent target, particularly as it will assist in creating a level playing field between arrangements, which is one of the key concerns raised throughout consultations by this industry.

The general consensus among stakeholders commenting on the material recovery target was that it should be lifted to 90 per cent or higher. Some of these stakeholders also recommended that the target commence earlier than the proposed timeframe of 2014-15. One recycler indicated that measurement and reporting can be standardised within 12 months.

7. Conclusion and recommended option

The analysis undertaken for this RIS indicates that only Options 3 and 4 provide a positive net benefit NPV over the period to 2030/31 that is consistent with the $649 million estimated in the 2009 Decision RIS. The other options have lower directly observable benefits due to higher volumes of television and computer materials disposed of to landfill and lower WTP benefits by failing to achieve the diversion rates that the community values most highly.

Options 3 and 4 are consistent with the expectations of Government in deciding to undertake the policy in 2009 and are most likely to achieve the Government's objectives of minimising waste to landfill and maximising the recovery of resources in a safe, scientific and environmentally sound manner. Options 1 and 2, by contrast, fail to achieve the level of net benefit published by Government in the Decision RIS and are likely to under-perform relative to the Government's objectives. Options 1 and 2 are also likely to result in perverse outcomes for the e-waste recycling industry by encouraging investment in processes with poor material recovery outcomes, thereby lowering its current standards.

Option 4 is preferred over option 3 on the basis that it provides greater consistency for the recycling industry and arrangement administrators, increasing the likelihood that near-term investments which expand recycling capacity will be made in assets which are capable of meeting the long term objectives of the scheme. This option is also consistent with feedback from a broad range of stakeholders during consultation processes, who indicated that they preferred the inclusion of a 90 per cent material recovery target in the Regulations as soon as possible to maintain current levels of material recovery in the industry.

8. Implementation and review

The Regulations will be amended as soon as possible in 2011 to include the 90 per cent material recovery target. While the target will not come into effect until 2014-15, the inclusion of the target in the Regulations as soon as possible will provide certainty to arrangement administrators and e-waste recyclers.

In the two years before the target comes into effect, the department intends to work with arrangement administrators and e-waste recyclers to standardise measurement and reporting practices on material recovery rates. This will ensure accurate and consistent reporting to the Government and support the monitoring of compliance with the target. Feedback from stakeholders, including recyclers, during the consultation process indicates that there is little risk of not being able to standardise measurement and reporting in this timeframe.

Section 109 of the Act requires a statutory review of the Act, including all regulations and other legislative instruments made under the Act, five years after commencement (i.e. in 2015-16). This review will consider the effectiveness and impact of the material recovery target and whether it needs to be adjusted.

9. References

BDA Group 2009, *The full cost of landfill disposal in Australia*, prepared for the Department of the Environment, Water, Heritage and the Arts, http://www.environment.gov.au/settlements/waste/publications/landfill-cost.html

Equilibrium 2011, *Baseline analysis of mass balance rate of television and computer recycling in Australia*, prepared for the Department of Sustainability, Environment, Water, Population and Communities, http://www.environment.gov.au/wastepolicy/publications/mass-balance.html

Hyder Consulting 2009, *Report 4 for Consultation RIS for Televisions and Computers Projections for diversion under each option,* prepared for Pricewaterhouse Coopers. Unpublished.

Hyder Consulting 2006, *Television EPR Scheme: Producer Responsibility Organisation – Cost Analysis*, prepared for the NSW Department of Environment and Conservation and Product Stewardship Australia. Unpublished.

Meta Economics 2011, *Alternative trajectories for computer and television recycling: Achieving the 80 per cent target by 2021-22*, prepared for the Department of Sustainability, Environment, Water, Population and Communities, http://www.environment.gov.au/wastepolicy/publications/ntcrs-alternative-trajectories.html

OECD 2003, *Technical guidance for environmentally sound management of specific waste streams: used and scrap personal computers*, http://www.oecd.org/LongAbstract/0,3425,en_2649_34395_2495365_119829_1_1_1,00&&en-USS_01DBC.html

PricewaterhouseCoopers 2009, *Decision Regulatory Impact Statement: Televisions and Computers*, prepared for the Environment Protection and Heritage Council, http://www.ephc.gov.au/taxonomy/term/51

PricewaterhouseCoopers July 2009, *Consultation Regulatory Impact Statement: Televisions and Computers*, prepared for the Environment Protection and Heritage Council, http://www.ephc.gov.au/taxonomy/term/51

Productivity Commission 2006, *Waste Management*, Productivity Commission Inquiry Report no. 38, Canberra

The Allen Consulting Group 2009, *National Waste Policy Regulatory Impact Statement*, prepared for the Department of the Environment, Water, Heritage and the Arts, http://www.environment.gov.au/settlements/waste/publications/regulatory-impact-statement.html

URS 2009, *Willingness to pay for e-waste recycling*, prepared for the Environment Protection and Heritage Council, http://www.ephc.gov.au/taxonomy/term/51

Appendix A - summary of stakeholder impacts

Who is affected	Option 1: Business as Usual	Option 2: 75% material recovery target at year 3	Option 3: 75% material recovery target at year 3, 90% at year 5	Option 4: 90% material recovery target at year 3
Arrangement administrators	• Potentially lower costs for recycling • Flexibility to determine rate. • May be undercut by other arrangements – pressure to reduce recovery.	• Potentially higher costs for recycling than option 1, but greater certainty • Level playing field, but still some flexibility to choose higher rate than 75%	• Potentially higher costs for recycling than options 1 or 2, but consistent with DRIS • May be fewer recyclers to contract • Level playing field	• Potentially higher costs for recycling than other options, but consistent with DRIS • May be fewer recyclers to contract • Level playing field
Importers and manufacturers of televisions and computers	• Potentially lower costs for recycling results in lower fees.	• Potentially higher costs for recycling results in higher fees than option 1.	• Potentially higher costs for recycling results in higher fees than option 1/2.	• Potentially higher costs for recycling results in higher fees.
Recyclers	• May need to lower standards to compete. • Uncertainty around rate expected by arrangement administrators. • Investment flows to cheaper but less effective methods • Unscrupulous operators could enter market • Additional landfill costs for disposal of haz materials (differs by jurisdiction)	• May need to lower their standards to compete. • Certainty on the rate expected by arrangement administrators • Investment flows to cheaper but less effective methods • Additional landfill costs for disposal of haz materials (differs by jurisdiction)	• Some may need to invest in different processes to compete at 90%, but plenty of lead time • Maintains current standards in long-term • Inconsistent signals for investment due to ramp up in rate • Lower landfill costs for disposal of haz materials (differs by jurisdiction)	• Some may need to immediately invest in different processes to compete at 90%, some lead time for this to occur • Maintains current standards • Greater certainty for investment • Lower landfill costs for disposal of haz materials (differs by jurisdiction)

Consumers	• Potentially lower flow-through costs to new products.	• Potentially higher flow-through costs for new products than option 1.	• Potentially higher flow-through costs for new products than option 1 and 2, but consistent with DRIS CBA from year 5	• Potentially higher flow-through costs for new products than other options, but consistent with DRIS CBA from year 3
Waste management authorities	• May continue to pay high costs for managing residual waste TV and computer materials in landfill • Uncertainty over actual volume to landfill	• Greater certainty on waste to landfill • Lower costs for managing waste to landfill, but still managing a significant amount.	• Greater certainty on waste to landfill • Lower costs for managing waste to landfill.	• Greater certainty on waste to landfill • Lower costs for managing waste to landfill.
Community	• Recycling may not meet expectations. • Health safety risks from haz waste in landfill	• Recycling may not meet expectations. • Health safety risks from haz waste in landfill	• Lower health and safety risks than options 1 and 2	• Lower health and safety risks than options 1 and 2
Australian Government	• No impact on administration costs • Would assist in meeting international obligations, but not to the same extent as other options.	• Minor impact on administration costs • Would assist in meeting international obligations, but not to the same extent as options that set higher target.	• Minor impact on administration costs • Would assist in meeting international obligations to a greater extent than options 1 or 2.	• Minor impact on administration costs • Would assist in meeting international obligations to a greater extent than all other options.