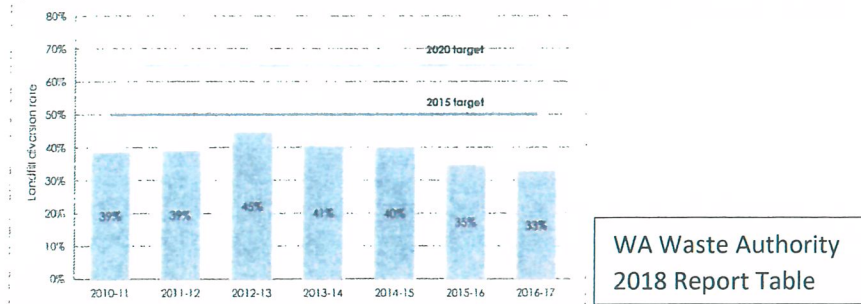


Nature of Waste Management in W.A

In Western Australia, each person creates 2.4 tonnes of waste each year. Over 1.9 million people live in Perth, and each household creates on average enough waste to fill a three bedroom, two-bathroom home each year. The nature of this challenge is that West Australians are producing more waste than they are recycling and recovering which has put strain on waste management services to increase these rates. Western Australia only recycles 33% of the waste produced by households which is below the national average of more than 50%. This is far behind the Waste Strategy Target of 2020, where the goal is to divert 65% of waste produced in the Perth Metropolitan area, the comparison illustrated in Figure 1.2.

Figure 1.2 Perth Metropolitan region MSW diversion rate and targets (2010-11 to 2016-17)

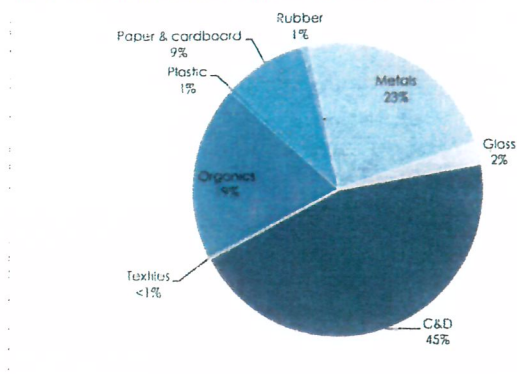


Waste is being produced at a rate that cannot be managed sustainably under the current recycling and waste management system. Two thirds of average household rubbish in Perth is food and organic waste, which is sent to more than 30 landfill sites in Perth Metropolitan Area alone. This is an issue because in landfill this organic waste is compressed to the point where very little oxygen can break it down, resulting in a slow decomposition. This allows methane to be released for a longer duration, and the effect of methane on the atmosphere is 21 times worse than carbon dioxide over a 100-year period as it can retain 20 times the heat that carbon dioxide can in the atmosphere.

Western Australians consume in what is considered a linear economy. A product in its raw form is packaged, and that packaging is then discarded at the end of the products life. The packaging, commonly plastic but also aluminium, paper or glass, is designed to be single use. When the product needs to be purchased again, another piece of packaging is also re-purchased. In the 2016 to 2017 period, 13100 tonnes of plastic were diverted in Western Australia. This is a 64% increase from the 2011 to 2012 period of 9800 tonnes. During the same 2016 to 2017 period, paper and cardboard waste was 211000 tonnes and glass waste was 55,700 tonnes. Packaging is almost unavoidable, through single-use carry bags to plastic sealed bags for dry goods within cardboard and a combination of hard and soft plastics to protect fresh produce during transportation. Supermarkets are a culmination of waste, majority of its products utilise an excess of cardboards, plastics and glass to entice consumers to purchase highly refined products.

With over 100 retail and speciality stores within Carillion City alone, textiles are a large contributor to Perth's waste challenge. The trend of fast fashion has increased quantity and decreased quality, leading to a small lifespan for the majority of affordable textile products. The 2016 W.A Waste Authority found that textiles are the least recycled material in the state, as seen in Figure 1.5, it accounts for less than 1% of recycled products. Textiles used in fast fashion are cheap and low quality so that a lower retail value can be achieved and marketed to customers. Many retail franchises utilise this method to increase sales and profits, as the garments and products will reach their end life faster and need to be repurchased.

Figure 1.5 Percentage of total recycling by material category W.A 2016, 17



W.A Waste Authority
2018 Report

The Ways in Which West Australians Can Intensify the Challenge

A lack of education on recycling can inhibit the ability for waste to be re-purposed through recycling the material. Most suburbs in Perth utilise curb-side collection bins. These bins come with collection guidelines that often omit important information about the products, as well as continually changing bin guidelines depending on the local government that distributes the service. In the City of Stirling, food waste is directed to the red, general waste bin however, in the City of Melville a trial is being introduced to put food scraps into the green, organic waste bin. Instructions on the bin lids detail what materials can be placed in each bin. However, people can intensify the challenge by reducing the effectiveness of the kerbside bins, through a lack of education. The yellow bin is for recyclables, but there is no instruction on the lid that recyclable products must be washed or that all traces of organic material must be removed to be recycled. A plastic milk carton that has not been washed cannot be processed for recycling because of the contaminants of remaining traces of milk.

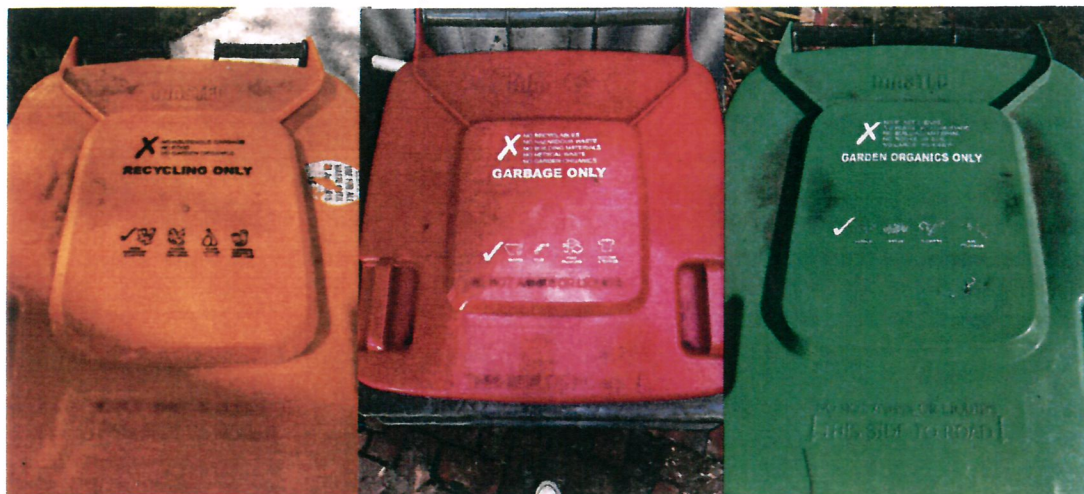
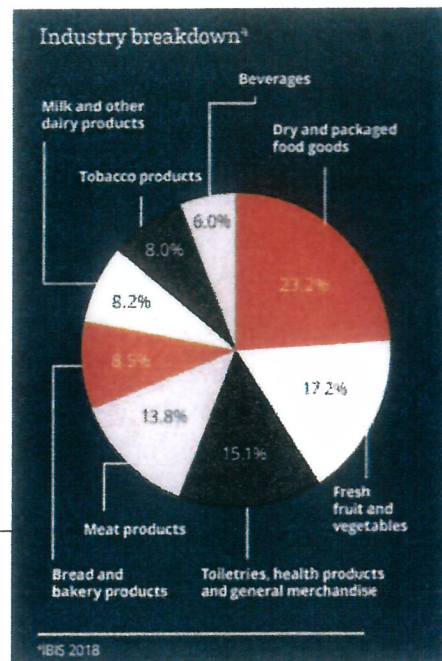


Figure 2: City of Stirling Coloured Curb-side Bin Strategy

The convenient, throwaway lifestyle that is marketed to West Australians intensifies the waste management challenge as rather than avoiding excess waste, people actively participate in producing it. Some of W. A.'s least recycled materials are used together throughout the day. A takeaway paper coffee cup lined with plastic cannot be recycled after use, due to the paper and plastic not being able to be separated. Retail stores offer single-use plastic carry bags for textiles and products. A Bankwest report on supermarkets illustrates that majority, 23.2%, of products in supermarkets are dry or packaged. Packaging is popular because of its ability to utilise colours, pictures and slogans to entice customers to purchase the product within.

Figure 3: Bankwest Report Pie Graph



Perth's population is growing rapidly, expected to reach 3.5 million by 2050. This population influx will put more pressure on waste management services, associated with this is Australia's overall high affluence. The combination of increasing population and affluence has a directly proportional relationship with waste produced. It is not only the present population of Western Australia that intensifies the issue of waste management but also the future inhabitants that will affect this issue if no solutions are implemented in the future.

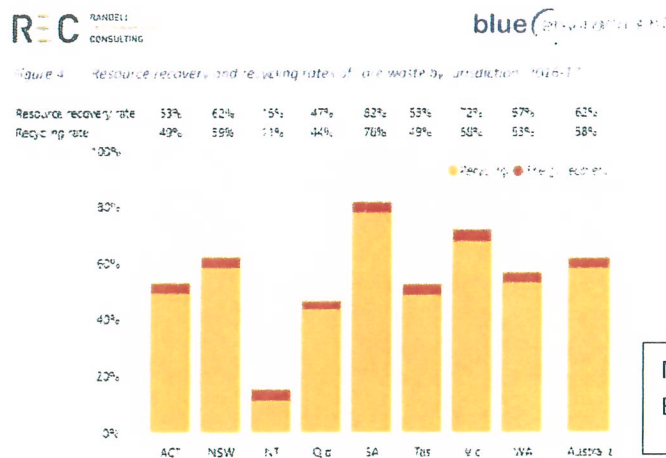
The Strategies That Can Be Used to Reduce the Impact of the Challenge

The West Australian Government Waste Avoidance and Resource Recovery Strategy for 2030 provides objectives, targets and guidelines on how both councils and the public can reduce their waste and utilise waste management services properly. This reduces the impact on landfill, the primary end-point for waste in Western Australia. The first target is 'Avoid', the strategy aims to generate less waste overall and by 2025 have a 10% reduction in waste generation per capita, this will help reduce the size of each individual landfill site in W.A. As there are 110 landfill sites across Western Australia, recovering materials is essential to keeping landfill from growing, a goal of increasing material recovery to 70% will aide in less recyclables ending up in landfill. Combined these two efforts aid in the third objective of 'Protect', no more than 15% of waste generated by West Australians will end up in landfill, which will slow and stop encroachment of waste into native environments. These objectives will have to be addressed in local councils' waste management plans so that the targets can be achieved.

VISION	Western Australia will become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste.		
OBJECTIVES	Avoid Western Australians generate less waste.	Recover Western Australians recover more value and resources from waste.	Protect Western Australians protect the environment by managing waste responsibly.
TARGETS	<ul style="list-style-type: none"> 2025 – 10% reduction in waste generation per capita 2030 – 20% reduction in waste generation per capita 	<ul style="list-style-type: none"> 2025 – Increase material recovery to 70% 2030 – Increase material recovery to 75% From 2020 – Recover energy only from residual waste 	<ul style="list-style-type: none"> 2030 – No more than 15% of waste generated in Perth and Peel regions is landfilled. 2030 – All waste is managed and/or disposed to better practice facilities

Figure 3.5: Waste Authority Infographic

An example of how this strategy can be employed at a local level to address both the lack of education and minimise the impact of organic waste is the Waste Authority's School Waste Wise Plan. This plan involves setting up worm farms to complement environmental studies and give students practical application of learning how to compost and minimise organic wastes, which are the highest in Western Australian Households. Children also have the opportunity to collect appropriate waste from their households to feed the worm farm. When parents become involved in this activity, it promotes the benefits of composting organic waste and educates the whole household on how to reduce their waste.



National Department of Environment Recycling report

Another strategy not currently in use in Western Australia but that could be adopted is the Container Deposit Refund Scheme. Currently, this scheme has been used in South Australia since 1977 and it has decreased the amount of waste that goes to landfill, increased resource recovery and decreased litter in the streets, reducing the impact on waste management services as people are rewarded for recycling and not littering in the streets. As seen in Figure 4, in 2016-17 South Australia had the highest recycling and resource recovery rates in Australia, higher than the national average. South Australia's recycling rate of 78% and resource recovery rate of 82% was 25% higher for both areas than Western Australia. By recovering resources, less products have to be made new,

Word Count: 1524

decreasing overall waste in society. Recycling aids that by providing the resource to be recovered. There is no current refund scheme in Western Australia but to increase recycling rate and resource recovery rate, a scheme should be considered by the state government to increase the effectiveness of waste management.

Conclusion

The nature of the issue in Western Australian waste management is that more waste is being produced in W.A then can be diverted through recycling and resource recovery. This challenge has been intensified through a lack of education with West Australians on the subject and the ease of a convenient, throwaway lifestyle. Combined with a projected 1.5 million increase in the Perth and Peel region alone by 2030, West Australians can no longer environmentally afford to continue to produce waste at the current rate without serious actions to decrease it. The W.A Waste Authority has outlined in The West Australian Government Waste Avoidance and Resource Recovery Strategy for 2030 the targets for local councils' waste management strategies. Whilst there are strategies being put in place, the rate of effectiveness in both implementing and enacting these objectives and goals will determine the success of decreasing W. A's excess waste.

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