

PORT PHILLIP BAY ISSUES PAPER : WASTE MANAGEMENT



This paper outlines Port Phillip Bay EcoCentre and collaborators' perspectives on waste management issues affecting Port Phillip Bay and its environmental health.

Background

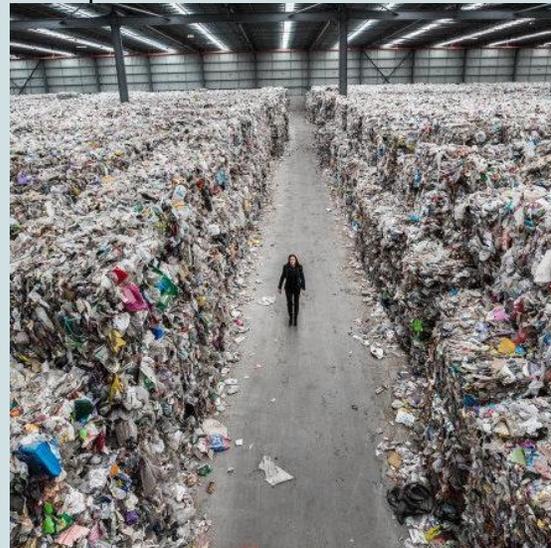
Waste management issues in Melbourne, Victoria have been accumulating since the 1800's. Until 1850, the general population developed an "out of sight, out of mind" approach to dealing with garbage [1]. People were responsible for their own waste, leading to lots of unregulated dumping and littering. Due to a lack of waste regulations, Melbourne was considered the world's dirtiest city in the 19th century [1]. It was only when poor waste management led to more community problems that action was taken [2].

Today, Melbourne is working to clean up their waste. In 2017, China passed new legislation, updating regulations on imported waste and reducing the acceptable contamination level. As a result, Victorian treatment companies could no longer export waste to China and thus had no way of handling the waste generated by the community [3]. Melbourne now has to deal with thousands of tonnes of waste built up across several different warehouses [4]. On top of this backlog, municipal collection rates all but halted, leading to the majority of waste being sent to landfills instead of proper treatment centres [6]. Looking forward, Victorian waste production is

estimated to rise 40% by 2046 from that in 2017-2018 [7].

Melbourne Warehouse

The image in the figure below offers a person in comparison to the amount of built up waste.



Warehouse completely filled by waste pallets [8]

Threat to Community and Bay Health

The issues Victoria faces surrounding waste management come from lack of public awareness and recycling contamination. Unfortunately, the two seem to work in tandem; when one problem gets worse, it develops new issues in the other.

The first issue in Victoria is the lack of accountability by individuals when in public. According to a study done by Sustainability Victoria, M. Ross claims there are 3180 different waste collection bins in Metropolitan Melbourne [9]. These bins can

range from solar smart bins to cigarette bins. Metropolitan Melbourne occupies 9,993 km², and if each bin is equidistant there is 1 bin to every 3 square kilometres. Without bins in high risk littering areas, littering only increases.

On top of this, the existing public bins around Melbourne tend to overflow with waste before they are collected. Litter and overflowing trash on the ground is often carried by stormwater systems into Port Phillip Bay, decreasing the water quality and polluting the bay [9]. An estimated 95% of litter on beaches is from urban areas and carried to the sea by stormwater [10].

During COVID19's regulations, these problems were amplified. There was both an increased generation of single use plastics and a decline in collection rates. Coffee shops not allowing the use of reusable cups and an increase in take away food led to significantly higher waste generation. The shutdown also prevented bins from being collected by the workers. Both factors only aggravated the existing problems with public bins.

The second issue Victoria faces is the contamination of recyclable materials. While there are plenty of treatment plants capable of recycling used plastics, recyclable materials are often sent to landfills. Recycling processes are designed to deal with isolated recycling but can tolerate minor contamination. Thus, improper waste disposal by citizens can lead to entire batches of recycling being sent to landfills.

Recycling sent to landfills does more than take up space. When plastics sit in open dumps they react with the sunlight to produce greenhouse gasses – methane and ethane. In 2016, open dumps globally

contributed to 5% of all generated greenhouse gas [7].

Responsible Organizations

Our main contact was with the Port Phillip Bay EcoCentre. However, to understand the issues further, we completed background research on ten relevant waste management stakeholders around Victoria:

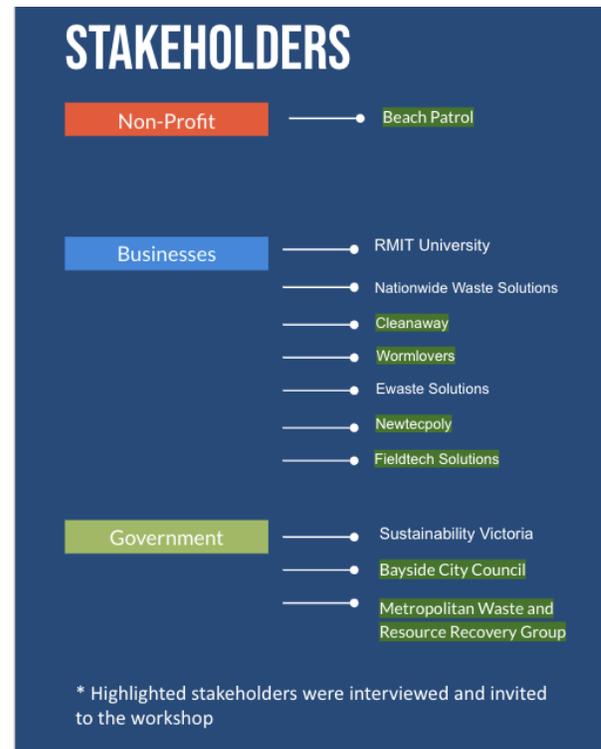


Figure 1: A list of researched stakeholders

Existing policy framework

There are currently several waste solutions being considered. Many organisations have been collaborating to solve smaller pieces of the larger problem. Recently, a new waste management act was proposed for Victoria, adding regulation and policies aimed at environmental protection.



Figure 3: The waste act's four main ideas ^[6]

These steps will create more progress towards a solution for waste management, however, none of these ideas solve the entire issue. The best way to solve these issues is to remove all the barriers that stop the everyday citizen from proper recycling and waste disposal. The goal is for recycling to be made easy. If the average person has to put in effort to carry their trash or sort their waste, it decreases the likelihood that they maintain good habits.

One common problem is the lack of enforcement on regulations surrounding litter and mishandled waste. Both Bayside City Council and Metropolitan Waste and Resource Recovery Group mentioned that people aren't afraid of being fined for littering. Victoria has some of the highest fines and punishments for littering, however the responsibility is passed around within the local government and is rarely enforced ^[11]. In fact, most littering occurs within 5 metres of the bin ^[11]. Currently there is a lot of public campaigning working through volunteer groups and social media working to engage the general public further.

Upcoming Waste Policies

Currently, Australia is working to implement new legislation working on solutions. One of which is called "the 3 R's plus 1" - Reduce, Reuse, Recycle, and Recover Energy ^[12]. This plan furthers the goal of a developing circular economy - a material economy relying on reimplementation of used products back into the market. The plan details multiple small scale solutions to combat the waste crisis.



Figure 2: A description of the "3 R's plus 1"

A threat to achieving this goal is the lack of manufacturer support. Many single use plastics are commonly littered items and oftentimes are improperly disposed of. There is a large movement working to encourage local and federal government officials to implement a policy holding manufacturing companies accountable for the waste they generate. This idea is twofold and involves manufacturers making a switch to environmentally friendly materials, or having a plan in place to make up for waste destined for landfills.

Coming soon, Victoria will implement a container deposit scheme, a program that has been successful in other states already. Victoria will begin to provide cash for

returned bottles and cans. This gives residents of Victoria an easy way to properly dispose of recyclable materials such as plastic, aluminum and glass. According to Fam Charko ^[13], container deposit schemes located at the front of grocery stores allow people to use the money from deposited containers as coupons on their grocery bills.

Barriers

Waste management is an ongoing issue and has no clear solution. There will always be new demand for more inclusive recycling processes and better ways to separate garbage. Right now, there are a few barriers imposing on waste issues from being resolved.

The first barrier comes from a diffusion of responsibility in the general public. Citizens tend to leave their recycling habits at home when they go into public, leading to litter and carefree waste disposal.

The second barrier comes from a lack of legislation restricting manufacturers. Manufacturers have turned a blind eye to their impact on waste. The companies responsible for making food packaging and plastic water bottles see nothing but decreased profits when it comes to changing their current habits. This leads to voices for change falling on deaf ears.

The last barrier concerns the different regulations surrounding public waste. Victorian municipalities don't have cohesive waste bin regulations. This leads to contamination and confusion when disposing of waste. With municipal codes not evident, citizens often use the regulations they're most familiar with.

Solutions

After organizing and hosting a workshop involving the previously mentioned stakeholders, our team noticed

many potential solutions arise during the discussion.

The first solution identified was the need for youth education and public awareness. Educating children in schools has a lasting impact on kids and an additional impact on their families. Lessons learned by children in school are later taught to their parents at home. Increasing social awareness is a huge factor in solving contamination problems also. Repeatedly teaching people what can go in certain bins and keeping people focused on environmental health leads to a more engaged community.

The second solution discussed involved a standard bin system across the entire Victorian state. Currently, the waste bin systems between different municipalities are asynchronous. People can cross over towns without realizing and won't know the proper codes for disposing of garbage. This leads to people contaminating recyclable materials with non-recyclable waste. Standardizing the bin systems across the entirety of Victoria will lead to increased recycling rates and less waste sent to landfills.

The third solution is incorporating alternative processes to avoid landfill use. During the roundtable discussion, two organizations detailed their work involving alternative processes. One partial solution involved biodegradable plastic - targeting plastic that is destined for landfill - and the other was capable of recycling plastic with higher levels of contamination. Having multiple angles to approach an issue will result in more help to solve it. Steps away from landfills can provide more funding to alternative research, resulting in new ways to recycle waste.

The final solution was creating a separate glass waste stream to isolate glass

from other types of recycling. This was met with a brief pushback as it was noted that having another waste bin in residential homes would not be accepted easily. However, it was decided that glass ultimately needed its own waste stream as its recycling process was unique to that of cardboard/paper and plastics. Isolating glass for recycling will only increase the quality of other recycled materials as there would be fewer contaminants in the batch. In the Netherlands, they already have a glass stream isolated, proof that the public will eventually adjust to the new policy.

Endnotes

^[1] - Nicholls, Philip H. (2002). [A review of issue relating to the disposal of urban waste in Sydney, Melbourne and Adelaide. An environmental history](#) (PDF). Adelaide: Faculty of Arts – University of Adelaide. [Archived](#) (PDF) from the original on 27 May 2019. Retrieved 3 June 2019

^[2] - Total Environment Centre. (2019). History of Waste. Retrieved December 07, 2020, from <https://wastenot.org.au/history-of-waste/>

^[3] - Morton, A. (2019, July 22). 20,000 tonnes of recycling dumped in Victorian landfill during SKM ban. Retrieved October 16, 2020, from <https://www.theguardian.com/environment/2019/jul/23/20000-tonnes-of-recycling-dumped-in-victorian-landfill-during-skm-ban>

^[4] - Taylor, J., & Butler, B. (2019, August 02). SKM to be wound up and 280,000 tonnes of recycling could end up in landfill. Retrieved October 06, 2020, from <https://www.theguardian.com/environment/2019/aug/02/skm-to-be-wound-up-and-280000-tonnes-of-recycling-could-end-up-in-landfill>

^[5] - Oaten, J. (2019, August 21). *Plans to revive SKM plants to ease Victoria's waste crisis*. Retrieved September 18, 2020, from

<https://www.abc.net.au/news/2019-08-21/skm-recycling-enters-receivership/11433932>

^[6] - Victorian Government. (2020, November 19). Transforming recycling in Victoria. Retrieved December 07, 2020, from https://www.vic.gov.au/transforming-recycling-victoria?_ga=2.68588434.2018768962.1607300474-437320327.1607300474

^[7] - Swaters. (2018, October 08). New Study Shows Plastics Release Greenhouse Gases, Contributing to Climate Change. Retrieved October 06, 2020, from <https://www.surfrider.org/coastal-blog/entry/new-study-shows-plastic-as-source-of-greenhouse-gases-potentially-contribut>

^[8] - South, J. (2019). *A warehouse in Victoria filled with compacted trash from SKM*. [Photograph]. Melbourne.

^[8] - City of Melbourne. (2020). Reducing litter. Retrieved December 07, 2020, from <https://www.melbourne.vic.gov.au/residents/home-neighbourhood/Pages/reducing-litter.aspx>

^[9] - Ross, M. (2020, January 16). *New report on microplastics in Port Phillip Bay*. Retrieved September 11, 2020, from <https://www.sustainableportphillip.com/articles/microplastics-port-phillip-bay>

^[10] - Sulaeman, D. (2018). *We apologize for the inconvenience...* Retrieved September 18, 2020, from <https://iopscience.iop.org/article/10.1088/1755-1315/148/1/012028/pdf>

^[11] - Eco Group (2020, 22 November). Metropolitan Waste and Resource Recovery Group Interview Transcript, <https://docs.google.com/document/d/12eO55DbSh1LzOsWUSvJcGyeyR1aEjBZS2B8fQ7SdP9Q/edit?usp=sharing>

^[12] - Pickin, J. (2018). National Waste Report 2018. Retrieved December 06, 2020, from <https://www.environment.gov.au/system/files/resources/7381c1de-31d0-429b-912c->

[91a6dbc83af7/files/national-waste-report-2018.pdf](#)

^[13] - Eco Group (2020, 1 December). Workshop Transcript,

<https://docs.google.com/document/d/1OIHWkryOX29DIMQ8m2INyepsEKmwp35T-iOCiVAPtVao/edit?usp=sharing>