



MATTRESS RECYCLING in the City of Knox

A case study for the recycling of used mattresses - City of Knox and Knox Transfer Station

Background

One of the most commonly disposed of items in council hard waste collections are end-of-life mattresses, and Australians are discarding more and more every year. In 2011 metropolitan Melbourne councils collected around 130,000 mattresses. Within three years that number had almost doubled to around 232,000 annually.

Used mattresses are a major problem for local councils and landfill operators. They are difficult to collect, handle and store. Landfill equipment operators find that mattresses do not compact well and can become tangled in processing equipment. They can take up valuable landfill space, are cumbersome and heavy to manage, and create air pockets.

A better option is to transform discarded mattresses from a waste problem into a valuable resource through recycling. The materials in used mattresses, such as wood, foam, textiles and steel springs, can be recovered and reused in the manufacture of new products.

But mattress recycling is not easy. Mattresses are difficult to take apart and the range of materials in them make it difficult to apply a single mechanised recycling process. Finding economically viable, safe and environmentally friendly ways to recycle and manage an increasing number of discarded mattresses is a continuing challenge.



Used mattresses at Knox Transfer Station

The issue

Local councils in the eastern metropolitan region of Melbourne contract their hard waste management to Waste Management Services Pty Ltd (WM). WM manage Knox Transfer Station Pty Ltd (KTS) where they process hard waste. Until 2011, WM sub-contracted mattress recycling to the commercial operator Dreamsafe.

In 2011 Dreamsafe went into liquidation. More than 5,000 mattresses a month began arriving at KTS instead, a staggering increase from the previous average of 1,000 a month. The situation was unsustainable; KTS was already processing as many mattresses as it could and landfill space was rapidly decreasing.



The response

In 2012, supported by a grant of \$280,000 from the Metropolitan Local Government Waste and Resource Recovery Fund (Metro Fund), Knox City Council and KTS began a mattress recycling project. The total cost of the project was \$633,040.

The project enabled the installation of a:

- concrete pad where mattresses can be safely stored and sorted into spring and non-spring so that each type can be processed separately
- slow speed shredder for processing mattresses containing springs
- screener with a three magnet metal recovery system to separate out shredded springs and other metals
- baler to bale foam so that it can be easily sold on and transported to foam recyclers.

In addition, to combat the fire risks of mattress recycling, a 34,000 litre rainwater tank and a fire hydrant close to the mattress recycling area were also installed.

Benefits

By 2015, the project had:

- increased processing capacity from 5,000 mattresses in 2011 to 168,000 mattresses in 2015, with spare capacity to accept mattresses from councils as far afield as Albury in NSW
- diverted more waste from landfill - sixty percent of recyclable mattress components at KTS have been diverted from landfill, a 45 percent rise since 2011
- improved workplace health and safety.

Next steps

Fine tuning of the mattress recycling process is ongoing, to improve the quantity and quality of recyclables recovered and to find better markets for their resale into other industries.

Future activities could include:

- investing in technology to recover timber and foam early in the process so there is less mixing of different types of materials, which makes resale difficult
- improving the quality of foam available for recycling by reducing soiling and contamination caused by weather or hard waste
- conducting a cost benefits analysis of available methods for recovering shredded textiles, to determine the most cost effective method for treating mattresses in the long term
- identifying stable markets for recovered foam and textiles.

Conclusion

The project commenced in response to a crisis of mattress stockpiling and landfill congestion when, on the sudden collapse of Dreamsafe, KTS was inundated with stockpiled mattresses and an increasing supply from council collections. The improved processes introduced as a result of grant funding from the Metro Fund mean that KTS can now divert an increasing number of mattresses from landfill and recover more materials such as steel and wire for resale.

The project has provided an opportunity to learn from the current challenges that occur in mattress recycling operations and outlines recommendations for developing even more innovative and effective mattress recycling processes.

For more information about this project contact the Coordinator, Waste Management at Knox City Council on (03) 9298 8000.

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