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| Waste EDUCATION in Healthcare project |  |
| Evaluation summary report |  |

# Introduction

In August 2016 the Victorian Government released the *Victorian Waste Education Strategy[[1]](#footnote-1)* with the aim to increase the awareness of the environmental and economic impacts of waste management and establish consistent approaches to waste education for the community and businesses.

The strategy commits Sustainability Victoria to identify key business sectors and partner with key organisations to encourage and support waste avoidance and minimisation initiatives in those sectors. The two strategic directions the waste education in healthcare project was delivered under are:

* Strategic Direction 2: Increase community awareness of waste and support and encourage waste avoidance
  + Action 2: Waste avoidance and minimisation for business
* Strategic Direction 3: Improve resource recovery and reduce contamination
  + Action 2: Waste and resource recovery education for small to medium enterprises and industry

Due to the nature of services provided, healthcare facilities and services consume a high amount of resources. In 2017-18 Victorian public health facilities generated approximately 35,060 tonnes of solid waste per year. Around 7,551 tonnes of this was recycled, 4,566 tonnes were clinical waste, and the remaining two-thirds was classified as general waste.

Disposal costs for waste was close to $17 million, of which half was for the treatment and disposal of clinical waste. There is also a recognised trend for public health services to increasingly substitute single use items for reusable items, contrary to the practice of avoiding waste generation through materials reuse. This growing prevalence is due to single use items simplifying procedural workflows and/or diminish the risk of infection, although this may not always be founded on objective evidence that reflects the operating reality for all Victorian hospitals.

Through the *Victorian Waste Education Strategy,* the Victorian Government allocated $0.5 million over two years to deliver the waste education in healthcare project. The Victorian Health and Human Services Building Authority and Sustainability Victoria, under the guidance of a project working group and other experts, partnered to deliver the project in two phases:

* **Phase 1:** The identification of waste and resource recovery education opportunities in the public healthcare system, and development of potential interventions in targeted areas of the health system. These findings were presented in the *Waste Education and Health Sector Report*.
* **Phase 2:** Implementation of selected interventions identified by a Waste Education in Healthcare Officer and measuring the impact of interventions.

# Project objectives

In implementing behaviour change programs directed at the priority areas, the project aimed to help public hospitals achieve effective, efficient, correct and consistent use of healthcare waste management systems, that ultimately reduced the **environmental impact** of the healthcare sector through a reduction of waste generation and recoverable resources going to landfill, and reduced the **cost of waste management** (e.g. via correct use of clinical waste bin) to the Victorian public healthcare waste system.

Phase 1 of the project identified eight priority waste streams and three priority locations (see Table 1).

Table 1: Priority waste streams and locations

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| Priority waste streams | Priority locations |
| Commingled recycling  Paper and board (and confidential paper)  Single use medical PVC items  Single use metal instruments  Small electrical items and consumables  Food organics (existing services)  Food organics (new services)  Larger electrical equipment | Theatre  Emergency  Kitchens / cafeterias |

The findings of Phase 1 were used to identify a series of intervention projects that, if delivered effectively, could meet the project objectives. The interventions were prioritised using a series of weighted criteria, including alignment with project objectives, whether the intervention was educational or would result in behaviour change and whether the intervention would be sustainable beyond the project. This process provided an unbiased framework, through which nine interventions were selected and delivered over the course of the project.

The list of interventions planned for delivery in this project are set out in Table 2, along with their contribution to reduction in waste to landfill and waste related costs.

# Project outcomes

The project’s achievements were assessed against the two program objectives, the program design and partnership approach, and delivery of each intervention. It found that the project contributed substantially to the project objectives through:

* the development and promotion of waste management guidance tools, including guidance on conducting waste audits and separation of clinical waste from other waste streams,
* delivery of guidance on an ongoing basis – both specific to individual interventions (such as compliance with the e-waste ban; recycling of PVC) and more generally,
* delivery of programs that achieved increased diversion and/or helped to mitigate waste management risks faced by Victorian health services,
* delivery of pilot initiatives with the prospect of further testing and expanded roll out,
* delivery of workshops and site visits (including mentoring workshops and in service training) to build confidence and empower staff to become leaders in waste management, and
* preparation of guidance to provide clarity (for example - the management of pharmaceutical waste and waste associated with the Covid-19 outbreak) in response to emerging health service needs, and in doing so, showing an ability to adapt to shifting circumstances and demands.

With regards to intervention completion, the majority of included interventions were progressed towards completion and seemed to have met health service stakeholder expectations. Two interventions – the piloting of single use metal recycling and waste management in theatre settings – were impacted by the Covid-19 pandemic and the need for health services to focus their attention on a response.

The full list of materials developed as part of the program and where they can be accessed is contained at the end of this summary report.

## Summary of performance against project objectives

Table 2 (above) sets out how each intervention was able to deliver against the objectives as the waste education in healthcare project draws to a close. Key findings in relation to the two objectives are provided below.

The primary way objectives were achieved came through measures to guide and enable health services take action to reduce waste to landfill and lower the volume of waste placed in clinical waste bins. A diverse set of tools were used to deliver this guidance – online content, email updates, workshops, guidance booklets, in service training, and webinars.

Stakeholder feedback (at the intervention level and regarding the overall program) confirmed the value of this guidance in helping health services achieve better waste management – both to reduce costs and lower waste volumes to landfill. There is clear demand for the Department of Health to continue such interventions and deliver follow up actions.

Part of the project’s involved setting up pilots – for single use metals recycling and improved waste separation in theatre settings – that could be refined and be rolled out across the health sector. Both of these interventions faced setbacks related to the Covid-19 outbreak, such that the single use metal recycling pilot was paused, and the number of health services taking the theatres intervention to completion was reduced. The single health service that took the waste in theatres intervention to completion delivered positive results suggesting a desired change in waste management practices, such as less contamination of theatre department bins, was achieved. The learnings from planning for the single use metal recycling were captured in a guidance note.

Two interventions – advice on the e-waste ban and PVC recycling – were more direct and pervasive in their waste reduction goals. These achieved increased recycling (diversion from landfill) or reduced the risk of non-compliance with the e-waste ban.

The first intervention – development of waste audit guidelines – did not necessarily deliver direct savings and landfill disposal outcomes. However, the health services require consistent and standard methods to track compositions and contamination levels across their waste streams, as a fundamental tool to prioritise actions and evaluate outcomes.

Beyond the different mechanisms applied to achieve project objectives at the intervention level, the role of the Department of Health in leading the program with health service stakeholders was paramount in its achievement. Participants in multiple interventions – notably the waste in theatre pilot and the mentoring workshops – verified that the success of these activities was in part due to the department’s authoritative presence. In this light, departmental leadership served as an outcomes multiplier: it drove interest and participation across health services and helped overcome potential blockages and barriers to intervention delivery that may otherwise have manifested within public health service hierarchies.

As a program of related activities, the project delivered on its objectives. There would be benefit in continuing some activities into the future, complete and expand pilot initiatives across the health service, and continue to deliver guidance to ensure health services embed long term changes in their waste management practices.

Table 2: Summary of interventions’ contributions to project objectives

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| Intervention | Contribution to reduction in waste to landfill | Contribution to reduced waste related costs |
| 1 – Waste audit guidelines | The guidelines do not inherently reduce waste going to landfill but support a capacity for health services to determine which items present the best opportunity to reduce waste to landfill. They allow for benchmarking, consistent methods, and an ability to share results of initiatives across the sector. | The guidelines do not inherently reduce the cost of managing waste but support the capacity for health services to determine which items present the best opportunity to reduce waste costs. They allow for benchmarking, consistent methods, and an ability to share results of initiatives across the sector. |
| 2 – Clinical waste guidelines clarification & FAQs | The supplementary booklet (and training) to guide separation of wastes in a clinical setting has led to better waste separation outcomes.  While promotion was interrupted due to the Covid-19 outbreak, some stakeholders said it was a very useful reference during the pandemic. | The supplementary booklet (and training) to guide separation of wastes in a clinical setting has led to better waste separation outcomes.  While promotion was interrupted due to the Covid-19 outbreak, some stakeholders said it was a very useful reference during the pandemic. |
| 3 – E-waste to landfill ban | This intervention provided greater certainty that health service e-waste is being recycled, consistent with new regulations. While the ban would have driven recycling, this intervention helped ensure a fuller extent of e-waste recycling. | The notification of the ban may not have directly lowered costs, as e-waste recycling may be more expensive than landfilling. In ensuring all health services recycle e-waste, the action lowered the risk of non-compliance and penalties. |
| 4 – Piloting waste segregation in theatre | The results suggest that the intervention was effective in driving reduced bin contamination, with evidence of an increase in correctly sorted recycling. Because it was a pilot, reduction outcomes were modest within the intervention. | This intervention aimed to use behaviour change to improve separation in theatre areas, commencing with a pilot. Audits showed a drop in recyclable content in clinical waste bins, reducing waste management costs in pilot locations. |
| 5 – PVC recycling | Based on the contractor’s report and evaluation survey responses, there was a reduction in waste going to landfill and decreased level of contamination in the PVC recycling bin. The contractor was able to widen the number of departments engaging in PVC recycling, helping to ensure that PVC waste being sent to landfill is further reduced. | The focus of this intervention was to increase PVC recycling and reduce contamination of PVC recycling. As such the main interest was in reducing volumes to landfill rather than reducing costs. It is likely that costs may be reduced on an incidental basis, by virtue of having more material being placed in the PVC bin where it may otherwise have gone into the clinical waste bin. |
| 6 – Single use metal recycling | This intervention intended to pilot single use metal instrument recycling and set out a model for adoption across health services. The eventual outcome from wide adoption would be significant diversion of a valuable resource from landfills. Due to the Covid-19 outbreak, this intervention could not proceed to completion. | This intervention intended to pilot single use metal instrument recycling and set out a model for adoption across health services. The outcome from wide adoption would be significant savings through diversion of metals from clinical streams. Due to the Covid-19 outbreak, this intervention could not proceed to completion but may be re-started in future. |
| 7 – Mentoring workshops | The mentoring workshops aimed to support health service staff initiate, gain authority for, and complete actions to improve waste management in a health service setting. It is likely that this intervention has enabled some increased diversion from landfill although the volume would be impractical to quantify. | The mentoring workshops aimed to support health service staff initiate, gain authority for, and complete actions to improve waste management in a health service setting. It is likely that this intervention has led to lower waste management costs although the savings would be impractical to quantify. |
| 8 – Online education resources | This intervention involved the development and publication of resources online, designed to guide health service staff in their management of waste, including measures to improve recycling. | This intervention involved the development and publication of resources online, designed to guide health service staff in their management of waste, including measures to improve recycling. |

## Stakeholder views on performance outcomes

The evaluation survey delivered the following findings on views held across health service respondents, who primarily comprised Environment Sustainability Officers (ESOs), support services staff, and engineering department staff who were the main contacts working with the department.

* 66 per cent of respondents agreed (35 of 53 responses; 19 per cent strongly agreed, 47 per cent slightly agreed) that the project led to reduced waste generation for their health service, while 25 per cent were neutral and 10 per cent slightly or strongly disagreed.
* 72 per cent of respondents agreed (38 of 53 responses; 30 per cent strongly agreed, 42 per cent slightly agreed) that the project would lead to reduced waste generation for their health service in future, while 21 per cent were neutral and 7 per cent strongly disagreed.
* 75 per cent of respondents agreed (40 of 53 responses; 28 per cent strongly agreed, 47 per cent slightly agreed) that the project led to increased resource recovery (recycling) for their health service, while 19 per cent were neutral and 6 per cent slightly or strongly disagreed.
* 48 per cent of respondents agreed (25 of 53 responses; 8 per cent strongly agreed, 40 per cent slightly agreed) that the project led to reduced waste management costs for their health service, while 34 per cent were neutral and 19 per cent slightly or strongly disagreed.

The stakeholder feedback provides evidence that the project objectives were met. It also echoes the view that achievements from the project may carry into the future, based on the time taken to embed guidance into standard practice.

# Project materials

The following materials were prepared as part of the waste education in healthcare project:

* [Waste education in healthcare summary report](https://www2.health.vic.gov.au/about/publications/researchandreports/waste-education-in-health-care-summary-report) <https://www2.health.vic.gov.au/about/publications/researchandreports/waste-education-in-health-care-summary-report >
* Waste signage including downloadable posters <https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability/waste/waste-and-recycling-signage>
* Implementing a hospital PVC program guide <https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability/waste/pvc>
* Single Use Metal Instruments (SUMI) recycling guidelines <https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability/waste>
* Waste management plan template <<https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability/waste>>
* Clinical and related waste guidance – Supplement for healthcare staff <https://www2.health.vic.gov.au/about/publications/policiesandguidelines/clinical-related-waste-guidance>
* Waste audit guidelines <https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability/waste/audit-guidelines>

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1. *Victorian Waste Education Strategy 2016* <https://www.sustainability.vic.gov.au/About-Us/What-we-do/Strategy-and-planning/Victorian-waste-education-strategy> [↑](#footnote-ref-1)