ENVIRONMENTAL REPORT

2012 — 13

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FOREWORD

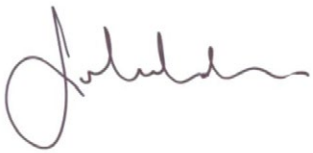
I am pleased to present to you our inaugural Environmental Report for 2012/13. This report provides us with an opportunity to share information about our environmental footprint and the ways in which we are monitoring and improving our performance. We acknowledge that this is the start of a journey for us and we hope to share stories in future reports of our successes.

As stated in our Environmental Policy, “Bendigo Health is committed and will strive to minimise the environmental impacts associated with our operations to the greatest extent possible, and seek to achieve continual improvement in the management of our environmental effects. It is our intention to integrate the concept of sustainable development into all of our business operations and to pursue a vision of sustainability to achieve a fairer, safer and healthier world.”

In June 2013 we launched our 2013-18 Strategic Plan and vision of Healthy Communities and World Class Healthcare. The plan’s vision is supported by staff-developed values of Caring, Passionate and Trustworthy and defines Bendigo Health’s role as one of empowering people and working together to improve our health.

This Environmental Report demonstrates a clear alignment with our strategic goals, particularly goal 4: Operate safely and sustainably. Our target is an increase in resource efficiency over the Strategic Plan period, by reducing water and energy consumption by 12% relative to the baseline year of 2012-2013, where funding is received for capital upgrades.

We hope you find this report informative and welcome your feedback via the feedback link so that we can continue to improve its presentation and content, making it relevant and accessible to the community that relies on our health care services.



John Mulder
Chief Executive Officer

INTRODUCTION

This report is Bendigo Health's inaugural Environmental Report, and covers the period from 1 July 2012 to 30 June 2013.

The Environmental Report outlines our environmental performance in the areas of energy, carbon emissions, water and waste. This report should be read in conjunction with Bendigo Health's other annual publications:

- Annual Report 2012-2013, which provides information about our services, sites, staff, strategic plan and financial performance
- Quality of Care Report 2012-2013, which demonstrates our commitment to safe, high quality healthcare for all our patients and features consumer stories related to our quality and safety systems.

All our publications are available on the Bendigo Health website at www.bendigohealth.org.au.

This report has been prepared in accordance with the Department of Health's Environmental Reporting Guidelines, as published in July 2012. These Guidelines set-out the environmental parameters which are to be (mandatory and voluntarily) reported by Victorian public health services, and provide principles and standards for the collection and reporting of data.

Bendigo Health is required to publicly report aspects of its environmental performance under the National Pollutant Inventory (NPI). Further information can be found on the NPI's website at www.npi.gov.au. Bendigo Health is not required to report its environmental (or similar) performance via other government programs, such as the National Greenhouse and Energy Reporting (NGER) Scheme or Energy Efficiency Opportunities (EEO) program as their reporting thresholds are not triggered.

ABOUT US

With more than 3100 staff and covering an area a quarter of the size of Victoria, Bendigo Health Care Group (commonly known as Bendigo Health) is an expanding regional health service offering advantages of city life combined with the beauty and freedom that comes from living in a regional area.

Bendigo Health, a 653 bed service, treated almost 41,000 inpatients, triaged almost 47,000 emergency attendees and welcomed more than 1170 new born babies in the reporting period July 1, 2012 to June 30, 2013.

These services include a 60-bed rehabilitation unit, eight bed intensive care unit and five operating theatres where more than 11,000 surgical procedures were performed.

The organisation provided services in emergency, maternity, women's and children's health, medical imaging, pathology, rehabilitation, community services, residential aged care, psychiatric care, community dental, hospice/palliative care, cardiology, cancer services and renal dialysis to the people of the Loddon Mallee region.

The three main campuses of Bendigo Health are based in Bendigo, with many services extended to regional settings including areas such as Mildura, Echuca, Swan Hill, Kyneton and Castlemaine.

Demand on services is increasing rapidly with Bendigo being one of Victoria's fastest growing regional cities.

Figure 1: The Loddon Mallee region in which Bendigo Health provides services.

Bendigo Health and the Victorian Government are committed to delivering high quality health care to the community of Bendigo and the greater Loddon Mallee region with the investment of $630 million to deliver a new Bendigo hospital in late 2016.

In May 2013, Victorian Premier Dr Denis Napthine and Health Minister David Davis announced Exemplar Consortium were successful in winning the contract. Construction on the new facility has begun.

SCOPE

One aspect of providing a health care service is managing the facilities (buildings and properties) in which these services take place, including ensuring the reliable supply of utilities and efficient use of plant and equipment to provide services such as lighting, heating, cooling and hot water. Bendigo Health operates a variety of facility types including hospitals, rehabilitation units, outpatient clinics, nursing homes, residential psychiatric units, offices, stores/depots, patient accommodation, student accommodation and medical staff accommodation.

Operating our facilities involves the use of resources such as energy and water, and the generation of wastes that contribute to Bendigo Health's environmental footprint.

The scope of this report covers all facilities that are operated by Bendigo Health and where consumption data is available from the supplier or service provider.

The types of environmental information included in this report include:

- Energy consumption – electricity, natural gas, LPG, diesel and unleaded petrol
- Carbon emissions – carbon emissions from the consumption of energy and use of nitrous oxide gas for medical purposes
- Water consumption – potable water and Class A recycled water
- Waste management – including a wide range of materials separated and sent for recycling or further processing, clinical wastes sent for further processing and wastes disposed of to landfill.

The scope of this report does not include:

- Water consumption – alternative sources of water such as rainwater and reclaimed water from the operation of reverse osmosis plants and sterilisers
- Water consumption – water consumed by tenants in our facilities (where the cost is paid directly by the tenant, or reimbursed to Bendigo Health)
- Energy consumption – from operation of our fleet and associated vehicles
- Energy consumption - from the transmission and distribution losses associated with supplying our electricity (although these losses are included in our total costs) to large facilities.

- Energy consumption – energy consumed by tenants in our facilities (where the cost is paid directly by the tenant, or reimbursed to Bendigo Health)
- Carbon emissions – scope 3 carbon emissions (i.e. those associated with the purchase and use of products, waste disposal, etc).
- Costs - all reported costs are GST exclusive

This report differs from Bendigo Health's previous environmental reporting in that the scope has been expanded to include all operational sites and facilities across the Loddon Mallee region. Previous reports have only reported the resource consumption of the two hospital campuses – The Bendigo Hospital and the Anne Caudle Centre. We acknowledge that this makes it difficult to compare our environmental footprint across years because the data set has changed. In the short term (until sufficient historical data is available to enable comparisons to be made), comment will be provided about how consumption and costs at the hospital campuses has changed.

ENERGY CONSUMPTION

Brett Park, Plumber, with the solar hot water system on the roof of the Hyett building

What is energy used for?

Energy plays a critical role in ensuring the comfort and wellbeing of our patients and residents, plus our staff, volunteers and visitors. Energy is used to provide lighting, maintain buildings at comfortable temperatures (i.e. fans for ventilation, heating and cooling systems), generate hot water, sterilise equipment, operate lifts and operate vital medical equipment.

What types of energy does Bendigo Health use?

Bendigo Health's primary sources of energy are natural gas and electricity. Smaller quantities of other fuels are used – such as LPG (for areas where a natural gas supply is not available), diesel (to operate generators as back-up sources of electricity) and petrol/diesel for portable tools and equipment (i.e. lawn mowers). Figures 1 and 2 show the sources of energy used by Bendigo Health in terms of consumption and cost.

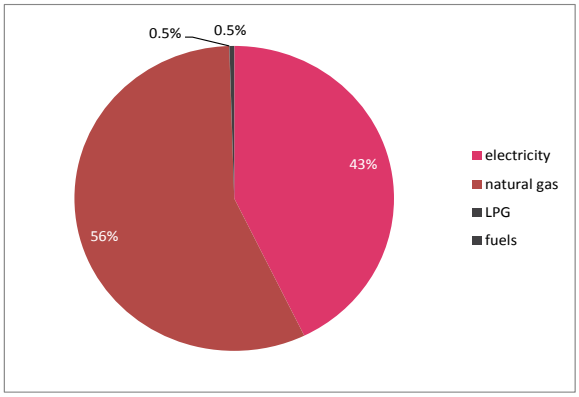


Figure 1: Energy consumption by source

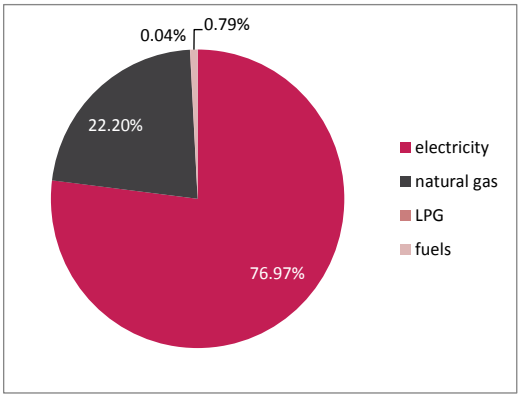


Figure 2: Energy cost by source

How much energy does Bendigo Health use?

In 2012-2013 Bendigo Health used a total of 136,438 GJ of energy at a cost of just over $3 million.

Energy source	2012-2013
Electricity	46,001
Natural Gas	77,381
LPG	39
Diesel	601
Other fuels	45
Total GJ	**136,438**

Table 1: Energy consumption

When looked at on a monthly basis (Figure 3), it can be seen that energy consumption is seasonal – natural gas usage peaks in winter when heating is required and electricity consumption peaks in summer when cooling is required. Some of the month to month variation in the graph is the result of some bills being received bi-monthly or quarterly.

Figure 3: Energy consumption by month

Which facilities use this energy?

The majority of energy used is by the hospital campuses, as shown in Figure 4, with smaller amounts used by the nursing homes and offices.

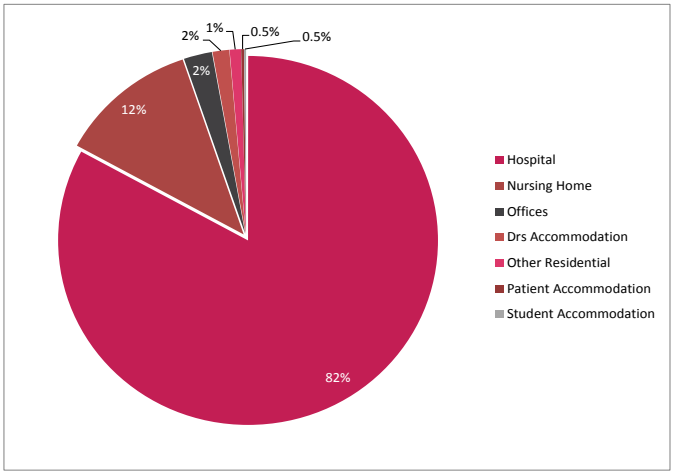


Figure 4: Energy used by facility type

How has energy use changed over time?

As the 2012-2013 period was the first year Bendigo Health collected energy consumption data for all facilities, it is somewhat difficult to compare how overall energy use has changed over time.

The Environmental Performance section in the 2012-2013 Bendigo Health Annual Report was based on data for The Bendigo Hospital and Anne Caudle Centre campuses only. This report revealed that electricity usage decreased 2.9%, which was expected to be the result of changes to the temperature set points (i.e. adjusting the temperatures relative to the outdoor temperature means the heating and cooling systems do not need to work as hard). Natural gas usage decreased by 30.9% due to the closure of the Loddon Linen Service and old boiler house, and the establishment of new, more energy efficient boilers on each campus to supply steam.

How has energy cost changed over time?

As mentioned above, it is difficult to compare how energy costs have changed over time because the scope of reporting has been changed in 2012-2013 to include all facilities.

The reporting data included in the 2012-2013 Bendigo Health Annual Report was for The Bendigo Hospital and Anne Caudle Centre campuses only and revealed that electricity costs increased by 21.1% and natural gas costs by 11.3% due to a combination of higher prices and the introduction of carbon pricing.

Energy performance

One way in which energy consumption can be tracked over time is by using performance indicators or measures. This is a new area for Bendigo Health and we plan to improve our data collection and reporting systems over the coming years to be able to provide a better understanding of where energy is being used and how efficiently and to identify opportunities for improvement.

We are currently monitoring two energy performance indictors: energy consumption per unit of floor space (i.e. intensity per area) and energy per bed-day (i.e. intensity per patient).

As can be seen from Table 2 below, the performance indicators vary significantly depending on the type of facility. As expected, the hospital campuses are the most energy intensive facilities due to their 24/7 operation, specialised medical equipment and infection control requirements.

indicator	units	average	hospitals	nursing homes	offices
Energy used per floor area	GJ/m2	1.6	2.0	1.3	0.4
Energy used per bed-day	GJ/bed-day	0.6	0.9	0.2	-

Table 2: Energy performance indicators

Case study: New guideline for temperature set points in HVAC systems

Wayne Murphy, Electrician, with Building Management System screens.

The design specification for the new Bendigo Hospital Project included a requirement that the temperature in general areas of the hospital be varied with the outdoor temperature, to reduce energy consumption and adjustment when entering or leaving the area. We decided to implement this initiative across the current hospital campuses.

We stated our objective as: the use of consistent and defined temperature set points will assist Bendigo Health to provide comfortable living and working environments for patients, visitors and staff, while also minimising the energy used for (and cost of) the heating and cooling of buildings.

We developed a new guideline to define the temperature set points that would be used to control the operation of the centralised heating, ventilation and air conditioning (HVAC) systems. A Building Management System (BMS) controls the operation of the hospital's HVAC systems, and the new temperature set points have been programmed into the BMS. The temperature set points are adjusted slightly based on the ambient (outdoor) temperature forecast for the day; for example, if the forecast temperature is >36°C, the indoor temperature is raised to 24°C.

Some specialist areas, such as operating theatres and intensive care, have specific temperature set points or ranges for clinical reasons and these are also defined in the guideline and adjusted as required in the BMS.

We were not able to quantify the savings in energy or the cost savings associated with this procedural change, but other organisations have implemented similar initiatives and achieved savings of 10% in the energy consumption of heating and cooling systems. We too experienced a reduction in both electricity and natural gas consumption.

CARBON EMMISSIONS

What carbon emissions does Bendigo Health emit?

Bendigo Health's carbon emissions from energy use and use of nitrous oxide for 2012-2013 were 23,450 tonnes, as shown in the Table 3 and Figure 5 below.

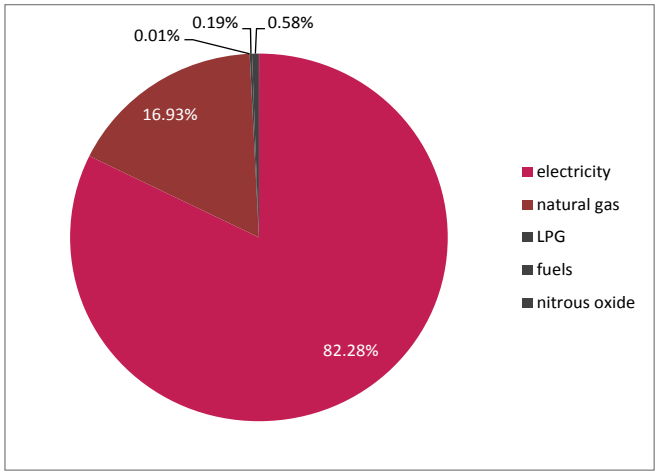


Figure 5: Carbon emissions by source

Carbon emissions	2012-2013
Electricity	19,295
Natural Gas	3,971
Nitrous Oxide	137
Diesel & other fuels	45
LPG	2
Total tonnes CO_{2-e}	**23,450**

Table 3: Carbon emissions

Table 4 below shows Bendigo Health's carbon emissions in terms of scopes:

Scope	2012-2013
Scope 1 (direct)	4,155
Scope 2 (indirect)	19,295
Total tonnes CO_{2-e}	**23,450**

Table 4: Carbon emission scopes

The above tables do not include the carbon emissions associated with travel, particularly the operation of our vehicle fleet. This reporting will be included in our Environmental Report for 2013-2014. We will report our scope 3 emissions when suitable data and methodologies are available.

Which facilities are responsible for these carbon emissions?

In terms of facilities, the hospital campuses were responsible for 80% of the carbon emissions, followed by 12% for the nursing homes

Carbon performance indicators

As per energy, we are currently using two indicators to monitor carbon emission performance:

indicator	units	average	hospitals	nursing homes	offices
Carbon emissions per floor area	kg $CO_{2\text{-}e}$/m2	267	333	226	129
Carbon emissions per bed-day	kg $CO_{2\text{-}e}$/bed-day	107	153	32	-

Table 5: Carbon emssion performance indicators

Similar to the energy performance indicators, the carbon indicators in Table 5 vary significantly depending on the facility type. The hospital campuses have the highest carbon emission intensity due to their higher energy usage.

Case study: Getting into (and out of) hot water

The hot water systems installed at Atkins Street complex, showing the instantaneous units (top) and storage tank and recirculating pump (bottom).

The Atkins Street Accommodation Complex is a $25 million project with 120 residential units built in North Bendigo. The project offers a vibrant new community lifestyle, incorporating apartment living with shared communal spaces, for health professionals including medical staff, interns, registrars, observers, locums, consultants, administration staff and executives.

The project was initially designed to incorporate an electric hot water system inside each unit. Concerns were raised about the operating costs associated with electric hot water systems, as other proven technologies are available to provide hot water with less energy use, lower energy cost and with less carbon emissions.

A business case was developed requesting additional funding to upgrade the hot water systems from electric storage to instantaneous natural gas via a ring-main system; with benefits to be realised through reduced electricity use and cost, reduced carbon emissions and reduced maintenance and replacement costs. The additional funding was approved, and the initiative is expected to save nearly $540,000 over the 30 year lease period.

WATER CONSUMPTION

The reverse osmosis plant that treats drinking water to the standard required by dialysis services.

Leading hand Gardener Bob Ermel in front of the garden irrigation tank.

What is water used for?

Water also plays a critical role in ensuring the comfort and wellbeing of our patients, plus our staff, volunteers and visitors, as does the managed discharge and treatment of trade waste and sewerage. Water is used to provide infection control and cleaning services (i.e. patients' showering, toilets, cleaning of floors, cleaning and sterilising of medical equipment), produce steam (energy) and cooling (evaporative), food preparation, dialysis services and irrigate lawns and gardens to provide attractive and restful areas around our facilities.

What types of water does Bendigo health use?

Most (96%) of the water used by Bendigo Health is potable (or drinking) water. The balance (4%) is Class A recycled water (supplied by Coliban Water to the Bendigo Hospital and Anne Caudle Centre campuses only).

Bendigo Health also utilises several alternative water supplies – rainwater and reclaimed process water (i.e. from the reverse osmosis plants supplying treated water for our renal dialysis service). Typically this water is captured and re-used to irrigate the gardens and lawn areas. The volume of these alternative water supplies is not recorded, so are not included in our total consumption.

How much water does Bendigo Health use?

In 2012-2013 Bendigo Health used a total of 136,846 kL of water at a cost of $473,000. Note that this cost also includes the cost of trade waste and sewerage disposal.

Source	2012-2013
Potable Water	131,422
Class A Recycled Water	5,424
Total kL	**136,846**

Table 6: Water consumption by source

When looked at on a monthly basis (refer Figure 6), it can be seen that water consumption is seasonal –consumption peaks in summer when more cooling and irrigation is required. The notable month to month variation in the graph is the result of most bills being received quarterly.

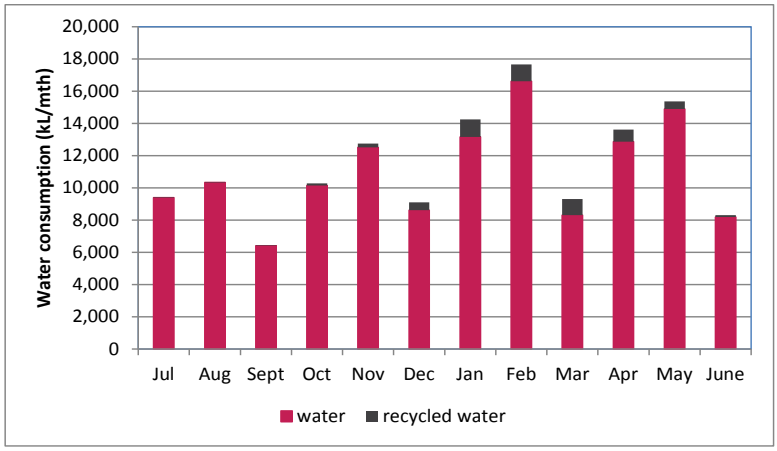


Figure 6: Water consumption by month

Which facilities use this water?

The majority of water used is by the hospitals (67%), as shown in Figure 7, with smaller amounts used by the nursing homes (21%).

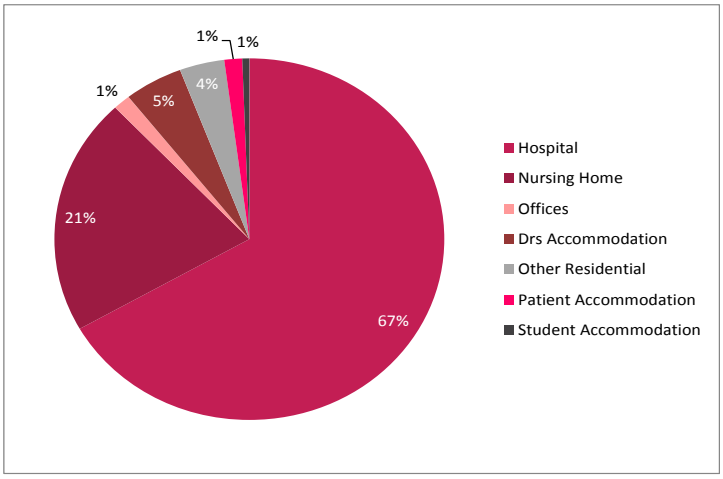


Figure 7: Water consumption by facility type

How has water use changed over time?

As the 2012-2013 period was the first year Bendigo Health has collected water consumption data for all facilities, it is somewhat difficult to compare how overall water use has changed over time.

The reporting data included in the 2012-2013 Bendigo Health Annual Report was for The Bendigo Hospital and Anne Caudle centre (hospital) campuses only. Water consumption decreased by 19%, which was the result of the closure of the Loddon Linen Service and old boiler house, and most garden and construction activities using Class A recycled water.

How has water cost changed over time?

As mentioned above, it is difficult to compare how water costs have changed over time because the scope of reporting has been changed in 2012-2013.

Price increases for water, trade waste and sewerage increased costs for the Bendigo Hospital and Anne Caudle Centre (hospitals) in 2012-13 by 1.5%, despite the sigificant reduction in water consumption.

Water performance indicators

We are currently using two indictors to monitor our water performance: water consumed per unit of floor space (i.e. intensity per area) and water consumed per bed-day (i.e. intensity per patient).

As can be seen in Table 8 below, the indicators vary significantly depending on the type of facility. The facilities with the highest water intensity are the residential facilities (i.e. residential psychiatric units) which was due to a large pipe burst at one facility and the establishment of new gardens and lawns at another.

indicator	units	average	hospitals	nursing homes	offices	other residential
Water use per floor area	kL/m2	1.6	1.6	2.2	0.2	3.6
Water use per bed-day	kL/bed-day	0.6	0.7	0.3	-	-

Table 8: Water performance indicators

WASTE MANAGEMENT

The former Loddon Linen service being demolished as part of prepartory works for the new Bendigo hospital.

How does Bendigo Health generate waste?

Just as energy and water plays a critical role in ensuring the comfort and wellbeing of our patients, staff, volunteers and visitors, waste is a consequence of our activities that needs to be appropriately managed so it does not pose a risk to patient health, staff safety or the environment.

What types of waste does Bendigo health generate?

Bendigo Health produces a variety of waste streams – from paper and cardboard, co-mingled recycling, general rubbish and wastes from medical treatments that must be specially managed, to old materials removed during renovations.

Our 'top 10' wastes by weight in 2012-2013 were: general (rubbish), clinical, grease traps, paper and cardboard, security shredding (paper), garden clippings and grass, commingled recyclables, construction waste, cytotoxic waste and sharps.

How much waste does Bendigo Health produce?

As shown in Table 7 during 2012-2013 Bendigo Health produced about 1,166 tonnes of waste, which cost just over $363,000 to manage.

Waste type	**2012-2013**
General waste (to landfill)	773
Recycling	185
Clinical wastes (for treatment)	175
Other waste (for treatment)	33
Total tonnes	**1,166**

Table 7: Waste generation

In addition to the waste volumes shown above was another 10,000 tonnes of construction material generated as part of the enabling works for the new Bendigo hospital – particularly the demolishment of the former Loddon Linen Service, boiler house and ambulance station. Of this waste, 84% was recycled and 16% disposed of to landfill because of contamination (largely asbestos) or inability to be recycled.

Figure 8 shows the destination for the 1,166 tonnes of waste and resources. The majority of our waste is disposed of to landfill, with 16% sent for resource recovery via recycling, and another 18% for further processing to enabling recycling or safe disposal.

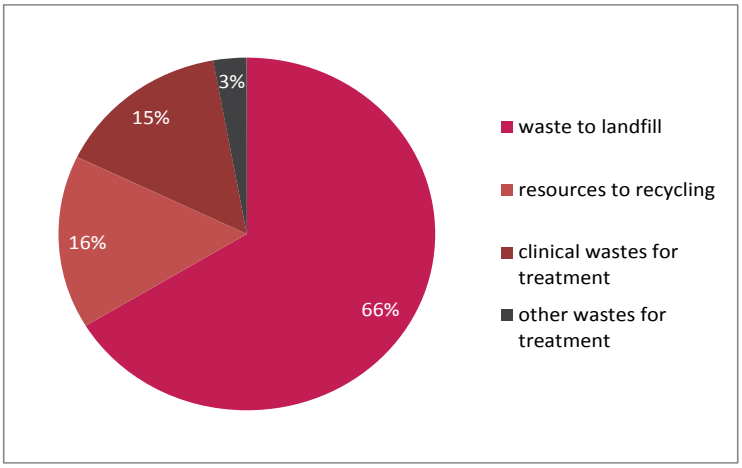


Figure 8: Waste and recycling destinations

As can be clearly seen in Figure 9, the cost of managing clinical wastes is much greater than for other waste types. This is because we have strict compliance obligations to manage these wastes in specific ways to protect both public safety and the environment.

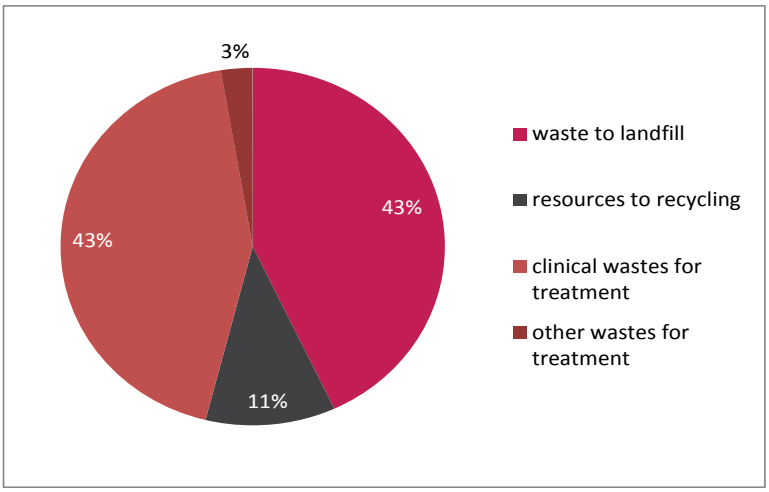


Figure 9: Waste and recycling costs

It should also be noted that waste management is an area in which it is difficult to collect and compile accurate data. This is because many of the waste streams are not directly measured (i.e. weighed), but rather a weight or volume is estimated based on factors such as the size of a bin, how frequently it is emptied and how full it was when emptied. Also, we do not currently track wastes by facility or facility type, but it is known anecdotally that the largest waste generators are the hospital campuses.

Waste performance indicators

We are currently monitoring three waste performance indictors: waste generated per unit of floor space (i.e. intensity per area), waste generated per bed-day (i.e. intensity per patient) and recycling ratio (i.e. % of waste generated sent for recycling).

indicator	units	average
Waste generation per floor area	kg/m2	13
Waste generation per bed-day	kg/bed-day	5
Recycling ratio	%	16%

Table 8: Waste performance indicators

THE FUTURE OF ENVIRONMENTAL REPORTING

Image of the new Bendigo hospital, showing the green roof and landscaping.

As this is our first Environmental Report, we acknowledge that there are gaps in our data and knowledge of where resources are used and wastes generated. We are working with the Department of Health on a project to automate much of our data collection and verification processes so that we can focus on identifying opportunities for improvement and working with our staff and volunteers to implement them.

In conjunction with this Environmental Report, Bendigo Health has prepared an Environmental Management Plan. The Plan sets out our baseline environmental footprint in the areas of energy, water and waste (i.e. using the data in this Report), explains our resource efficiency target, and details an action plan of short-term actions.

We have an Environmental Sustainability Committee which meets regularly to discuss environmental initiatives and share information. Our short term focus is to reinvigorate this committee and implement the current Environmental Management Plan, while transitioning it to a plan that will work towards achieving the medium and longer-term environmental objectives and targets detailed in our Strategic Plan and prepare our staff for the new technologies in the new Bendigo hospital.