Melbourne Health Environmental Report

2016/17

Introduction

ABOUT MELBOURNE HEALTH

Melbourne Health is a leading public health service in Victoria, employing over 9000 staff and managing over 1,400 beds. We provide comprehensive acute, sub-acute, general, specialist medical and mental health services through both inpatient and community based facilities through the following services: The Royal Melbourne Hospital (RMH) City and Royal Park Campuses, NorthWestern Mental Health and The Doherty Institute for Infection and Immunity.

In 2016/17 our staff provided care to over 500,000 patients at RMH with over 74,000 emergency attendances and more than 184,000 outpatient appointments.

Melbourne Health has a long standing commitment to minimise its carbon footprint and to be a leader in environmental sustainability within the Victorian healthcare sector.

By thinking green, Melbourne Health continues to promote a culture of caring for the environment, which is supported by the actions and initiatives of both the organisation, our people, patients, consumers and visitors.

Our Strategic Plan 2015-2020 includes sustainability as a strategic priority and our 'Think Green' Strategy 2015-2020 sets our sustainability goals over five years and provides yearly objectives to guide our environmental initiatives.

Our 'Think Green' strategic goals are:
1. Continued improvement in waste segregation and reduction
2. Implement mechanisms to monitor and reduce resource consumption
3. Promote green thinking amongst staff, visitors and partners
4. Encourage sustainable and active transport
5. Foster sustainable procurement

HIGHLIGHTS 2016/17

- Winner of Premier's Sustainability Award in the Health category
- Further reduction in clinical waste
- Reductions in energy and water consumption
- Reduction in Greenhouse gas emissions
- 130+ staff members nominated as Green Champions
- Organic food waste dehydrator commissioned
- Secure bike cages installed

Key Achievements

Members of the Nephrology Environmental Sustainability Special Interest Group, from left to right: Brett Sobey, Dr Katherine Barraclough, Rachel Woolstencroft, Anthea White and Matthew Sypek

Winner
Premier's **Sustainability** Awards 2016

PREMIER'S SUSTAINABILITY AWARDS

Our Nephrology Service won the Health category in the 2016 Premier's Sustainability Awards for the program 'Reducing Waste, One Dialysis Patient at a Time'.

The nephrology team has developed a leading environmental sustainability multidisciplinary team, the Nephrology Environmental Sustainability Special Interest Group, which champions a range of waste reduction initiatives and significantly decreases the amount of waste the service as a whole, and its patients, produce each year.

By improving recycling, these Green Champions were able to make significant reductions in clinical waste, while educating staff and patients about sustainable practices and appropriate waste segregation.

One satellite dialysis site in Coburg reduced their clinical waste per patient treatment from 2.4 kg in 2010 to 1.55 kg in early 2016, representing a sustained 35 per cent reduction in clinical waste.

Melbourne Health and the Department of Health and Human Services published a case study about Coburg Dialysis Unit, available at: https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability/resources/case-studies-on-sustainability
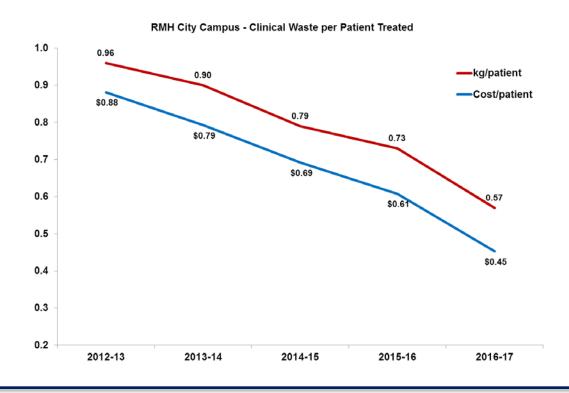
Key Achievements

CLINICAL WASTE REDUCTION

At RMH City Campus, clinical waste reductions continued this year. In the past five years we have almost halved the clinical waste produced per patient treated. Clinical waste constitutes 15 per cent of all waste generated in line with US hospitals' best practice.

Clinical waste is either sterilised and then shredded or it is incinerated. Both processes have a negative impact on the environment. Reducing clinical waste reduces our footprint and also reduces disposal costs.

Sustainability Groups active in the Perioperative Department, Intensive Care Unit and Nephrology and our 130+ Green Champions educate their colleagues about waste segregation and lead the way in encouraging sustainable practices at Melbourne Health.

A case study about recycling initiatives in our operating theatres has been published on the Global Green and Healthy Hospitals website.

RMH City Campus - Clinical Waste per Patient Treated

Legend: — kg/patient, — Cost/patient

	2012-13	2013-14	2014-15	2015-16	2016-17
kg/patient	0.96	0.90	0.79	0.73	0.57
Cost/patient	$0.88	$0.79	$0.69	$0.61	$0.45

Key Achievements

ORGANIC WASTE PROCESSOR

The Department of Health and Human Services, in conjunction with Melbourne Health, secured a grant from the Metropolitan Waste and Resource Recovery Group to procure and install an organic waste processor at the RMH City Campus for the Parkville Precinct. The organic waste processor has been operating since June 2017, diverting organics waste from landfill. By mid October ,over 60 tonnes of organic waste has been processed into organic fertiliser, reducing greenhouse gas emissions by 115t CO_2-e, the equivalent to taking 28 cars off the road for a year.

NEW SECURE BIKE CAGES

In order to support sustainable transport at Melbourne Health, two new bike cages were built and opened in November this year. The cages are located at RMH City and Royal Park Campuses.

The bike cage at RMH City Campus has space for 137 bicycles and is equipped with swipe card access, LED lights and 24/7 CCTV.

The bike cage at the Royal Park Campus (pictured) has similar features and can accommodate 50 bicycles.

Thinking Green

GLOBAL GREEN & HEALTHY HOSPITALS

Melbourne Health became a member of the Global Green and Healthy Hospitals (GGHH) network in 2016. GGHH brings together 930 members from 49 countries to share ideas and exchange learnings about sustainable healthcare.

GGHH is based around a framework of 10 sustainability goals and members focus on at least two goals. Our Think Green Strategy 2015-20 includes commitments for six of these goals: Leadership, Waste, Energy, Water, Transportation and Purchasing.

SWITCH OFF WEEK

Melbourne Health went into power saving mode during 'Switch Off Week' in March 2017.

To celebrate Earth Hour's 10th birthday on Friday 24 March, we encouraged all staff to switch off non-essential lights and appliances for one hour to reduce our carbon footprint.

GREEN CHAMPIONS

We now have 130+ Green Champions promoting sustainability in their wards and departments across Melbourne Health.

This year one of our Green Champions started a Green Champions Facebook group to facilitate collaboration and sharing of ideas.

SPRING CLEAN BLITZ

Our third annual Spring Clean Week was held in October 2016. Over 50 volunteers collected 133 kgs of litter at City Campus and 21 kgs of litter at Royal Park during the two hour Spring Clean Blitz.

SUSTAINABILITY EXPO 2016

A record breaking 132 staff members attended our annual Environment and Sustainability Expo on 15 November to view 16 displays by suppliers, NGOs and staff.

Consumption Data

NORMALISING FACTORS

Normalising factors refer to indicators that are used to compare environmental performance over time and to allow for any changes in service delivery. The factors below are used throughout this report.

Bed days

The number of in-patient bed days for the reporting period

Patients treated

The number of in-patient bed days, the number of emergency presentations and the number of out-patients for the reporting period

Separations

The number of separations for the reporting period

Floor area

Metre squared of floor space, excluding car parks

Recycling Rate

The Recycling Rate is the total weight of recycled material divided by the total of general waste and recycled material

Source: Public Environmental Reporting Guidelines, Department of Health and Human Services, VIC, 2017

Factors City Campus	2012-13	2013-14	2014-15	2015-16	2016-17
Bed days	243,259	229,307	238,591	239,213	245,489
Separations	89,371	79,714	83,781	89,306	95,022
Patients treated	462,430	459,921	478,262	485,905	503,771
Floor area m^2	114,367	114,367	114,367	121,083	127,799

Factors Royal Park	2012-13	2013-14	2014-15	2015-16	2016-17
Bed days/Patients treated	52,274	50,994	50,426	57,097	66,383
Separations	3,091	2,728	2,633	3,310	4,026
Floor area m^2	25,395	25,395	25,395	25,395	25,395

First in Care,
Research and
Learning

MELBOURNE HEALTH

Energy

RMH CITY CAMPUS

Energy consumption decreased in 2016/17 despite an increase in patient presentations.

Improvement projects are evaluated according to the lifespan of our buildings. Approved energy saving initiatives included installation of regenerative lift drives, chiller upgrades, VSDs for carpark CO_2 fans and ongoing replacements of halogen lights with more efficient LEDs.
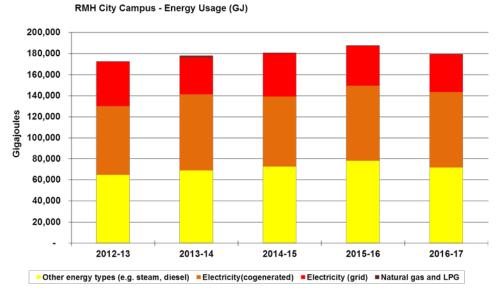
RMH CITY CAMPUS COGENERATION

Two-thirds of electricity used at City Campus is produced through cogeneration. Burning natural gas in a turbine generates both electricity and steam. The steam is used for both heating and for hot water.

The cogeneration plant can provide 13 Megawatts electricity ensuring self sufficiency for the hospital in case of a power outage.
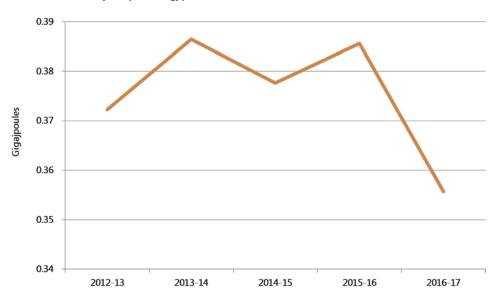
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Energy consumption RMH City Campus					
	2012-13	2013-14	2014-15	2015-16	2016-17
Electricity (Grid)	42,032	34,929	40,613	37,920	35,727
Electricity (Cogeneration)	65,332	72,301	66,667	71,336	71,705
Natural gas and LPG	89	1,502	718	10	12
Other (e.g. steam, diesel)	64,698	69,027	72,634	78,126	71,748
Total (gigajoules)	172,151	177,759	180,632	187,392	179,193
Normalised energy consumption					
Energy per floor area (GJ/m^2)	1.51	1.55	1.58	1.55	1.40
Energy per bed-days (GJ)	0.71	0.78	0.76	0.78	0.73
Energy per separations (GJ)	1.93	2.23	2.16	2.10	1.89
Energy per patients treated (GJ)	0.37	0.39	0.38	0.39	0.36

Energy

RMH CITY CAMPUS

RMH City Campus - Energy Usage (GJ)

Legend: Other energy types (e.g. steam, diesel) ■ Electricity(cogenerated) ■ Electricity (grid) ■ Natural gas and LPG

RMH City Campus - Energy per Patient Treated

Energy

ROYAL PARK CAMPUS

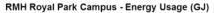The primary energy sources at Royal Park Campus are natural gas and electricity from the grid.

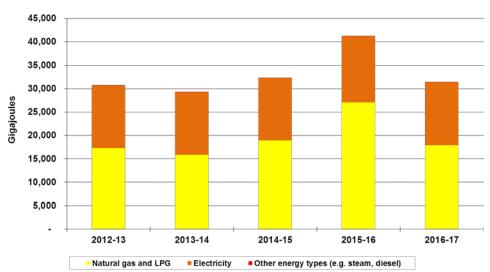Halogen lamps were replaced with LEDs at Royal Park Campus this year.

Energy consumption at Royal Park decreased this Financial Year by 23 per cent despite a significant increase in patients treated.

Rises in patient presentations increase energy demand because medical technology is used more extensively and hospital departments are occupied for longer hours resulting in more lighting, heating, cooling and ventilation.
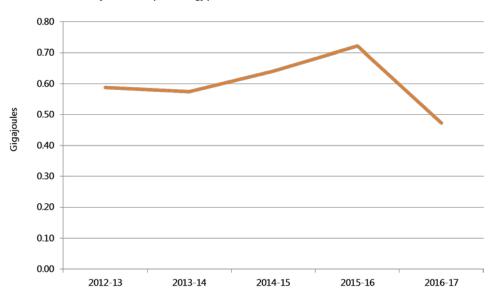
Energy consumption RMH Royal Park Campus					
	2012-13	2013-14	2014-15	2015-16	2016-17
Electricity (Grid)	13,444	13,458	13,338	14,069	13,461
Natural gas and LPG	17,302	15,838	18,973	27,104	17,922
Other (e.g. steam, diesel)	19	19	19	19	19
Total (gigajoules)	30,765	29,315	32,330	41,192	31,402
Normalised energy consumption					
Energy per floor area (GJ/m^2)	1.21	1.15	1.27	1.62	1.08
Energy per bed-days/ patients treated (GJ)	0.59	0.57	0.64	0.72	0.47
Energy per separations (GJ)	9.95	10.75	12.28	12.44	7.80

Energy

ROYAL PARK CAMPUS

RMH Royal Park Campus - Energy Usage (GJ)

RMH Royal Park Campus - Energy per Patient Treated

GHG Emissions

RMH CITY CAMPUS

Greenhouse gas emissions at RMH City Campus have declined by 3 per cent over the previous year. Greenhouse gas emissions per patient treated are the lowest in the last five years.

The 1,001 tCO2e reduction in emissions is equivalent to taking approximately 240 cars off the road for a year.

SCOPE 1 & 2 EMISSIONS

Scope 1 greenhouse gas emissions (direct emissions) are the emissions released to the atmosphere as a direct result of an activity at a facility, e.g. diesel for generators

Scope 2 greenhouse gas emissions (indirect emissions) are the emissions released to the atmosphere from the consumption of energy produced by another facility, e.g. electricity

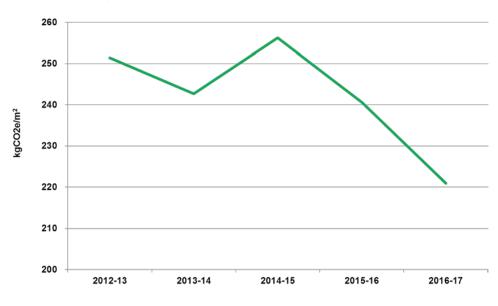Source: Clean Energy Regulator, AU, 2017

Greenhouse gas emissions RMH City Campus

	2012-13	2013-14	2014-15	2015-16	2016-17
Scope 1	3,319	3,612	3,757	4,018	3,694
Scope 2	25,436	24,142	25,553	25,120	24,442
Total (tonnes CO2e)	28,755	27,754	29,310	29,137	28,136
Normalised greenhouse gas emissions					
Emissions per unit of floor space (kgCO2e/m^2)	251	243	256	241	220
Emissions per bed-days (kgCO2e)	118	121	123	122	115
Emissions per separations (kgCO2e)	322	348	350	326	296
Emissions per patient treated (kgCO2e)	62	60	61	60	56

GHG Emissions

RMH CITY CAMPUS

RMH City Campus - Greenhouse Gas Emissions (tCO2$_e$)

RMH City Campus - GHG Emissions per m^2

GHG Emissions

ROYAL PARK CAMPUS

Greenhouse gas emissions at Royal Park have declined by 14 per cent over the previous year and are the lowest level in five years, despite an increase in patients.

This reduction in emissions is equivalent to taking approximately 200 cars off the road for a year.
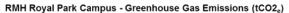
NATIONAL GREENHOUSE FACTORS

The National Greenhouse Accounts (NGA) Factors is prepared annually by the Department of the Environment and Energy and is designed for use by companies and individuals to estimate greenhouse gas emissions. The published emissions factors are used to convert energy types into Greenhouse gas emissions and are used throughout this report.
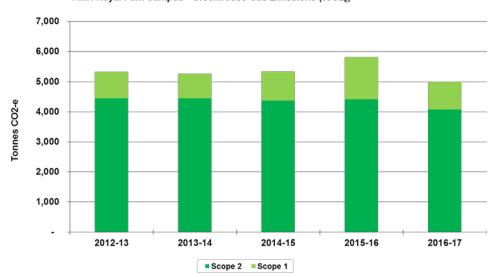
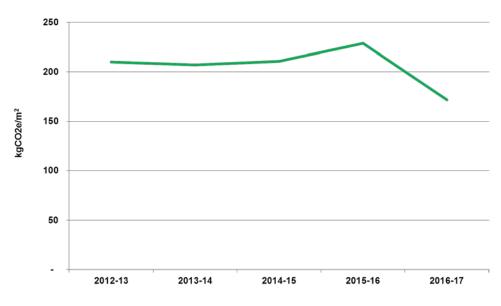Source: Department of the Environment and Energy, AU, 2017

Greenhouse gas emissions RMH Royal Park Campus

	2012-13	2013-14	2014-15	2015-16	2016-17
Scope 1	889	814	975	1,398	925
Scope 2	4,444	4,449	4,372	4,416	4,076
Total (tonnes CO2e)	5,333	5,263	5,347	5,814	5,000
Normalised greenhouse gas emissions					
Emissions per unit of floor space (kgCO2e/m^2)	210	207	211	289	172
Emissions per bed-days / patients treated (kgCO2e)	102	103	106	102	75
Emissions per separations (kgCO2e)	1,725	1,929	2,031	1,757	1,242

GHG Emissions

ROYAL PARK CAMPUS

RMH Royal Park Campus - Greenhouse Gas Emissions (tCO2e)

RMH Royal Park Campus - GHG Emissions per m²
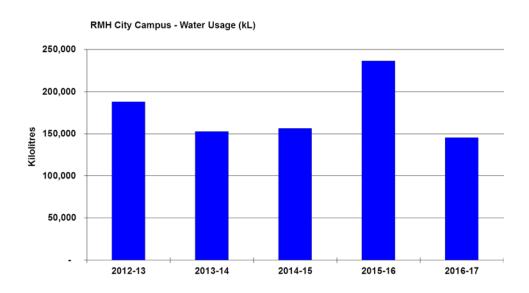
Water

RMH CITY CAMPUS

In 2016/17 our water usage has decreased per patient treated to 0.29 kilolitres, the lowest rate in five years.

We installed 200 low flow shower heads provided to us at no cost by City West Water in the South Block wards to improve water use efficiency.
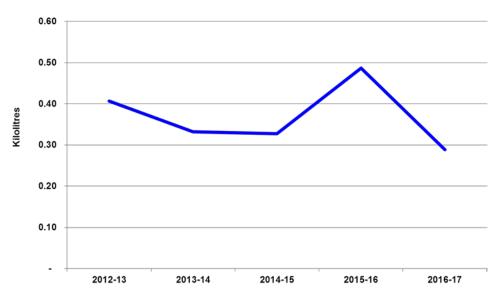
Please note:

Water consumption in 2015/16 was higher than usual due to construction of four new floors in the B Building and commissioning of new equipment.

Water consumption RMH City Campus

	2012-13	2013-14	2014-15	2015-16	2016-17
Potable water	188,042	152,798	156,660	236,572	145,497
Reused/recycled water	0	0	0	0	0
Total (kilolitres)	188,042	152,798	156,660	236,572	145,497
Normalised water consumption					
Water per unit of floor space (kL/m2)	1.64	1.34	1.37	1.95	1.14
Water per bed-days (kL)	0.77	0.67	0.66	0.99	0.59
Water per separations (kL)	2.10	1.92	1.87	2.65	1.53
Water per patient treated (kL)	0.41	0.33	0.33	0.49	0.29

Water

RMH CITY CAMPUS

RMH City Campus - Water Usage (kL)

RMH City Campus - Water Usage per Patient Treated (kL)

Water

ROYAL PARK CAMPUS

Melbourne Health uses potable water for drinking, food preparation, toilet flushing, cleaning, fire services and cooling towers.
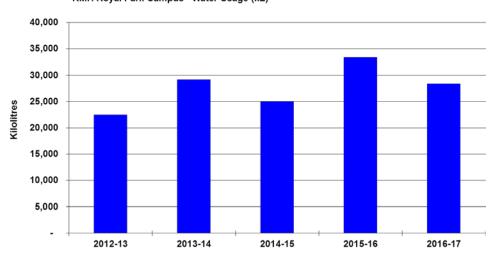
Royal Park Campus total water consumption has decreased in 2016/17 and is at a five year low of water use per patients treated.

The unusual rise in water consumption in 2015/16 was caused by a plant failure which was subsequently repaired.
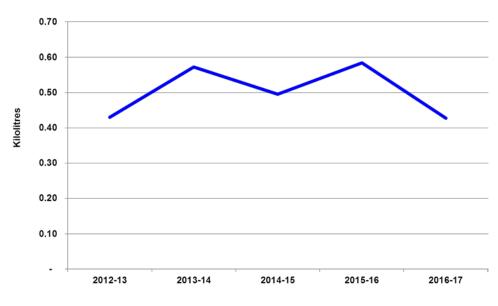
Water consumption RMH Royal Park Campus

	2012-13	2013-14	2014-15	2015-16	2016-17
Potable water	22,500	29,220	24,971	33,383	28,378
Reused/recycled water	0	0	0	0	0
Total (kilolitres)	22,500	29,220	24,971	33,383	28,378
Normalised water consumption					
Water per unit of floor space (kL/m^2)	0.90	1.15	0.98	1.31	0.97
Water per bed-days / patients treated (kL)	0.43	0.57	0.50	0.58	0.43
Water per separations (kL)	7.36	10.71	9.48	10.09	7.05

Water

ROYAL PARK CAMPUS

RMH Royal Park Campus - Water Usage (kL)

RMH Royal Park Campus - Water Usage per Patient Treated (kL)

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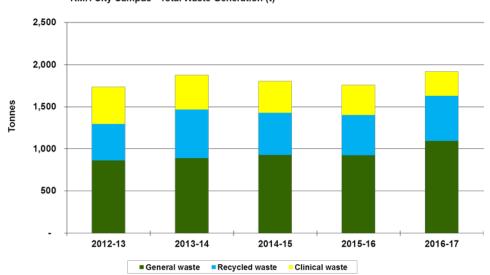Learning

MELBOURNE HEALTH

Waste

RMH CITY CAMPUS

Hospitals generate large volumes of waste and at Melbourne Health we manage over 20 separate waste streams. We are constantly aiming to recycle as much of our waste as possible within the safety constraints of infection prevention.

Some of the recycling streams we have introduced include commingled recycling, paper/cardboard, sterile wrap, PVC, batteries, steel, pallets, e-waste, toner cartridges and organic food waste.

In 2016/17, while we were able to continue to reduce our clinical waste per patient treated, the total amount of waste generated per patient increased by five per cent. Some of the contributing factors include the increasing trend in healthcare towards the use of single use and/or disposable items such as blood pressure cuffs, aprons and curtains and relocation of various wards and departments across the campus generating extra waste from moving and clean-outs.
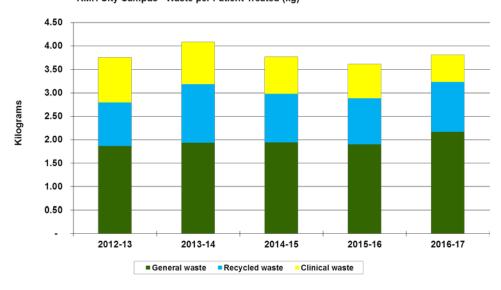
Waste generation RMH City Campus	2012-13	2013-14	2014-15	2015-16	2016-17
Clinical waste	443	412	376	355	289
General waste	864	889	928	923	1,094
Recycled waste	431	577	500	481	537
Total (tonnes)	1,738	1,878	1,804	1,759	1,920
Normalised waste generation					
Waste per bed-days (kg)	7.14	8.19	7.56	7.35	7.82
Waste per separations (kg)	19.45	23.56	21.53	19.70	20.21
Waste per patient treated (kg)	3.76	4.08	3.77	3.62	3.81
Waste recycling					
Waste recycling rate %	33	39	35	34	33

Waste

RMH CITY CAMPUS

RMH City Campus - Total Waste Generation (t)

RMH City Campus - Waste per Patient Treated (kg)

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MELBOURNE HEALTH

Waste

ROYAL PARK CAMPUS

Recycling rates have increased steadily at Royal Park Campus over the past five years.

We have introduced new recycling streams and raised staff awareness through in-services, posters and newsletters.
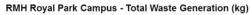
Royal Park Campus is a long-term residential/aged care facility and separations occur less frequently than in an acute setting, however waste per separation has decreased over previous years.
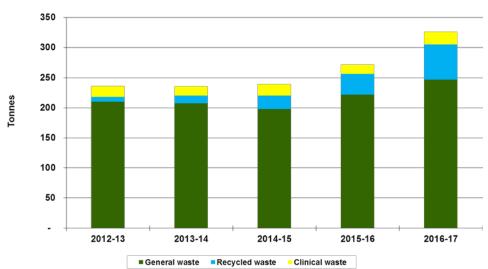
We will focus our attention on reducing clinical waste generation at Royal Park through staff education on correct waste segregation practices.

Please note: Clinical waste reported for both campuses does not include sharps; as sharps weight data is not available from the contractor.
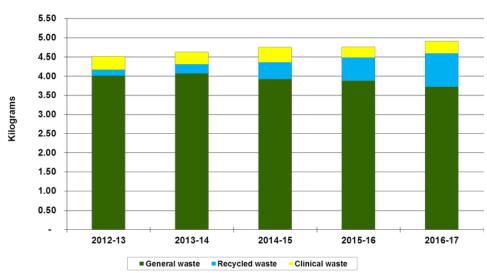
Waste generation RMH Royal Park Campus

	2012-13	2013-14	2014-15	2015-16	2016-17
Clinical waste	18	15	20	15	21
General waste	210	208	198	222	247
Recycled waste	8	13	22	35	58
Total (tonnes)	236	236	240	272	326
Normalised waste generation					
Waste per bed-days / patients treated (kg)	4.51	4.62	4.75	4.76	4.91
Waste per separations (kg)	76.22	86.39	91.02	82.10	80.97
Waste recycling					
Waste recycling rate %	4	6	10	14	19

First in Care,
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MELBOURNE HEALTH

Waste

ROYAL PARK CAMPUS

RMH Royal Park Campus - Total Waste Generation (kg)

RMH Royal Park Campus - Waste per Patient Treated (kg)

Glossary

REPORT BOUNDARIES

The consumption data in this report reflects environmental performance at the RMH City Campus and RMH Royal Park Campus.

A full set of accurate consumption data is not available for other Melbourne Health sites, as some sites are either co-located within other organisations or utility costs are charged as a flat rate under lease agreements and metering is unavailable.

ACKNOWLEDGEMENTS

Data presented in this report was provided by suppliers, contractors, utility invoices, sub-metering and the Victorian Department of Health and Human Services.