Melbourne Health Environmental Report

2018/19

First in Care, Research and Learning

MELBOURNE HEALTH

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 2018/19 our staff provided care to over 550,000 patients at RMH with over 79,000 emergency attendances and more than 207,000 outpatient appointments.

Melbourne Health has a long standing commitment to minimise its carbon footprint and 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.

Melbourne Health committed to the following targets in our Statement of Priorities 2018-19:

- Aim to recycle 350 kilograms of single use steel instruments from our Theatres, ICU and Emergency Department
- Commitment to reaching an overall recycling rate of 30%
- Recruit 30 further Green Champions in 2018-19 to promote sustainability in their departments
- Report publically on our performance in the annual MH Environment Report available on our website

We met these targets by recycling 1 tonne of steel instruments, recruiting 44 new Green Champions and reaching a 30% recycling rate

HIGHLIGHTS 2018/19

- New 5 year Environmental Sustainability Strategy developed
- Further clinical waste reductions
- ED Nurses win an award for their recycling efforts
- 20,000 plastic bags removed from landfill
- Telehealth program continues to grow

Strategy 2020-25

STRATEGY DEVELOPMENT

Our Environmental Sustainability Strategy is due for renewal in 2020. In order to commence the planning process, a strategy workshop was held in February 2019 and was facilitated by MH Director Strategy and Planning. Participants included the Chief Executive and other Executive Committee members, representatives of Procurement, IT&T, Facilities Management, Pharmacy, Green Champions, Environment Committee members and external stakeholders including DHHS, HPV and Parkville Precinct partners.

The purpose of the workshop was to determine stakeholders' views of proposed goals, to identify gaps and develop targets around five theme areas for the new MH Environmental Sustainability Strategy 2020-25.

Post workshop, a 5 year action plan was developed with staff leads, implementation timeframes were established and responsibilities for agreed actions assigned.

The MH Environmental Sustainability Strategy 2020-25 was approved by the Executive Committee and the Board in October 2019.

Five theme areas:

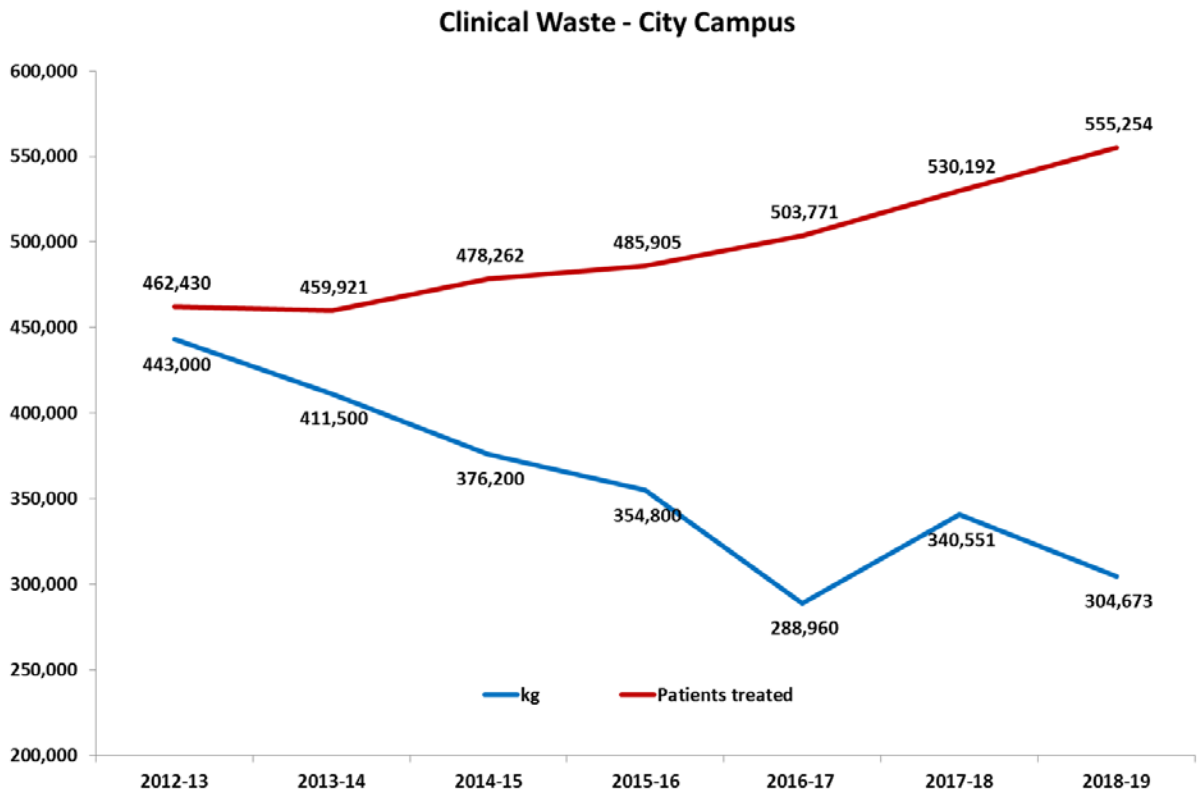
Waste segregation

CLINICAL WASTE REDUCTIONS

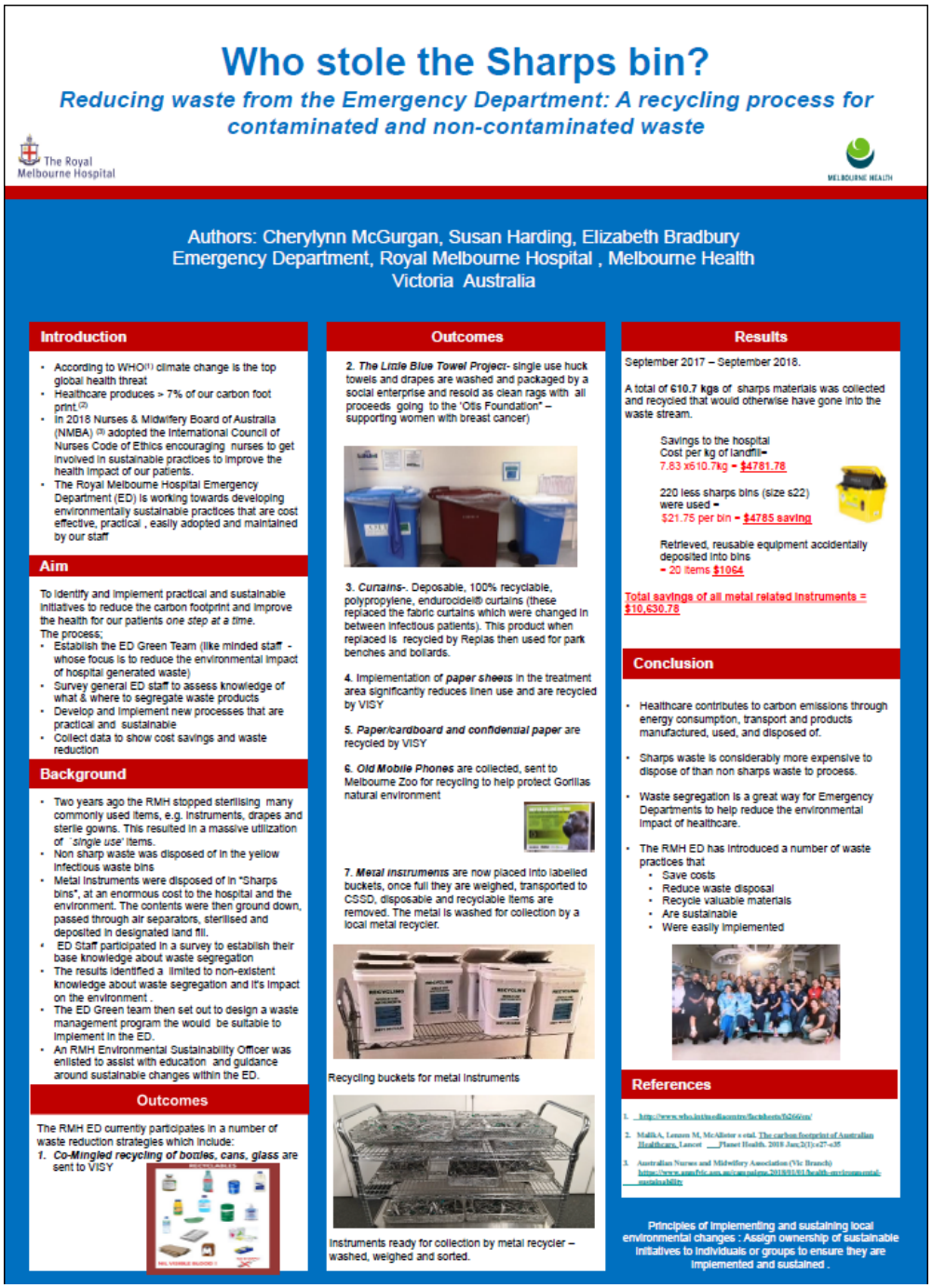
Our main site, the Royal Melbourne Hospital (RMH) City Campus provides general and specialist medical and surgical acute services to over 550,000 patients per year and provides one of the two adult major trauma services to the state of Victoria. Clinical or infectious waste is produced in hospitals especially in ICU, Theatres and the Emergency Department. Clinical waste has to be disposed of according to EPA guidelines, either by incineration or to prescribed landfill after a shredding and disinfecting process.

At RMH, we have reduced our clinical waste through better segregation and staff education, reducing both environmental impacts and costs from this waste stream.

Our Sustainability Groups in ICU, Theatres and the Emergency Department have been instrumental in reducing our clinical waste by over 40% per patient treated since 2012-13.



Recycling in ED



Who stole the Sharps bin?

Reducing waste from the Emergency Department: A recycling process for contaminated and non-contaminated waste

The Royal Melbourne Hospital

MELBOURNE HEALTH

Authors: Cherylynn McGurgan, Susan Harding, Elizabeth Bradbury
Emergency Department, Royal Melbourne Hospital , Melbourne Health
Victoria Australia

Introduction

- According to WHO[1] climate change is the top global health threat
- Healthcare produces > 7% of our carbon foot print.[2]
- In 2018 Nurses & Midwifery Board of Australia (NMBA) [3] adopted the International Council of Nurses Code of Ethics encouraging nurses to get involved in sustainable practices to improve the health impact of our patients.
- The Royal Melbourne Hospital Emergency Department (ED) is working towards developing environmentally sustainable practices that are cost effective, practical , easily adopted and maintained by our staff

Aim

To identify and implement practical and sustainable initiatives to reduce the carbon footprint and improve the health for our patients *one step at a time.*
The process;

- Establish the ED Green Team (like minded staff - whose focus is to reduce the environmental impact of hospital generated waste)
- Survey general ED staff to assess knowledge of what & where to segregate waste products
- Develop and implement new processes that are practical and sustainable
- Collect data to show cost savings and waste reduction

Background

- Two years ago the RMH stopped sterilising many commonly used items, e.g. instruments, drapes and sterile gowns. This resulted in a massive utilization of *'single use'* items.
- Non sharp waste was disposed of in the yellow infectious waste bins
- Metal instruments were disposed of in "Sharps bins", at an enormous cost to the hospital and the environment. The contents were then ground down, passed through air separators, sterilised and deposited in designated land fill.
- ED Staff participated in a survey to establish their base knowledge about waste segregation
- The results identified a limited to non-existent knowledge about waste segregation and it's impact on the environment .
- The ED Green team then set out to design a waste management program the would be suitable to implement in the ED.
- An RMH Environmental Sustainability Officer was enlisted to assist with education and guidance around sustainable changes within the ED.

Outcomes

The RMH ED currently participates in a number of waste reduction strategies which include:

1. ***Co-Mingled recycling of bottles, cans, glass*** are sent to VISY

Outcomes

2. ***The Little Blue Towel Project***- single use huck towels and drapes are washed and packaged by a social enterprise and resold as clean rags with all proceeds going to the 'Otis Foundation" – supporting women with breast cancer)

3. ***Curtains***-. Deposable, 100% recyclable, polypropylene, endurocidell® curtains (these replaced the fabric curtains which were changed in between infectious patients). This product when replaced is recycled by Replas then used for park benches and bollards.

4. Implementation of ***paper sheets*** in the treatment area significantly reduces linen use and are recycled by VISY

5. ***Paper/cardboard and confidential paper*** are recycled by VISY

6. ***Old Mobile Phones*** are collected, sent to Melbourne Zoo for recycling to help protect Gorillas natural environment

7. ***Metal instruments*** are now placed into labelled buckets, once full they are weighed, transported to CSSD, disposable and recyclable items are removed. The metal is washed for collection by a local metal recycler.

Recycling buckets for metal instruments

Instruments ready for collection by metal recycler – washed, weighed and sorted.

Results

September 2017 – September 2018.

A total of **610.7 kgs** of sharps materials was collected and recycled that would otherwise have gone into the waste stream.

Savings to the hospital
Cost per kg of landfill=
7.63 x610.7kg = $4781.78

220 less sharps bins (size s22) were used =
$21.75 per bin = $4785 saving

Retrieved, reusable equipment accidentally deposited into bins
= 20 items $1064

Total savings of all metal related instruments = $10,630.78

Conclusion

- Healthcare contributes to carbon emissions through energy consumption, transport and products manufactured, used, and disposed of.
- Sharps waste is considerably more expensive to dispose of than non sharps waste to process.
- Waste segregation is a great way for Emergency Departments to help reduce the environmental impact of healthcare.
- The RMH ED has introduced a number of waste practices that
  - Save costs
  - Reduce waste disposal
  - Recycle valuable materials
  - Are sustainable
  - Were easily implemented

References

1. http://www.who.int/mediacentre/factsheets/fs266/en/
2. Malik A, Lenzen M, McAlister s etal. The carbon footprint of Australian Healthcare. Lancet Planet Health. 2018 Jun;2(1):e27-e35
3. Australian Nurses and Midwifery Association (Vic Branch) https://www.anmfvic.asn.au/campaigns/2018/01/01/health-environmental-sustainability

Principles of implementing and sustaining local environmental changes : Assign ownership of sustainable initiatives to individuals or groups to ensure they are implemented and sustained .

Congratulations to our Emergency Department Nurses for winning second prize for their Research Study Poster about their recycling initiatives at the 16th International Conference for Emergency Nurses in October 2018.

Less plastic

INTRODUCING *BLOOD BASKETS*

In an effort to reduce waste at Melbourne Health, the Blood Management Committee has introduced the use of reusable 'Blood Baskets' to transport blood and blood products from the Transfusion Laboratory to the wards and critical care areas, excluding theatre.

Between January and July 2018 the Transfusion Laboratory released over 10,000 units of blood and blood products to the hospital which have been transported in single use plastic bags.

To reduce and better manage plastic waste the Transfusion Laboratory trialed the removal of plastic bags and the use of reusable 'Blood Baskets' to transport blood and blood products.

This has been a successful improvement project which ran for four months.

The Blood Management Committee greatly appreciates everyone's efforts and hard work. Staff on 5 West Day Medical Centre, 7B and Clinical Assistants have been instrumental in the change to "No Plastic Bags".

As of the 1st of January 2019 blood and blood products are no longer being released to Clinical Assistants from the Transfusion Laboratory if they do not have a reusable 'Blood Basket'.

This great initiative is now saving over 20,000 plastic bags per year from going into landfill.

Transport

GREEN COMMUTE DAY 2018

In order to promote all types of sustainable transport at Melbourne Health we celebrated Green Commute Day on 17 October, coinciding with Ride2Work Day.

Our two RMH Campuses are surrounded by walking and biking trails and are also easily accessible by public transport. Secure undercover bike cages are available at both sites.

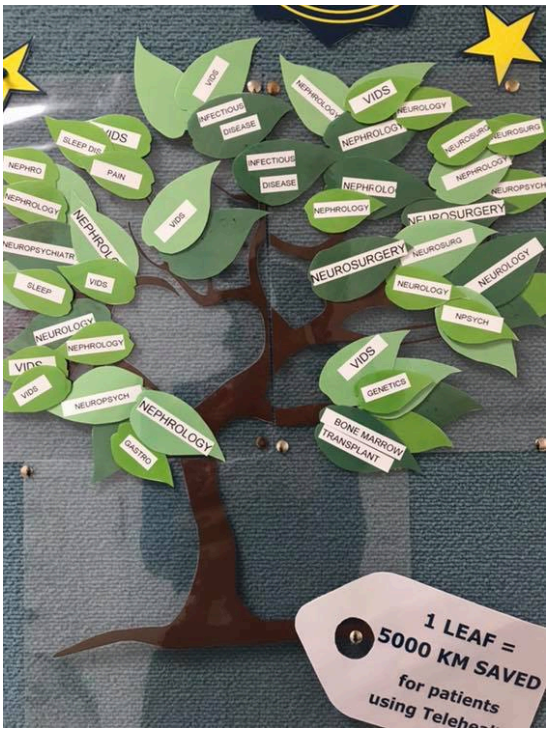
Information on sustainable transport options including bike and walking routes, train, tram and bus network maps, bike and car share opportunities were made available on the think green intranet page

STAFF TRAVEL SURVEY

To get the conversation started about how staff get to work on a daily basis, we asked staff to complete a travel survey. Results show that 64.5% of respondents already commute either on public transport or they walk or use a bicycle to come to work. Only 12% use their car all the time and an additional 18% drive to the nearest train station then take public transport. We commute greener than the average worker.

In Parkville on average 46% of people use their car to drive to work and in metropolitan Melbourne the average is 66% of trips to work by car.

Thinking Green



TELEHEALTH PROGRAM

The RMH Telehealth program enables patients to have video appointments with our specialists using their own computer, smartphone or tablet. Telehealth is available for all RMH clinics, either from the patient's home or their GP's office.

The Telehealth project began in 2017, focussing on outpatient appointments across 6 specialities. Since then the Telehealth Team has coordinated and facilitated 2,500 telehealth outpatient appointments for rural and regional patients across 21 specialties and 86 clinics. Patients have saved 700,000 kms in travel and over 2 million $tCO2_e$.

In addition, the telehealth platform is often used for education, team meetings, case conferences, and video interpreting services, further reducing travel.

ONE PATIENT'S STORY

- Set alarm for 4:30 am
- Arrive at airport at 5:30 am
- Catch morning flight at 6:30 am
- Arrive in Melbourne at 7:50 am
- Taxi in peak hour to RMH by 9:00am
- Wait in Outpatients until seen by clinician for 20 minutes
- Fills in time until taxi back to airport for 15:45 pm flight
- Arrive Mildura at 16:55 pm
- Home approximately 17:30 pm

= 12+ hours for a 20 minute specialist consultation
= $500 in travel expenses

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 weight of general waste and recycled material

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

Factors City	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Bed days	243,259	229,307	238,591	239,213	245,489	254,824	267,803
Separations	89,371	79,714	83,781	89,306	95,022	98,303	101,254
Patients treated	462,430	459,921	478,262	485,905	503,771	530,192	555,254
Floor area m2	114,367	114,367	114,367	121,083	127,799	127,799	127,799

Factors RPC	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Bed days	52,274	50,994	50,426	57,097	66,383	65,944	67,123
Separations	3,091	2,728	2,633	3,310	4,026	3,785	4,149
Floor area m2	25,395	25,395	25,395	25,395	25,395	29,112	27,563

Energy

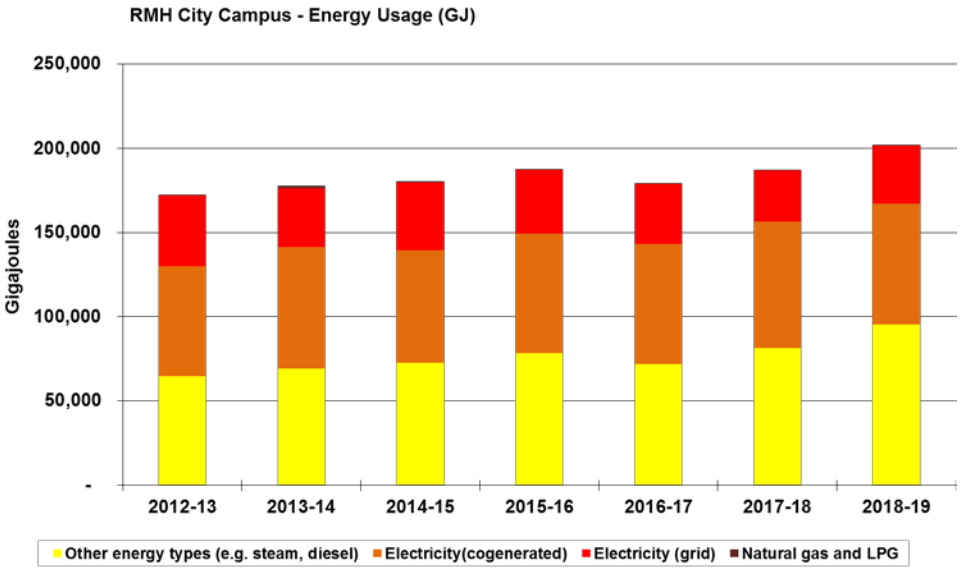
RMH CITY CAMPUS

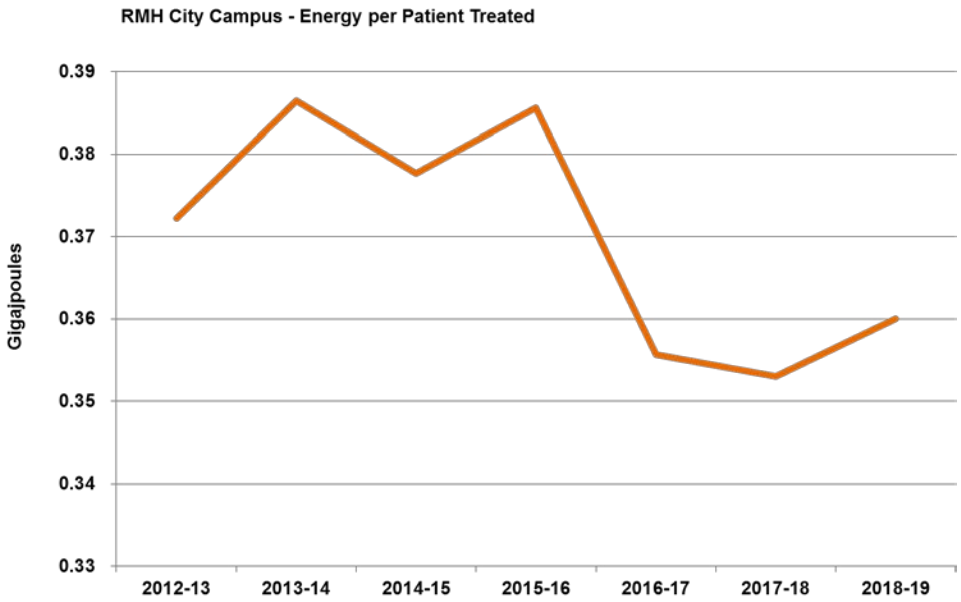
Energy use per patient treated at RMH City Campus increased slightly this year.

Energy consumption RMH City Campus	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Electricity (Grid)	42,032	34,929	40,613	37,920	35,727	30,749	34,390
Electricity (Cogen)	65,332	72,301	66,667	71,336	71,705	75,014	72,063
Natural gas and LPG	89	1,502	718	10	12	11	10
Other (e.g. steam, diesel)	64,698	69,027	72,634	78,126	71,748	81,401	95,232
Total (GJ)	172,151	177,759	180,632	187,392	179,193	187,176	201,695
Normalised energy consumption							
Energy per floor area (GJ/m2)	1.51	1.55	1.58	1.55	1.40	1.46	1.58
Energy per bed-days (GJ)	0.71	0.78	0.76	0.78	0.73	0.73	0.75
Energy per separations (GJ)	1.93	2.23	2.16	2.10	1.89	1.90	1.99
Energy per patients treated (GJ)	0.37	0.39	0.38	0.39	0.36	0.35	0.36

Energy

RMH CITY CAMPUS





Energy

ROYAL PARK CAMPUS

Energy consumption at Royal Park Campus was lower than in previous years.

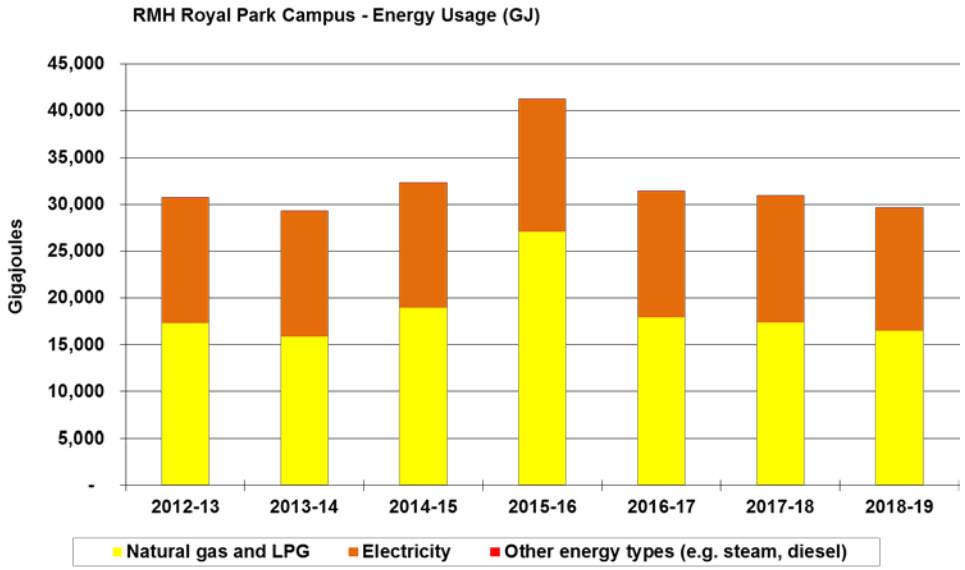
Energy per patient treated is at an all time low since measurements started in 2012-13.

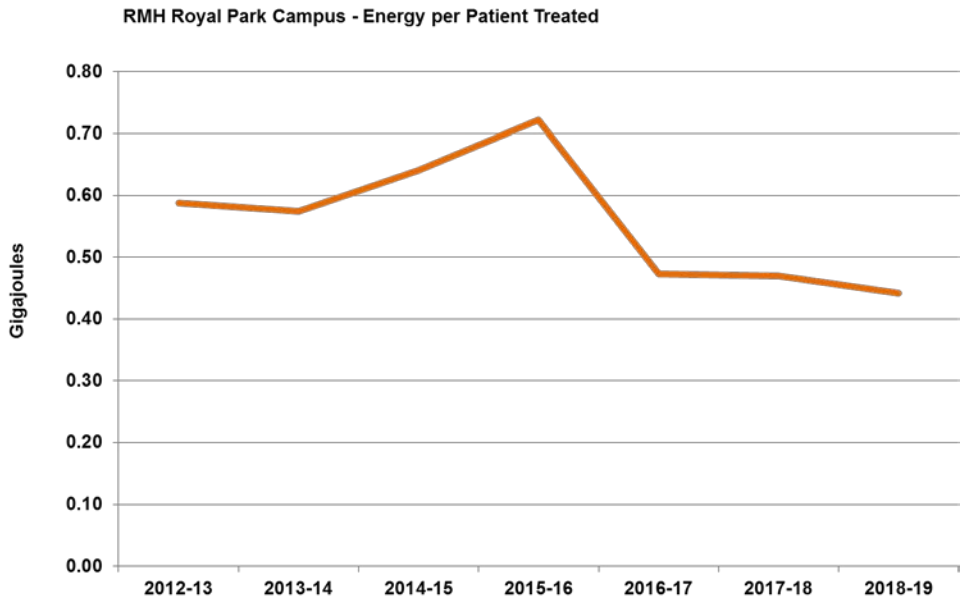
In February 2019, the old Parkville Orygen site closed. The new Orygen building is no longer under the operational control of Melbourne Health, reducing the size of our Royal Park Campus and our energy consumption.

Energy consumption RMH Royal Park Campus							
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Electricity (Grid)	13,444	13,458	13,338	14,069	13,461	13,603	13,141
Natural gas and LPG	17,302	15,838	18,973	27,104	17,922	17,338	16,490
Other (e.g. steam, diesel)	19	19	19	19	19	19	19
Total (gigajoules)	30,765	29,315	32,330	41,192	31,402	30,960	29,650
Normalised energy consumption							
Energy per floor area (GJ/m2)	1.21	1.15	1.27	1.62	1.08	1.06	1.08
Energy per bed-days	0.59	0.57	0.64	0.72	0.47	0.47	0.44
Energy per separations (GJ)	9.95	10.75	12.28	12.44	7.80	8.18	7.15

Energy

ROYAL PARK CAMPUS





GHG Emissions

RMH CITY CAMPUS

Greenhouse gas emissions at RMH City Campus have increased slightly in 2018-19. This is due to an increase in patients and also due to an increase in the ratio of grid electricity versus co-generated energy consumption. Our Co-generation plant is gas fired, meaning co-generated electricity is less carbon intensive.

SCOPE 1 & 2 EMISSIONS

Scope 1 GHG emissions (direct emissions) are emissions released to the atmosphere as a direct result of an activity at a facility

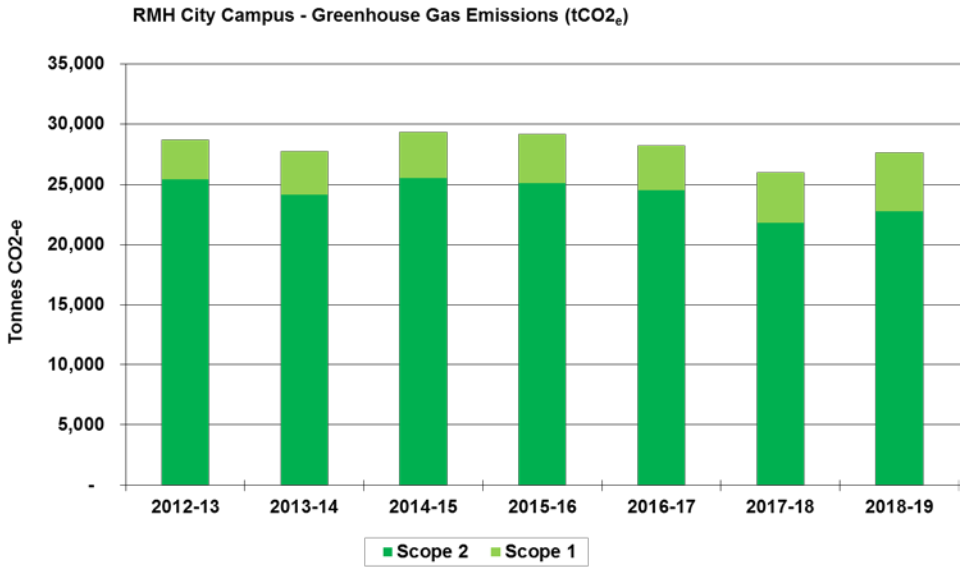
Scope 2 GHG emissions (indirect emissions) are emissions released to the atmosphere from the consumption of energy produced by another facility

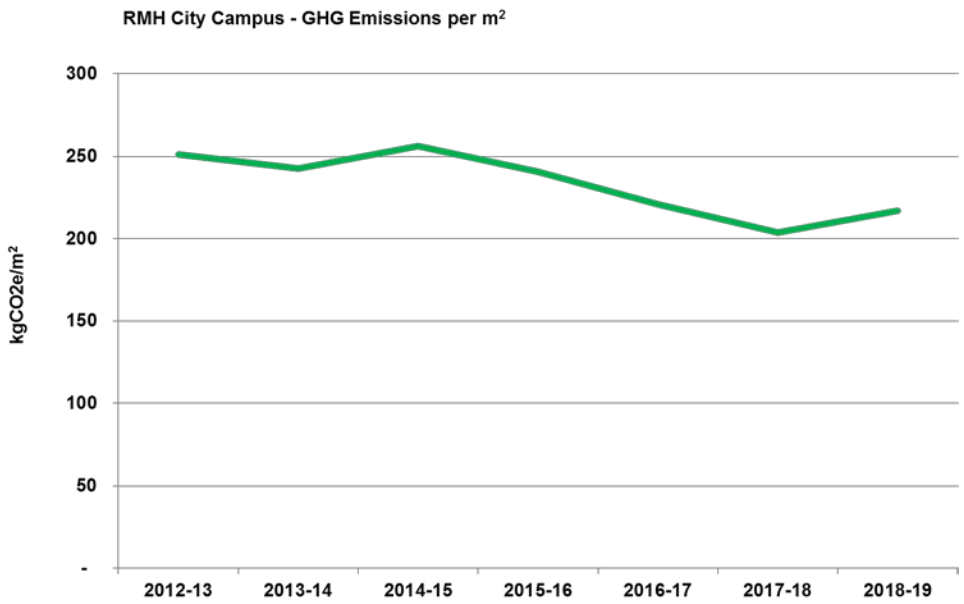
Greenhouse gas emissions RMH City Campus

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Scope 1	3,319	3,612	3,757	4,018	3,694	4,186	4,898
Scope 2	25,436	24,142	25,553	25,120	24,442	21,831	22,795
Total (tonnes CO2e)	28,755	27,754	29,310	29,137	28,136	26,017	27,693
Normalised greenhouse gas emissions							
Emissions per floor area ($kgCO2e/m^2$)	251	243	256	241	220	204	217
Emissions per bed-days (kgCO2e)	118	121	123	122	115	102	103
Emissions per separations (kgCO2e)	322	348	350	326	296	265	274
Emissions per patient treated (kgCO2e)	62	60	61	60	56	49	50

GHG Emissions

RMH CITY CAMPUS





GHG Emissions

ROYAL PARK CAMPUS

Greenhouse gas emissions at Royal Park have declined again over the previous year and are at the lowest level since we began measuring our emissions.

NATIONAL GREENHOUSE FACTORS

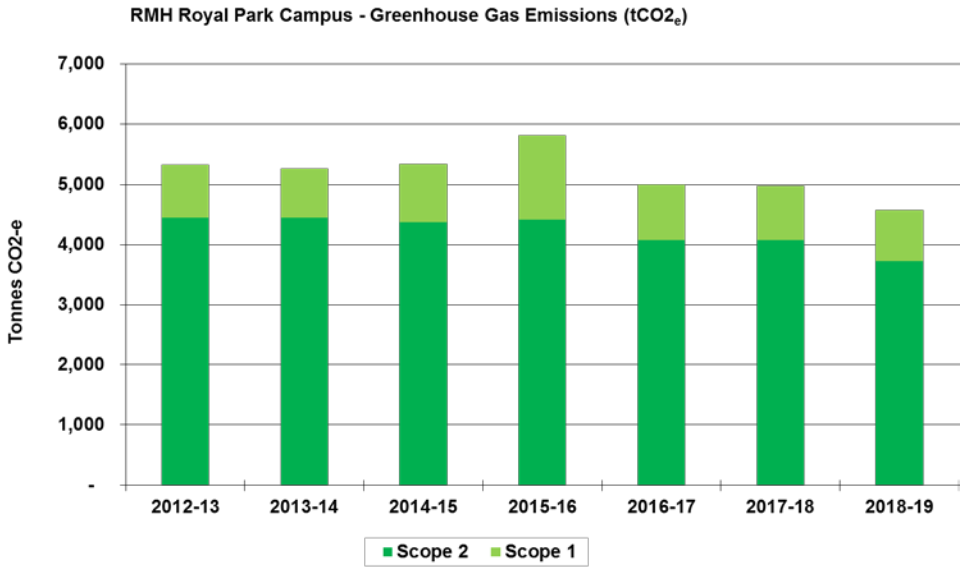
The National Greenhouse Accounts (NGA) Factors is prepared annually by the Department of the Environment and Energy for use by organisations to estimate their greenhouse gas emissions. The published emissions factors are used throughout this report.

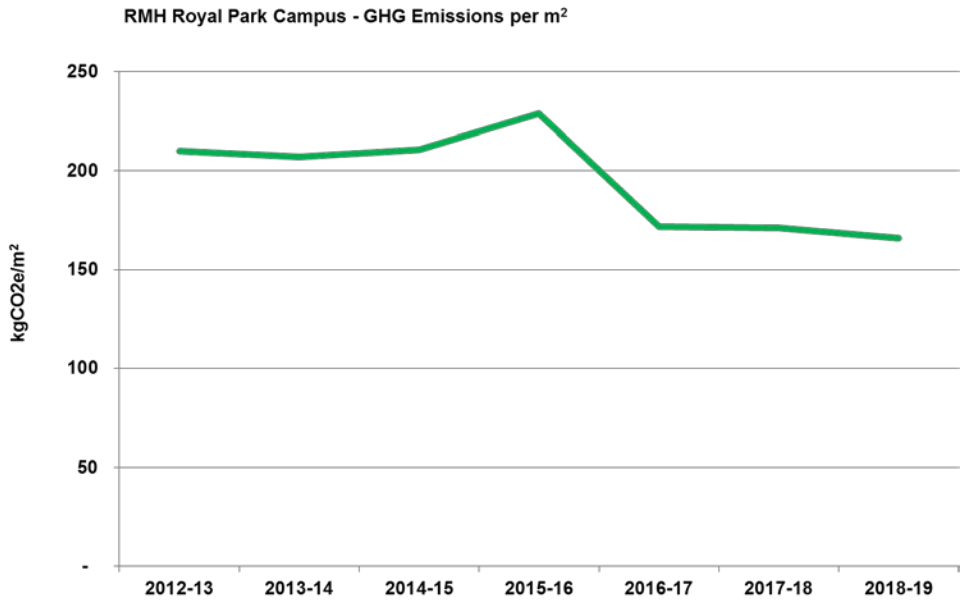
Source: Department of the Environment and Energy, AU, 2017

Greenhouse gas emissions RMH Royal Park Campus							
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Scope 1	889	814	975	1,398	925	895	851
Scope 2	4,444	4,449	4,372	4,416	4,076	4,081	3,723
Total (tonnes CO2e)	5,333	5,263	5,347	5,814	5,000	4,976	4,574
Normalised greenhouse gas emissions							
Emissions per floor area ($kgCO2e/m^2$)	210	207	211	289	172	171	166
Emissions per bed-days /patients treated (kgCO2e)	102	103	106	102	75	75	68
Emissions per separations (kgCO2e)	1,725	1,929	1,757	1,757	1,242	1,315	1,102

GHG Emissions

ROYAL PARK CAMPUS





Water

RMH CITY CAMPUS

In 2018/19 our water usage has increased at City Campus.

Water consumption can fluctuate depending on weather conditions, hotter temperatures require more water for heat rejection in our cooling towers.

Our cogeneration plant used more water for steam generation this year.

Please note:

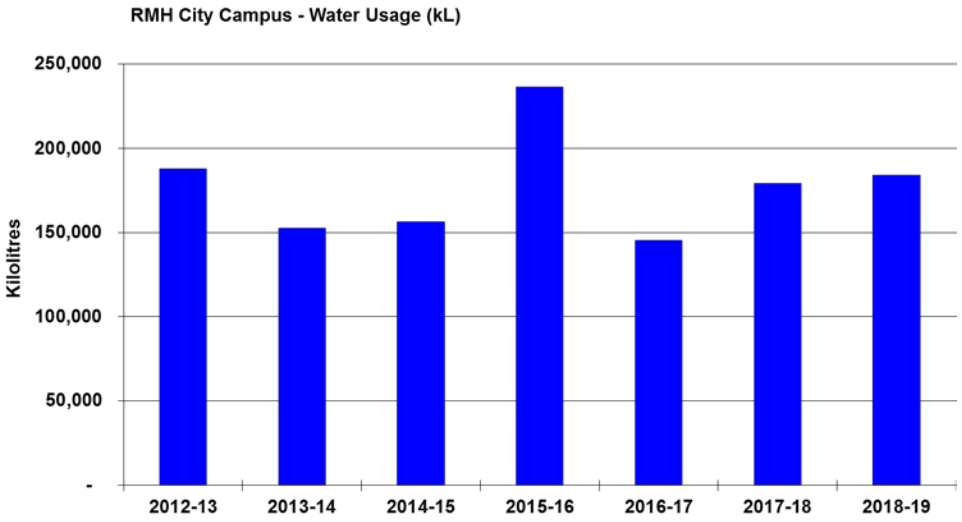
Water consumption in 2015/16 was higher than usual due to construction of four new floors in the B Building and commissioning of new equipment.

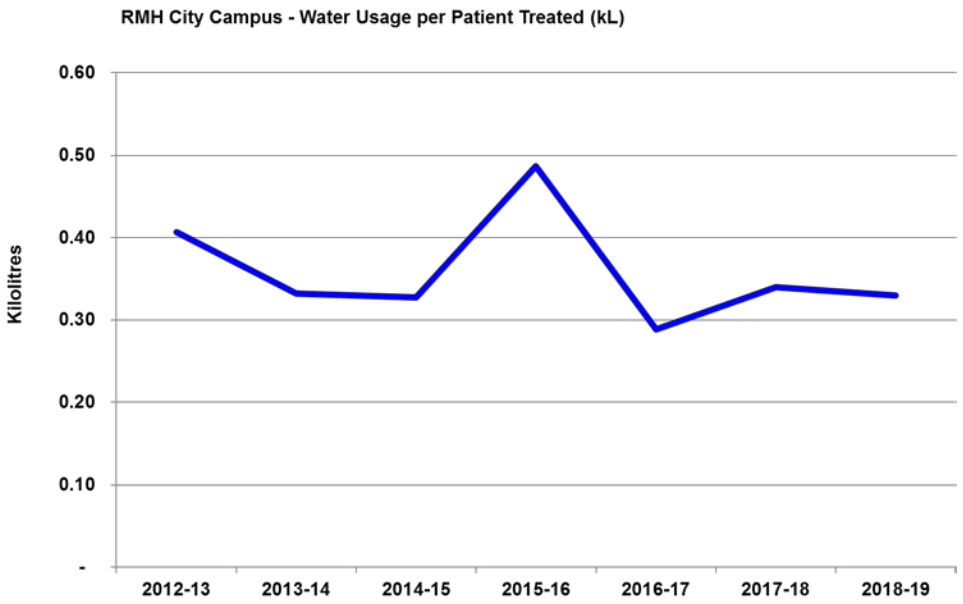
Water consumption RMH City Campus

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Potable water	188,042	152,798	156,660	236,572	145,497	179,582	184,222
Reused/recycled water	0	0	0	0	0	0	0
Total (kilolitres)	188,042	152,798	156,660	236,572	145,497	179,582	184,222
Normalised water consumption							
Water per unit of floor space (kL/m2)	1.64	1.34	1.37	1.95	1.14	1.41	1.44
Water per bed-days (kL)	0.77	0.67	0.66	0.99	0.59	0.70	0.69
Water per separations (kL)	2.10	1.92	1.87	2.65	1.53	1.83	1.82
Water per patient treated (kL)	0.41	0.33	0.33	0.49	0.29	0.34	0.33

Water

RMH CITY CAMPUS





Water

ROYAL PARK CAMPUS

Royal Park Campus water consumption per patient treated has decreased further in 2018/19 and is at it's lowest since 2012/13.

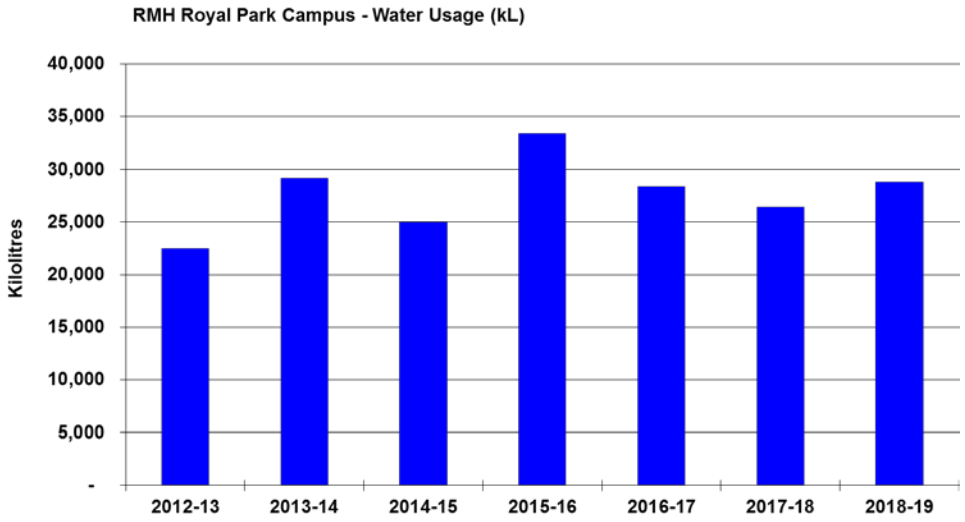
Please note:

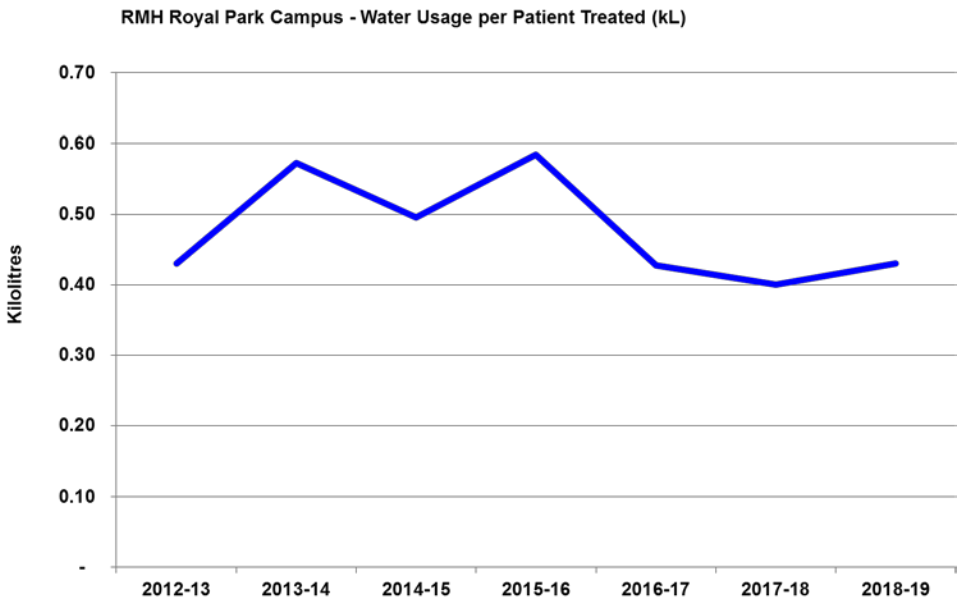
The unusual rise in water consumption in 2015/16 was caused by a plant failure which was subsequently repaired.

Water consumption RMH Royal Park Campus							
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Potable water	22,500	29,220	24,971	33,383	28,378	26,445	28,842
Reused/recycled water	0	0	0	0	0	0	0
Total (kilolitres)	22,500	29,220	24,971	33,383	28,378	26,445	28,842
Normalised water consumption							
Water per unit of floor space (kL/m2)	0.90	1.15	0.98	1.31	0.97	0.91	1.05
Water per bed days/patients treated (kL)	0.43	0.57	0.50	0.58	0.43	0.40	0.43
Water per separations (kL)	7.36	10.71	9.48	10.09	7.05	6.99	6.95

Water

ROYAL PARK CAMPUS





Waste

RMH CITY CAMPUS

At RMH City Campus we decreased our clinical waste generation over last year despite an increase in patient presentations.

Waste per patient treated has decreased this year.

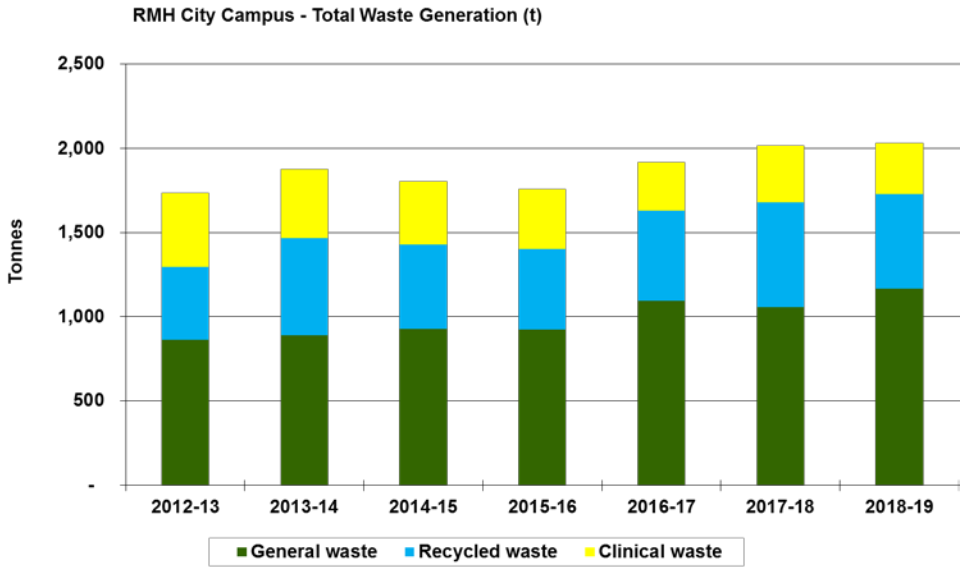
Our total waste generation is still increasing due to the continued increase in patients treated. Other contributing factors include the trend in healthcare towards the use of single use and/or disposable items due to better infection prevention and continued construction and opening of new wards/areas.

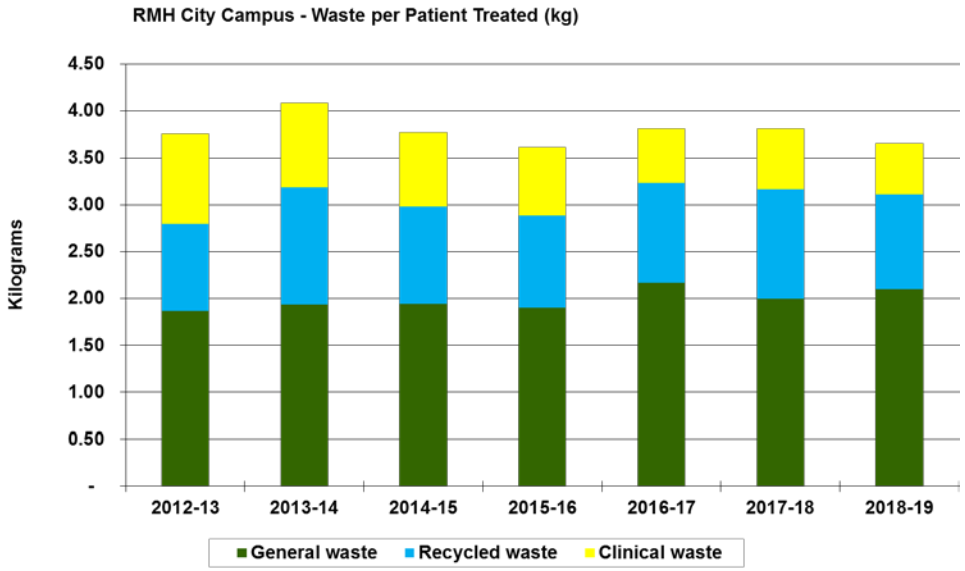
Waste generation RMH City Campus

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Clinical waste	443	412	376	355	289	340	305
General waste	864	889	928	923	1,094	1,058	1,166
Recycled waste	431	577	500	481	537	622	562
Total (tonnes)	1,738	1,878	1,804	1,759	1,920	2,019	2,033
Normalised waste generation							
Waste per bed-days (kg)	7.14	8.19	7.56	7.35	7.82	7.92	7.59
Waste per separations (kg)	19.45	23.56	21.53	19.70	20.21	20.54	20.08
Waste per patient treated (kg)	3.76	4.08	3.77	3.62	3.81	3.81	3.66
Waste recycling							
Waste recycling rate %	33	39	35	34	33	37	33

Waste

RMH CITY CAMPUS





Waste

ROYAL PARK CAMPUS

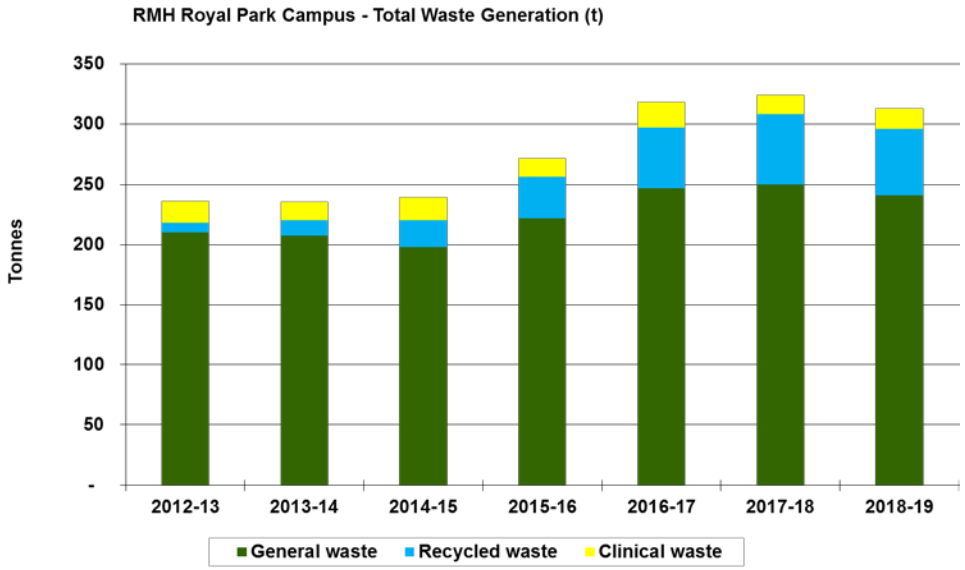
At Royal Park Campus total waste per patient treated has decreased from last year, as has clinical waste.

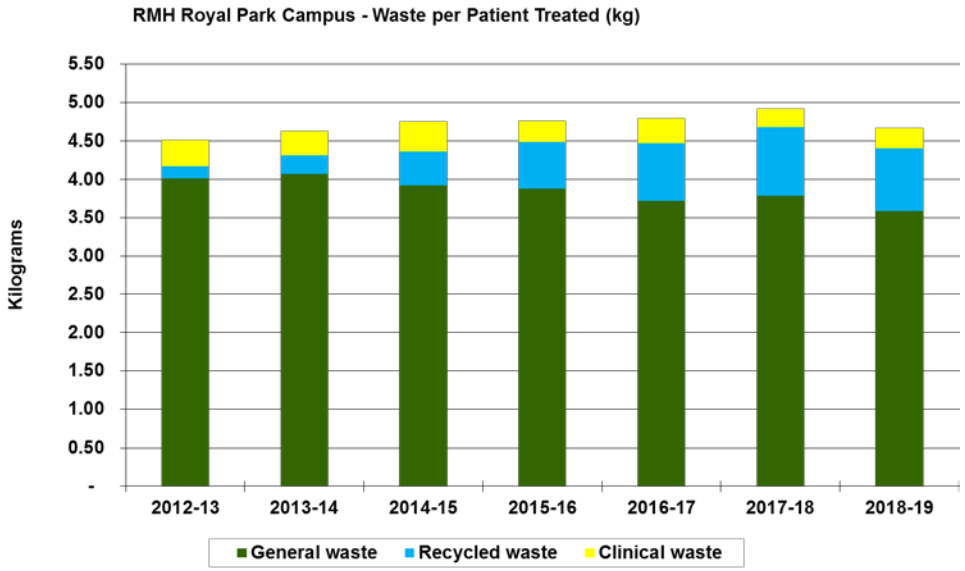
Please note: Clinical waste reported for both campuses does not include sharps; as sharps weight data is not available from the contractor.

Waste generation RMH Royal Park Campus							
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Clinical waste	18	15	20	15	21	16	17
General waste	210	208	198	222	247	250	241
Recycled waste	8	13	22	35	50	58	55
Total (tonnes)	236	236	240	272	318	324	313
Normalised waste generation							
Waste per bed-days / patients treated (kg)	4.51	4.62	4.75	4.76	4.79	6.20	4.66
Waste per separations (kg)	76.22	86.39	91.02	82.10	78.99	85.60	75.22
Waste recycling							
Waste recycling rate %	4	6	10	14	17	19	19

Waste

ROYAL PARK CAMPUS





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.