Sustainability Snapshot Report 2017

city of Rockingham

where the coast comes to life

Introduction

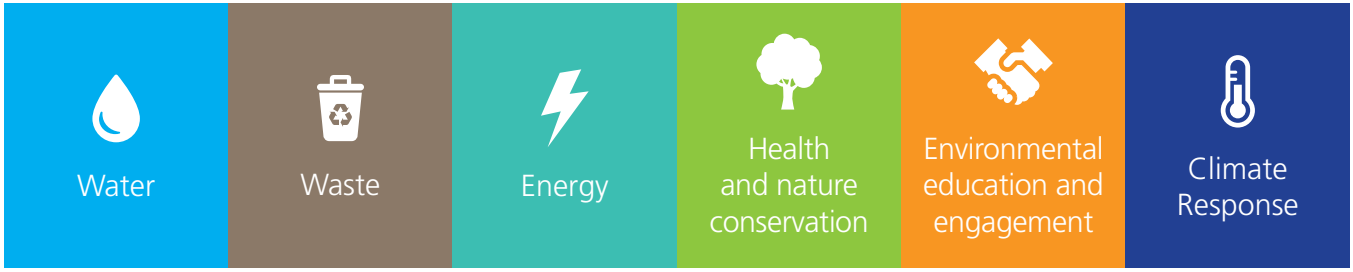
The City of Rockingham encompasses nearly 260 km^2 and currently has a population of approximately 140,000, which is expected to grow beyond 175,000 in the next ten years. Given the context of a rapidly urbanising Strategic Metropolitan Centre, the City aspires to develop strong communities, recognising that a sustainable environment is fundamental to our prosperity, identity and lifestyle.

The widely accepted definition of a sustainable environment is to ensure the needs of our current population can be met, without impacting on the ability of future generations to meet their own needs.

The City is committed to the protection and enhancement of our environment and works in close partnership with the community to ensure it is sustainably managed for future generations to enjoy.

This Report provides a snapshot of the City's collective efforts towards achieving environmental sustainability in the last two financial years (July 2015 – June 2017), with actions undertaken across various teams. It highlights the City's key initiatives and achievements so far on our journey towards a more sustainable future.

As part of our ongoing commitment, the City will be preparing an Environmental Sustainability Strategy in 2018 which will set out key directions, priorities and actions to be implemented over the next ten years, with all outcomes reported in future Sustainability Snapshot Reports against six key focus areas:



Vision

The report aims to deliver Aspiration D: Sustainable Environment as detailed in the City's Strategic Community Plan 2015-2025.

Strategic objectives:

Climate Change
Coastal and Bushland Reserves
Land Use and Development Control
Carbon Footprint and Waste Minimisation

1

Water

The City has made a commitment to reduce its water consumption through the development of a Water Efficiency Action Plan. The plan, endorsed by the Water Corporation and the Department of Water and Environmental Regulation, details key actions to reduce corporate water consumption, improve water quality and educate the community with methods to conserve water at home. The City also uses best practice irrigation techniques to ensure sustainable use of water on its reserves, together with employing Water Sensitive Urban Design (WSUD) principles in the design and construction of all new areas of public open space.

Waterwise Council

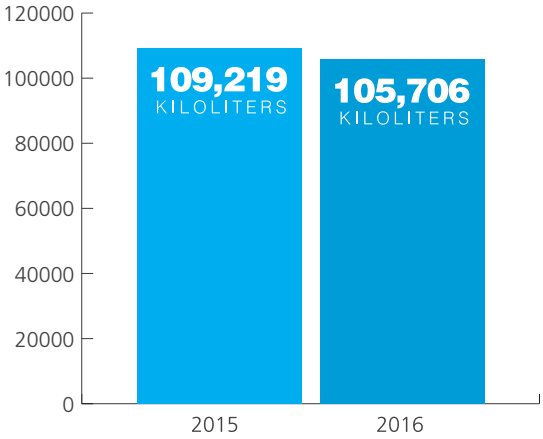
- The City was endorsed as a Waterwise Council by the Water Corporation and Department of Water (now Department of Water and Environmental Regulation) in March 2017.
- City officers are now implementing the actions identified in our Water Efficiency Action Plan, including a review of the highest scheme-water-using City facilities, the top five being:

  1. Aqua Jetty
  2. Churchill Park
  3. Rockingham Aquatic Centre
  4. Point Peron Boat Ramp
  5. Crocker Street Depot

- To maximise water efficiency, all fixtures installed in the City administration buildings and facilities must be certified as waterwise.

Scheme Water Usage

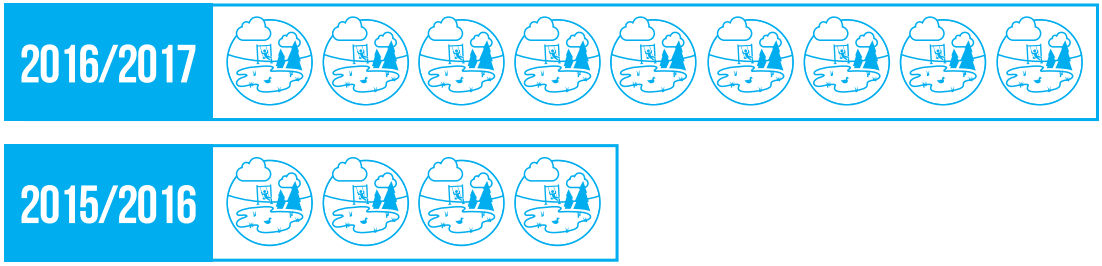
- The City's scheme water usage for its operations **reduced by 3.22%** from 2015 to 2016 (calendar years).



Water Sensitive Urban Design (WSUD)

- The City uses best practice WSUD principles in the design and construction of all new areas of public open space. This improves the quality of stormwater runoff and also provides habitat for native animals, such as frogs and waterbirds.

Number of new areas of public open space constructed incorporating best practice WSUD principles



WSUD Achievements - Case Studies

Baldivis Parks Estate (Developer: Frasers Property Group) and One71 Estate (Developer: Mirvac)

Challenges:

- Poor infiltrating clay soils
- High groundwater table with degraded water quality
- Stormwater from the sites drains into the environmentally sensitive Peel Harvey Estuary

Key WSUD elements for the public open space areas in the first stages of both developments include:

- Integration of water quality treatment measures in the form of Gross Pollutant Traps and a biofilter landscaped with nutrient stripping native vegetation and underlain with amended soils and subsoil drains.
- The biofilters (pictured) have been sized to treat the first 15mm of rainfall runoff and improves the quality of both stormwater and groundwater to achieve water quality improvement targets for the Peel Harvey Estuary.
- Tiered flood mitigation basins designed to contain stormwater runoff from rare major rainfall events (1% chance of occurrence). These areas have been turfed to provide a recreation area whilst maintaining WSUD best management practice.
- Engineered weir outlet systems to reduce stormwater flows to pre-development rates.
- The public open space in One71 features a unique boardwalk (pictured, image 1.2) which has been integrated within the biofilter and stormwater management basin, and includes interpretive signage to promote awareness of WSUD to the community.
- Both public open spaces feature ephemeral wetland areas designed to temporarily contain stormwater runoff from surrounding urban catchments.

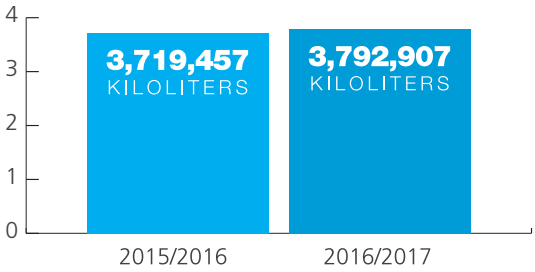
1.1 Biofilter at Baldivis Parks, Baldivis

1.2 Biofilter at One71, Baldivis

Waterwise Irrigation

With over 600 hectares of reserves irrigated using groundwater, the City is continually working to be more water efficient, by monitoring usage, identifying opportunities for improvement and employing best practice irrigation techniques.

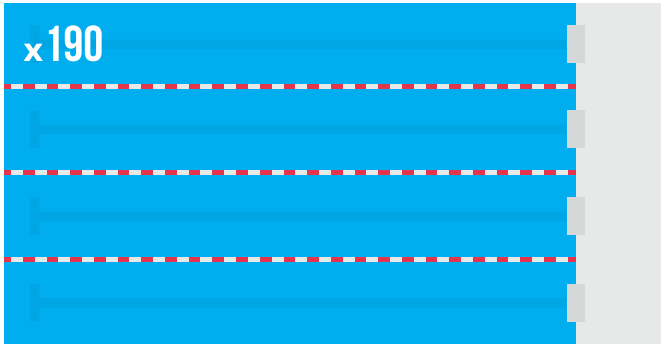
- The City's groundwater usage over the last two financial years was:



  The slight increase in usage reflects additional areas of public open space being managed by the City last financial year.

- The City's usage of 3,792,907 kL in the 2016/2017 financial year is 474,493 kL less than the City's groundwater allocation from the Department of Water and Environmental Regulation. This is a saving of 13% or 190 olympic sized swimming pools.

OLYMPIC SWIMMING POOLS OF GROUNDWATER SAVED:



- In 2016/2017 the City undertook irrigation audits at Careeba Reserve, Laurie Stanford Reserve and Shoalwater Oval to measure the performance of the irrigation systems. On this basis, Laurie Stanford was identified as a priority and has been upgraded to improve efficiency of the existing irrigation system. Both Careeba Reserve and Shoalwater Oval have old irrigation systems that require replacement with improved designs. This will be budgeted for in future years.

- The City has installed four weather stations at the following locations to reduce water use:

  - Rockingham (City Park)
  - Warnbro (Living Waters Oval)
  - Baldivis (Chestnut Reserve)
  - Singleton (Laurie Stanford Reserve)

- Each weather station measures and records wind speed, wind direction, air temperature, relative humidity, rainfall and solar radiation. Using this data, the weather stations estimate the amount of water lost from the soil due to evaporation and plant transpiration (evapotranspiration) and adjust the irrigation system cycle accordingly.

- In 2016/2017, all four weather stations were serviced and recalibrated. Each weather station will now be connected to a reserve, as listed below:

  - Rockingham - Delphinus Reserve
  - Warnbro - The Avenue Reserve
  - Baldivis - Avena Gardens
  - Singleton - Harmony Park

These sites will come on line in late 2017.

Groundwater monitoring

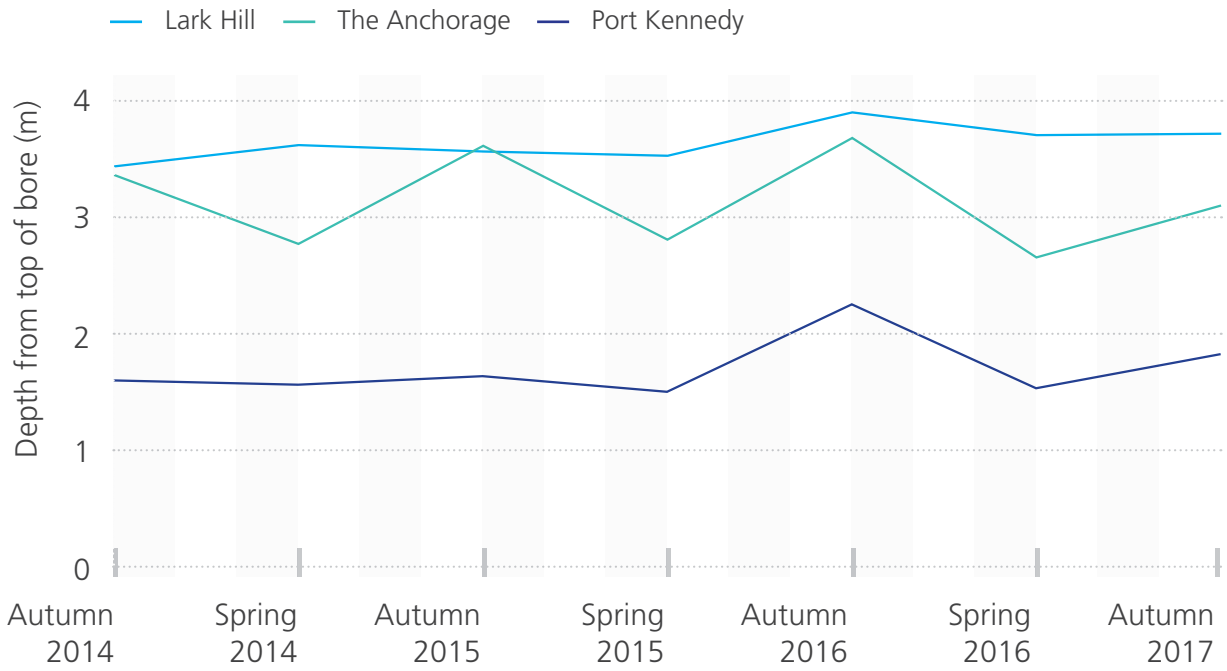
- Consistent with the Department of Water and Environmental Regulation's requirements, the City undertakes groundwater monitoring twice a year at the following sites:
  - Lark Hill
  - Anchorage
  - Port Kennedy; and
  - Lake Richmond

Groundwater levels and a number of key quality parameters are measured, including salinity, pH and nitrate. This data is used to establish a long term database and enables the City to detect changes in the aquifer.

Analysis of data collected indicates that water quality in these areas meets national standards as per the Australian and New Zealand guidelines for fresh and marine water quality.

The standing water level is measured at three of the monitoring sites, from ground level down to the top of the water table. As can be seen in figure 1.1 below, groundwater levels have remained stable, with only minor seasonal fluctuations occurring due to rainfall.

Figure 1.1 Standing water level measurements at three groundwater monitoring sites



2

Waste

There are a number of environmental impacts associated with waste, including the space required for landfill, potential contamination and greenhouse gas emissions. The City's Waste Collection Strategy 2014 details the City's commitment to delivering best practice, sustainable waste management to minimise environment impacts and provide optimal waste services for our residents.

Millar Road Landfill

- 62,503 tonnes of waste was collected through the City's kerbside and verge services last financial year. This is the equivalent to the weight of 8.5 Eiffel towers and can fill up 140 Olympic sized swimming pools
- The Western Australian Waste Strategy aims to achieve a 65% municipal waste recovery rate in the metropolitan region by 2020. The City is working towards this, with 28% of waste in the City being diverted from landfill to recycling facilities in 2016/2017.
- This means that 17,200 tonnes of waste was recycled through yellow lidded bins and verge collections, which is equivalent to the weight of 2.5 Eiffel towers and can fill up to 39 Olympic sized swimming pools.
- The remaining 45,303 tonnes of the waste collected last year was buried in landfill. That's the equivalent weight of 6 Eiffel towers being buried and can fill up to 101 Olympic sized swimming pools.

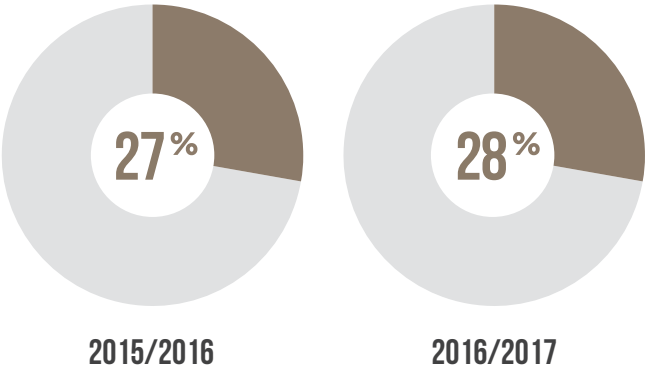
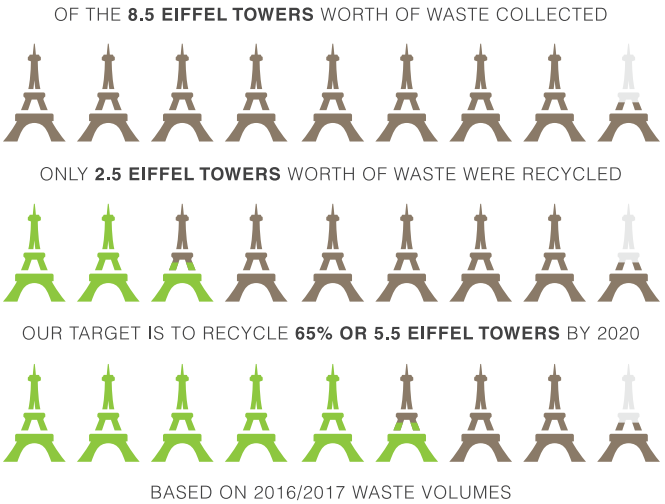


Figure 2.1 - Percentage of waste directed from landfill to recycling facilities from the bin and verge collections

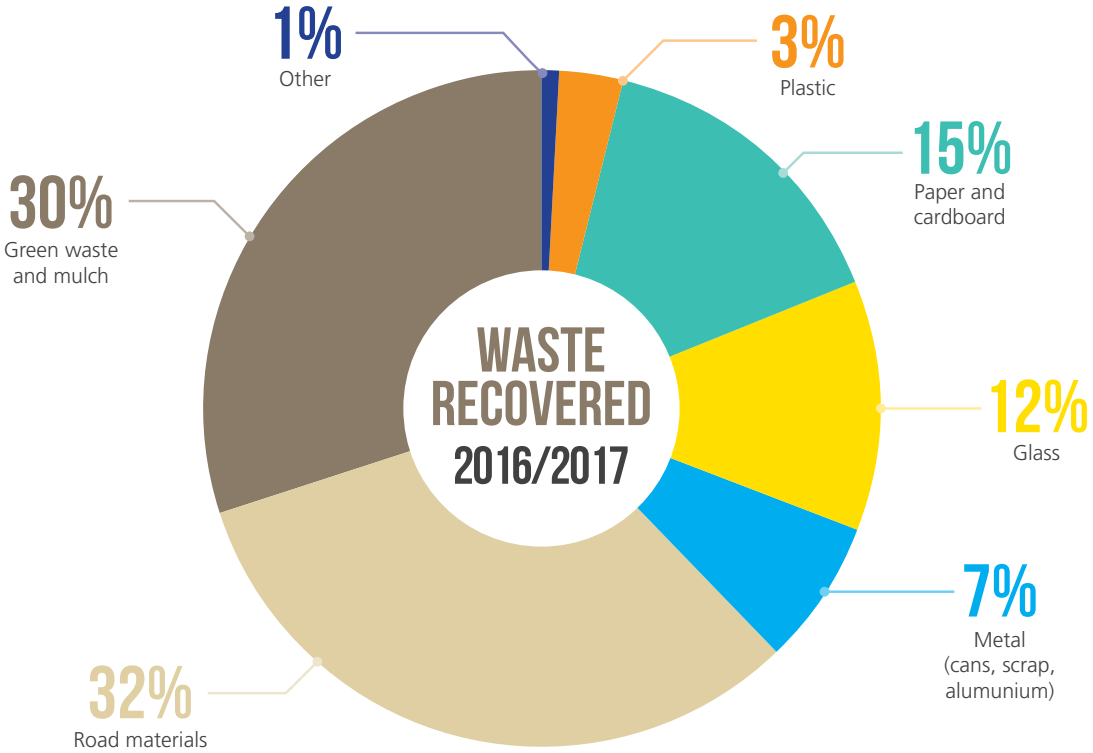


- The City has now completed the Three Bin Rollout project to provide all households with an additional green waste bin and a larger recycling bin. This was expected to increase the City's waste recovery rate to 35%.

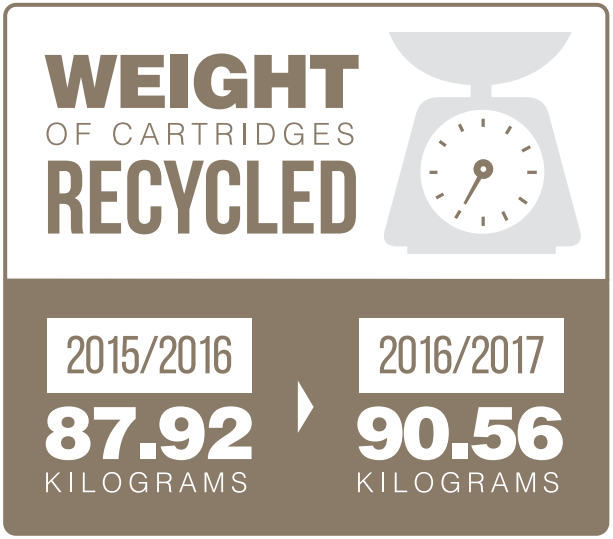
  In the first three months since the rollout, the City's waste recovery rate for the bins has increased from 23% to 46%

- The City recovers and recycles many products from landfill in addition to the items recycled in the yellow-lidded bins.
  A percentage breakdown of these products can be seen in Figure 2.2 below.

Figure 2.2 - Products recovered or recycled from landfill in 2016/2017



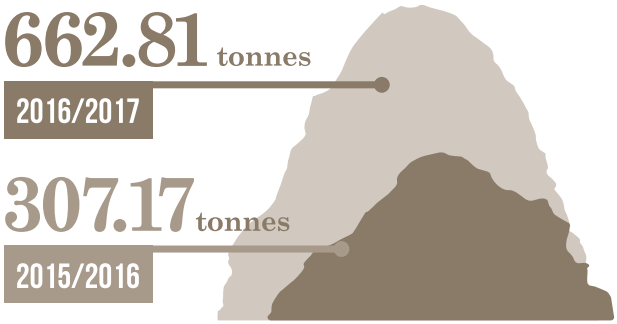
- The City also recycles printer cartridges. The total weight of cartridges recycled in the last two years is shown below:



- All landfill waste is placed into large 'cells' in the ground. New cells are required about every 2.5 - 3.5 years at the Millar Road Landfill as existing cells are filled. In 2016/2017, the new Landfill Cell 17 was constructed, costing $1.81 million.
- Capping of waste cells once they are filled is a requirement of the licence for the Millar Road Landfill Facility. The Cell 8 cap was constructed in 2016/2017, costing $4.32 million (total project cost includes Cell 16 construction and 2 new leachate ponds).

LitterBusters

- The City's LitterBusters team was developed to provide a rapid response to community reports of litter, after it was identified as a key area of concern in the Customer Satisfaction Survey.
- Since 2015, LitterBusters have responded to 4,136 community reports of litter.
- LitterBusters was a finalist in the AIM West Pinnacle Awards for marketing and customer service excellence in 2016.
- The amount of litter cleaned up and sent to landfill by LitterBusters over the last two years is shown below:



LITTERBUSTERS
City of Rockingham

3

Energy

The City is committed to ensuring that City operations are undertaken with minimal energy consumption. As our population continues to grow, we are presented with the challenge of providing additional facilities, services and infrastructure whilst aiming to reduce our greenhouse gas emissions.

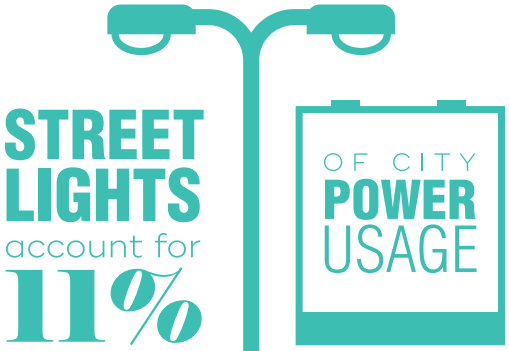
The City used more than 13 million KWh of power last financial year, which is **enough to power over 2,000 households for a year.**
This energy was used in all of the City's operations, administration and community facilities, in addition to lighting streets and parks.

Highest energy users

Facilities
The City's five highest energy consuming facilities were:

- Administration Centre;
- Aquatic Centre,
- Lark Hill;
- Autumn Centre; and
- Mary Davis Library.

Streetlights
The ownership of our street lighting is shared, with approximately 18,000 lights owned by Western Power and 1,755 lights owned by the City. As with other local governments across Australia, streetlights account for a significant portion of the energy budget and are responsible for 11% of the City's total energy use.



Energy Efficiency Program

Strategies to reduce energy consumption are implemented through the City's Energy Efficiency Program, managed by the City's Asset Services team. The program began in 2012 and is delivered through a $400,000 annual budget identified in the City's Business Plan.

The average payback period for the City's investment in energy efficiency is 2.5 years.

Specific elements of the program include:

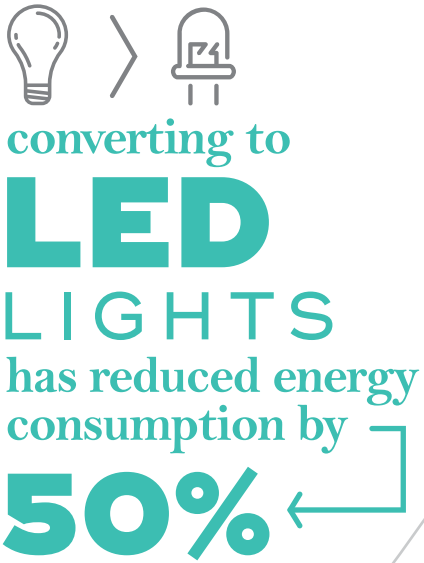
Energy production

- Photo Voltaic (PV) solar panels installed on 74 buildings
- A total of six facilities had PV solar installed in 2016/2017
  - Gary Holland Centre
  - Anniversary Park club rooms
  - Georgetown club rooms
  - Safety Bay Library
  - Depot
  - Operations centre
- PV solar lighting installed in seven parks and six Public Access Ways
- One wind turbine installed
- The total energy produced by these energy production measures per year is 874,548 kWh, **enough to power 135 average households for a whole year.**

Energy reduction

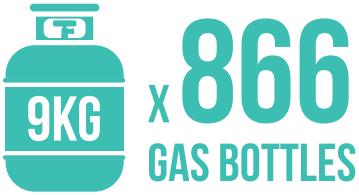
- Each year the City upgrades existing lights to Light Emitting Diodes (LEDs). LEDs are one of the most energy-efficient lighting technologies, saving up to 85% of the energy of a standard halogen or incandescent globe and resulting in significant cost savings. This has reduced our energy consumption associated with lighting from 118,552 kWh per year to 59,542 kWh per year. This is approximately a 50% reduction.

  This includes:
  - Park lighting – 457 lights upgraded
  - Roads – 25 lights upgraded
  - Buildings – 156 lights upgraded.
- All tenders require any fixtures installed in City facilities to be energy efficient.



Monitoring energy consumption

- Sub-metering has been installed at the Administration Building, Mary Davies Library and Community Centre and the Aqua Jetty to monitor real time energy consumption.
- An audit of the Administration Building energy usage was undertaken which identified the need to undertake an in depth review of the HVAC (heating, ventilation and air conditioning) system next financial year.
- The City's emissions are calculated by running a report through Greensense, an energy consumption monitoring platform that identifies trends and areas where reductions in emissions can be targeted.
- The City currently has 282 facilities monitored through the Greensense platform.
- The City used over 13 million kWh of energy in 2016/2017 to power all of our operations, facilities and streetlights, which was **less than a 1% increase from 2015/2016**.
- The City used approximately 382 GJ of gas in 2016/2017, equivalent to 866 9kg gas bottles.



3. Energy

Emissions

- The City actively monitors greenhouse gas emissions generated from day to day operations. Vehicle fleet, machinery, natural gas and electricity usage all contribute to the City's emissions, however, most emissions are attributed to the decomposition of waste at the Millar Road Landfill Facility as shown below.

2015/2016

92%

emmisions from landfill

105,546

tonnes of City CO^2e

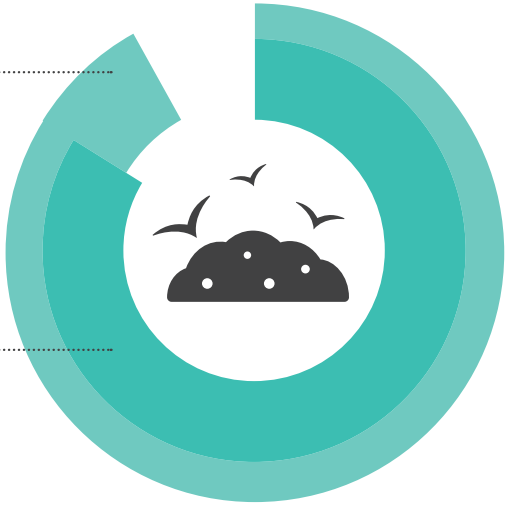
2016/2017

84%

emmisions from landfill

104,767

tonnes of City CO^2e



- **Emissions between the 2015/2016 and 2016/2017 financial years reduced by approximately 1%.**

- Methane is the dominant greenhouse gas produced at the Millar Road Landfill. To reduce the amount of methane released into the atmosphere, methane harvesting is undertaken at the landfill. This involves laying a system of pipes to capture the gas as it is generated from the decomposition of waste in landfill. The gas is then converted to electricity and put back into the grid. The results for 2016/2017 are shown below:

88,524

tonne of

methane

EXTRACTED

20,150

mega watts

electricity

GENERATED

3,535

average

households

POWERED YEARLY

The energy generated from the Millar Road Landfill Facility is 1.5 times the City's total energy use

Carbon Neutral

- In 2015/2016 the City's total vehicle fleet produced approximately 3,472 tonnes of CO^2 emissions. The City engages Carbon Neutral to compensate for vehicle emissions through accredited and verified carbon offset programs. Specifically, the City participates in the following two programs run by Carbon Neutral:

Canakkal Wind Power
(Turkey)

The installation of wind power farms in Turkey generates electricity from renewable resources, creates employment opportunities for local communities and reduces reliance on fossil fuels.

Yarra Yarra Biodiversity Corridor
(Western Australia)

The Yarra Yarra Biodiversity Corridor is a multi-species native reforestation project located just south of Dongara, WA. The project was established on degraded, semi-arid agricultural land that no longer supported farming with the goal of returning the environment to its origins by replanting locally endemic native species. The project is expected to remove over 1.257 million tonnes of carbon over 50 years and create a valuable conservation reserve.

3.1 Yarra Yarra Biodiversity Corridor before (above) and after (below) revegetation

The mix of local and international projects balances the high capital and labour costs associated with large scale revegetation projects with lower cost energy generation projects in developing countries.

Carbon Neutral is regulated by the Australian Securities and Investments Commission and is a registered offset provider under the Carbon Farming Initiative. Furthermore, most carbon credits are compliant with the Kyoto Protocol, an international agreement linked to the United Nations Framework Convention on Climate Change (UNFCC).

4

Health and Nature Conservation

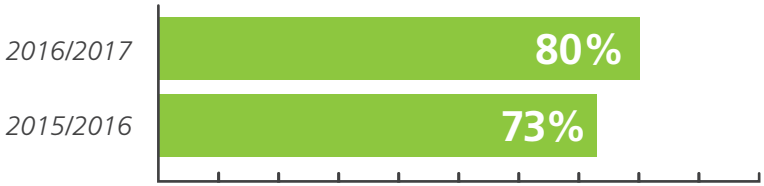
The City boasts a diverse range of natural environments with 37 km of pristine coastline, the deepest freshwater lake on the Swan Coastal Plain (Lake Richmond), several conservation significant wetlands, nationally recognised ecological communities, over 870 hectares of well-maintained public open space and approximately 940 hectares of nature reserves. The City also recognises that health and wellbeing are intrinsically linked to the quality of our natural environments.

City is committed to the protection and enhancement of natural areas and works in close partnership with the community to ensure our environment is sustainably managed for future generations to enjoy. Some key achievements and projects in this space are detailed below.

Frog Population Monitoring Program

- **Biologically, frogs are particularly sensitive to environmental change and are a good indicator species to detect changes in ecosystem health.**

The sensitivity of frogs to their environment and their relative ease of detection using surveys of recorded frog calls makes them a cost effective tool for wetland monitoring and management. Since 2015, the City has undertaken a Frog Population Monitoring Program in a number of wetland reserves, looking specifically at the Squelching Frog, *Crinia insignifera* (pictured) to provide an indication of overall wetland health. The occupancy rates, shown below, tell us that in 2016/2017, 80% of the sites surveyed contained the target frog species indicating that our wetlands are in good health.



Occupancy of target species at sites surveyed

The monitoring will be undertaken every two years to establish a long term dataset which will give us a better understanding of changes over time.

Little Penguin Research Project

The marine research branches from Murdoch University and the University of Western Australia, have been studying the Penguin Island colony of Little Penguins *(Eudyptula minor)* since 1986. These seabirds are recognised as key bioindicators for the health of marine ecosystems and therefore provide critical information relating to the management of the Warnbro Sound, Cockburn Sound, Shoalwater Islands Marine Park and surrounding coastal environments.

The City has supported the Little Penguin Research Project since 2012, which aims to better understand the health, ecology and resilience of Little Penguins and the coastal marine habitats they occupy.

- In 2016/2017 the City committed $35,000 to monitoring and managing water quality in 20 of its lakes.
- An assessment of vegetation condition in the City's reserves was undertaken in 2007 and 2014 to inform the Reserve Prioritisation Report. The results of this assessment showed that **overall, the condition of vegetation within the City's reserves has improved since 2007**, which tells us that our natural areas are being effectively managed.

Vegetation Condition (Kaesehagen 1995 scale)

- The City's Natural Area Conservation Strategy was endorsed by Council in September 2017, which provides a framework for the conservation of approximately 940 hectares of natural areas under management by the City, including bushland, foreshore and wetland environments.
- In early 2017 an assessment was undertaken of all ecological values on both public and private land to identify priority areas for protection and management. This desktop assessment provides a foundation for further detailed analysis which will be undertaken in 2018.

- A detailed fauna assessment was undertaken in coastal areas between Warnbro and Singleton to inform the development of the City's Foreshore Management Plan 2015. During the field survey, a total of 68 species were recorded including nine mammal species, 16 reptile species, two amphibian species and 41 bird species. Of these, four species are listed as having high conservation value – Southern Brown Bandicoot (Priority 4 species) Lined Skink (Priority 3 species), Common Sandpiper and Sanderling.

4.1 Southern Brown Bandicoot

4.2 Sandpiper

4.3 Sanderling

4.4 Lined Skink

- As of 2016/2017, **a team of 87 City officers are responsible for managing 870 hectares of public open space.**

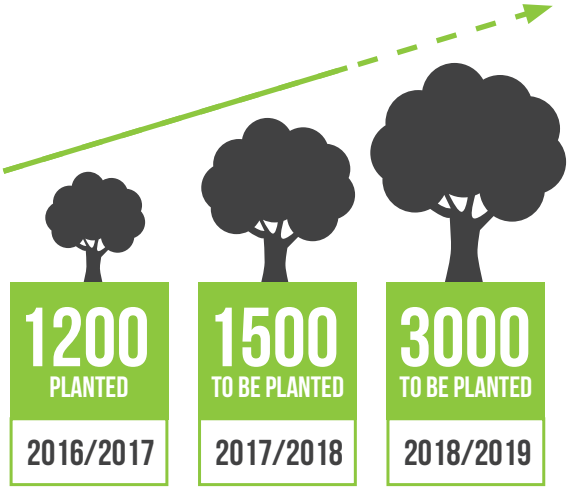
  This is more than double the area of Kings Park.

- Number of parks managed by the City:

- It is estimated that the City has **over 50,000** public trees located in streetscapes and parks, which deliver a range of benefits to the community and the environment.

- The Winter Street Tree Planting Program provides an opportunity for residents to request a free street tree to be planted in their verge. Last year the City installed over 500 trees through the program.

- The City's Greening Plan (2017) provides a framework to increase our tree canopy in streetscapes and public open space, with 15,000 trees to be planted over the next five years.



- More than 100,000 native seedlings were planted in City conservation reserves over the last 2 years.

NUMBER OF SEEDLINGS USED IN REVEGETATION OF CITY CONSERVATION RESERVES	
2015/2016	49,273
2016/2017	52,668

- The average survival rate of revegetation in the last two financial years has been **78%**.

- Since 2015, a total of seven new areas of public open space have been designed with a focus on 'nature play' through the use of natural materials and elements. These parks are located at:
  - **Chimes Estate**
    Splendour Road, Baldivis
  - **Golden Bay Estate**
    Woolibar Road, Golden Bay (pictured)
  - **Baldivis Parks Estate**
    Timbarra Street, Baldivis
  - **Golden Bay Estate**
    Mallina Crescent, Golden Bay
  - **The Vistas Estate**
    Aquamarine Parade, West Karnup
  - **One71 Estate**
    Parkville Boulevard, Baldivis
  - **The Edge Estate**
    Key Close, Baldivis (pictured)
- In 2016/2017 the City spent $1.9 million on installing 1.4 km of bike path along Safety Bay Road between Mandurah Road and Eighty Road.

4.5 The Edge Estate, Baldivis

4.6 The Edge Estate, Baldivis

4.7 Golden Bay Estate

4.8 Golden Bay Estate

5

Environmental Education and Engagement

The City works in close partnership with the community to ensure the sustainable use and management of our local environment. In particular, the City plays an important role in providing a range of opportunities for environmental education and engagement which assists residents, schools and community groups to adopt more sustainable practices.

Key Achievements

- The City has used the following participant organisations for volunteer planting in the last two financial years:
  - Conservation Volunteers Australia
  - Work for the Dole
  - Green Army
  - CoastCare
  - Scouts
  - Primary Schools
  - Friends Group
- The City had an average of **469 volunteers** attend community planting days each year for the last two financial years.

Number of plants planted through community planting days

7,110
2015/2016

4,780
2016/2017

5. Environmental Education and Engagement

- Over $20,000 in grant funding was awarded to community groups to undertake various environmental activities in 2016/2017.
- The City's Castaways Sculpture Exhibition is an annual art competition that has been running since 2008. The exhibition combines the theme of recycling and environmental awareness with the creative re-use of materials and innovative sculpture.
- **Five primary schools** and **six high schools** made artwork submissions and over **15,000 people attended** the exhibition in 2015/2016.
- The City delivered **132 environmental education and awareness sessions** to school groups in 2016/2017. This included 'Upcycle' workshops which allowed students to make sculptures from recycled materials, as well as take tours of the Millar Road Landfill Facility.
- The Waste Education Program run through the Waste Services team was delivered to **260** community members and **1,350** school students in 2016/2017.
- 24 schools participated in the Walk Safely to School Day in 2016/2017. Data collected on the day indicated a 52% increase in the number of students walking to school, with 4,245 students provided with a healthy breakfast.
- 11 free workshops were run at the City's libraries in 2016/2017 covering various sustainability themes.
- At the end of 2016/2017 the City had 336 people signed up to Coastal and Marine Environment category and 290 people signed up to Environmental Issues category on Rock Port.

Case Study

Bushfire Mitigation in the Warnbro Dunes

In 2015/2016 the City undertook the Warnbro Dunes Bushfire Risk Mitigation Pilot Project. The Pilot Project aimed to develop an understanding of the bushfire risks within the Warnbro Dunes; by engaging with the community and developing individual property bushfire treatment plans to manage the bushfire risk. The project recognised that the risk cannot be removed altogether due to the importance of protecting the environmentally significant vegetation on the dunes.

- In 2016/2017 City Officers commenced property inspections in the Warnbro Dunes to assess compliance with issued bushfire treatment plans. All 119 properties were inspected, with 28 properties requiring further works to be completed through work orders.
- In 2016/2017 the City engaged contractors to do work within the road reserve to assist in the reduction of bushfire risk.
- The Warnbro Dunes risk assessment will be incorporated into the City's overall Bushfire Risk Management Plan being developed.

6

Climate Response

There is a consensus amongst scientists dealing with climate hypotheses and observations that increasing levels of greenhouse gases attributable to human activities are likely to be contributing to global warming. Over the 20th century, increases in global average air and ocean temperature have been observed. The extra heat in the climate system also has other impacts such as affecting atmospheric and ocean circulation, which influence rainfall and wind patterns.

Records show that the decade of 2001 - 2010 was the world's warmest decade on record. In Australia, each decade has been warmer than the previous decade since the 1950s.*

The City recognises the importance of long term strategic planning and managing our environment in a way which ensures resilience for the future.

Green spaces

- The City maintains over 50,000 trees along streets and in parks. These provide a cooling effect, habitat for native birds, and reduce stormwater runoff.

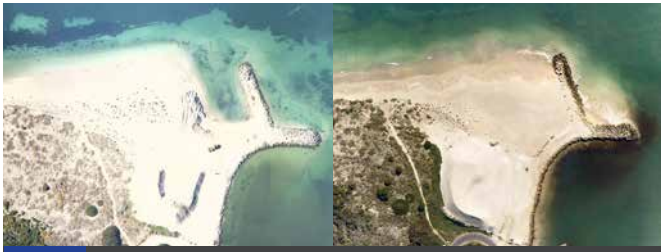
18.1 Civic Boulevard, Rockingham

- A detailed assessment of existing canopy cover was undertaken to inform the new City Greening Plan 2017-2022. This plan can be viewed on the City's website and outlines key actions to enhance our green space, particularly by planting more trees in public open space and road reserves. In accordance with this plan, the City is aiming to more than double our tree planting effort over the next five years, from 1,200 per year to approximately 3,000 per year, to improve the long term trajectory of our urban forest cover.

* Data from Department of Environment and Energy

Coastal management

- The purpose of the Point Peron sand trap is to manage the natural sand build up which would otherwise impact on the functionality of the Point Peron boat ramp. The City is required to excavate sand from the trap every year as it builds up. This sand is typically used to replenish parts of the coast subject to significant erosion, either in the City or in other local governments. In 2016/2017 the City excavated 13,000 m^3 of sand from the Point Peron sand trap, which was then transported to replenish several beaches along our coastline.



6.1 Sand trap following excavation and when full

6.2 Area of eroded beach near Hymus Street

- In 2016/2017, the City undertook beach profile surveys at the following beaches to better understand long term changes relative to seasonal variations:
  - Point Peron
  - Safety Bay Foreshore, Navigation Channel and Tern Bank
  - Mersey Point
  - Waikiki Foreshore
  - Warnbro
- A hydrographic survey was also undertaken between the Donald Drive Boat Ramp, Safety Bay and Shelton Street, Warnbro to determine the profile of the sea floor with respect to the boat ramps in these locations.

6.3 Completed sand replenishment at Hymus Street

Regional partnerships

- The City is part of two collaborative partnerships aimed at developing a shared understanding of our coastal environments. These partnerships recognise that management of our dynamic coastal environment is not limited by local government boundaries.

  Cockburn Sound Coastal Alliance
  The Cockburn Sound Coastal Alliance was formed in 2011 between four local governments (Fremantle, Cockburn, Kwinana and Rockingham), with support from the Departments of Transport, Planning, Water and Environmental Regulation, Defence, the Cockburn Sound Management Council, and Perth Region NRM.

  Key achievements include the development of coastal hazard mapping and adaptation reports for the Cockburn Sound coastline.

  Peron Naturaliste Partnership
  The Peron Naturaliste Partnership is an incorporated collective group of nine local governments between Point Peron and Cape Naturaliste (Bunbury, Busselton, Capel, Dardanup, Harvey, Mandurah, Murray, Rockingham, Waroona). The partnership was formed in 2001 and key achievements to date include regional coastal hazard modelling and research into adaptation pathways and coastal values.

7

Taking Action

This report is the City's primary method for communicating its progress towards a more sustainable future and will be published annually. As part of its ongoing commitment, the City will also be preparing an Environmental Sustainability Strategy in 2018 which will establish directions, priorities and actions to be implemented over the next 10 years.

In addition to several ongoing programs, including revegetation works and community engagement initiatives, the City's key sustainability projects for the next 12 months are identified in this section.

Success in delivering these projects, together with updates on the City's progress towards environmental sustainability, will feature in the 2018 Sustainability Snapshot Report.

Water

Project	Team
At least two audits will be completed for the highest scheme-water-using City facilities to identify where improvements to water efficiency can be made	Asset Services
A $55,000 irrigation system upgrade at the Baldivis Reserve	Parks Services
Audits of irrigation systems at the following reserves: ► Baldivis Reserve ► Koorana Reserve ► Secret Harbour Reserve	Parks Services
The following reserves will be connected to each of the four weather stations: ► Delphinus Reserve ► Centenary Park ► Harmony Park ► Avena Gardens	Parks Services
Develop Local Planning Policy: Urban Water Management (and associated Planning Procedure) to deliver best practice urban water management consistent with water sensitive urban design principles	Land and Development Infrastructure

Waste

Project	Team
Millar Road Landfill Cells 12 and 13, along with a portion of Cells 14 and 15, will be capped at a cost of $3.3 million	Waste Services

Energy

Project	Team
Budgeted $1.5 million for all LED, PV, metering, software and HVAC retrofitting projects to improve energy efficiency and management	Asset Services
A review of the Administration Building HVAC system to identify where energy efficiency improvements can be made	Asset Services
Install solar PV on the following facilities: ► Aqua Jetty ► Kent Street Arts Centre ► Lark Hill Maintenance Shed ► Warnbro Recreation Centre	Asset Services
Replace existing park and street lights with LEDs at nine key locations	Asset Services
Install an Energy Management System at the Gary Holland Centre	Asset Services
Install smart software to integrate monitoring of solar PV systems	Asset Services
Install a vehicle charging station at the Rockingham Foreshore (timing dependent on progress of foreshore revitalisation project)	Asset Services

Health and nature conservation

Project	Team
Preparation of an Environmental Planning Strategy which will identify natural areas to be prioritised for protection and management based on their environmental values. This will be informed by the Natural Areas Technical Assessment undertaken in 2016/2017.	Strategic Planning and Environment
Establishment of a Native Plants Program for 2018 to provide residents with free native seedlings to promote waterwise and wildlife friendly gardens.	Strategic Planning and Environment
Preparation of a Wetland Management Plan for ten of the City's wetland reserves including Conservation Category Wetlands and Resource Enhancement Wetlands.	Strategic Planning and Environment
Preparation of a revised Lake Richmond Management Plan which will include a detailed assessment of thrombolite microbial communities and recommend management actions specific to the unique environmental and recreational attributes of this significant wetland.	Strategic Planning and Environment
Investing $360,000 to install 13 new shared use paths, with a combined length of 2,247 m.	Engineering Services
Plant 3,000 new street and parkland trees as per the City's Greening Plan	Parks Services

Environmental education and engagement

Project	Team
Community coastal adaptation workshops to inform the Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) project	Strategic Planning and Environment
Castaways Sculpture Exhibition	Community Capacity Building
Waste Education Program	Waste Services
Sustainability Workshops	Library Services, Community Capacity Building

Climate Response

Project	Team
Preparation of a CHRMAP for our 37 km of coastline, which will outline key directions for coastal adaptation over a 100 year planning timeframe and prioritise management works over the next 10 years.	Strategic Planning and Environment
Undertake monthly coastal monitoring at 18 set points to establish a database for estimating long term shoreline change, in collaboration with the PNP and the University of Western Australia.	Strategic Planning and Environment
Investing approximately $2 million relocating the Mersey Point Jetty away from the dynamic area of coast to a more stable location approximately 150 m north of the existing jetty.	Engineering Services
Investing $250,000 installing rock armour protection upgrades at Palm Beach East Boat Ramp.	Engineering Services

Acknowledgements

The City wishes to acknowledge the following teams who collectively work to implement the various environmental sustainability actions detailed in this report:

Parks Services

Asset Services

Waste Services

Library Services

Engineering Services

Community Capacity Building

Strategic Planning and Environment

Land and Development Infrastructure