

# managing Cornwall's household waste

April 2017  
— March 2018



on behalf of Cornwall Energy Recovery Ltd



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**CORNWALL**  
COUNCIL



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The April 2017 to March 2018 contract year marked a number of key milestones for our contract with Cornwall Council, notably the first full year of operations at the Cornwall energy recovery centre, the opening of its new visitor centre and the introduction of new initiatives to boost recycling from household collections and divert more waste from landfill through the household waste recycling centres.

The opening of the energy recovery centre in March 2017 marked an end to landfill for the majority of Cornwall's residual household waste. The facility processed 238,000 tonnes of waste during the contract year, putting this to good use to generate 156,000 megawatt hours of electricity for the National Grid.

We were particularly proud when the energy recovery centre was named Sustainable Project of the Year at the Michelmore's Property Awards 2017, with judges commending both the role the facility plays in reducing Cornwall's carbon footprint and its visitor centre, which welcomed 1,623 visitors over the contract year from local residents and parish councils to schools and youth groups such as brownies, cubs and young farmers. This was in addition to the 1,914 visitors to the Bodmin materials recycling facility visitor centre, which was revamped with new information boards and signage during the summer.

We began separating plastics pots, tubs and trays collected from homes around Cornwall at the two materials recycling facilities in Bodmin and Pool. At three of the household waste recycling centres, we began a trial in July to separate residual waste, ensuring only waste that is unsuitable for energy recovery was sent to landfill. Through separate containers with dedicated signage and our teams engaging with the customers using the centres, we successfully diverted 1,979 tonnes from landfill and are extending the trial to other household waste recycling centres in the network.

The restoration of the closed United Mines landfill also progressed well over the year and we were delighted to reopen public bridleways crossing the site, allowing residents of nearby Carharrack and Cusgarne to enjoy the landscape and views for the first time in 30 years. We will build on this success next year, when Connon Bridge landfill near Liskeard closes, with a biodiversity-focussed plan that aims to deliver a similarly high-quality restoration.

As we begin the 2018 to 2019 contract year, we look forward to working with Cornwall Council to help residents reuse and recycle more of their waste and continue to put that which is left to good use as a fuel at the energy recovery centre. Our education team are always happy to host visits to Bodmin materials recycling facility and Cornwall energy recovery centre, and we encourage anyone interested to get in touch to book a trip to one of our visitor centres and see firsthand how we process Cornwall's recycling and rubbish.

We look forward to welcoming you!

**John Scanlon**

Chief Operating Officer – Operations  
SUEZ recycling and recovery UK

**Ian Sexton**

Chairman  
Cornwall Energy Recovery Ltd



It is a pleasure to introduce you to the first publication of our annual report, which covers the huge amount of progress that has happened in the 'Integrated Waste Management' Contract in 2017/18. Cornwall Council has entered into this long-term contract in order to ensure significant investment into existing and new facilities which help us all to manage our waste correctly and responsibly. To date, the contract has resulted in the successful construction and major refurbishment of many of its new and existing household waste recycling centres, waste transfer stations and materials recycling facilities. However, it has been the completion of the Cornwall energy recovery centre in March 2017 that has delivered the major change to how we manage our waste in Cornwall.

The Cornwall energy recovery centre has meant the diversion of the vast majority of our 'residual' waste (the waste which is left over after all efforts have been taken to reduce, reuse and recycle it) from landfill. The centre uses this waste as a fuel to safely and sustainably generate a huge amount of electricity, which is exported to the National Grid for use by you and I. This has substantial environmental benefits, and ensures that we are managing our waste in accordance with the 'waste hierarchy', mentioned later in this report. Furthermore, to complement the development of the centre, a community trust has been established to benefit the local communities surrounding it. The trust receives annual funds based on both electricity generation from the centre, and additional funds from Cornwall Council. It is great to see that the trust distributed nearly £180,000 in 2017/18 to local community projects.

Despite these fantastic achievements, there is still much more that we can do in Cornwall to improve our waste management practices. For example, we need to acknowledge that the County's recycling rate can still be improved. Cornwall Council has ambitions in this area, and over the coming years we wish to deliver the vision of our Resources and Waste Strategy for Cornwall. With regards to this contract, this will mean the construction of three new household waste recycling centres in Truro, Pool and Newquay. It means making required adaptations to our existing facilities to reflect the forthcoming decisions that will be made for our new Waste Collection and Cleansing Contract, which will start in 2020. It also means continuing to work in partnership with Cornwall Energy Recovery Ltd to find innovative ways to reduce, reuse, recycle and recover as much of our waste as possible, whilst ensuring value for money for the residents of Cornwall. Finally, I know that there has been a huge drive by residents and businesses within Cornwall to reduce the amount of single use packaging and goods that are produced and consumed. Our partnership will need to proactively respond to local and national changes on plastic usage, re-use and disposal.

I look forward to reporting all of these achievements to you in future editions of this annual report.

Best wishes

**CLlr Sue James**

Cornwall Council Cabinet Member  
for Environment and Public Protection



This report is designed to give community members and stakeholders a behind the scenes view of how Cornwall Council and SUEZ recycling and recovery UK are working together to create a cleaner, greener Cornwall. In the following sections, we will review highlights of the year, utilising case studies to show how our work is helping to deliver the priorities laid out in Cornwall Council's Environmental Growth Strategy.

## **Cornwall Council**

As a waste disposal authority, Cornwall Council is responsible for collecting and processing the 267,757 tonnes of household waste and recycling collected from the 550,000 residents living in the county and that which is deposited at the county's 13 household waste recycling centres.

## **Cornwall Energy Recovery Ltd**

In October 2006, Cornwall Energy Recovery Ltd was awarded a 30-year contract to manage household waste in Cornwall on behalf of Cornwall Council. Cornwall Energy Recovery Limited is made up of three shareholders: Pensions Infrastructure Platform, i-Environment Investments, and SUEZ recycling and recovery UK. In addition to being a shareholder, SUEZ is responsible for running the day-to-day operations of the network of facilities that manage Cornwall's household waste.

## **SUEZ Recycling and Recovery UK Ltd**

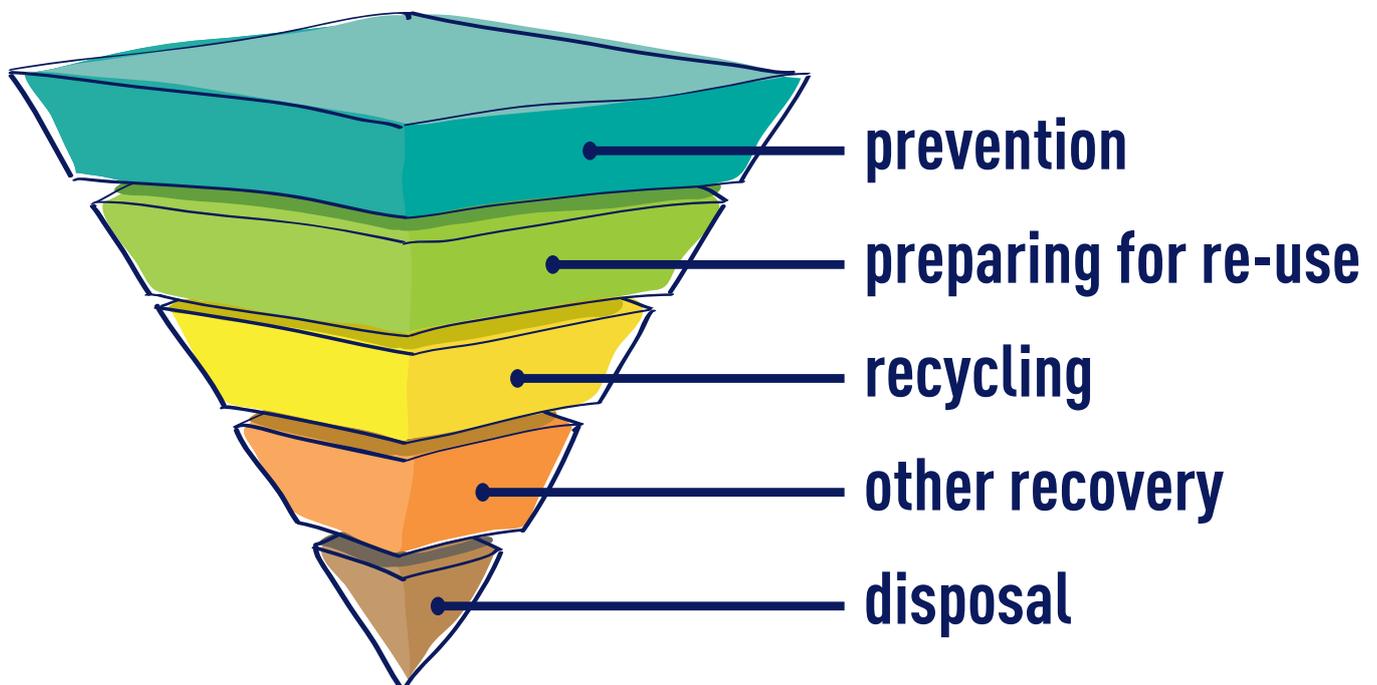
Part of the global SUEZ group, SUEZ Recycling and Recovery UK Ltd employs over 5,000 people and handles more than 10 million tonnes of waste over the course of a year. Since it was established in the UK in 1988, our company has delivered innovative and environmentally-responsible solutions for the waste generated by households and businesses across the country.

# managing Cornwall's waste

In this section, we explain how we are working together to treat Cornwall's waste as a valuable resource, utilising our extensive network of facilities to create and promote environmental growth.

## The waste hierarchy

When it comes to processing recycling and residual waste, there are several different options, which, when ranked by their environmental impact, form a pyramid called the 'waste hierarchy'. Each step in the pyramid is one step closer towards realising a society with zero waste.



## Delivering an integrated strategy

Our main objective is to support Cornwall's environmental growth by reducing the amount of waste sent to landfill and increasing the amount that is recycled and recovered. To date, Cornwall Energy Recovery Ltd has invested over £180 million to provide Cornwall with modern facilities that improve the sorting and processing of recyclable materials, moving materials up the waste hierarchy by delivering an integrated strategy focussed on the four R's: **reduce, reuse, recycle and recover**.

### Reduce

The most manageable waste is the waste that is never created, so we first aim to educate the public and help reduce the amount of waste produced by the 280,000 households in Cornwall. The visitor centres at Bodmin materials recycling facility and Cornwall energy recovery centre host scheduled visits from schools and community groups and provide a comprehensive look at the lifecycle of waste, its environmental impact and the responsibility that lies with each individual.

### Reuse

We aim to extend the useful life of unwanted items, like furniture or clothing, by encouraging residents to donate them at one of our household waste recycling centres. We work with local re-use organisations who collect the items from our sites, refurbish them where necessary and sell them on, back into use.

### Recycle

We manage a network of recycling facilities across Cornwall. All of the recycling collected from the kerbside is sorted and baled at one of our two materials recycling facilities, located in Bodmin and Pool. Most items that cannot be collected at the kerbside can be brought to one of our 13 household waste recycling centres located across the county. The garden waste collected from households and deposited at our household waste recycling centres is recycled as compost.

To date, we have invested over £10 million in updating these two materials recycling facilities, opening five new household waste recycling centres and redeveloping seven existing sites, and opening four new transfer stations. An additional household waste recycling centre is due to open in Truro in 2019.





## Recover

Waste left over after re-use and recycling is sent to the newly opened Cornwall energy recovery centre near St Dennis, where it is used as a sustainable fuel to generate energy. The Cornwall energy recovery centre has the capacity to process all of the residual household waste produced in Cornwall, providing a local and sustainable solution to waste management.

Any waste remaining after applying the 4 R's, waste that is bulky or unsuitable for energy recovery, is sent to landfill or for special treatment. In an effort to further decrease the amount of residual waste sent to landfill, in 2018 we will begin a shredder trial at the Cannon Bridge transfer station to help bring bulky waste down to a suitable size for the energy recovery process.

Cannon Bridge landfill is due to close at the end of 2018 and will be subsequently restored to native woodland and grassland. With the opening of the Cornwall energy recovery centre, the amount sent to landfill is now minimal and we continue to focus on recycling and recovering as much of Cornwall's waste as possible.

A graph showing how we processed Cornwall's household waste in the contract year can be found at appendix one.



## Environmental growth in action

In the 2017/2018 contract year, the 550,000 residents in Cornwall produced 267,757 tonnes of waste. Managing this high volume of material requires coordination and teamwork across a strong network of facilities throughout the county.

Our five transfer stations act as a vital link between households and our facilities, helping us recycle and recover 235,045 tonnes of waste. Once waste is collected at the kerbside, it is taken by the collection vehicle to a transfer station where it is then loaded onto larger bulk vehicles and taken to be recycled or recovered. These transfer stations have an important role to play in protecting Cornwall's environment, as they reduce the amount of vehicles needed, thereby reducing traffic congestion and air pollution.

Every day, our operations work in harmony to demonstrate environmental growth in action by making efficient use of resources, protecting land and providing a sustainable and economical solution to Cornwall's waste. By applying the four R's to the 267,757 tonnes of waste produced in Cornwall, we are able to divert 88% away from landfill.



# stewardship of our assets



## Working to support Cornwall Council's aims for 2017

In early 2017, Cornwall Council published their annual business plan and an accompanying list of aims for the year – including a set target for increasing recycling. In the following section, we use two case studies of actions we have taken to make sure we get the most value and use out of Cornwall's resources, supporting the Council's overall goal of improving the stewardship of the county's assets.



## Aim

To increase the amount of household waste sent for re-use, recycling and composting from 35.5% (as at December 2017) to 37%.

In the 2017/18 contract year, Cornwall sent 37%\* of household waste for re-use, recycling and composting, achieving Cornwall Council's target.

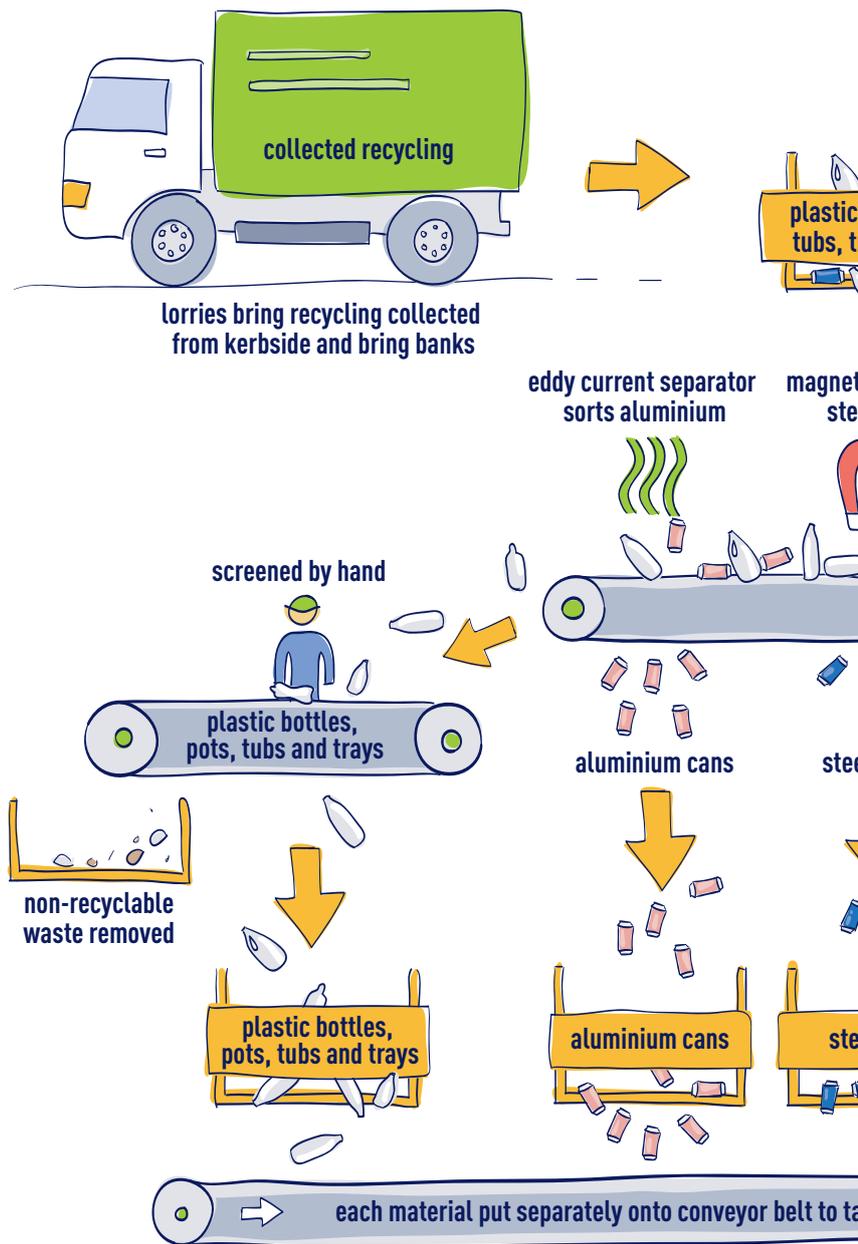
\* In line with Cornwall Council's recorded rate, this includes wood sent for biomass energy recovery.

## Case study

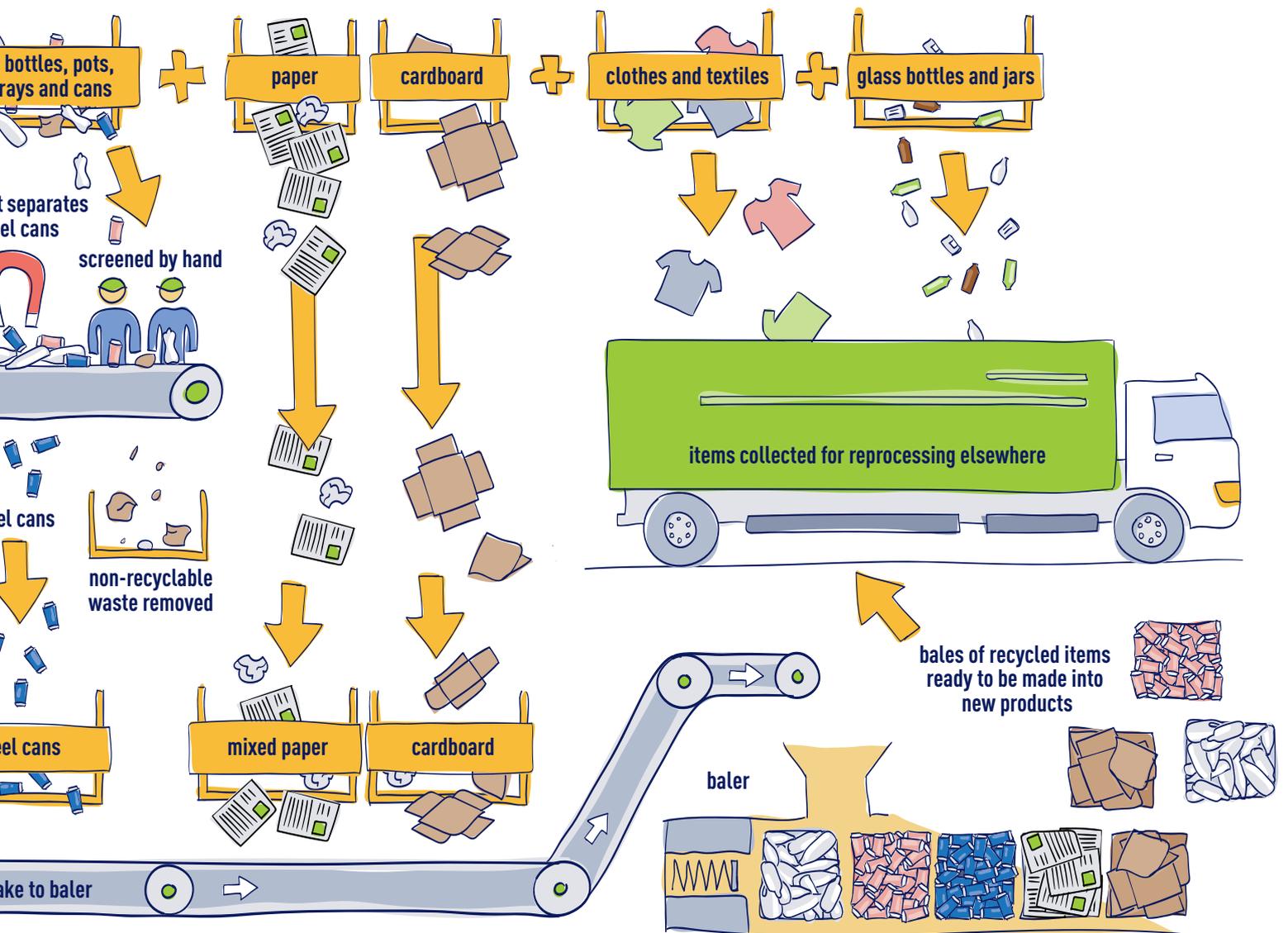
### Pots, tubs and trays recycling at the materials recycling facilities

SUEZ adapted the two materials recycling facilities, located in Bodmin and Pool, in order to increase the volume and range of materials they can accept.

In an effort to increase the amount of household waste sent for recycling, in 2016 Cornwall Council conducted a trial of 46,000 homes to test the impact of adding plastic pots, tubs and trays to kerbside recycling collections. The trial was deemed a success and the council voted unanimously to extend the service to all households in Cornwall, using a phased approach through 2017. The new service implementation began in April 2017 and was completed in November 2017.



Previously, all of this mixed plastic would have been collected along with non-recyclable black bag rubbish and sent to landfill. Now, residents sort these materials into the red recycling sacks along with plastic bottles, steel and aluminium cans. The sacks are then collected from the kerbside and taken to one of our material recycling facilities, where they go through a rigorous sorting process.



The mixed plastics and cans are tipped onto a conveyor belt hand screened by SUEZ staff, who pick out any non-recyclable materials – like plastic film, food contamination, and black plastic trays – that may have accidentally been collected. The materials then continue on the conveyor belt, where they pass under a magnet that separates out the steel cans, followed by an eddy current separator that takes out the aluminium cans. Finally, the plastic bottles, pots, tubs and trays are screened by hand once more before being baled and sold on to reprocessing facilities, where they are made into new products.

By adding kerbside collection of plastic pots, tubs and trays, we were able to separate 2,865 tonnes of plastic for recycling – 526 tonnes more than the previous year.

Information on the different materials separated for recycling at the materials recycling facilities can be found at appendix two.

## Case study

# Diverting waste from landfill at household waste recycling centres

Until the Cornwall energy recovery centre became fully operational in March 2017, all of the non-recyclable general waste was sent to landfill at Connon Bridge or transported out of the county to be processed elsewhere. This included any non-recyclable black bag waste collected at the 13 household waste recycling centres around the county.

In an effort to increase recycling and divert as much waste away from landfill as possible, in July we began a black bag sorting trial at three sites: Connon Bridge, Launceston and St Erth. This required installing new, separate containers for waste that is suitable for energy recovery, along with new signs to clarify the difference and explain where each type of waste goes. To help encourage the public to put anything that is suitable and small enough into the energy-from-waste containers, we took on additional staff and conducted training sessions to enable them to communicate with residents and make sure they are separating out as much as possible for recycling and recovery, sending as little as possible to landfill.

Under this new system, when residents arrive at one of the trial sites they are greeted by a staff member who asks what they are disposing of and helps to determine whether the material really has to be landfilled or if it can instead be recycled or sent to the Cornwall energy recovery centre to be used as a fuel to generate energy.



The black bag sorting trials have been very successful and 1,979 tonnes of waste brought into the sites was diverted from landfill. The trial is still in its early days, but was extended to five more sites – Bude, Helston, Falmouth, United Mines and St Austell – in January 2018, with plans to eventually implement the process across more of Cornwall's household waste recycling centres.

Information on the recycling rate for each household waste recycling centre and results of the customer satisfaction survey can be found at appendices three and four.



# working to deliver Cornwall Council's environmental growth strategy

In 2016, Cornwall Council and the Cornwall and Isles of Scilly Nature Partnership published the Environmental Growth Strategy, setting ten target outcomes to help ensure that by 2065, “Cornwall’s environment will be naturally diverse, beautiful and healthy, supporting a thriving society, prosperous economy and abundance of wildlife.” Along with each target outcome is a detailed list of needs, which must be met in order to achieve the goal and realise environmental growth.



The following section will use case studies of several highlights from the 2017/2018 contract year to illustrate how our work addresses the needs and supports the target outcomes laid out in the Environmental Growth Strategy.

## Cornwall needs ...

- ▶ Urban and rural landscapes that are designed to support local access for communities to enjoy and experience nature (target outcome no.1)
- ▶ Restoration of species diversity and abundance across Cornwall leading to more natural food chains (target outcome no.10)



### Case study

## Restoration of United Mines landfill



Working closely with Cornwall Council and with expert guidance from Code7 Consulting, a locally-based ecology consultancy, in 2017 SUEZ was granted planning permission and began work to restore the former United Mines landfill back to nature. The approved restoration plan requires the creation of several different habitats, including a mix of lowland heathland, native woodland with glades, native hedges and grassland. Together, these habitats will create a sustainable landscape that makes a notable contribution to both local and national biodiversity targets.

The restoration of lowland heathland is particularly significant. It is considered a priority habitat by the Department for Environment, Food and Rural Affairs, and has declined by 80% over the last century. Recreating this 'lost' habitat requires significant investment of time, money and effort, with around 55,000 tonnes of imported sandy soil and peat-like material used to create the right growing environment for heathland. Consequently, restoring the lowland heathland at United Mines will make a valuable contribution, not only to Cornwall's natural landscape, but also to national biodiversity targets.

With this restoration, 1.3 kilometres of public bridleways have been reopened to the public for the first time in over 30 years, allowing local residents to access and enjoy nature. These paths connect the communities of Carharrack and Cusgarne and will allow residents to enjoy fantastic views of the restored areas and surrounding towns.

Once restoration is complete in December 2018, the 53 hectare site will provide a new habitat for local species of reptiles, birds and insects – like stonechat, common lizards and dragonflies. Our dedication to Cornwall's natural landscape does not stop here. We are already working with Code7 to develop a biodiversity-focused plan for the restoration of Cannon Bridge landfill site once it officially closes at the end of 2018.



## Case study

# Opening of the visitor centre at the Cornwall energy recovery centre

In 2017, we officially opened the visitor centre at the Cornwall energy recovery centre, welcoming school children, local interest groups and community members from across the county. We worked closely with local school teachers to develop engaging, fun and informative programs to teach students the four R's: reduce, reuse, recycle and recover.

- “ This was the best school trip we've been on.
- “ A powerful experience to see the whole process.
- “ A fantastic visit! It really helps with the learning for sustainability.

The centre features colourful and interactive displays which utilise a hands-on approach to environmental education. A fast-paced team challenge keeps visitors engaged while learning about the plants, animals, and geography that make Cornwall's environment so unique. Adults and children alike are able to examine their impact on the environment, walking away with a renewed understanding of sustainable resource management. At the end of the visit, all guests are asked to make a sustainability pledge, encouraging them to go out and apply what they've learned by making small eco-friendly changes to their lifestyles.



## Cornwall needs ...

- ▶ Increased awareness of the role of personal and collective values in decision making (target outcome no.5)
- ▶ To utilise the environment as a topic, tool and setting for statutory education and life-long learning (target outcome no.7)



These new visitor centre programs at the Cornwall energy recovery centre are designed to work closely with the existing educational programs at the materials recycling facility visitor centre located in Bodmin. Joint visits are offered of both facilities, providing visitors with a comprehensive look at what happens to their rubbish and recycling after it leaves their homes, emphasising the role that individuals play in helping us manage Cornwall's valuable resources. Adults who visit the sites are also invited to take a tour of the facility, gaining a behind the scenes view of the machinery and processes we use to recycle and recover value from the waste they create.

1,623 visitors of all ages came through the Cornwall energy recovery centre this contract year and we hosted an open day for the community. By continuing to invest in and develop these programs, we are helping to build a new generation of protectors for Cornwall's stunning natural beauty and rich cultural heritage.

Information on the number of groups and individuals welcomed at our visitor centres can be found at appendix five.

## Cornwall needs ...

- ▶ The development of a circular, low carbon economy which maximises resource efficiency and; increased resource security; considering supply and demand management for food, water and energy (target outcome no.8)

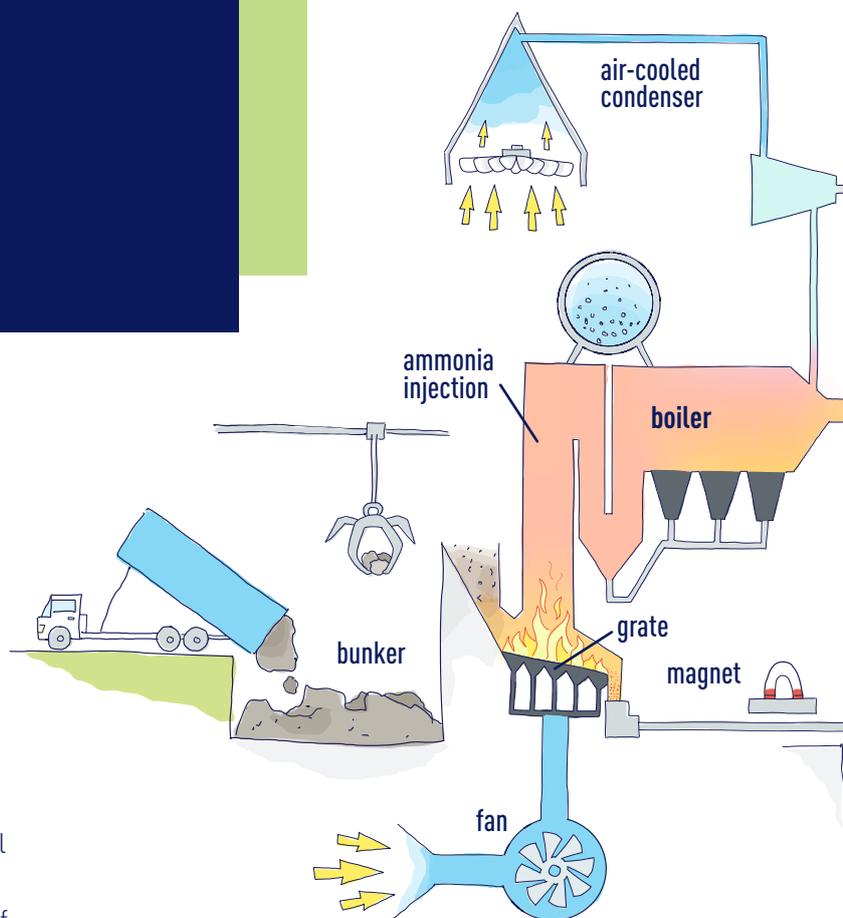
### Case study

## Completion of the Cornwall energy recovery centre

Our mission is to reduce the amount of waste that is sent to landfill, make sure resources are managed efficiently and continue moving towards a circular economy. To do this, we work with Cornwall Council to encourage recycling, re-use and composting across the county and to put every bit of waste to good use.

Previously, any waste that could not be recycled would be sent to landfill. Now, with the opening of the Cornwall energy recovery centre in March 2017, residual household waste is being used as a sustainable fuel to generate electricity for the National Grid – enough to power 21,000 homes.

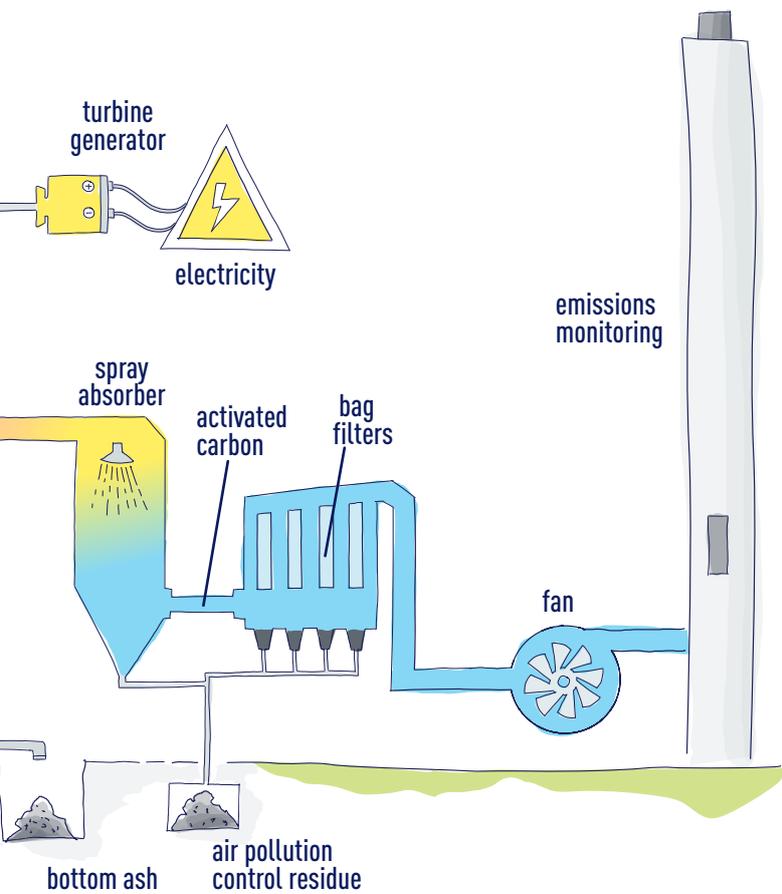
This year, the Cornwall energy recovery centre processed 238,072 tonnes of waste and exported 156,694 megawatt hours of electricity to the local supply network. After processing Cornwall's household waste, remaining capacity is used to process waste from businesses, which also needs to be diverted from landfill. The amount of household waste fluctuates throughout the year – for example, with seasonal increases in the population – and so the proportion of business waste processed at the facility varies with this. By generating electricity from Cornwall's waste and waste from businesses, we reduce our dependence on fossil fuels and free up land for natural use.



Information on the amount of household and business waste processed at the facility each month can be found at appendix six and a graph showing energy exported to the National Grid can be found at appendix seven.

The bottom ash left over after the recovery process is filtered for metals that can be recycled and the fine particles left over are used to create secondary aggregate products for use in construction. This contract year, 6,878 tonnes of metal was recycled and 51,597 tonnes of bottom ash was sent to be used in construction and landfill restoration.

Information on the amount of metals and bottom ash aggregate recovered each month can be found at appendix eight, together with the amount of air pollution control residue (the particles, carbon and lime collected by the filters that are part of the emissions control process) sent for specialist disposal each month.



Not only is the Cornwall energy recovery centre a more sustainable waste management solution, but it also reduces the amount spent by Cornwall Council on landfill tax. In recognition of this, the Cornwall energy recovery centre was named as the Sustainable Project of the Year by the 2017 Michelmores Property Awards, which recognise outstanding construction projects in Devon, Somerset, Bristol, Dorset and Cornwall. Judges specifically commended the Cornwall energy recovery centre's role in reducing Cornwall's carbon footprint and the efforts to involve the local community through the visitor centre.





## Cornwall needs ...

- ▶ Consistent compliance with legislative and statutory duties by organisations across all sectors (target outcome no.10)

### Case study

## Environmental management system and performance

The Cornwall energy recovery centre was designed to satisfy the European Union's Industrial Emissions Directive. To meet the stringent standards set by this directive, any gases produced during the process are sent through a multi-stage clean-up process. In fact, out of our nine energy-from-waste facilities in the United Kingdom, the Cornwall energy recovery centre is the first to have two types of filtration systems.

After the combustion process, the gases pass through a rigorous filtration system, so what comes out of the chimneys at the end is primarily steam, oxygen, nitrogen and carbon dioxide, with a low level of pollutants, that are well within the levels set by the permit granted by the Environment Agency. To protect health and the environment, equipment within the chimney continually monitors the emissions. If levels begin to rise, then adjustments are made to the process. If levels continue to rise, then operations are shut down to prevent them from exceeding permitted levels. Monitoring information is published on our website ([www.suezcornwall.co.uk](http://www.suezcornwall.co.uk)) and regularly updated.

In the 2017/2018 contract year, the two lines of the Cornwall energy recovery centre were operational for 16,874 hours combined. Throughout these 16,874 hours, emissions remained within the daily permit levels. There were 14 occasions when emissions of carbon monoxide briefly rose above the half-hourly limit but remained well within the daily permitted limit, as our operators quickly stepped in to make adjustments and bring the levels back into compliance. These breaches of the half-hourly permit level were all minor, short-lived and classed by the Environment Agency as having no environmental impact. Elevated carbon monoxide levels occur when there is incomplete combustion and operator action is needed to ensure the right mix of waste, oxygen, temperature, time and turbulence.

A table showing the permit limits for emissions from the facility and the daily average emissions for 2017/2018 contract year can be found at appendix nine.



## Cornwall needs ...

- ▶ Increased investment by business, communities and philanthropists into the appropriate management of environmental assets to deliver public benefits (target outcome no.8)



### Case study

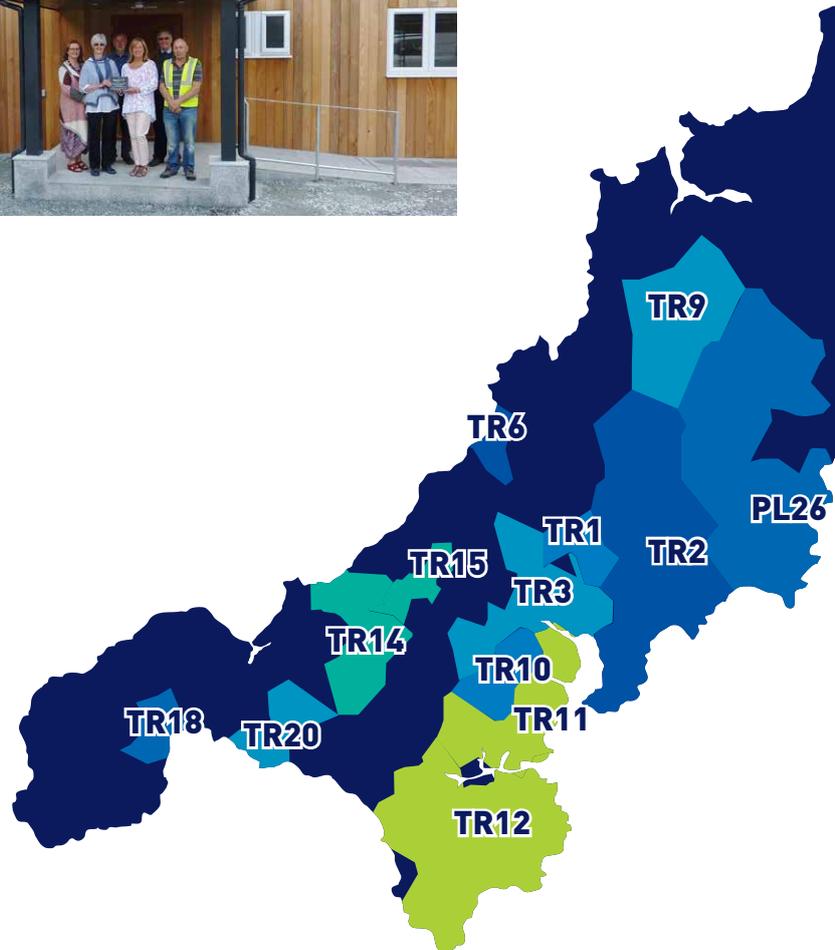
## Funding for local community projects

Being an active member and positive force in the communities we serve is a priority for all of us here at SUEZ. That's why, in the 2017/2018 contract year, we gave over £1 million in funding to local community projects through the independently run SITA Cornwall Trust and, through Cornwall Energy Recovery Limited, to the St Dennis & Nanpean Community Trust, improving green spaces and reviving vital social hubs.

### SITA Cornwall Trust

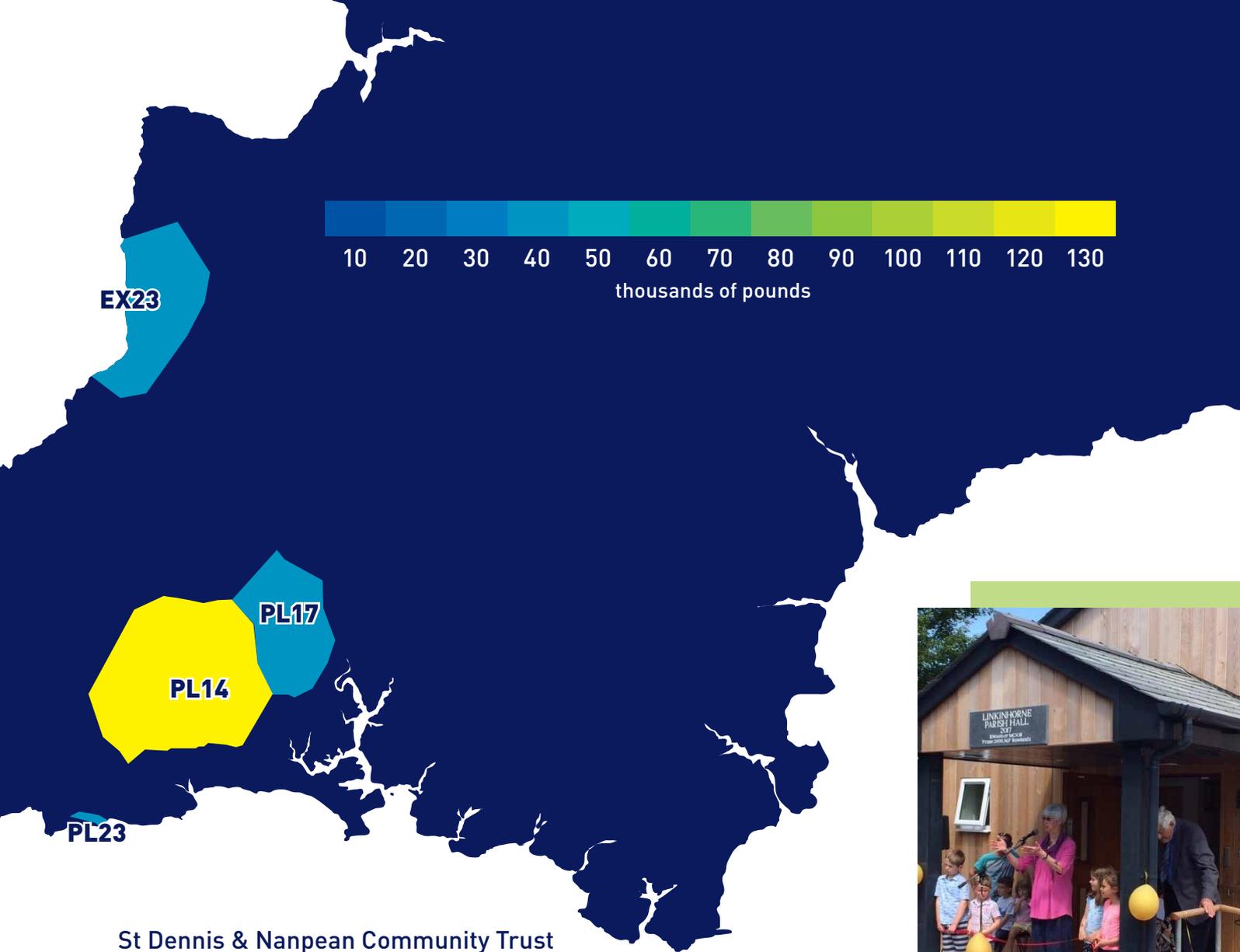
As a landfill operator in Cornwall, we are able to direct a portion of the landfill tax we pay towards eligible projects in the community. The SITA Cornwall Trust was established in 2009 to distribute the funds generated by the Landfill Communities Fund to projects that provide social and environmental benefit to residents in Cornwall. In the 2017/2018 contract year, SUEZ contributed £845,314.80 towards 28 projects across the county.

Projects are diverse, ranging from £35,000 to replace a condemned play area in St Teath, to £30,000 to restore the tower and replace the bells at picturesque St Winnow Church, a Grade 1 listed building set in an area of outstanding natural beauty.



### Other notable projects include:

- £100,000 for a new village hall in Upton Cross
- £100,000 for a new community building and multi-use games area in Lanivet
- £35,000 to restore the Penryn Clock tower, part of the Grade 2 listed Town Hall
- £15,000 to restore Mary Newman's Cottage, Grade 11 listed museum dating to 1480
- £30,000 to refurbish the Bodmin Bowling Club



## St Dennis & Nanpean Community Trust

Jointly funded by Cornwall Energy Recovery Limited and Cornwall Council, the St Dennis & Nanpean Community Trust was established to serve the communities surrounding the Cornwall energy recovery centre. The Trust received £200,000 per year during the construction period and continues to receive a fixed percentage of revenue from electricity generation, estimated to be around £100,000 per year. This contract year, the trust distributed £179,221.14 to a total of 15 community projects.



### Highlights include:

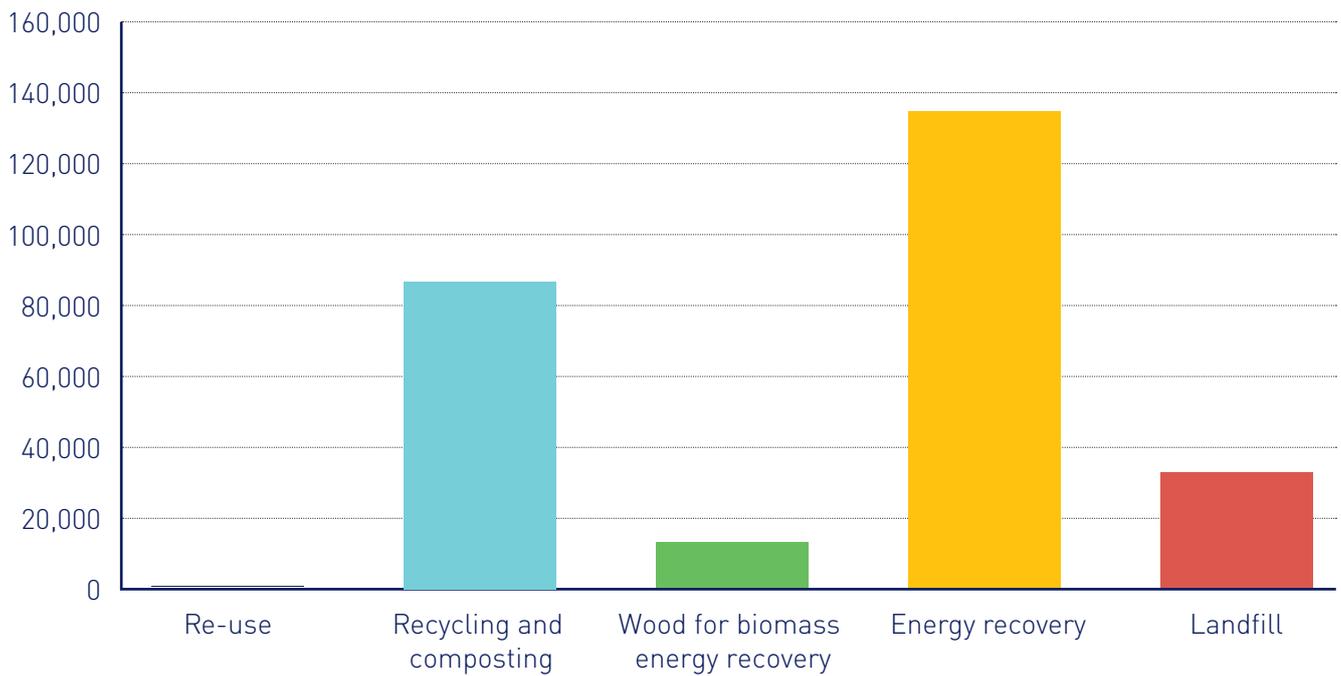
- £106,280 for a new playing field in St Dennis
- £13,430 to the Tregargus Trust to refurbish footpaths through the Tregargus valley
- £11,360 for the St Dennis War Memorial and Working Mens Club
- £1,000 to set up a beginners class with the St Dennis Art Group

# appendices

All appendices use 2017/2018 contract data.

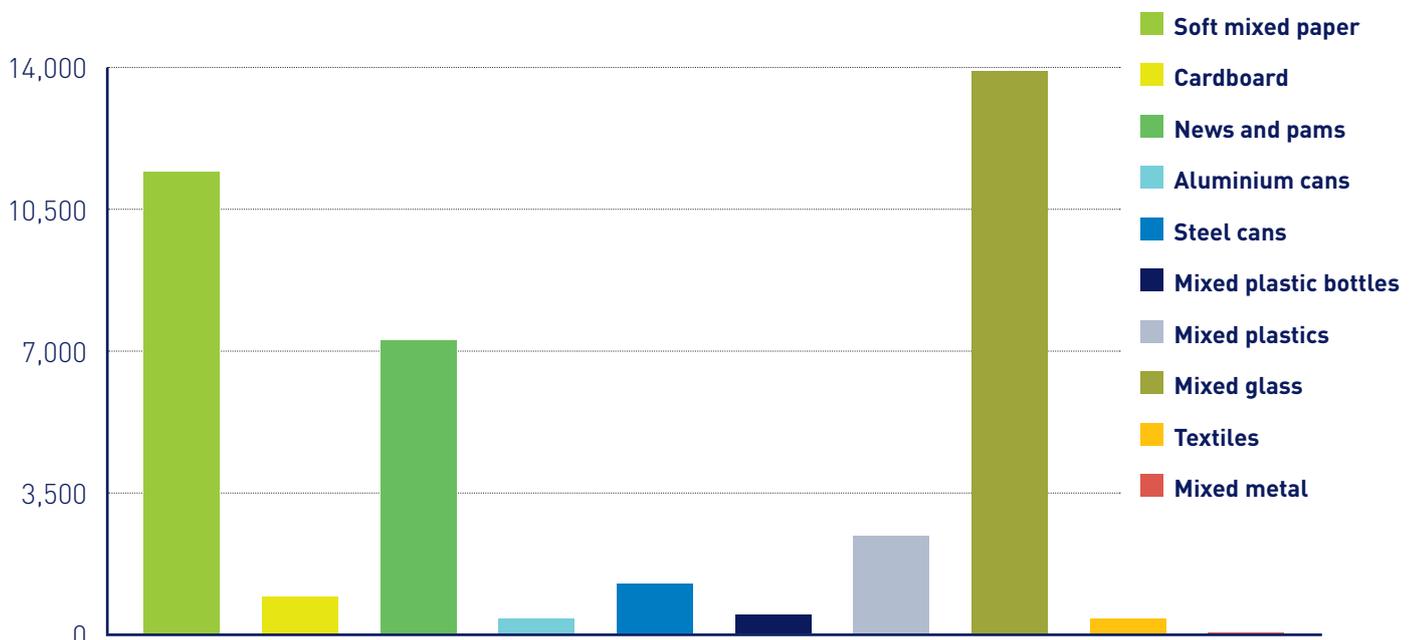
## Appendix one

How we processed Cornwall's household waste (tonnes)



## Appendix two

Materials separated for recycling at the materials recycling facilities (tonnes)



## Appendix three

Recycling at the household  
waste recycling centre recycling

	Recycling rate
<b>Bodmin</b>	46.7%
<b>Bude</b>	52.3%
<b>Connon Bridge</b>	48.3%
<b>Helston</b>	51.9%
<b>Launceston</b>	54.7%
<b>Saltash</b>	47.2%
<b>St Austell</b>	46.1%
<b>St Erth</b>	51.2%
<b>Falmouth</b>	50.7%
<b>United Mines</b>	41.7%
<b>Dudnace Lane</b>	79.7%
<b>Newquay</b>	43.7%
<b>Tintagel</b>	49.5%

## Appendix four

Customer satisfaction at the  
household waste recycling centres

	Customer satisfaction rate
<b>St Austell</b>	94.18%
<b>Bodmin</b>	87.38%
<b>Connon Bridge</b>	88.38%
<b>Launceston</b>	93.55%
<b>Saltash</b>	87.85%
<b>Tintagel</b>	94.55%
<b>Bude</b>	94.70%
<b>Newquay</b>	87.98%
<b>Falmouth</b>	87.58%
<b>United Mines</b>	87.70%
<b>Dudnace Lane</b>	86.43%
<b>St Erth</b>	86.50%
<b>Helston</b>	88.00%

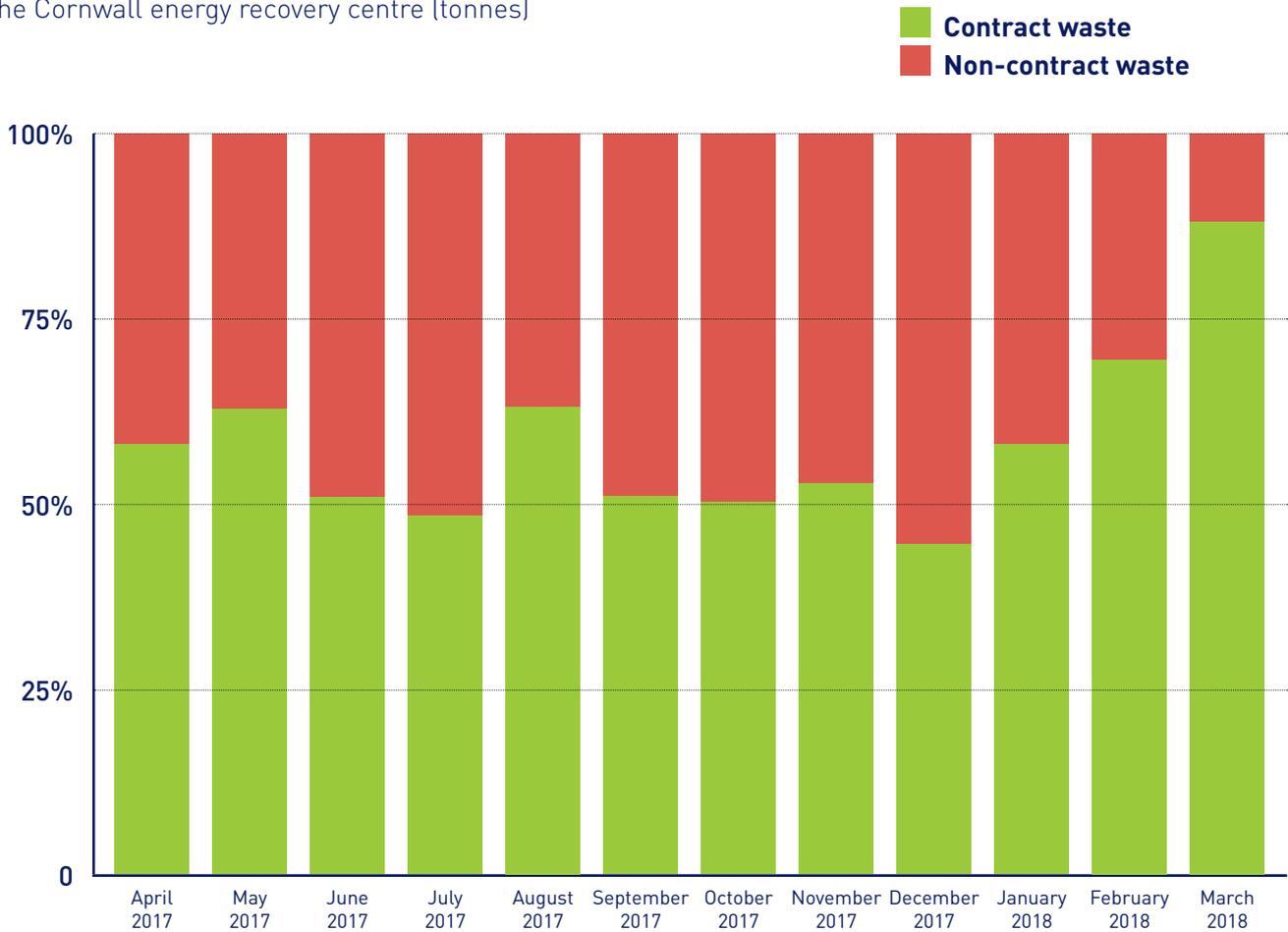
## Appendix five

Visits to our visitor centres

	Total number of visitors	Total number of visits	Total number of school visits
<b>Bodmin materials recycling facility</b>	1,914	49	38
<b>Cornwall energy recovery centre</b>	1,623	57	17

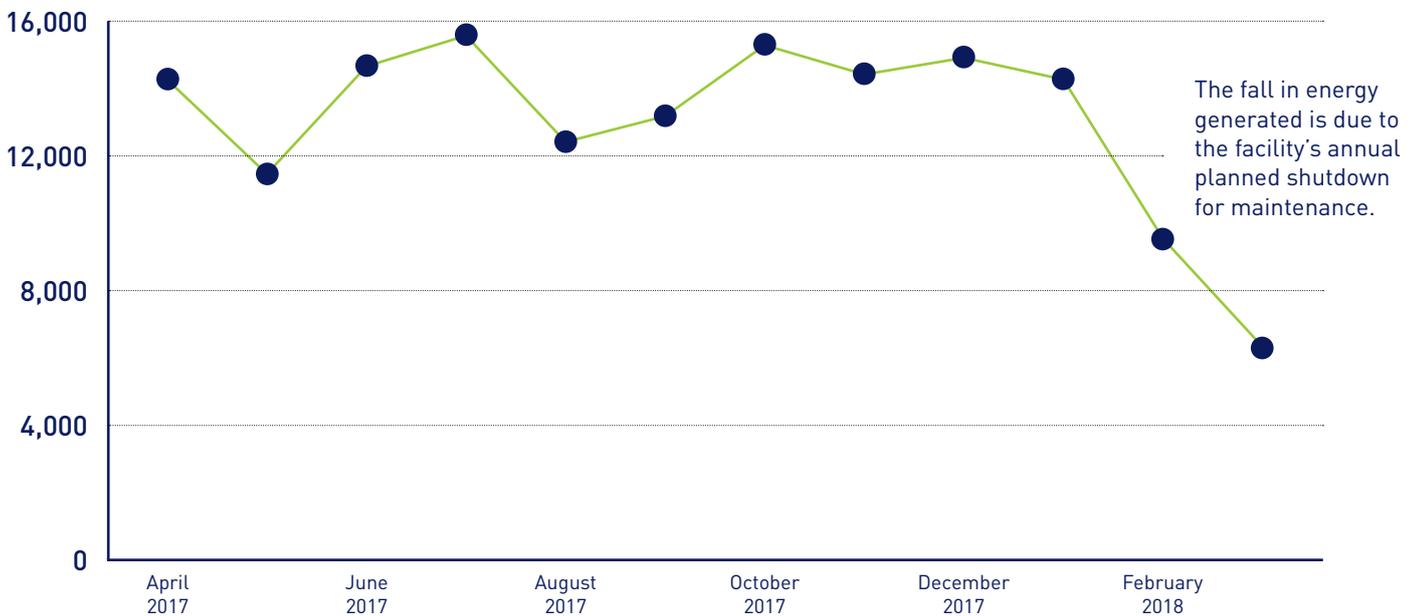
## Appendix six

Household and business waste processed at the Cornwall energy recovery centre (tonnes)



## Appendix seven

Energy generated for export to the National Grid by the Cornwall energy recovery centre (megawatt hours)





## Appendix eight

Cornwall energy recovery centre outputs

<b>Incinerator bottom ash (tonnes)</b>	<b>April 2017</b>	<b>May 2017</b>	<b>June 2017</b>	<b>July 2017</b>	<b>August 2017</b>
Aggregates to recycling	592.5	1,170.0	1,053.0	1,993.4	1,852.8
Aggregates to landfill restoration	3,730.9	4,368.0	3,545.3	3,104.2	3,330.2
Metals to recycling	284.4	662.0	396.8	621.0	799.3
Residue to landfill	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>4,607.8</b>	<b>6,200.0</b>	<b>4,995.2</b>	<b>5,718.6</b>	<b>5,982.2</b>

<b>Air pollution control residue (tonnes)</b>	<b>April 2017</b>	<b>May 2017</b>	<b>June 2017</b>	<b>July 2017</b>	<b>August 2017</b>
Residue to landfill	448.0	405.2	515.5	475.5	448.9
<b>Total</b>	<b>448.0</b>	<b>405.2</b>	<b>515.5</b>	<b>475.5</b>	<b>448.9</b>

September 2017	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018
328.2	781.2	1,169.8	1,081.6	3,729.2	3,618.8	3,361.9
4,711.6	2,944.4	3,605.8	341.9	0.0	0.0	0.0
603.4	611.3	613.8	352.7	668.0	474.6	590.7
0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>5,643.2</b>	<b>4,336.9</b>	<b>5,389.4</b>	<b>1,776.2</b>	<b>4,397.3</b>	<b>4,093.4</b>	<b>3,952.6</b>

September 2017	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018
518.3	523.4	512.6	577.7	534.6	436.7	363.0
<b>518.3</b>	<b>523.4</b>	<b>512.6</b>	<b>577.7</b>	<b>534.6</b>	<b>436.7</b>	<b>363.0</b>

## Appendix nine

Cornwall energy recovery centre  
permit limits and average daily emissions

	Permit limit	Line one	Line two
	Daily average per line (mg/m <sup>3</sup> )	Daily average (mg/m <sup>3</sup> )	Daily average (mg/m <sup>3</sup> )
<b>Particulates</b>	10	0.67	0.60
<b>Carbon monoxide</b>	50	7.35	2.01
<b>Sulphur dioxide</b>	50	10.29	9.50
<b>Hydrogen chloride</b>	10	5.62	5.09
<b>Oxides of nitrogen</b>	200	136.42	139.20
<b>Total organic carbon</b>	10	0.23	0.29
<b>Ammonia</b>	10	0.04	0.07
<b>Hydrogen fluoride</b>	1	0.04	0.00

## What are the emissions?

### Particles

Particles, also called particulates, are formed during the combustion process. These are captured in bag filters and form part of the Air Pollution Control Residue (APCR) which is sent for disposal off site in sealed containers.

### Carbon monoxide and VOCs as total organic carbon

High temperatures, a good mix of waste and sufficient air are all needed to achieve complete combustion and limit the formation of carbon monoxide and total organic carbon.

The temperature of the furnace is carefully controlled and additional burners can be used to bring up the temperature if it starts to drop.

A good mix of waste is achieved, initially using the grab in the bunker, but also on the moving grate in the furnace which keeps the waste moving throughout combustion.

The air flow into the furnace is controlled using fans alongside and underneath the grate.

### Sulphur dioxide, hydrogen chloride and hydrogen fluoride

Many of the things we throw away, including batteries and plastics, contain either sulphur, chlorine or fluorine. These are released during combustion and react with the air to form sulphur dioxide, hydrogen chloride and hydrogen fluoride.

We use hydrated lime and lime slurry to neutralise these gases and convert them into a solid which can be captured in the bag filters. This excess lime, particulates, salts and carbon dust make up the air pollution control residue, which is sent for disposal off site in sealed containers.

### Oxides of nitrogen and ammonia

Whenever anything is burnt in air, oxides of nitrogen are formed. This is because the air we breathe is made up of nitrogen (78%) and oxygen (21%) which combine during combustion. Nitrogen dioxide and nitrogen monoxide are known as oxides of nitrogen or NO<sub>x</sub>.

To control these in the combustion process, we inject ammonia into the furnace, which reacts with the oxides of nitrogen to produce nitrogen and water.





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