



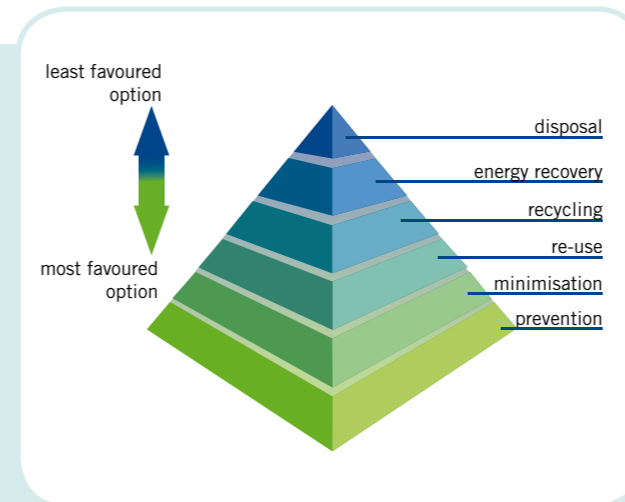
## SUSTAINABLE WASTE MANAGEMENT: A PRIORITY FOR CORNWALL



# Contents



## section one Sustainable waste management: a priority for Cornwall



The waste hierarchy has become the cornerstone of sustainable waste management. It sets out the options for dealing with waste from the most favoured to the least favoured.



### section one Sustainable waste management: a priority for Cornwall

### section two SITA UK and SITA Cornwall

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### Changing attitudes

In 2005, Cornwall produced 320,000<sup>1</sup> tonnes of municipal waste<sup>2</sup> and, with population growth alone, this figure is set to rise considerably over the coming years.

Our throwaway culture has to change. The way the world disposes of waste not only damages our environment, it depletes the planet's finite resources as well. We need a more sustainable approach.

Managing waste in a sustainable way, re-using, recycling and recovering as much as possible, as well as minimising the amount of waste produced in the first place, is at the heart of Cornwall County Council's vision for sustainable development.

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### Sustainable waste management

Greater focus on environmental issues has changed the way we deal with our waste considerably over the past 20 years. UK and European legislation is driving this change, setting targets to encourage:

- Less waste to landfill
- Increased recycling and composting
- Tightened regulation of waste treatment and disposal

Cornwall County Council must meet the challenges of European and national targets, aimed at reducing our long-term reliance on landfill to dispose of our rubbish.

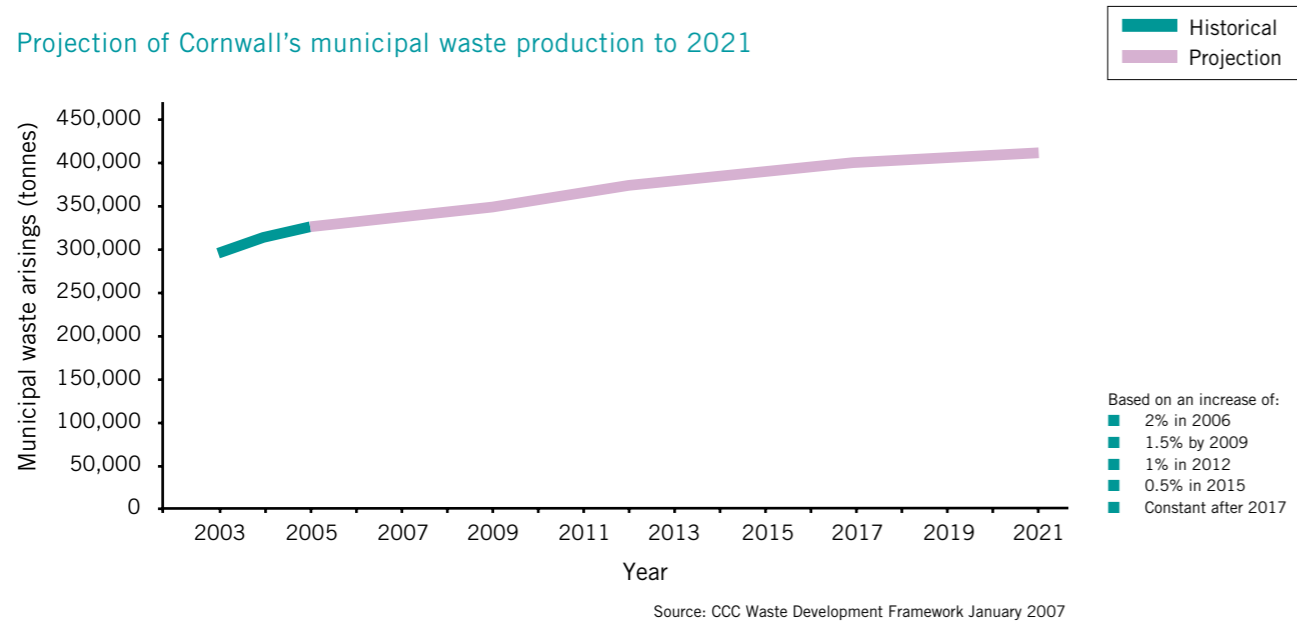
The Waste Local Plan and the emerging Waste Development Framework have been developed to meet government targets and regulations in which the council sets out suitable sites and methods for dealing with waste. These methods must ensure that waste is recovered or disposed of, without affecting human health or harming the environment.

The council's vision is to have a modern integrated waste management system combining greatly increased waste minimisation, recycling and composting with energy recovery to reduce the non-recyclable waste going to landfill.

<sup>1</sup> Source: Cornwall County Council

<sup>2</sup> Municipal waste includes household waste and waste such as street sweeping, beach cleaning, etc.

Projection of Cornwall's municipal waste production to 2021



The targets that Cornwall must meet

Year	Requirement	Cornwall's biodegradable municipal waste targets for landfill <sup>2</sup>	Cornwall's projected biodegradable municipal waste arisings <sup>3</sup>	Amount to be diverted from landfill
2009	Reduce quantity of biodegradable municipal waste going to landfill to 75 per cent of 1995 levels	110,554 tonnes	166,053 tonnes	55,499 tonnes
2013	Reduce quantity of biodegradable municipal waste going to landfill to 50 per cent of 1995 levels	73,737 tonnes	173,662 tonnes	99,925 tonnes
2020	Reduce quantity of biodegradable municipal waste going to landfill to 35 per cent of 1995 levels	51,526 tonnes	174,920 tonnes	123,394 tonnes

<sup>2</sup> Source: DEFRA      <sup>3</sup> Source: SITA UK projections

## Targets for sustainable waste management

### Waste forecast for Cornwall

Every one of Cornwall's 550,000 residents produces around half a tonne of waste per year and in recent years this has increased by approximately three per cent per year; Cornwall's four million plus visitors each year also have an impact.

The diagram above shows how the amount of waste that Cornwall produces is expected to grow over the coming years.



### Landfill diversion targets for biodegradable waste

Biodegradable waste, such as food, garden waste, paper and cardboard, is waste that can be decomposed by bacteria or other biological means. This waste, when sent to landfill, releases a greenhouse gas called methane.

The European Commission's Landfill Directive was created to phase out the landfilling of biodegradable waste and took effect in the UK in 2003. Over the next 15 years, the government has set local authorities a decreasing limit on the amount of biodegradable waste they can send to landfill (see table opposite).

By 2020, landfilling of biodegradable waste will have to reduce to 35 per cent of its 1995 levels and local authorities will face penalties if these targets are not met. The penalties could reach up to £150 for each tonne over the target, which would mean that Cornwall would face penalties of around £18 million a year. This is why we need an alternative approach.

### National targets

The UK Government published its Waste Strategy in 2000 setting out the following targets for local authorities.

#### National municipal waste<sup>1</sup> targets

- To recover value from 40 per cent of municipal waste by 2005
- To recover value from 45 per cent of municipal waste by 2010
- To recover value from 67 per cent of municipal waste by 2015

#### National household waste targets

- To recycle or compost at least 25 per cent of household waste by 2005
- To recycle or compost at least 30 per cent of household waste by 2010
- To recycle or compost at least 33 per cent of household waste by 2015

(Source: "Waste Strategy 2000", HMSO)

<sup>1</sup> Municipal waste includes household waste and waste such as street sweeping, beach cleaning, etc.

<sup>4</sup> Cornwall County Council

Cornwall has made great progress in its recycling levels in the past few years and in 2005/6, the county recycled 27 per cent<sup>4</sup> of its household waste.

The Waste Strategy 2000 is currently being reviewed and the future targets are expected to be even more challenging. We're all going to have to rise to the challenge.



section two

# SITA UK and SITA Cornwall



### SITA UK's values



In October 2006, SITA Cornwall Ltd was awarded a 30 year contract to manage waste in the county. This was the culmination of a three year period in which the council researched different approaches and held discussions with seven bidders.

#### Contract structure in brief

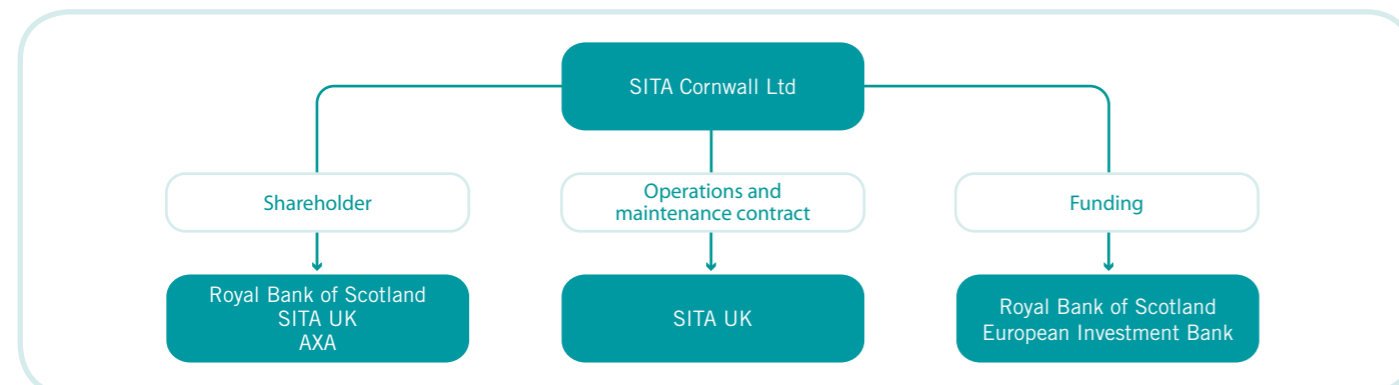
SITA Cornwall Ltd was created to fund the investment programme. SITA UK attracted funding from the European Investment Bank (EIB) and the Royal Bank of Scotland (RBS) with equity provided by SITA UK, RBS and AXA. Under this structure, SITA UK will provide the day-to-day operation and maintenance services.

#### Private Finance Initiative (PFI) credits

PFI credits are allocated to projects by government departments to assist with the capital costs of such projects. In this case, the Department of Environment, Food and Rural Affairs (DEFRA) awarded £45 million in PFI credits to Cornwall County Council in support of this contract.



The SITA Cornwall name and logo, above, will be used across the county.



## SITA UK

SITA UK is proud to be part of Cornwall's future.

The company has been in operation since 1988 and is now one of the country's leading suppliers of recycling and waste services. Every day, we serve over 12 million residents and 35,000 business customers.

Delivering integrated solutions – through collection, recycling, composting, energy recovery and other innovative technologies – for local authorities, industry and commerce, SITA UK aims to maximise the value extracted from the waste stream.

#### SITA UK's experience

We operate eight integrated waste management contracts across the UK with authorities in Aberdeen, Isle of Man, Kirklees, South Gloucestershire, Surrey, Tees Valley, Northumberland and now in Cornwall. This gives us the experience, knowledge and expertise to fully understand the complexities of integrated waste contracts and deliver them successfully.

#### SITA UK's values

All activities and employees of SITA UK are governed by values that derive, ultimately, from our parent company, SUEZ. These values, developed with input from employees from across the world, describe how we approach our work, our customers, our suppliers and each other.





## SITA Cornwall

Working in partnership with Cornwall County Council, we are bringing an innovative solution to the management of waste, conserving resources and protecting the environment.

Over the next 30 years, we will deliver a sustainable integrated waste management service. Our solution fits with Cornwall County Council's waste management aspirations and ensures a sustainable future for Cornwall's waste. The solution follows the waste hierarchy (see page 3) and puts re-use and recycling ahead of treatment and disposal. It is also designed to minimise the impact on communities and the environment.

Our approach is for recycling to take the lead, whilst delivering more efficient operations and using tried and tested technology.

### Recycling

We will quickly deliver a number of key recycling facilities and services that will make significant improvements in recycling percentages throughout the county.

- Investment by SITA Cornwall Ltd in building new and redeveloping existing facilities to improve the sorting and processing of materials collected from households across the county.
- Changes will help ensure that Cornwall achieves its targets for recycling and landfill diversion.



### Delivering efficiency

We will deliver greater efficiency by:

- Upgrading the network of transfer stations, recycling centres and composting facilities across the county.
- Coordinating the operation of recycling centres, transport, recycling plants, composting and energy recovery.
- Reducing the total number of journeys taken by waste throughout Cornwall.

### Delivering a tried and tested solution

Our approach is to maximise material recovery and move the county away from its dependency on landfill.

- Although landfill will continue to play a role in waste management for the county, we plan to deliver a tried and tested alternative through Energy from Waste (EfW).
- EfW will bring a number of benefits including the generation of electricity, heat and the production of aggregate for road building.

### Key facts

- Integration of the activities of three companies: CES Group, Cornwall Paper Company, Sid Knowles Waste and the duties of a subcontractor
- 220 employees
- 45 job creations planned over the period of the contract
- 200 suppliers
- £191 million investment over the life of the contract
- £14.6 million investment in the first year of the contract
- 320,000 tonnes of municipal waste to be handled in the first year

section three  
**Defining the solution**

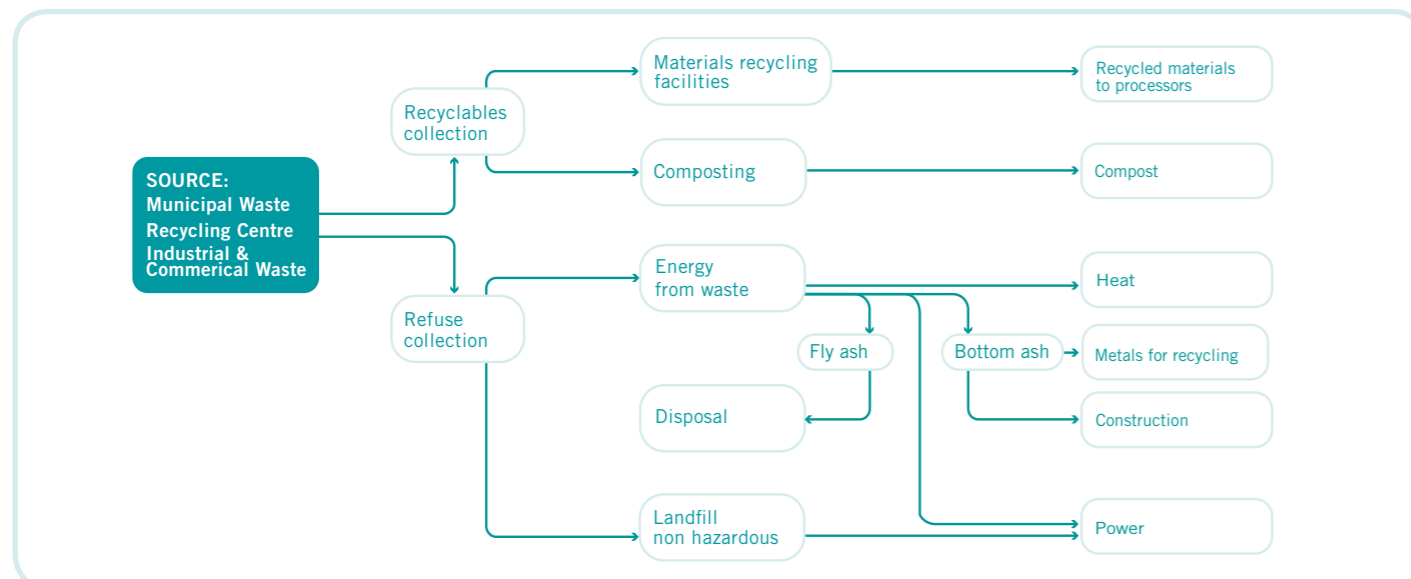


**Sustainable waste: an integrated approach for Cornwall**

We have spent many years developing the way in which we manage society’s waste and we have learnt that a sustainable solution is best achieved through an integrated approach, bringing together all aspects of waste management. The integrated waste management solution for Cornwall includes:

- Recycling centres and bring sites
- Materials recycling facilities
- Energy from Waste
- Composting
- Transfer stations
- Final disposal – landfill

**Waste management process**



**Recycling centres**

Recycling centres are provided for the public to deposit waste and recyclables. We will operate 13 facilities across Cornwall, accepting in the region of 80,000 tonnes each year. We also manage three sites provided by the local authorities.

Investment in the recycling centres early in the contract will improve recycling and make them easier to use.

Improvements will be made at all of the centres, plus:

- Three brand new centres will be provided at Falmouth, Truro and Penzance.
- Replacement centres (at new locations) will be built in Newquay, Redruth / Scorrier, Launceston and St Austell.
- The centres at Bude and St Erth will be completely redeveloped.

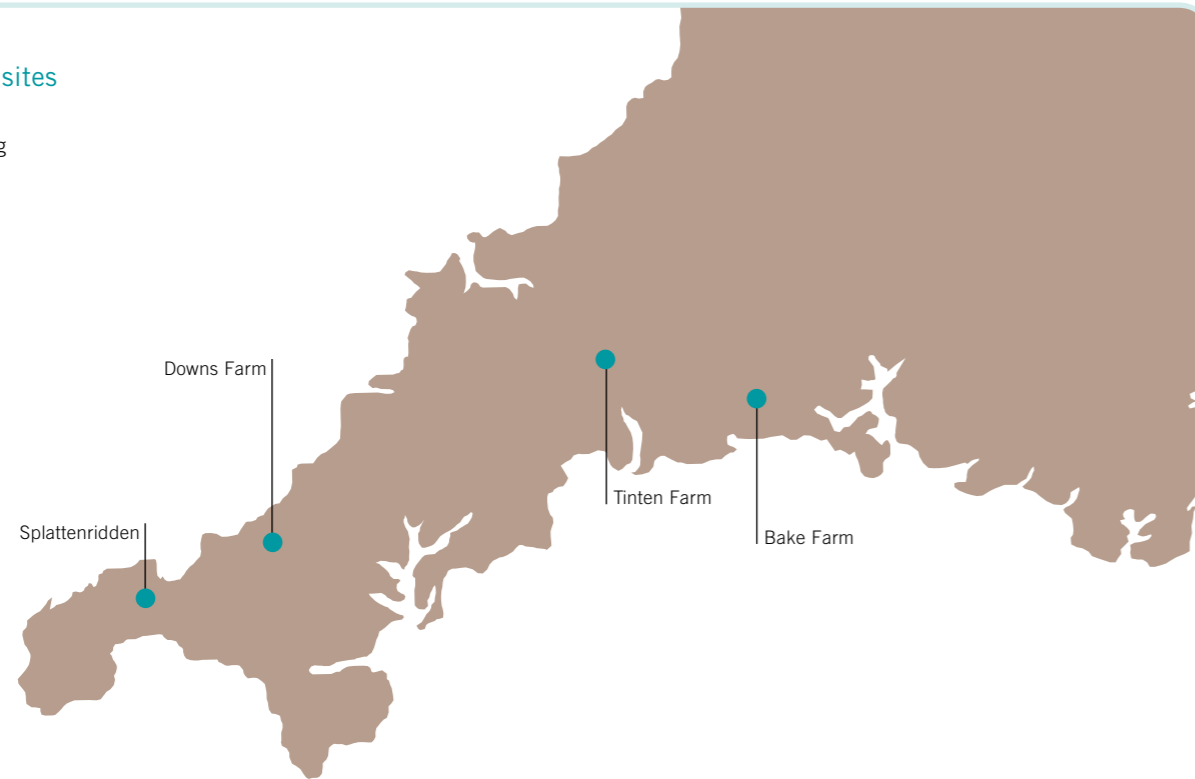
New and redeveloped centres will be split-level wherever possible allowing ease of access for the public. The recycling target on each site is 50 per cent and the following materials will be recycled:

- Mixed cans, plastic bottles, mixed paper, mixed glass, cardboard, nonferrous and ferrous metal, textiles, bric-a-brac.
- Car and household batteries, electrical equipment, fluorescent tubes, fridges, gas cylinders.
- Green waste, tyres, wood, soil and rubble.

Specialist disposal for asbestos, chemicals and oil is also provided.

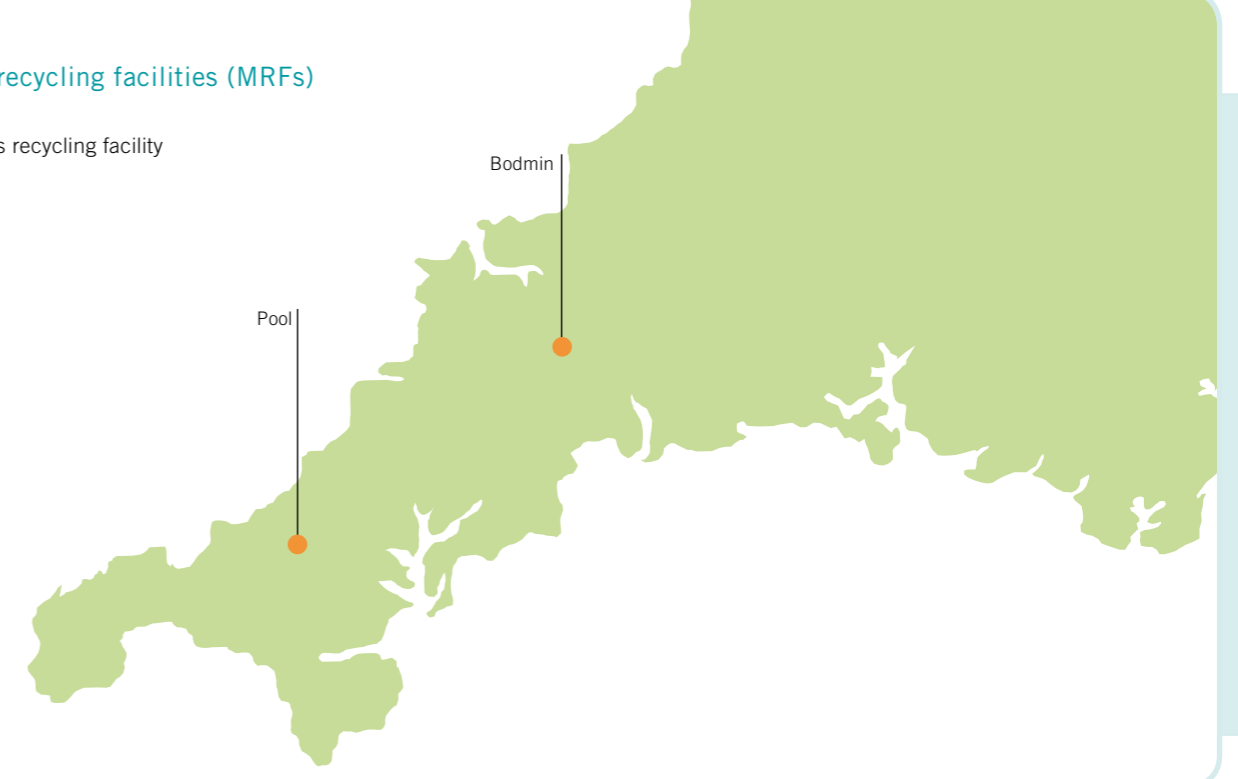
## Composting sites

- Composting



## Materials recycling facilities (MRFs)

- Materials recycling facility



### Composting

Green waste received from the district councils and collected at the recycling centres is processed into compost by local contractors.

The green waste is composted using Open Windrow Composting which consists of the following steps:

- Green waste is shredded and formed into windrows (heaps of material).
- Windrows are turned once a week and monitored regularly whilst the green waste biodegrades into compost, a process that takes approximately 14 weeks.
- Compost is screened and graded to different sizes depending on final use.

The compost is manufactured to a minimum quality of BSI PAS 100\*, meaning it can be used in parks and gardens.

The compost is used locally, supplying mainly agriculture and landscaping, with the aim to develop local outlets.



### Materials recycling facilities (MRFs)

Recycling collected by the district councils and some of that taken to the recycling centres is sorted at the materials recycling facilities. Some materials are collected directly from the recycling centres by the reprocessors, for example, green waste for compost.

Two existing facilities at Bodmin and Pool will be redeveloped to accommodate the growing quantities of recyclable materials. These include:

- cans
- plastic bottles
- paper
- aluminium foil
- cardboard
- textiles
- glass

The segregated materials are then baled and sent to reprocessors where they are used to make new products.

We will look for outlets for recyclable materials in Cornwall and the South West.



\*PAS: Publicly Available Specification

### Transfer stations

- Existing facilities, some will be replaced or redeveloped
- Planned facilities
- Other facilities



The EfW plant on the Isle of Man was designed to reflect the culture and history of the Isle

### Transfer stations

Transfer stations play an important role in the overall solution for Cornwall. They provide an efficient waste management service and will manage approximately 152,000 tonnes of waste each year.

Waste is brought to the transfer stations in smaller collection vehicles, deposited and moved onto larger vehicles for onward treatment or disposal. This process helps reduce the number of vehicles moving waste around Cornwall, minimising traffic on the roads and emissions from vehicles.

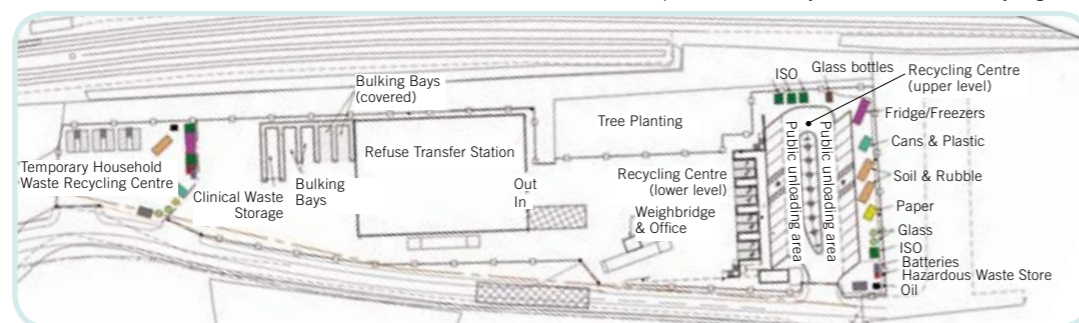
Initially, the existing sites at Newquay, St Austell and Launceston will continue to operate for household waste only. New or redeveloped sites will be provided at Launceston and Scorrier (near Redruth).

We will also be managing three transfer stations for trade waste at Lee Mill, Domellick and Dudnance Lane. These will improve the segregation of recyclables and help to reduce the amount of waste requiring landfill disposal.

We are planning to provide a temporary transfer station at Connon Bridge whilst the landfill site is mothballed\*. With this in place, district councils would continue to deliver waste to Connon Bridge, from where the waste would be transferred in larger vehicles to United Mines landfill until it closes in 2010.

\* See page 17

Redevelopment of St Erth (Hayle) transfer station and recycling centre



### Energy from Waste (EfW)

For material that is not re-useable, recyclable or compostable (known as residual waste), we plan to provide an Energy from Waste plant (EfW), which will reduce reliance on landfill for the disposal of this waste.

Experiences in Europe, particularly in Denmark, the Netherlands and Sweden show that EfW and recycling can coexist well and offer a much more sustainable approach than landfill.

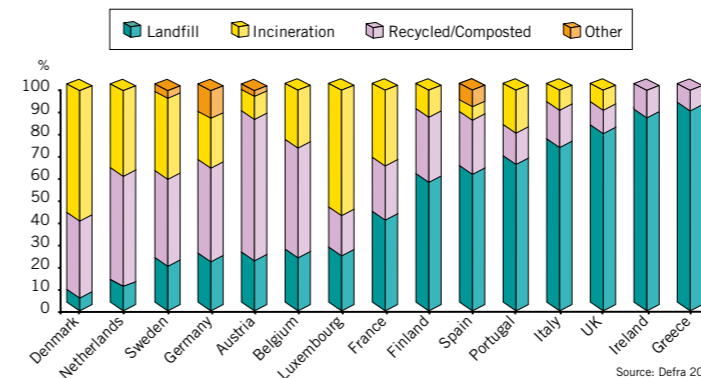
The EfW plant will deliver a tried and tested alternative to landfill and create a number of other benefits including electricity, heat, and aggregate for road building.

This new EfW facility will handle 240,000 tonnes of waste per year and will generate 132,000 MWh of electricity annually, equivalent to the needs of around 15,000 households. The heat generated will be used by local industry.

Planning permission from the council and a PPC\* permit from the Environment Agency will be required to build and operate the plant.

All EfW plants operate under the strictest European regulations that control emissions and these are enforced by the Environment Agency.

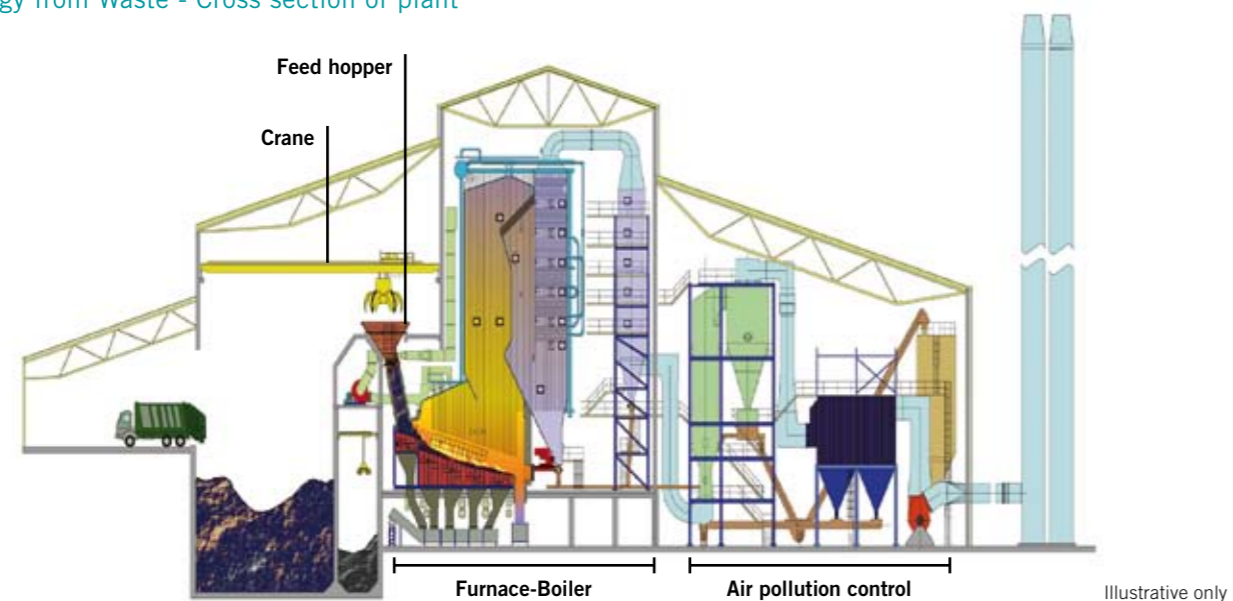
### Municipal Waste Management in the European Union



Source: Defra 2004

\* PPC: Pollution Prevention and Control.

### Energy from Waste - Cross section of plant

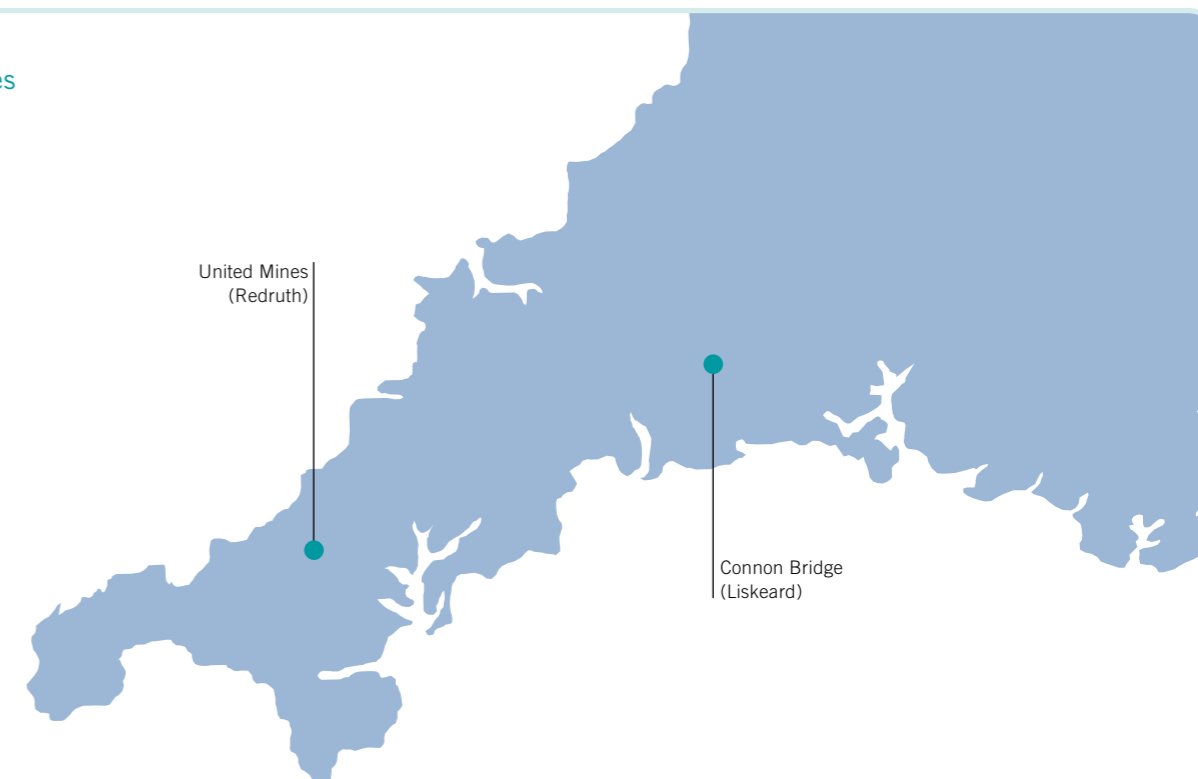


### Energy from Waste – how does it work?

- In an Energy from Waste plant, waste collection vehicles discharge the residual waste into bunkers where the waste is mixed to ensure an even burn in the furnace.
- Water sprays and induction fans reduce levels of dust and smell in the waste reception hall.
- Waste is loaded by crane into a feed hopper. The waste then travels down the feed chute into the furnace.
- Inside the furnace, a series of grate bars move waste through the furnace where it is dried and burned at a temperature of 1000°C.
- Burning waste in the furnace produces hot flue gases that travel through the boiler transferring heat to the water running through the boiler pipes. The hot water creates steam and the steam drives turbines which generate electricity. The steam is captured for heat.
- Gases from the burned waste are thoroughly cleaned by a flue gas cleaning system. The gas passes through a fine fabric filter that captures any particles before the now cleaned gas is released through the chimney. All emissions are controlled to strict European standards. Collected particles from the fabric filter are stored in a silo before being sent for specialist treatment.
- Incinerator bottom ash (IBA) from the burned waste drops into a quench tank and then along a conveyor to a storage pit. Magnets above the conveyor extract ferrous metals from the ash for recycling. Remaining IBA is treated at the ash recycling plant and subsequently used as a construction material.
- Air is drawn from the waste reception hall through the hopper and chute, into the furnace. This not only fuels the furnace but also helps control any smell from the waste, with the odour passing through the plant and gas cleaning system rather than building up in the surrounding area.

### Landfill sites

● Landfill



### Landfills

We have taken over the management and operation of the two CES landfills at Liskeard (Connon Bridge) and Redruth (United Mines). However, United Mines must close in 2010 and so, in order to use the space available efficiently, it is planned that Connon Bridge landfill will be temporarily closed and all waste will be diverted to United Mines until 2010.

We have calculated, based on an EfW plant being built, that there should be enough space in the two landfills to accommodate Cornwall's residual waste during the contract period. This means that a new landfill site should not be necessary.

Once the EfW plant is in operation, the amount of waste sent to landfill will significantly reduce.





### Finding a solution that works

Cornwall County Council spent a number of years thoroughly researching different waste management technologies, with the assistance of a number of waste management companies and independent, expert advice.

Recycling and composting had to take priority, whichever system was chosen, but the options for residual waste needed careful consideration.



#### The solution for Cornwall....

SITA Cornwall and Cornwall County Council firmly believe that using EfW to treat the residual waste, after recycling and composting, is the best solution for the county.

- EfW produces electricity and heat from waste that, up until now, has been buried in landfill sites.
- EfW technology has improved significantly, particularly over the past 15 years and the Environment Agency makes sure that emissions from EfW facilities are kept well below stringent levels set by UK and EU legislation.
- Using a single EfW site reduces the cost to council tax payers – because there are lower construction and operational overheads.
- The size of the site has been calculated to deal with the waste remaining after composting and recycling – a capacity of 240,000 tonnes is needed.

The solution will meet the objectives of the Waste Local Plan and the Waste Development Framework. The outcome will be that Cornwall becomes self-sufficient, dealing with its own waste and reducing its reliance on landfill.

### Our commitment

SITA Cornwall takes its responsibility towards the environment and the local community seriously:

- SITA Cornwall is committed to working with the community and wherever possible will employ locally.
- SITA Cornwall will participate in Cornish life and is committed to supporting environmental and social initiatives in the county.

This contract will bring significant benefits to Cornwall and the Cornish people, including:

- Self-sufficiency and non reliance on external waste management solutions
- Improved proximity to collection points
- Increased recycling and composting rates
- Compliance with EC Landfill Directive
- Input of electricity and heat
- Increased income for Cornwall from sales of LATS\*
- Credit from Defra and involvement of the European Investment Bank

\*LATS: Landfill Allowance Trading Scheme. Launched in 2005, this scheme enables waste disposal authorities to trade, bank and borrow landfill allowance in order to meet their landfill obligations.



#### Landfill Communities Fund

We will support the Landfill Communities Fund (formerly called the Landfill Tax Credit Scheme) in the county. This is an important source of funding for community and environmental groups within the vicinity of landfill sites, helping to maintain community facilities, sports, heritage and environmental projects.



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Whether it is on a specific issue or to provide more general feedback, we would like to hear from you.

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