

State of the Nation Report

Landfilling Practices and Regulation in England and Wales

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ENGLAND & WALES

1. Summary of Solid Waste Management Sector

The waste and resources management sector in the UK can be broadly summarised by the following statistics¹:

- Total turnover: £11bn
- Direct Employment: 142,000 people
- Municipal waste handled each year: over 26 million tonnes
- Energy generated (from waste combustion and landfill gas) each year: approximately 6,500 GWh, 1.5% of the UK's total electricity supply and over 25% of our renewable electricity.
- Greenhouse gas emissions down by 70% since 1990.
- The top seven companies account for over 50% of turnover. Many hundreds of SMEs provide either localised or more specialised services

England & Wales have historically, along with the rest of the United Kingdom, relied on landfill as the preferred disposal route for wastes based on experience, geology and relatively cheap costs. The progressive introduction of tighter regulation on landfill operations coupled with the introduction of Landfill Tax in 1996² has driven up the cost of landfill, making other treatment routes more economically viable and pushing waste up the hierarchy. The implementation of the Landfill Directive has led to a reduction in waste sent to landfill, many older landfill sites have been required to close, so the number of Landfill sites is also decreasing.

In the year 2009, facilities in England and Wales managed a total of approximately 134 million tonnes of waste³. Although a large amount of waste is still sent to landfill, this proportion has been decreasing over the past years and will continue to decrease in the future. Over 46.5 million tonnes of waste were landfilled in England and Wales in 2009. This compares to 56 million tonnes in 2008, a reduction of over 18 per cent. Waste to landfill has fallen considerable, by 45%, since 2000.

Site Type	Landfill	Transfer	Treatment	Metal Recycling	Incineration
Number of sites at end of 2009 with an environmental permit	497	3591	1381	2411	94
Number of sites that	448	2794	1031	1344	79

¹ www.esa.org

² <http://www.legislation.gov.uk/ukxi/1996/1527/contents/made>

³ Statistics taken from <http://www.environment-agency.gov.uk/research/library/data/123472.aspx>

accepted waste in 2009					
Millions of tonnes managed in 2009	46.5	41.9	27.4	13.2	5.4

Table taken from Environment Agency, Waste Information 2009 Report

Landfill Classification

As England and Wales operate under the Landfill Directive; landfills are classified into three types: Hazardous, Non-hazardous and Inert. In 2009⁴, 68 per cent of waste that was landfilled in the UK was sent to sites accepting non-hazardous waste; 21 per cent went to inert only sites; eight per cent to restricted user sites (consisting of mainly ashes and slags from metal manufacture and power stations) and three per cent to hazardous merchant landfills.

Landfill Capacity

At the end of 2009 there was 614 million cubic metres of available landfill capacity, 68 per cent of this was available at merchant non-hazardous sites; 18 million cubic metres available at hazardous waste only sites. There is nearly eight years of landfill life left at sites for non-hazardous wastes in England and Wales, at 2009 input rates⁵. As the tonnage of waste reduces due to waste prevention and recycling it could be argued that the life of the national stock of landfill will be extended beyond eight years.

England and Wales: Landfill Capacity Trends 1998/99 - 2009 (x1000 cubic metres)							
	2000/01	2004	2005	2006	2007	2008	2009
Inert	64,596	100,284	82,742	98,633	128,366	112,108	126,655
Non-inert	602,257	559,387	566,671	560,289	503,884	499,933	439,217
Restricted	91,705	26,340	34,042	34,803	52,103	38,701	48,389
Total	758,558	686,011	683,455	693,725	684,352	650,742	614,261

Data from: <http://www.environment-agency.gov.uk/research/library/data/123744.aspx>

Landfill Inventories

Existing landfill inventories for England and Wales can be found at <http://www.environment-agency.gov.uk/research/library/data/123744.aspx>

⁴ Statistics taken Environment Agency, Waste Information 2009 Report

⁵ Statistics from Environmental Agency, Waste Information 2009 Report

2. Overview of Landfill Practices

The general policy for management of landfills and their design is laid down in the Landfill Directive

Landfill management practices (daily cover practices, waste scales, leachate management and treatment, waste compaction)

In England and Wales waste management operations, including landfill, are regulated by the Environment Agency and the UK has managed landfill following statutory operational guidance for nearly thirty years.

The Environment Agency requires that proposals for landfills are designed in such a way as to protect the environment. The Environment Agency expects operators to adopt a principle of 'Landfill by design'. Landfill operators are expected to use sound scientific techniques and detailed calculations to design a specific solution to protect the environment from the particular risks at the proposed location.

The Environment Agency has produced a series of guidance documents covering: waste acceptance; monitoring guidance; landfill engineering guidance; landfill gas guidance and landfill permitting and surrender technical guidance. These are available at the following link: <http://www.environment-agency.gov.uk/business/sectors/108918.aspx>

Current Status and Trends for Landfill Design (depth of waste, presence of liners and/or caps, steepness of slopes) especially disposal and landfill gas

The general policy for management of landfill gas is laid down in the Landfill Directive; Landfill gas must be controlled, collected and where possible utilised and any residual gas combusted in an enclosed flare.

The Environment Agency encourages operators to maximise utilisation of landfill gas. Permit applications require a risk assessment that demonstrates through modeling that there will be sufficient capacity to collect and use the predicted quantities of gas. On operational sites the Agency practices emissions based regulation. The aim is to balance the benefits to the global atmosphere from methane combustion with the local impacts of emissions from combustion of the gas. Targets on individual emissions are set on best practice and beyond the boundary of the site National Air Quality standards are applied. Operators report annually on emissions from engines, enclosed flares and landfill surfaces using monitoring guidance issued by the Agency

Landfill design includes requirements on capping, liners, slope angles etc.

3. Key Stakeholders in the solid waste disposal sector relating to Landfill

The key Stakeholders connected to Landfill in England and Wales include⁶:

Private landfill owners – there are several very large multinationals with sites throughout the country; some of these manage their own gas utilisation and will be involved in waste collection and treatment. In addition there are a larger number of small operators with local interests, some of these have contracts with specialist power project companies.

Public Landfill Responsibilities – waste management is all contracted. However, local authorities have responsibility for some old landfills – these are generally treated as contaminated land.

Specialist gas utilisation companies - offering project management for turn-key plants or contracts to take gas to their own power generation plants beside landfills

Environment Agency – Regulator of licensed and permitted landfills and associated gas utilisation plant

Consultants designing landfill, gas collection and use and those undertaking risk assessments.

Equipment suppliers – These can either be UK manufacturers and installers or agents for non-UK equipment that is installed by UK contractors.

Utilities – the electricity supply companies buy the power generated by the gas engines and count this against their Renewable Obligation. They do not generate this type of power themselves.

NGOs – issues are usually dealt with by local pressure groups concerned with nuisance factors associated with waste management. However health impacts from air emissions are a growing concern.

4. Legal and Policy Frameworks for Landfill

Licensing

In England & Wales the operation of waste management, including landfill, is regulated by the Environment Agency.

Environmental Regulations

Adopted in 1999, the EU Landfill Directive 1999/31/EC was transposed into law as the Landfill (England & Wales) Regulations 2002. It requires a reduction in biodegradable waste sent to landfill. Of the 1995 level, it sets 75% landfilling by 2010, 50% by 2013 and 35% by 2020. These relate to biodegradable municipal waste, the scope of which currently includes all waste collected by or on behalf of a Local Authority.

It also bans various materials from landfilling, including liquid waste, explosive and flammable waste. Hospital and clinical waste and tyres, whether whole or shredded. It also introduced new categories of inert, non hazardous and hazardous landfill sites.

The implementation of the Landfill Directive's requirements for diversion of BMW required primary legislation and have been implemented through the Waste and Emissions Trading (WET) Act 2003 via:

⁶ Taken from Methane to Markets Partnership Landfill Subcommittee England & Wales Profile State of the Nation Report: England & Wales, December 2012

- The setting of a maximum amount of BMW to landfill from each country in the UK
- The allocation on landfill allowances, which may be tradable, to waste disposal authorities
- The preparation, in each country of the UK, of a strategy for reducing the amount of biodegradable waste going to landfills
- Details of the landfill allowances scheme being established in subordinate legislation by the appropriate authority in each country of the UK

This Act introduced the Landfill Allowance Trading Scheme (LATS) that sets out restrictions for disposal by each local authority in England and Wales. The Act permits each waste disposal authority (WDA) to sell its yearly quota of landfill allowances to other WDAs, creates financial incentives for good performance and encourages WDAs to maximise alternatives to landfill. The allowances can be traded, the penalty for breaching the target without purchasing LATS from other authorities was set at £150 per tonne, and the Secretary of State sets each WDAs landfill disposal allowance annually, to reflect nationally the downward trend of the EU Landfill Directive, which deals with bio-degradable municipal waste. The targets are 50% of 1995 levels by 2009, and 35% by 2016.

The Integrated Pollution Prevention And Control Directive (IPPC) 1996/61/EC introduced a new integrated permitting regime for major industrial and waste sites covering air, water and land pollution. It targets industrial sectors considered to have a high potential to cause pollution and aims to provide a high level of protection for the environment as a whole and extends traditional approaches to environmental protection by including energy use, waste minimisation, vibration and noise. Sectors of industry regulated by IPPC include energy, metal production and processing, minerals, chemicals production and waste management.

In England and Wales the Pollution Prevention and Control (Public Participation) (England and Wales) Regulations 2005 govern industrial facilities such as oil or gas installations and ensures that they are reducing waste at source and also achieving energy and water efficiency improvements. It sought to bring the most significant 4500 sites within the rules by 2007.

From 1994 operational landfills were regulated through the Waste Management Licences. After 2003, the Landfill Directive was implemented by permitting operational sites through the PPC (Pollution Prevention and Control) scheme that already exists for other industrial processes. Sites are classified as inert, non-hazardous and hazardous; MSW goes to the nonhazardous category of site. Provision of waste management is a market driven process in which private operators make applications to build facilities. These applications are supported by a full risk assessment covering engineering, gas and leachate management.

In 2010 a consolidated system for environmental permits and exemptions for industrial activities, mobile plant, waste operations, mining waste operations, water discharge activities, groundwater activities and radioactive substances activities was introduced via the Environmental Permitting (England and Wales) Regulation 2010 SI 675⁷. Amendments were made to this with the Waste (England and Wales) Regulation 2011 SI 988⁸, which requires businesses to apply the waste management hierarchy, introduces a two-tier system for waste carrier and broker registration, and excludes some categories of waste from waste controls.

⁷ http://www.legislation.gov.uk/uksi/2010/675/pdfs/ukxi_20100675_en.pdf

⁸ <http://www.legislation.gov.uk/uksi/2011/988/contents/made>

Policies or mandates that may affect waste streams

The Landfill Directive bans the following streams from being landfilled:

- liquid waste
- waste which in a landfill would be explosive, corrosive, oxidising, flammable or highly flammable
- hospital and other clinical wastes – from medical or veterinary establishments – which are infectious
- chemical substances from research and development or teaching activities (such as laboratory residues) which are not identified or which are new, and whose effects on man and/or the environment are not known
- whole and shredded used tyres – apart from tyres used as engineering material, bicycle tyres, and tyres with an outside diameter of more than 1,400 mm.

The landfill directive also sets targets for the diversion biodegradable municipal waste (BMW) from landfill.

As discussed earlier, the UK introduced a landfill tax in 1996. Since 1999, the cost of landfill tax has risen via the ‘landfill tax escalator’ which has increased the rate of landfill tax per tonne on an annual basis. From 1999-2004, the rate was £1 per tonne; it was increased to £3 per tonne between 2005-2008. The escalator rose to £8 per tonne from 1st April 2008 and in the June 2010 budget⁹ the previous Government confirmed that the escalator will continue until at least 1st April 2014 and introduced a floor so that that the rate will not fall below £80 per tonne until at least 2020. The current Government has confirmed that it still supports these measures.

The following regulations also affect the waste sent to landfill:

1. Packaging Waste Directive (1994/62/EC)

The Packaging and Packaging Waste Directive aims to harmonise measures concerning the management of packaging and packaging waste and in particular, obligates the UK to meet targets for the recovery and recycling of packaging waste. The Directive covers all packaging placed on the Community market. Targets are set as a percentage of packaging flowing into the waste stream.

In England and Wales the Packaging Directive was implemented with the Producer Responsibility Obligations (Packaging Waste) Regulations 2005, with further changes being made to the Regulations in 2007. The changes require volumes and weights of packaging to be the minimum necessary to maintain safety and hygiene. Producers of waste are made responsible for proving that their waste is diverted from landfill by getting Packaging Waste Recovery Notes (PRNs) from accredited re-processors or recyclers. The Regulations sought a 60% overall recovery and 55% minimum recycling of packaging waste by the end of last year, with specific recycling targets for each commodity.

Further changes to the Regulations have more recently been consulted upon following the publication of the UK’s Packaging Strategy in 2009. Changes proposed include higher targets for each material type and greater transparency on how PRN funds are spent.

⁹ <http://www.defra.gov.uk/news/2010/06/23/june-2010-budget-key-announcements-for-environment/>

2. End of Life Vehicles Directive 2000/23/EC

The purpose of the End of Life Vehicles (ELV) Directive is to prevent waste from end of life vehicles and promote the collection, reuse and recycling of their components. It sets recycling targets and will require producers, dismantlers and shredders to establish collection systems for ELVs.

The End of Life Vehicles Directive 2000/23/EC resulted in the End of Life Vehicle (Producer Responsibility) Regulations 2005 dealing with cars and other vehicles. For motor cars, this aims to increase the recovery and recycling of old cars by requiring the use of authorised treatment facilities (ATFs) for their breakdown and reprocessing, and manufacturers are charged with the collection and recycling of their own-brand vehicles. The Regulations deal with metals, oils, batteries, tyres, plastics and WEEE from end of life vehicles. They set escalating targets for reuse and recovery. They require free take-back from 2007. These Regulations were a prequel to the government's Scrap Vehicles scheme described below.

- Car Scrappage Scheme

The UK car scrappage scheme was set-up to take older cars off the roads, to encourage the new car market, and by working through dealers ensure returned cars are recycled as far as possible. In order to qualify for the £2000 payment, cars to be scrapped had to be 10 years old or more, the car to be purchased had to be new, the buyer had to have owned or kept the vehicle for at least twelve months, it had to have a valid MOT. Vans up to 3.5 tonnes also qualified for the scheme which was voluntary. Initially due to end in February 2010, the scheme ended March 2010.

The End-of-Life (Producer Responsibility) Regulations 2005, implementing Articles 5(1), (2), (4) and 7 of End-of-Life Vehicles Directive (2000/53/EC) is also applicable in Scotland, Northern Ireland and Wales. Regulatory targets for the reuse, recovery and recycling for end-of-life vehicles treated at authorised treatment facilities (Regulation 18) are the same across all regions of the UK.

3. EU Batteries Directive:

The earlier relevant legislation includes the EU Directive 1991/157/EEC on Batteries and Accumulators as well as 1993/86/EEC and 1998/101/EC. A new Batteries Directive came into force in September 2006 and the UK transposed this into law during 2008.

In England the Directive has been transposed through the Waste Batteries and Accumulators Regulations which came into force on 5 May 2009 establishing a new Producer Responsibility system for the collection, treatment and recycling of waste portable, industrial and automotive batteries.

A new producer takeback scheme comes into force in January 2010, dealing with batteries from households. Automotive and industrial batteries are also covered by these Directives. The most recent enactment deals with ending the use of hazardous materials, such as cadmium and mercury, in the manufacture of batteries, except certain specialised batteries, sets-out targets for collection (25% by 2012, 45% by 2016) and bans the disposal of untreated car and industrial batteries.

4. Waste Electrical And Electronic Equipment Directive (WEEE):

Two European Directives exist relating to WEEE. These are Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE), and Directive 2002/95/EC governing the use of hazardous substances.

The WEEE Directive is transposed in England & Wales under the Hazardous Waste (England and Wales) Regulations 2005, as well as in the Waste Electrical and Electronic Equipment Regulations 2006, and the Waste Electrical and Electronic Equipment (Waste Management Licensing) (England and Wales) Regulations 2006, both coming into force early in 2006. The Regulations deal with plastics and metals, including hazardous substances such as mercury, arising from electrical and electronic goods from households as well as the commercial and industrial sector.

All producers must be members of a Producer Compliance Scheme (PCS) that is set treatment and recycling obligations based on WEEE collected at Designated Collection Facilities (DCFs). 'EEE' with a 'wheeled bin crossed-out' has to be shown on all relevant products, and free in-store take-back schemes must be provided. Local Authorities have designated community recycling sites as DCFs and have received some funding for doing so through the Distributor Take back Scheme.

5. EU Hazardous Waste Directive

A series of pieces of legislation set rules identifying hazardous materials, their controlling management, reprocessing and disposal to ensure public and environmental safety. The materials affected are listed in the European Waste Catalogue (EWC) 2002.

The relevant legislation transposing the Directive includes the Hazardous Waste (England and Wales) Regulations 2005 which transposes the EU Directive 1991/689/EEC on Hazardous waste together with the legislation associated with transposition of the WEEE Directive described above, the Directive on Batteries and Accumulators and the 1996/59/EC Directive on the Disposal of PCBs and PCTs.

The sources of waste include fluorescent tubes, cleaning fluids, batteries, oils, electrical goods, commercial facilities including photographic processors, vehicle re-processors, television and computer re-processors.

From 2004 co-disposal of hazardous and non-hazardous waste was banned. A producer registration scheme was entered-into in 2005, with waste being catalogued and sent for authorised recovery or re-processing. And from 2005, pre-treatment before disposal was introduced, with a Waste Acceptance Procedure under Waste Acceptance Criteria (WAC).

6. Waste Oil Directive 75/439/EEC.

The Waste Oil Directive 75/439/EEC prioritises regeneration of waste oil, for use again as oil. Currently, most waste oil in the UK is treated and used as a fuel substitute for virgin oil (primarily in power generation and kilns).

The relevant legislation transposing requirements of the Directive includes the Hazardous Waste Regulations (England and Wales) 2005 and legislation associated with the transposition of the Waste Incineration Directive 2000/76/EC and the Integrated Pollution Control Directive (IPPC) 1996/61/EC. Rules govern the storage and disposal of waste oil from cars, as well as industrial and household processes, and deal with the burning of old oils as an energy replacement.

7. Household Waste Recycling Act 2003

The Act requires local authorities in England to collect separately at least two separate recyclable fractions of household waste by 2010.

5. Domestic Country Strategy

England

The government has committed to ensure that England is ‘on the path towards a zero waste economy’. The Government recently carried out a Review of Waste Policy¹⁰ in England the results of which were published in June 2011. It sets out its policies and a series of actions designed to help move towards a zero waste economy in England. Alongside the Review, the Government also published an Anaerobic Digestion Strategy and Action Plan.¹¹

These include commitments to:

- Work with business on a range of measures to prevent waste occurring wherever possible, ahead of developing a full Waste Prevention Programme by December 2013;
- Explore the potential for new voluntary responsibility deals to drive waste prevention and recycling, including in the hospitality sector and with the waste management industry and for direct mail, textiles, and construction waste;
- Launch a grant funding scheme for innovative reward and recognition schemes which could incentivise people to do the right thing;
- Encourage councils to sign new Recycling and Waste Services Commitments, setting out the principles they will follow in delivering waste services to households and businesses.
- Provide technical support to councils and businesses who want to see recycling-on-the-go schemes grow,
- Consult on the case for increased recovery targets for packaging waste, in time for a final decision in the 2012 Budget;
- Consult on introducing a restriction on the landfilling of wood waste and review the case for introducing landfill restrictions on other materials, including textiles and biodegradable waste;
- Abandon bin fines and taxes while bringing in powers to deal with repeat fly-tipping offenders and genuine nuisance neighbours

The Government envisages that amongst others, the zero waste economy will have the following characteristics:

- resources are fully valued – financially and environmentally
- one person’s waste is another’s resource
- over time, to get as close as possible to zero landfill
- a new public consciousness in its attitude to waste

Landfill is specifically discussed in the Review of Waste Policy, with the following conclusions:

“Landfill should be the last resort for most waste, and particularly for biodegradable waste. The landfill tax – with increases maintained towards a floor of £80 per tonne in 2014/15 – will remain the key driver to divert waste from landfill and remains necessary to ensure we

¹⁰ <http://www.defra.gov.uk/publications/files/pb13540-waste-policy-review110614.pdf>

¹¹ <http://www.defra.gov.uk/environment/waste/>

meet key EU targets in 2013 and 2020. As noted, we are removing the Landfill Allowance Trading Scheme as we no longer consider this an effective tool to ensure delivery of the EU landfill targets.

However, even with existing measures in place and new actions which will drive waste up the hierarchy, it is likely that some waste will end up in landfill that could be put to better use and which may warrant the introduction of additional, legislative tools, such as landfill bans or restrictions, to ultimately achieve our aim. In 2012 we will consult on introducing a restriction on the landfilling of wood waste, with the aim of diverting the still substantial tonnages that end up in landfill to better uses up the waste hierarchy and delivering clear environmental benefits.

Building on this, we will review the case for restrictions on sending other materials to landfill over the course of the Parliament, including looking specifically at textiles and biodegradable waste.”

Wales

Towards Zero Waste is Wales’ overriding waste strategy document that sets out how the Welsh Assembly Government will build on the successes achieved through Wise about Waste: the National Waste Strategy for Wales (2002). It was launched in June 2010 and describes a long term framework for resource efficiency and waste management from 2010-2050. The strategy document outlines the actions that must be taken to become a high recycling nation by 2025 and a zero waste, one planet nation by 2050. Sector Plans, which will detail the means of implementing the Strategy, are currently being consulted on.

Wales aims to reduce the amount of waste by 1.5 per cent every year until 2050 and prevent the waste of materials which have the greatest impact on the ecological footprint (the impact on the environment). These materials are:

- food waste;
- paper and cardboard;
- wood;
- metals; and
- plastic.

Where waste is produced, Wales aims to deliver very high levels of recycling which is separated at source.

The measures outlined in Towards Zero Waste will also:

- Provide more green jobs and increase skills;
- Help Wales become more resilient against future competing demands for resources;
- Ensure that everybody can contribute; and
- Support our sustainable development and climate change objectives.

The Towards Zero Waste document states that by 2025 *“Landfill will be eliminated as far as possible - to reduce Wales’ greenhouse gas emissions and make the most of our valuable resources, we need to eliminate waste from landfill (especially food waste) and manage the emissions from existing landfill sites”*.

List the elements the country is using and plans to use to overcome the barriers and promote methane emission reductions from landfills.

In England and Wales there are a number of methods to encourage methane emission reductions. These include the following:

- The Landfill directive enforces the capture of methane emissions and also sets targets for the diversion of biodegradable municipal waste (BMW) to landfill to limit methane generation
- The Landfill Allowance Trading Scheme – allows Landfill operators to trade, bank or borrow carbon credits
- Landfill tax (£48/tonne in 2010/11) imposed on waste that gives off emissions, helps make alternative options like AD more economically viable
- Source separation of biodegradables to reduce potential for landfill gas generation.
- Incentives for waste minimisation and recycling (such as for composting)
- PFI programme that helps councils to build alternative waste facilities for BMW. This programme will not continue for the development of waste infrastructure.
- The Renewables Obligation (RO), the Government's main market support mechanism for renewable electricity. Electricity suppliers are obliged to source a growing proportion of the electricity they supply from renewable sources (currently up to 15.4% by 2015), confirmed by Renewables Obligation Certificates (ROCs).

6. Conclusions and Observations

While the UK is the 'Member State' in the EU and all targets and potential fines refer to the UK, waste is a devolved responsibility in Wales and Scotland. Separate regulations are in force in England, Wales and Scotland for waste strategic policy and for the implementation of Directive. England and Wales share a regulation Agency (the Environment Agency) but Scotland has its own (SEPA).

Operational management at landfill sites may be similar across the UK particularly where the landfill is owned by a multinational organisation; however, national strategic policy relating to landfill targets is different. As shown earlier landfill as a disposal treatment has reduced substantially in the past 10 years and that trend will continue and increase in the next 10 years as waste prevention and recycling initiatives take hold and other treatment technologies are implemented.

Due to the history of landfill in the UK (and the almost unique geology) there is a wealth of expertise not only in design and operational aspects but also in leachate and landfill gas capture. That expertise has been taken to many developed and developing countries and will continue to do so.

It is anticipated that landfill will continue in the UK as it will in many countries but the waste stream will be reduced in quantity and change in quality. Landfill Directive targets will reduce the Biodegradable Municipal Waste tonnages sent to landfill and it is likely that long term the only waste going to landfill in the UK will be the residue of other treatment technologies.

All the nations in the UK are considering extending the ban on certain waste streams going to landfill, in addition to those listed earlier. This initiative which has proven to be successful in other European countries would result in even more waste being diverted from landfill and utilised as a resources.