

The Waste (Scotland) Regulations 2012

Final Business and Regulatory Impact Assessment

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1. Title of Proposal

The Waste (Scotland) Regulations 2012, incorporating amendments to:

- Environmental Protection Act 1990
- Waste Management Licensing (Scotland) Regulations 2011
- Pollution Prevention and Control (Scotland) Regulations 2000
- Landfill (Scotland) Regulations 2003

2. Purpose and intended affect

2.1 Background

Economic activity and the consumption of goods and services create waste. However, one person's waste is another person's resource. In this context, waste can drive economic activity – whether through recycling and energy recovery or through more efficient use of resources.

In 2009 Scotland produced 17.11 million tonnes of waste. Although progress is being made to reduce waste arisings and to recycle key materials, the resource value of much of Scotland's waste remains untapped: it is estimated that there is over £100million worth of untapped resources in household waste alone, and this figure is set rise as the value of discarded materials increase.

The Scottish Government's Zero Waste Plan¹, launched in June 2010, set out actions to deliver important changes to how Scotland treats and manages waste. The plan is an economic strategy and a resource strategy – not simply a waste strategy. It aims to maximise the value of all the material resources we use in our economy, helping to create new business opportunities as well as savings to existing businesses and local authorities in how they manage waste. To support this aim, the plan includes ambitious recycling targets, including a 70% recycling rate for household and all other waste streams by 2025.

A major policy challenge is addressing barriers to the adoption of more efficient approaches to consumption and use of resources. This means creating the right market conditions and incentives for business and households to invest and make more efficient, resource minded choices.

The scale of the savings that can be made is strongly influenced by the market forces that control the value/price of recyclates. There has been considerable volatility in the recovered materials market since 2008, when the impacts of the economic crisis began to be felt globally. For example, plastic prices for virgin materials were around £1000/tonne in 2008 but dipped to between £700-800 by 2009, recovering to 2008 levels by mid 2010. Recovered plastics followed a similar pattern, dropping from 2008 prices of around £150/tonne to between £20-80/tonne in 2009 before recovering to 2008 prices by mid 2010. In the case of clear PET,

¹ <http://scotland.gov.uk/Topics/Environment/waste-and-pollution/Waste-1/wastestrategy>

such as drinks bottles, prices in 2010 were up by £100/tonne, reflecting increasing market demand for high quality recyclables². Similarly paper prices followed the same pattern, dipping from around £50-60/tonne in 2008 to £5-40 in 2009 before recovering to around £50-70/tonne by 2010³.

There is evidence to suggest however that despite the market's volatility over the past few years, the prices paid on longer-term contracts for high quality recyclables has remained more stable and is less susceptible to price rises and falls. Accordingly, a key aim of the Waste Regulations and wider Zero Waste agenda is to drive up the quality of recycled materials whilst also developing a home grown market for these resources.

A resource focused approach to managing waste can also help create new jobs in Scotland. Evidence from the waste industry indicates that each job in collecting materials helps support up to 8 jobs that convert those materials into valued resources. A key opportunity for Scotland will be encouraging the development of the reprocessing sector in Scotland, e.g. reprocessing discarded plastics into new marketable materials. The first step in this change is promoting the availability of these secondary resources, a key aim of the Zero Waste Plan.

There are also gains to be made in harnessing waste as a renewable source of energy. If food waste is treated through anaerobic digestion facilities, a clean and renewable energy source in the form of biogas can be created. The same process also produces composts that can replace chemical based fertilisers. If just half of the 2.1 million tonnes of food waste in Scotland was processed by anaerobic digestion it could produce enough electricity to power a city the size of Dundee for 6 months and enough fertilizer for 10% of Scotland's arable crops, this is on top of avoided methane emissions from landfill, a greenhouse gas some 25 times more potent than carbon dioxide.

2.2 Objective

The Zero Waste Plan aims to establish a policy and regulatory framework that will allow businesses and the Scottish economy to ultimately benefit from the resource value of waste. The objective of the policy is therefore to add long term value to Scotland's economy whilst tackling fundamental waste and resource issues in the short term.

The waste management sector in Scotland is a service sector upon which all businesses in Scotland depend. The regulations aim to ensure that the minimum level of service on offer in the future is better than that of today. This will require increased competition in the waste management sector to ensure that businesses have access to choice, and the sector passes on the opportunities and savings that come with moving to a resource-minded approach to waste management.

A key consideration in developing the regulations has been creating a regulatory framework that minimises, as far as possible, short term financial impacts (e.g. investment in new equipment and processes) without hindering opportunities for longer term financial savings or economic opportunities. Section 5 describes

² Market Situation Report 2010 – Plastics, WRAP (updated Summer 2011)

³ Market Situation Report 2010 – Paper, WRAP

initiatives that are underway to minimise these short term costs, for instance by improving access to information to allow businesses to make more informed choices on the services available to them.

To drive these changes, The Waste (Scotland) Regulations 2012 (the Regulations) introduce a series of regulatory measures to:

- maximise the quantity and quality of materials available for recycling and minimise the need for residual waste treatment capacity;
- move residual waste management up the waste hierarchy so as to extract resource value from those materials we can't recycle;
- drive operational and cultural shifts in how waste is managed, including improved provision of services to households and businesses;
- create the market certainty needed to support investment by businesses in the recycling, materials reprocessing and waste management sector;
- improve public confidence in recycling and further engendering a recycling culture across Scotland.

The Regulations are part of a suite of actions under the Zero Waste Plan. Other important actions include the development of a waste prevention strategy, new producer responsibility commitments and actions to promote changes in attitudes to waste and behaviour. Although outwith the scope of this draft BRIA, important links to these wider initiatives are discussed.

2.3 Rationale for Government intervention

The historic focus of waste management has been to divert material from landfill; an outcome very much in line with the old European Waste Framework Directive. The landfill tax escalator has provided a financial incentive to avoid landfill and meet this outcome. For source segregated waste streams, this has often meant that they have gone on to be recycled. Annex 1 provides a visual summary of the waste and resource market.

Mixed waste (waste from which recyclable materials have not removed at source) presents a different set of challenges. The market has often responded to these challenges by offering residual waste treatment facilities, which tend to be recovery operations like incineration and Mechanical and Biological Treatment. Like all large infrastructure, such plants have long operational life spans and although this type of infrastructure is needed, an over-reliance on this approach to managing Scotland's waste would trap key materials within mixed waste, hindering opportunities to capture and recycle high quality materials.

The existence of these and other market failures, which prevent businesses from making optimal choices, mean that market forces alone often lead to over-production of waste and reliance on disposal or treatment options that provide short terms financial gains to the detriment of longer term economic opportunities: something that is evidenced from past waste management trends in Scotland and globally - large waste arisings, low recycling rates and a dependence on landfill or incineration.

Environmental externalities are another driver of market failure – where economic decisions to produce and consume do not take full account of the environmental consequences of the waste they generated. Failing to price in the environmental cost of generating waste leads to economically inefficient production and consumption patterns, and excess waste being produced.

Other barriers to better waste management include a lack of information to waste producers on waste management options and imperfect competition. Evidence indicates that business can do more to reduce their waste despite the significant potential to reduce costs. Businesses can make better decisions about waste if they have more information on the direct and wider impacts of their actions and access to competitive markets.

A further area of concern is around the ability of the market to deliver the necessary waste infrastructure. Issues such as market imperfections, delays in investment coming on-line, a combination of uncertainty and long payback periods, and planning opposition mean that infrastructure development may be insufficient and require government intervention to incentivise and support the appropriate level and type of investment. Further, as in the case of renewable energy, new technologies can require additional intervention to overcome market failures. Clarity and certainty in respect to policy and regulation is needed to ensure industry can make long-term investment decisions that match Scotland's Zero Waste objectives.

The Regulations are specifically aimed at driving high levels of source segregation of recyclable materials both by Local Authorities and businesses that will help drive down the costs of waste management, while liberating resources that can help create more economic opportunities for Scotland. They also establish the stable policy and regulatory environment needed to support long-term investment decisions that align with the Scottish Government's Zero Waste agenda.

The Regulations will also ensure the Scottish Government meets its obligations under the EC revised Waste Framework Directive (rWFD). Meeting the requirements of the rWFD will require substantial changes to waste management in Scotland, including increased recycling rates. The Zero Waste Plan is well aligned to the aims of the rWFD, and the Regulations are intended to bring about the changes required under the rWFD in a way that will maximise the economic opportunities afforded by a resource-centred approach to managing Scotland's waste.

3. Consultation

3.1 Background

The Scottish Government consulted widely on proposals for Scotland's Zero Waste Plan (the Plan) from August to November 2009. The consultation paper can be found on the Scottish Government web site at:

<http://www.scotland.gov.uk/Resource/Doc/282143/0085295.pdf>.

239 responses were received from a broad range of stakeholders (see table 1 for breakdown). These responses were published on the Scottish Government web site and can be found at:

<http://www.scotland.gov.uk/Publications/2010/01/25155012/0>.

The responses received shaped the final form of Scotland's Zero Waste Plan, which was formally published in June 2010. Whilst a broad range of views and issues were raised by respondents, it was clear that overall there was strong support for adopting a zero waste approach to waste management.

Category	Number of Responses	% of Responses
Academics	3	1%
Business	19	8%
Campaign	54	23%
Consultants	8	3%
Government & Government agencies and bodies	10	4%
Individual	43	18%
Local government	33	14%
Others	5	2%
Politicians	2	1%
Third Sector/NGOs	19	8%
Trade association	23	10%
Waste Delivery bodies (SG funded)	7	3%
Waste Management Co.	13	5%
Total Responses	239	100%

Table 1 Summary of responses to Zero Waste Plan Consultation

To assist in the delivery of the Scottish Government's Zero Waste agenda, and to ensure that the waste management and business sectors and Local Government have a say in how that agenda is delivered, the Zero Waste Scotland Programme Board was established in June 2010. Business interests are represented on this Group by the Scottish Retail Consortium and the Scottish Environmental Services Association.

3.2 Consultation on the Waste Regulations

Within Government

The Scottish Government worked closely with the Scottish Environmental Protection Agency (SEPA), Zero Waste Scotland, local authorities, COSLA and Scottish Futures Trust in developing the Regulations. Scottish Government planners were also closely involved in the development of the draft regulations. Scottish Government officials have also liaised closely with colleagues in the Republic of Ireland who implemented similar legislation in 2010. Engagement with Local Government is continual, with frequent meetings between local authority and Scottish Government officials.

Public consultation

From December 2010 to end February 2011 the Scottish Government consulted on a draft of the Regulations. The consultation paper is available on the Scottish Government web site:

<http://www.scotland.gov.uk/Resource/Doc/341314/0113475.pdf>.

100 responses were received to this consultation from a broad range of stakeholders and these are also available on the Scottish Government web site:

<http://www.scotland.gov.uk/Publications/2011/07/07130019/0>.

5 formal responses to the consultation were received from Government bodies, namely, SEPA, Scottish Water, Scottish Futures Trust, Scottish Renewables and British Waterways (Scotland).

35 responses were received from individual local authorities, representative organisations (COSLA & SOLACE) and from other local authority based groups such as the Clyde Valley Waste Initiative and the Ayrshire Joint Waste Management Project. A complete breakdown of responses is set out in table 2 below:

Sector	Number of submissions	Percentage of total submissions
Local Government	35	35%
Business	26	26%
Trade associations	14	14%
Third Sector	8	8%
Other representative bodies	6	6%
Government	5	5%
Individual	4	5%
Consultancy	2	2%
Total	100	100%

Table 2 Summary of responses to the Waste Regulations consultation

The consultation on the draft Regulations demonstrated that there remains strong support for the principles underpinning our waste policy.. A number of practical and technical issues were however raised by respondents and the Scottish Government, again in consultation with its stakeholders, has worked hard to ensure that these were addressed.

Engagement with the business sector

Since the publication of Scotland's Zero Waste Plan, Scottish Government officials have engaged and met with representatives from across Scottish business sectors. This engagement has continued throughout the development of the Regulations. During the consultation period on the Regulations, workshops were held with Scottish businesses, Local Authorities and the community sector. Business sectors represented at the workshops included energy providers, food and drink, construction, retail, education and the waste management sector. Most workshops were well attended and all were well received. Scottish Government and SEPA officials delivered presentations on the proposals and engaged in Q & A sessions at each event.

Zero Waste Scotland and its representatives continue to have ongoing and regular engagement with the Scottish business community through a number of stakeholder networks and organisations.

These include:

- Zero Waste Scotland Programme Board
- Scotland's 2020 Climate Group: sub-group on Waste and Resources
- Product Research Forum
- FSB Scotland
- CBI Scotland
- Scottish Council for Development and Industry
- Scottish Chambers of Commerce
- Scottish Business in the Community
- Green Business Fife
- Construction Scotland
- Environmental Association of Universities and Colleges
- Institute of Civil Engineers
- Royal Incorporation of Architects Scotland
- Scottish Food and Drink Federation
- Scotland Food and Drink
- Scottish Retail Consortium
- Scottish Grocers Federation
- Scotch Whisky Association
- Visit Scotland
- Institute of Hospitality
- SAOS

Many individual one to one meetings with stakeholders took place both during and after the consultation period for the Regulations, and the Scottish Government maintained this high level of engagement up to the laying of the Regulations.

Sectors with which we have engaged included retail, waste management and hospitality. Scottish Government officials have also undertaken visits to waste treatment facilities and manufacturing sites to better understand any technical, practical and potential operational issues that may arise from the implementation of the Regulations and this has enabled us, where we have been able to do so, to amend our proposals accordingly.

3.3 Consultation on the draft BRIA

Within Government

Scottish Government consulted and worked closely with SEPA, COSLA and the Waste Managers Network on the development of this Business and Regulatory Impact Assessment.

Public consultation

From 14 October 2011 to the 25 November 2011, the Scottish Government consulted on the Waste (Scotland) Regulations Draft Business and Regulatory Impact Assessment. The consultation period enabled the Scottish Government to continue to engage fully with public sector organisations. 10 responses were received to the consultation and these have been published on the Scottish Government's web site.

Business

During the BRIA consultation period, the Scottish Government met and held face-to-face interviews with seven businesses based in Scotland from a range of sectors. A summary of the businesses consulted is provided in the table below:

Business	Business Sector	Geographic Location	Size Range (FTEs)	Annual Turnover
A	Food Preparation and Processing	South West	50-249	£2.7 million
B	Professional Services (office)	South West	6-10	£400,000
C	Food Production and Food Retail ¹	East	250+	£110 million (group)
D	Higher Education	Glasgow City	250+	£430 million
E	Retail (mixed)	Edinburgh	250+	£56 million
F	Restaurant Chain ²	Nationwide	250+	£15 million
G	Food Production	North East	50-249	£11 million

Notes:

¹ Operates 7 sites, four in Scotland with 450 employees, 140 employees, 40 employees and 6 employees

² Operates 7 restaurants in Scotland, each with 50-100 FTE staff and turnover c£2 million/annum

Table 3 Details of Scottish businesses consulted on the draft BRIA

4. Options

4.1 Overview

Scotland's Zero Waste policy incorporates some of the most ambitious aims and targets of any country in Europe if not globally. It is therefore important to place these aims in the context of what Scotland has to achieve to meet the requirements of the revised Waste Framework Directive.

In 2008, the European Parliament adopted a revised Waste Framework Directive (rWFD). The Directive established new protocols and targets for waste management across Member States. This Directive does not stand alone, and other European Directives and regulations influence waste management in Scotland, including the Landfill Directive.

In examining options for change, we have used the minimum requirements of the rWFD as a 'business as usual' scenario. The minimum EC requirements therefore set the baseline upon which our other scenarios are examined.

In Scotland, the Zero Waste Plan addresses many aspects of the rWFD, but it also goes beyond the minimum requirements in some areas. These deviations are intended to bring about the changes required under the rWFD in a way that maximises the economic opportunities for Scotland⁴. The main additions to the minimum requirements of the WFD are:

- a recycling target of 70% for all of Scotland's waste by 2025 (EC target 50%);
- a limit of 5% of Scotland's waste going to landfill by 2025;
- a ban on biodegradable waste going to landfill (date unspecified).

The Regulations establish the legislative framework required to deliver these and other aspects of the Zero Waste Plan. For the draft BRIA, we examined two options for implementing the Regulations: pre and post consultation options.

In summary, the options for change were:

Option 1 - EC Compliance (the Baseline);

Option 2 - Zero Waste Plan and introduction of the Regulations as consulted upon; and

Option 3 - Zero Waste Plan and introduction of the Regulations as refined post consultation.

A full description of the scenarios is provided in Section 4.4.

4.2 Approach to assessing benefits and costs

The benefits and costs of each option have been assessed using a combination of macro-scale modelling and more detailed sector specific modelling. Modelling outputs, which centre on the direct financial impacts, are accompanied by further

⁴ A Report examining the costs to local authorities of meeting EC Landfill Directive and Scottish Government Zero Waste targets. <http://www.scotland.gov.uk/Publications/2010/05/24145920/0>

evidence (quantitative and qualitative) drawn from recent studies, and interviews and meetings with businesses and industry. A description of the modelling used can be found in Annex 2.

4.3 Main sectors and groups affected

Waste producers

We all produce waste, so the changes will, to varying degrees, affect all sectors including the public. Information on waste is typically divided into three key sectors based on where the waste arises: household waste, Commercial and Industrial waste (C&I) and Construction and Demolition waste (C&D). For the purpose of assessing costs and benefits we have examined these key three sectors, and those involved in managing the waste arising in these sectors.

Waste management industry

The Waste Industry has a considerable and pivotal role to play in providing the necessary infrastructure to manage and treat Scotland's waste, both through contracts with local authorities and through the provision of services direct to businesses. Due to the pivotal role they can play in achieving the objectives of the Regulations they have been considered as a standalone industry.

Local authorities

As well as being a producer of waste, local authorities play a key role in collecting and managing waste, not just from households but also from some businesses.

Government and Government bodies

SEPA has an important roll in monitoring and ensuring compliance with the Regulations. Zero Waste Scotland is a Government supported not-for-profit body that has a key role in supporting delivery of the Zero Waste Plan, with a particular emphasis on supporting action by businesses and local authorities.

Third sector and community groups

Charitable organisations provide direct and indirect services to help manage Scotland's waste, ranging from community composting initiatives to reuse and donation services. Although the Regulations will not have a direct affect on these groups, we have examined some indirect implications.

4.4 Scenario descriptions

Option 1 - EC Compliance (baseline)

The baseline scenario is the introduction of legislation to fully enact the requirements of specific European Directives, which is driven in the most part by the revised Waste Framework Directive⁵ (rWFD) and the Landfill Directive⁶. The rWFD places responsibility on Member States to implement and update waste policy at a national level and to perform to a level which will meet targets set out in the Directive. There are parts of the rWFD which are not covered by the Zero

⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF>

⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31999L0031:EN:HTML>

Waste Regulations and are addressed in other Scottish legislation and are therefore not considered in this BRIA.

The main requirements of the rWFD of relevance to this BRIA are:

- the preparation for reuse and recycling of 50% of household wastes including provisions to collect at least Paper, Metal, Plastic and Glass;
- reporting of records in terms of meeting the required targets every 3 years;
- the preparation for reuse and recycling of at least 70% non-hazardous construction and demolition waste;
- Member States will actively encourage the separate collection of Bio-wastes;
- landfill no more than 1.26 million tonnes of biodegradable waste by 2020.

Option 2 - Zero Waste Plan and Regulations as consulted

This scenario is based upon the delivery of the Zero Waste Plan targets (see section 4.1) through the regulatory measures proposed in the draft Regulations as consulted on earlier this year. The main regulatory measures being:

- source segregate and separately collect key dry recyclable materials (textiles, paper, glass, card, paper and plastic) from end of 2013 and a ban on these materials going to landfill or EfW from 2015;
- separate collection of food/biodegradable waste from households from the end of 2013;
- separate collection of food waste from businesses involved in food production, retail and preparation from end of 2013;
- a ban on the mixing of any waste collected separately for recycling from end of 2015;
- a ban on the landfilling of biodegradable wastes from end of 2017

Option 3 - Zero Waste Plan and Regulations as revised (post consultation)

This option is similar to Option 2 but incorporates a series of changes to the Regulations in response to the consultation on the draft Regulations held earlier this year. These refinements aim to reduce the potential initial cost burden on smaller Scottish businesses while providing sufficient lead in times for developing the right mix of infrastructure across Scotland to collect, treat and process Scotland's waste and resources.

The principal changes from Option 2 are:

- moving the introduction of source segregation of food waste for businesses producing less than 50kg per week (involved in the preparation and sale of food) to end of 2015 (previously 2013 for all food producing businesses);
- providing local authorities with a longer roll out period for offering food waste collection to households, i.e. initiate roll out in 2013 and complete roll out by end 2015 (previously roll out completed by 2013);
- moving introduction of the ban on biodegradable waste going to landfill until 2020 (previously 2017), thus providing more time to establish recycling

services prior to decisions on infrastructure to deal with Scotland's remaining residual waste;

- restricting the ban on biodegradable waste to landfill to municipal biodegradable waste, thus ensuring that certain industrial wastes with no alternative disposal or recovery routes can be maintained until other more cost effective options become available.

4.5 Option 1- EC compliance (baseline)

The costs and benefits

Household wastes

On average, there would be an increase of around £36 million per year over today's costs. This additional cost is the result of a mixture of improved collection infrastructure to meet the 2025 target of 50% recycling, as well as increased costs for the treatment of organic waste and residual wastes, largely as a consequence of landfill tax increasing from £56 per tonne today to £80 per tonne in 2015.

Within this net cost there are specific benefits: additional material recycled will generate revenues in the region of £615 million (2010-2025), which in turn will reduce demand for finite virgin material, bringing substantial associated environmental benefits including avoidance of CO₂ emissions, less environmental pollution from mining resources and greater levels of resource sustainability for future generations. As more waste is diverted from landfill, there will be environmental benefits from the avoidance of methane, CO₂ and other greenhouse gases.

Commercial and Industrial wastes

On average there will be an additional net cost of £95 million per year over today's costs to manage collection and treatment of commercial and industrial waste. Similar to household waste, the additional cost is the result of a mixture of improved collection infrastructure, as well as infrastructure for the treatment of organic waste and residual wastes driven by landfill tax. Commercial and Industrial waste represents 40% of waste arisings in Scotland compared with around 17% from households, which helps explain the higher costs for C&I waste. The benefits are similar to those for household waste, although the revenues generated would be worth around 25% of those generated from household waste.

Construction and demolition wastes

No baseline cost and revenue estimates are available for the construction and demolition waste stream, therefore net financial impact under the baseline for this particular waste stream is unknown.

4.6 Option 2 - Zero Waste Plan and Regulations as consulted upon

The Benefits

Trends across all waste streams

As illustrated in Option 1, the costs of managing Scotland's waste under a business as usual (baseline) scenario are set to increase relative to 2010. Our analysis indicates the cost of managing Scotland's waste through the implementation of the Regulations (as consulted upon) will be significantly lower than that of the baseline scenario. Figure 1 summarises this trend. These trends are examined in detail below for each waste stream.

There is a net financial saving of the order £16 million per annum made, with the savings increasing to over £20 million per annum by 2021. This amounts to a total saving of £187 million in net present value terms over the period 2011-2025.

In addition to opportunities for direct financial savings, this option will deliver substantial additional environmental benefits, the greatest of which will be reduced emissions of green house gases from landfill and from displacement of virgin materials through increased recycling rates.

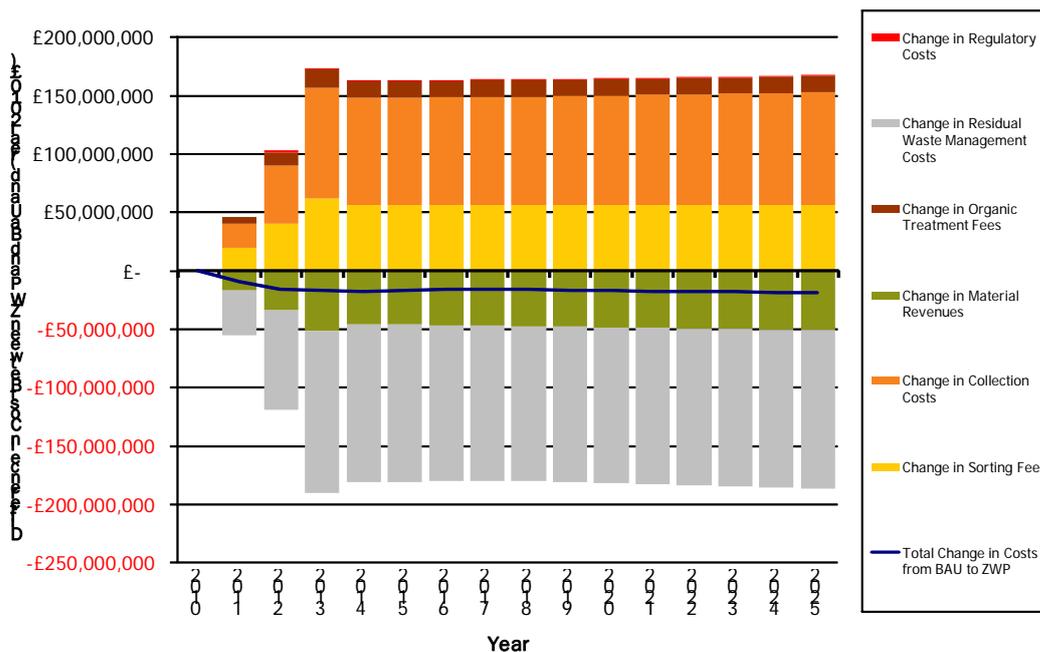


Figure 1 Option 2 v's the baseline (Option 1)

Monetised environmental benefits are estimated to be in the region of £180 million per annum following full implementation of the Regulations (Figure 2). This equates to a saving of £1.411 million through to 2025. The most significant environmental benefit is from the introduction of segregation and separate collection of dry recyclable materials, which is valued at 75% of the total benefit or £135 million per annum.

The Regulations will help promote improvements to the quality of recyclable materials, both through a direct requirement to source segregate key materials and through the general requirement to adopt collection systems that promote high

quality materials. This will help meet the demand for high quality materials from reprocessors. This in turn will help create the market conditions needed to support new investment in reprocessing facilities in Scotland. Higher quality recycle is in greater demand, commands higher prices and is more likely to be used in high value applications both at home and overseas. Increased demand from the UK market will directly support the Scottish economy, helping to insulate our industries from global fluctuations and unpredictable future quality demands in overseas markets.

The ban on biodegradable materials going to landfill will impart a direct effect on Scotland’s greenhouse gas emissions and help deliver our climate change targets. Modelling work for the Scottish Government’s emissions reduction programme estimates that these regulatory measures will reduce carbon emissions by around 521kt CO₂e by 2020.

Increased recycling rates will create new opportunities for “green jobs” within Scotland as the recycling industry capacity grows to meet demand. Evidence indicates that each job created in collecting recyclates has the potential to create up to 8 jobs in sorting and processing those materials.

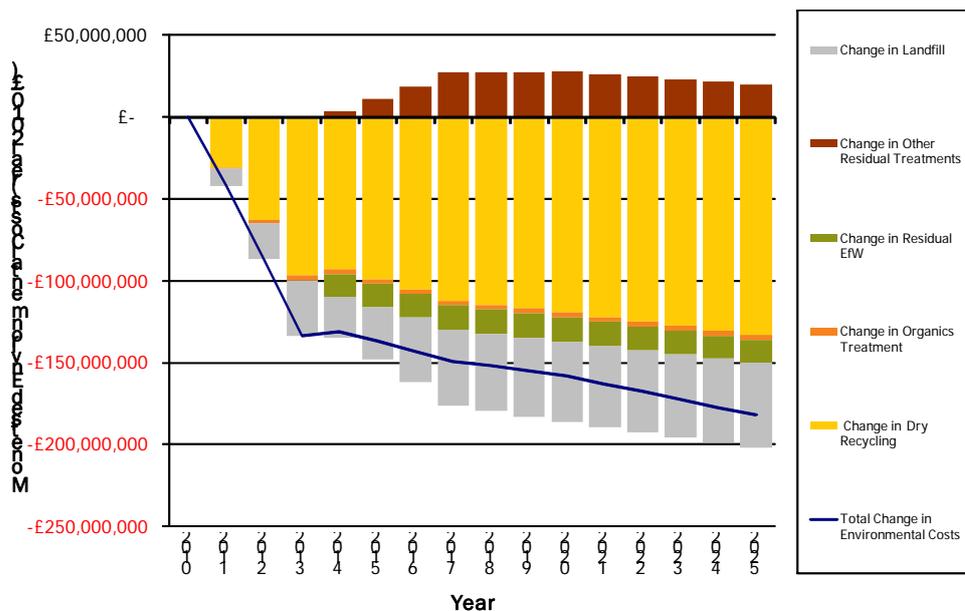


Figure 2 Change in environmental costs from the baseline scenario.
Note: Negative figures imply a benefit.

It is estimated that delivery of the Zero Waste Plan and the supporting regulatory framework will help leverage over £1 billion of additional investment in waste infrastructure across Scotland that will provide alternatives to landfill while also harnessing the resource value of waste for the benefit of the Scottish economy⁷. This could include new and innovative material sorting facilities that deploy cutting edge technology to sort materials so that their market value is maintained, innovative processing facilities (for plastics, nappies etc) and energy from waste facilities (modern forms of thermal treatment and anaerobic digestion plants).

⁷<http://www.zerowastescotland.org.uk/ZWPcostbenefit>

The vast majority of this infrastructure will be delivered through private sector investment serving both public and private sector infrastructure needs. This will not draw on Scottish Government capital funding and will either be supported through prudential borrowing by local authorities, long term contracts between local authorities and private sector providers or speculative private sector investment.

Although there will be direct costs to industry and local authorities in developing this infrastructure, it will also provide economic stimulus to the Scottish Economy, particularly to the construction sector. The Scottish Government is also supporting investment through targeted actions, including grants and/or loans to support investment in plastic recycling facilities; such investment is about developing closed-loop use of resources as part of a low carbon economy.

Household waste

It is estimated that the costs to local authorities of managing Scotland's household waste would be £200 million lower than the baseline scenario over the period through to 2025 (Table 3).

Types of costs	NPV, £million (2010-2025) costs relative to baseline scenario	Average costs per year (£million)
Collection	£104	£4 (2010-2013) £11 (2014-2025)
Organic treatment fees	£63	£4 (2010-2013) £6 (2014-2025)
Sorting fee	£107	£6 (2010-2013) £10 (2014-2025)
Residual waste management costs	-£269	-£14 (2010-2013) -£26 (const 2014-2025)
Material revenues	-£204	Not assessed
Net financial impact Option 2 vs baseline	-£200	

(NPV- Net Present Value)

Table 3 Net costs (Household waste) of Option 2 relative to baseline scenario

Source Data: Economic Assessment of the Zero Waste Plan for Scotland, WRAP, July 2011

These opportunities for savings will not be distributed evenly across all local authorities, and the cost per householder for introducing separate collections will vary depending upon the current service, planned changes to collection schemes, geography and population of the local authority, and timing of the introduced change. In the areas of low population density and wide geographic spread, eg the Highlands, the local authority may be required to invest more compared to a more densely populated area, where greater volumes of material can be collected to boost revenues. In almost all cases however, the additional financial benefit offsets the costs over the lifetime of the assessment.

The most significant savings will be achieved through reduced costs of residual waste management. Avoided landfill tax through adoption of alternative treatment routes for residual waste, including options enabling energy to be captured from waste, create estimated savings of £269M over the period through to 2025.

We estimate that this scenario will generate additional material revenues of over £200 million over the period to 2025. This is likely to be a conservative estimate, as the value of materials is likely to increase substantially in coming years, as a result of increased global consumption of resources linked to increased affluence in emerging economies. The emphasis placed on producing quality recyclable materials will help ensure the maximum resource value of materials can be achieved.

Commercial and industrial waste

The main financial benefit to the C&I sector will be the additional £286 million in material revenues and £1 billion in reduced landfill costs (based on total costs through to 2025). These additional revenues will create opportunities for the waste management industry to pass on savings to their customers through reduced collection and treatment costs. A fuller description of the financial impact of the regulations on this sector is provided in the 'costs' section.

Modelling suggests that the implementation of the Regulations could prevent some 10 million tonnes of waste going to landfill over the period 2011-2025. The valuable energy or material recovery from these wastes will support a growing recycling industry, green energy developments and investment in new cutting-edge waste management technologies and practices that will serve as a benchmark to other ambitious nations.

Businesses facing costs will need to step-up their efforts to improve resource efficiency to realise the substantial potential cost savings to be gained through using less or using something more efficiently. Support from organisations such as Zero Waste Scotland and SEPA will help businesses to realise these savings, and whilst many may see this as a demand on precious time (and it is recognised implementation will take time), the environmental and financial benefits are so significant that they cannot be ignored.

Separate collection of food waste has been shown to be a strong catalyst for reducing food waste. By demonstrating to businesses how much food is being wasted, we would expect to see leaner operations with less waste from farm to fork, with savings to the businesses involved and less pressure and better utilisation of finite natural resources.

There is potential for the most progressive companies to turn the investment in new collection and sorting to their advantage, leveraging-out positive publicity from environmental messages on their waste and recycling initiatives to secure new contracts (environmental criteria may become more central as a result of a shift in behaviours amongst clients and consumers).

The statutory requirement for separate collection of recyclables from businesses will improve competition in this service sector, creating choice for businesses and increasing the opportunity for savings to be passed down to all businesses. Work is underway in SEPA to improve the quality of data available on C&I waste which will help show where the market opportunities exist. This in turn will help leverage further resource efficiency gains by businesses. ZWS has a number of initiatives that support and raise awareness in businesses of how best to access effective

waste and recycling services and how to lower operating costs. Enhancing the provision of such services will be an important part of implementing the Regulations and ensuring businesses are ready and able to take advantage of changes in future service provision.

Construction and demolition waste

The trend is for a reduction in overall costs to this sector (£51 million over the period to 2025), with reduced residual waste management costs more than offsetting any additional collection costs (see Table 4).

Types of costs	NPV, £million (2010- 2025) costs relative to baseline scenario	Average costs per year
Collection	£10	£0.5 (2010-2013) £0.9 (2014-2025)
Residual waste management costs	-£61	-£3 (2010-2013) -£6 (const 2014-2025)
Total net costs	-£51	-£2.8 (2010-2013) -£4.9 (2014-2025)

(NPV- Net Present Value)

Table 4 Net costs (C&D waste) of Option 2 relative to baseline scenario
Source Data: Economic Assessment of the Zero Waste Plan for Scotland, WRAP, July 2011

Many of the companies involved within the construction industry are currently adopting measures to reduce waste to landfill, increase use of materials with greater recycled content and recycle increasing volumes of C&D waste materials. The sector has already made significant progress and implementation of measures to ensure compliance with the Regulations will be less challenging than for some of the other sectors.

Material revenues above Baseline (Option 1) are not anticipated or modelled as a result of the implementation of the Regulations as many of the companies involved within the construction industry are currently adopting measures to reduce waste to landfill, increase the use of materials with greater recycled content and recycle increasing volumes of C&D waste materials.

The Costs

Trends across all waste sectors

The resource value of much of Scotland's waste remains untapped. One of the key aims of the Regulations is to liberate more of these resources for recycling, whilst ensuring that resource value from non-recyclable materials can also be extracted, for instance by capturing its energy value. The first step in this change is promoting the availability of these secondary resources through improved waste collection services that separate out key materials for recycling.

In broad terms, separating out these materials will increase collection costs. In many instances, the value of the materials collected, reduced treatment costs and avoided landfill tax costs will outweigh the cost of investment in new collection systems. The degree to which savings are passed on from industry to waste producers is discussed below and in Section 5.

The Regulations also introduce requirements on operators of thermal treatment facilities to remove key recyclable materials from the residual waste stream (i.e. black bag waste). This will require investment by operators of these facilities in pre-treatment technologies to remove these materials. We estimate that this will require a £1-2m investment on the front end of a facility typically worth in the region of £100M. Alternatively, operators could develop contract arrangements with existing sorting facilities to ensure that their feedstock has undergone the necessary pre-treatment.

Household

Although the general trend will be for savings to be achieved (against the baseline scenario) in how local authorities manage household waste, new investment in services will often be required for longer-term savings to be realised. This could include new collection infrastructure, vehicles or bins. The level of investment required will depend on the performance of current systems, and the pace of change will be influenced by current contractual arrangements with the waste management industry, particularly where long term contracts are in place.

The impact of these changes will be greatest where they are complemented by real changes in behaviour by households, not only to affect good practice in sorting food and materials, but also to drive some of the consumer demand for recycled products and particularly the demand for greater volumes of household packaged goods to be fully recyclable. Local authorities, Zero Waste Scotland and the Scottish Government continue to work collaboratively to support these changes, for instance through national and local campaign work. More information on this and other support being made available to local authorities and businesses is provided in Section 6.

To meet the requirements of the Regulations, we would expect increases in collections, fleet, and containment for materials, manpower, supervision, literature and engagement, all of which necessitates both initial capital investment and ongoing operational costs. These costs are summarised in Table 3. As a percentage, this additional investment over the Baseline (Option 1) requirements is, on an annual basis, 2% in 2011 rising to just over 6% by 2025. This additional investment will yield increases in material revenues of over 42% by 2025. It is fully anticipated that the benefits of these revenues would be cascaded from the waste management industry (who as primary agents for the recycling industry will benefit directly from the revenues in the first instance) to local authorities in the form of more competitively-priced contracts, protection against future contract cost rises or rebates on existing collection contracts.

Local authorities will also need to take action to preserve the quality of separately collected materials, thus ensuring that their full resource value can be realised. There will be associated costs for local authorities in preparing for these changes around such areas as education and awareness, not only within the authority itself but also to the householders and businesses they service. Although such costs are not explicit within the BRIA evaluation, they are accounted for in the analysis and, as such, recognition has been made of the time needed to implement changes to the collection schemes for food waste (see Option 3).

Commercial and industrial waste

Accurately estimating financial impacts to the commercial and industrial sector is particularly challenging. Unlike household waste, there are some significant data gaps on the amount of waste produced and its composition, and work is ongoing to address these deficits. Also, unlike household waste, where information on current local authority services and costs is accessible, for businesses which are serviced by local authorities and the waste industry in a competitive market, information on current services and costs is difficult to obtain and highly variable.

The scale of the costs or savings across this sector depends in part on the following factors:

- market competition and innovation to drive down costs to customers;
- awareness of businesses to the services available;
- whether business adopt more efficient use of resource, thus reducing their waste;
- how rationally businesses have responded to the increased costs of managing mixed/residual waste.

Using the best available information, we have estimated that the cost of managing Scotland's C&I waste could increase by, on average, around £4.27 million per year or £64 million over 15 years when compared to Option 1 (Table 5).

These estimates are however based upon conservative assumptions on the future shape of Scotland's waste management industry. For instance, a residual treatment cost of £88 per tonne (in real 2010 terms) has been used to model all costs presented in this BRIA. Under a scenario where the average cost of residual treatment dropped to £77 per tonne, we would see savings across this sector of the order of £1-2 million per annum when compared to the baseline.

Types of costs	NPV, £million (2010- 2025) costs relative to baseline scenario	Average costs per year £million
Collection Costs	£826	£38 (2010-2013) £82 (2014-2025)
Organic treatment fees	£78	£5 (2010-2013) £7 (2014-2025)
Sorting fee	£473	£24 (2010-2013) £46 (2014-2025)
residual waste management costs	-£1,028	-£49 (2010-2013) -£102 (2014-2025)
Material revenues	-£286	Not assessed
Net financial impact Option 1 vs baseline (costs)	£64	£4.27

(NPV- Net Present Value)

Table 5 Net costs (C&I waste) of Option 2 relative to baseline scenario
Source Data: Economic Assessment of the Zero Waste Plan for Scotland, WRAP, July 2011

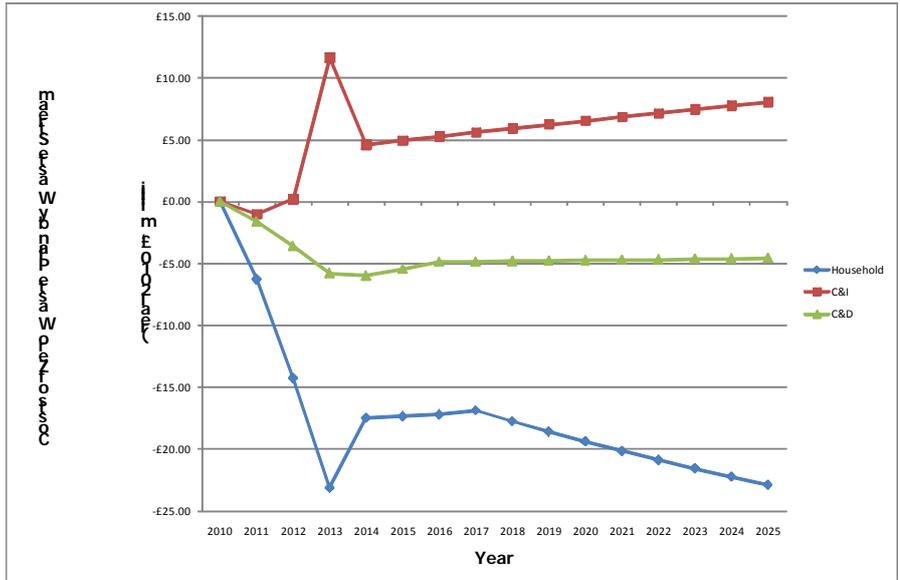


Figure 3 Financial Costs of Option 2 relative to Baseline.
Residual treatment costs modelled at £88 per tonne

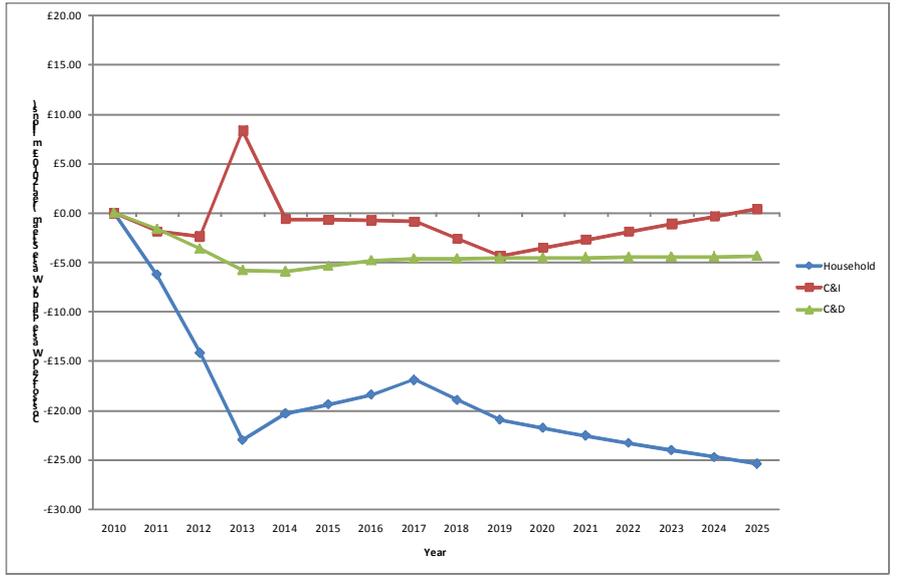


Figure 4 Financial cost of Option 2 relative to Baseline.
Residual treatment costs modelled at £77 per tonne.

Through Zero Waste Scotland, the Government has been providing funding and support to help establish the infrastructure needed to treat Scotland’s food waste. This has included funding new AD facilities to the tune of £6million, and providing further funding to ensure that existing facilities meet minimum industry standards. These actions help ensure that a competitive market is in place in Scotland for treating food waste.

Our estimates of costs also assume a reasonable level of rational behaviour amongst businesses in how they manage their waste (i.e. as landfill tax rises, the measures taken to recycle more and reduce waste ramp-up). Whether

businesses can, or do, act rationally to these market trends depends on the time, resource and expertise available within businesses to take action to find the most efficient way to manage their waste. Larger businesses are generally better placed to adopt resource efficient business practices. If businesses are currently acting less rationally than assumed in our assessment, then the savings from implementing the Regulations are likely to be substantially higher. This is because there are still many opportunities for businesses to lower the costs of managing their waste, regardless of longer term savings that the regulations will help drive, for instance through increased competition for collection and treatment services.

Any increased costs are going to come through increases in collection costs, which would be passed on to customers. The Regulations are aimed at ensuring that the minimum level of service on offer in future is better than that of today. This will require increased competition in the waste management sector to ensure that businesses have access to choice. A more detailed discussion of these issues is presented in Section 5.

Any additional costs (or revenues) are unlikely to be distributed evenly throughout the sector. This is because different sectors produce different volumes and types of waste. The composition of the waste will affect things like the amount of recyclate that can be extracted and the method of waste treatment or disposal, which will be reflected in the collection costs for businesses. Annex 3 provides a sectoral breakdown of the potential financial impact of Option 2.

The sectors that are likely to be most affected are: the food and drink industry, particularly the hospitality sector, the education sector, the trade (retail) sector and the health sector.

It has been estimated that the hospitality sector, including hotels and restaurants could incur additional costs of up to £7.3 million over and above the baseline (Option 1) costs. This equates to £38 per entity per year. In common with other sectors, SMEs make up a significant proportion of the total entities, 12,505 out of a total of 12,910.

Any additional costs must be considered in light of potential savings that can be made within the industry also. A recent report into the hospitality industry⁸ highlighted that savings of over £64 million could be made in this sector through resource efficiency and waste prevention measures plus an additional saving of £195,000 through food waste going to AD rather than landfill. The scale of any savings for businesses is dependent on the gate fee costs of AD facilities and the ability of the waste industry to pass on savings to customers through reduced collection costs.

The education sector is a significant producer of food waste through canteen and on-site catering. The requirement for food waste segregation and presentation will require operational changes and some upfront investment in infrastructure (e.g. bins) and collection services. The financial impacts on the **education sector** may be in the region of £134.98 per entity per year.

⁸ The composition of waste disposed of by the UK hospitality industry, WRAP, July 2011

The **trade sector** (particularly food retail) may also see an increase in costs to comply with the regulations, with a potential net increase in costs of £19.8 million over the baseline (Option 1) scenario. This equates to an average cost per entity of £52.13 per annum. Within this sector the anticipated savings in residual waste management costs are significant, around £235 million, and considerably reduce the anticipated cost burden generated by increased collection and sorting fees from the requirement to segregate wastes. One of the main businesses in this sector that will be affected is food retailers. Large quantities of out of date and spoiled food is disposed of each day in Scotland. Many large retailers have well established systems for managing this waste, which will include separate collection of food waste. The burden of depackaging food waste is particular concern of this sector. Through Zero Waste Scotland, we are supporting investment in new de-packaging infrastructure at AD sites that will make it easier for this sector to manage their food waste.

The **health sector** will face significant technical challenges to delivering changes to how it currently handles its waste, most notably around food waste collection. The care and health of patients is of paramount concern, and special care is needed to ensure that the collection and movement of waste does not, for example, impact on measures or practices in place to control the spread of infection.

Our assessment of the health sector suggests that costs could increase by up to £6.1 million over Baseline (Option 1), equating to an additional £70.15 per entity per year. In the case of hospitals, they will be in a stronger position than care homes to drive the best collection deal available to them due to the tonnage of material they could potentially produce and the potential economies of scale that may be generated by NHS Boards letting contracts across administrative areas. It is also likely that as a greater range of residual waste infrastructure develops across Scotland, this will provide the NHS with a greater range of options at more competitive rates than it currently receives today.

As outlined earlier, whether increased collection costs for these sectors can be offset will depend on factors such as the cost of residual waste treatment and the ability and willingness of the waste management industry to pass on savings to their customers.

Construction and demolition waste

Management of C&D wastes under Option 2 could create additional collection costs in the order of £10 million (NPV 2010-2025) with costs peaking in 2013 as the requirement to sort takes effect, gradually reducing to £900,000 per annum by 2025. However, these additional costs are more than offset by the increased revenues that can be generated from the materials being separately collected and from the reduced cost of residual waste treatment.

4.7 Option 3 - Regulations as revised (post consultation)

Benefits and costs

The changes we are proposing to the Regulations in response to our consultation exercise will not have a significant bearing on the main benefits and costs outlined

for Option 2. As such, the same broad benefits and costs apply to Option 3. There are however some areas where the trends are slightly different, and these are outlined below.

The main drivers for amending the Regulations have been to address particular operational or technical challenges, and the impact of these changes are discussed in detail in Section 5.

All waste streams

In direct financial terms, we estimate that refinements to the regulation reflected under Option 3, including providing a longer lead in time for separate collection of food waste and moving the ban biodegradable material going to landfill to 2020, will bring about a saving of between £196m and £216m (over the period to 2025), an additional saving of £20-40m over Option 2.

The sensitivity analysis conducted as part of the BRIA indicates that these benefits further increase where residual waste treatment costs are lower than the central case (£88/t) used in the modelling. The savings are generated from increases in recycling rates and the avoided costs to businesses of not having to pay for treatment (the price per tonne is only one element of the equation). The lower residual treatment prices means the tonnages diverted are much greater because the impact of the proposed regulations will leverage a greater change in recycling.

The environmental impacts under Option 3 are unlikely to vary significantly from Option 2 and will remain overwhelmingly positive. The requirement to move to separate collection of food waste for households and small businesses from 2013 to 2015 will only have a limited effect in environmental terms. For instance, moving the ban on biodegradable waste going to landfill will postpone some of the reductions in methane gas emissions, although the expectation is for methane emission to be progressively reduced as new infrastructure to deal with residual waste becomes available. A slight decrease from the £1,411 million benefit attributed to changes under Option 2 is therefore predicted, but this has not been modelled or further quantified at this stage.

Introducing the requirement to remove key recyclable materials from the mixed waste stream prior to incineration in 2015 for existing facilities will ensure that operators have sufficient time to invest in new sorting infrastructure or to establish arrangements with companies to ensure that only pre-treated waste is incinerated.

One of the key benefits offered by the Regulations as revised is to allow a longer lead in time for local authorities and small businesses to prepare for the separate collection of food waste. This was of particular concern to these stakeholders within the consultation, and although unquantifiable in monetary terms, the benefit likely to be conferred by the revisions to the Regulations will be significant on the ground. Small businesses must use the additional time beneficially to seek support on implementation of measures to reduce food waste and use resources with increasing efficiency. If small businesses can do this, they could benefit from potentially lower food waste collection costs (as the waste industry will have had two years to 'bed-in' with larger businesses on food waste collections) whilst also producing less waste. Through Zero Waste Scotland, we are providing this type of

support to businesses and we intend to increase efforts on this front as part of our implementation programme for the regulations. More detail on this support is provided in section 6.

A final key benefit of the proposed changes to the Regulations will be the avoidance of a situation where orphan waste streams are created. Orphan waste is waste for which there is no obvious management or disposal route. In these circumstances, waste producers can be forced to seek expensive overseas disposal routes. A number of industrial processes create waste streams for which there are limited management options, e.g. incineration or landfill. The ban on biodegradable waste going to landfill as set out in the consultation risked, albeit a small risk, creating orphan industrial waste streams. Our revised proposals, which limit the scope of the ban to municipal waste and therefore maintain landfill as a home for certain industrial wastes, will ensure that the risk of creating orphan waste streams is avoided. We expect however that the high costs of landfill will drive most industrial wastes away from landfill.

Household waste

Local authorities specifically will have an additional two years to roll out food waste collection services (e.g. design of rounds, contracts, adaptation of collection practices, new vehicles, training, promotion and householder awareness etc). We would therefore anticipate a reduction in the collection costs in the period 2014/15. Costs under Option 2 are £360 million and under the baseline £340 million. Collection costs under Option 3 should ultimately be reduced, but will not be as low as for Option 1.

The additional time given to implement food waste collections from businesses producing less than 50kg per week and households will mean more waste to landfill, which could increase residual waste costs. However, as outlined earlier, financial support is being provided to local authorities to help them establish food waste collection services. It is therefore likely that many local authorities will have implemented food waste collection services ahead of the revised 2015 deadline.

Commercial and industrial waste

The Regulations as consulted upon included a requirement on all business involved in food production, retail and preparation to present food waste separately for collection from 2013. Under the revised proposals, businesses producing less than 50kg of food waste per week will benefit from the deferment for separate food waste collections until end of 2015, providing them with additional time to prepare for this.

We have adopted a 50kg limit as in practice this is less than the weight of a typical 120L bin when filled with food waste (typically these would weigh in the region of 65 – 75kg when filled). Essentially, what this means is that anyone filling a typical 120L bin with food waste [on any particular week] [routinely on a weekly basis] will be required to present that waste separately for collection from 1 January 2014.

We have also adopted a de minimus threshold for presentation of food waste for all food waste producers from 1 January 2016. This has been set at 5kg per week as

we recognise that it is not practical to expect such small volumes of food waste to be presented separately for collection. It is also recognised that the waste management sector are very unlikely to offer a separate collection service for such low volumes as the costs of doing so would be prohibitive.

For those businesses that use macerators to treat and dispose of food waste there are likely to be some additional costs. From the end of 2015 businesses will no longer be permitted to discharge macerated food waste into the public sewer network which means that they will have to write off the cost of the machine. It is estimated that a small macerator, for use in a small independent café for example, would cost in the region of £1200 + VAT to purchase and have installed. For larger premises the likely cost is around £2000 + VAT.

Construction and demolition waste

We do not foresee any changes to this sector under Option 3, and the benefits and costs would remain as for Option 2.

4.8 Impact to third sector and community groups

We do not foresee any significant impact on charitable organisations. Charitable organisations play a role in collecting, managing and re-selling or recycling textiles that people no longer want. The Regulations as consulted upon (Option 2) included a requirement on local authorities to offer a collection service to households for textiles. It is possible that this mandatory requirement on local authorities could affect the volume of textiles reaching charitable organisations. One of the refinements to the Regulations under Option 3 is to remove the mandatory requirement to separately collect textiles from households. Local authorities may choose to run a separate collection and in doing so the Scottish Government has stressed the importance of working in partnership with charitable organisations.

4.9 Administrative costs

There will be limited additional costs associated with the introduction of the Regulations, as these regulations represent an adjustment to the existing regulatory framework that is already implemented by SEPA and local authorities, and under which businesses already have responsibilities to manage waste responsibility. This said, we do anticipate some additional costs in the roll out of the changes. The costs are likely to be highest in 2012 and lie between £941,000 and £2,327,000, with costs reducing after this point in time.

We would expect the waste management sector to be proactive in communicating and assisting in these changes. Zero Waste Scotland are already engaged in actions to support the changes needed by businesses, local authorities, the waste management sector and the public that will support the implementation of the Regulations. Section 5 provides further details of these actions.

5. Scottish firms impact test

5.1 Overview

The waste management sector in Scotland is a service sector upon which all businesses in Scotland depend. The Regulations are aimed at ensuring that the minimum level of service on offer in future is better than that of today. This will require increased competition in the waste management sector to ensure that businesses have access to choice and the sector passes on the opportunities and savings that come with moving to a resource minded approach to waste management.

As outlined throughout this document, the resource value of much of Scotland's waste remains untapped. The value of these resources can be harnessed in many ways: revenue from materials, reprocessing of materials into marketable goods, recovery of energy. A key opportunity for Scotland will be encouraging the development of the reprocessing sector so as to ensure that jobs created remain in and benefit Scotland.

The first step in this change is promoting the availability of these secondary resources: a key aim of the Regulations.

The central challenge in developing the Regulations and promoting availability of these new resources is minimising any short term financial impacts, for instance, investment in new equipment and processes. This must be done without hindering opportunities for longer term financial savings or economic opportunities that will be created as the value of the materials currently treated as waste are harnessed.

The Government has an open door policy with businesses, and we have worked closely with the Scottish business sector, as producers of waste, as well as the waste management industry. The following section draws on our discussions and our responses to concerns raised. As part of our commitment to listen to and understand the views of Scottish business and industry, we have held a number of additional discussions and interviews during the consultation on the draft BRIA. The views and opinions of the businesses have been incorporated into the points set out below.

5.2 Impacts to businesses

Waste producers

Scottish businesses can, and must, make an important contribution to delivering a more resource focused approach to managing Scotland's waste. Being resource efficient also makes perfect business sense – bringing many tangible benefits. Businesses who carefully and successfully manage their resources can benefit from:

- **Increased profits-** Being resource efficient helps you cut the costs associated with waste disposal. And there are many other hidden costs that can also be saved when your business becomes resource efficient. These include energy

and utility costs, labour costs and handling and transportation costs. A resource efficient business will typically save 1% of its turnover⁹;

- **Competitive advantage**- Better resource efficiency will improve your standing with your customers who more than ever seek assurance that their suppliers are operating on a sound environmental basis.

Resource efficient companies can also benefit from improved staff recruitment and retention, leading to productivity gains, improved customer service and further enhanced competitive advantage. A recent project by Defra concluded that UK businesses could save £55 billion through more efficient use of resources¹⁰. For larger companies with the time and skills to dedicate to examining their business practices, these savings are easier to identify.

Businesses consulted on the draft BRIA indicate that overwhelmingly the impact will be positive; the environmental and social benefits outweighing the costs to individual businesses. A key challenge will be the need to change recycling behaviours amongst staff and customers, including the challenge of fostering a shared responsibility for ensuring what must be recycled is recycled. The provision of additional labour for sorting recyclables was raised as was a question around whether packaged food products for disposal need to be de-packaged; the latter potentially creating significant additional burdens. Increased costs, storage space and management/collection of small volumes of recyclables were also noted by several consultees, however many felt positive that by working with their waste contractor solutions could be found that did not entail excessive cost.

In practical terms, the storage of an increased range of recyclables for small businesses may create a problem and in turn may generate the requirement for additional collections for materials such as food waste. This has particular relevance for small, independent hotels and restaurants and the need for additional collections means additional cost. The potential impact of increased costs on small businesses relative to larger operators needs consideration given the potential need for them to increase costs to customers in order to cover additional collection costs, which as one consultee noted may reduce their competitiveness in the wider UK marketplace. The responses from face-to-face interviews were balanced however, with at least three of the seven indicating there would be no impact as the changes enhance and build on what they are already doing or planning to do.

There was recognition also that the overall impact on businesses would very much depend on how the waste management sector responds in terms of the services that are offered in future. Reduced collections of residual waste for example, due to more source segregation of recyclables, would lower costs which could offset any increased collection of separately presented materials, particularly given the inherent value of these resources to the processor.

⁹ WRAP Report - Meeting the UK climate change challenge: The contribution of resource efficiency (2009) http://www.wrap.org.uk/downloads/Final_Report_EVA128_SEI_1_JB_SC_JB3.736b92c7.8038.pdf

¹⁰ The Further Benefits of Business Resource Efficiency. Defra 2011. http://randd.defra.gov.uk/Document.aspx?Document=EV0441_10072_FRP.pdf

Businesses that responded to the consultation were positive about some of the benefits they anticipated from introduction of the Regulations. The main points were a greater environmental awareness and an increase in positive recycling behaviours, opportunity to market increased environmental performance (e.g. over non-Scottish businesses), cost savings (material revenues) and innovation – the drive for solutions will raise the capability of the Scottish waste management industry, further advantaging them. One respondent pointed out that the changes will drive business and the waste industry to tackle some of the more problematic recyclables and not just focus on the ‘low hanging fruit’.

The Regulations place significant responsibilities upon businesses, requiring them to manage their wastes in a different way, and although there are many gains to be made for businesses, we are aware of the challenges that these changes can present, particularly the potential impacts on small businesses arising from the requirement to segregate key recyclables. Some of the challenges that business feels it faces in adapting to the new requirements are:

- Secure storage and cost-effective collection of smaller amounts of dry recyclables and food waste: the regulations make no de minimis thresholds for businesses and many smaller enterprises produce only very small volumes of materials. Businesses seek guidance on what volumes are necessary to ensure a viable collection service; they want support from waste management companies to ensure collection solutions can be provided without excessive cost.
- Decontamination of recyclables, notably plastics, was raised by consultees – there is limited ability to manage and clean contaminated waste on site and segregating this puts greater pressure on storage and collection systems: solutions for managing recyclables contaminated with food, animal by products and oils is sought.
- Education and awareness, of both staff and customers (e.g. in self-service and self-cleaning food outlets) will be critical to ensure no cross-contamination where separate recycling receptacles are provided. Businesses recognise that they must play a part, but there needs to be wider education campaigns to ensure everyone plays a part.

It is vital in order to meet these challenges that Scottish businesses have access to information to make it easier for businesses to implement change and improve resource efficiency, cut costs and improve competitiveness. Businesses were asked what support would be welcomed in helping them to adapt to meet the new Regulatory requirements. The following was noted:

- Increased guidance on the alternatives to waste disposal in parallel to use of posters and materials to support behaviour change. Many businesses noted the importance of certainty and sustained, clear messaging on recycling. Standardisation, for example of bin colour, was noted as a good way of ensuring behaviours become ‘embedded’ in shorter periods of time.

- Several respondents noted how important it would be to understand the impact that they are having and expressed a view that information on what is happening to the waste they recycle should flow down to them. The waste management industry needs to act on this; waste producers actively want to know how the time and energy they put in to sorting and segregating is impacting more generally on Scotland's recycling performance.
- Businesses feel that they are not alone in facing these challenges and recognise that whilst they might face common problems, there are likely to be common solutions. Several noted support for forums, events and sharing of best practice solutions (both operational and novel) would be welcomed and this is something strongly advocated by Scottish Government.

Zero Waste Scotland has developed free online training courses to give SMEs the tools needed to improve their resource efficiency and environmental performance, and identify the associated economic benefits¹¹.

A range of online resources are available to support and complement the training modules including technical publications and tools, a business recycling directory and construction waste exchange tool and specific materials tailored for micro and small businesses. In addition, businesses can engage with technical and industry experts at workshops delivered throughout the year.

Sector specific support is also being provided. Scottish food and drink manufacturers are eligible for a free Resource Optimisation Review. These reviews focus on products and packaging waste and look at the full range of activities on site in order to identify opportunities to cut costs, improve efficiencies and make environmental savings. Support is also available after the review to assist with the implementation of key recommendations.

For the construction sector, support is available in a variety of areas including procurement document reviews, management system reviews for construction waste recording and reporting and the provision of awareness and training sessions. In addition, a series of supply chain workshops are being run with host companies to engage with SME construction contractors and designers. The programme is underpinned by online tools and publications including the resource exchange tool, facilitating the reuse of construction materials within the industry.

Delaying the introduction of food waste collection from businesses producing less than 50kg / week to 2015, under Option 3, will ensure that these business have the opportunity to benefit from (i) a longer lead in time to adapt practices, (ii) more opportunities to receive support through our existing and planned engagement activities, and (iii) a more competitive collection market for food waste that will be established from 2013 onwards to service those businesses producing in excess of 50kg / week.

¹¹ <http://www.zerowastescotland.org.uk/category/service/business-support>

Waste management industry

The Waste management industry in Scotland is currently valued at around £1 billion. It handles over 17 million tonnes of Scotland's waste and employs approximately 12,000 people. The industry encompasses many aspects of waste management, from collection services and sorting facilities to waste treatment and landfill. Local authorities are part of this industry.

One of the key growth sectors is the reprocessing industry. As new materials become available and the value of materials increases, new opportunities to process materials into viable market products are created. For instance, today some 440,000 tonnes¹² of high grade plastics (food plastics) go direct to landfill, whereas material collected, bailed and exported to global markets commands around £130 per ton. If these plastics were reprocessed back into food grade material they would have a value in excess of £1000 per ton. This is value that could be benefiting the Scottish economy, by creating jobs and supplying, for example, local bottling companies, thereby displacing the use of virgin materials. To realise this opportunity we need to improve collection systems and encourage businesses to invest in reprocessing technology and capacity; something being promoted by ZWS. A similar story would apply to many other materials that are currently in the waste stream.

The waste industry will play a critical role in delivering the requirements of the Regulations. The regulations undoubtedly create new business opportunities with the sector, which will ultimately bring benefits to waste producers through the establishment of a more competitive market place in Scotland.

The availability of treatment infrastructure is critical to enable us to handle the additional materials within Scotland, and retaining these materials within Scotland will be key to stimulating the recycling industry. In order to make the necessary infrastructure available, the waste industry will be required to make significant capital investment to build facilities. However, in real terms, these are costs that will be passed back to those customers making use of the new facilities. Moving the ban on biodegradable materials going to landfill to 2020, as proposed under Option 3, will provide more time for changes in recycling behaviour and practice to take effect. This will ensure that residual waste treatment is aligned to Scotland's future waste needs and not over specified. It will also give industry the extra time needed to develop and take forward infrastructure proposals.

Facilities, particularly incinerators, currently in the design or planning phase will need to consider the longer term plans to restrict inputs and the requirement to recover metals and plastics. EfW operators will however be able to realise the value of these materials over the long term, so the opportunities, particularly with a buoyant metals market, can offset the costs of extraction at the front end.

Likewise, landfill operators will face additional pressure to comply with the biodegradability ban. To ensure that material accepted at landfill fulfils the correct criteria will require a robust monitoring and testing regime to ensure compliance. On some landfills this will require additional investment in areas to segregate

¹² Plastics from household and C&I sources – SEPA data

incoming loads for testing and then haul material to the appropriate cell instead of vehicles directly delivering to the landfill face.

The ban on the use of food waste disposal units will impact on companies involved in the production, sale and servicing of these units. From discussion with industry and business, we understand that 1 company in Scotland manufactures parts for a UK supplier of food waste disposal units that in turn supplies to the UK and global market. We also understand that Scotland represents around 10% of the UK market for these units. These issues are examined further in the competition assessment.

5.3 Competition Assessment

This competition assessment considers the impact that the introduction of the Regulations (following refinement post consultation) may have on relevant markets, products and firms.

Q. What are the relevant markets and products that could be affected by the proposals?

Waste is something that all businesses and individuals must deal with; the Regulations will, to some degree, have a bearing on all markets. The key markets affected will be:

- Waste service market – including provision of collection facilities (e.g. bins and containers), means of collection (refuse vehicles and material collection vehicles), processing of waste materials (including reprocessing and remanufacturing sectors);
- Scottish retail businesses and commercial enterprises (all sectors);
- Energy generation sector;
- Agriculture and horticulture sectors;
- Food retail, manufacture and preparation;
- Services provided within the health and education sectors and by public institutions.

The relevant products that will be affected by the proposals include:

- Food macerators and components of these;
- Waste collection bins, boxes, bags and other receptacles for storage of source segregated waste materials;
- Vehicles, notably for refuse and recyclable materials collection;
- Waste processing technologies and equipment (e.g. MBT, EfW and AD components).

The competition assessment identifies any possible restrictions on competition in the relevant markets resulting from the proposals as follows:

Q. Will the proposals directly limit the number or range of suppliers?

None of the measures in the Regulations will award any exclusive rights to supply, create a new form of licensing scheme or introduce a fixed limit on the number of suppliers.

Through the Regulations and our wider waste policy agenda we are encouraging local authorities to form partnerships under which they can procure more effectively. We believe that there are benefits to be secured from encouraging local authorities to exercise collectively greater bargaining power when securing contracts, while also allowing greater economies of scale to be achieved. However, there will be no obligation on local authorities to procure services in this way.

The proposal will directly limit the number and range of suppliers for the food macerator industry and companies selling parts to the manufacturers. The impact of the proposals will effectively close the market for non domestic food macerator sales in Scotland and on-going business opportunities (e.g. service and maintenance contracts) for a number of Scottish firms. It is our understanding that no companies in Scotland are directly involved in the sale of food waste macerators, but one company does manufacture/provide parts. We also understand that Scotland is a relatively small market for these products.

Q. Will the proposal indirectly limit the number or range of suppliers?

Landfill tax is already driving waste away from landfill into alternative treatment options. The proposal to ban biodegradable materials going to landfill and to require separate collection of key recyclates is intended to expedite this move away from landfill. This will indirectly limit the number and range of operators of landfill waste disposal services. The proposals do not ban the landfilling of waste, but the measures proposed to divert waste materials out of the residual waste stream and into alternative management (including front-end waste treatment for all residual household waste) will considerably reduce the market demand for landfill in Scotland.

Those sites unable or unwilling to make the necessary investment, or who find reduced demand creates an unsustainable business model may be forced to close at some point during the 15 year assessment horizon. There is already evidence that some landfill operators are already investing in alternative waste treatment infrastructure to ensure they comply with the regulations and remain competitive.

The corollary is that new businesses and investment opportunities will be created for handling, treating and reprocessing those materials that can no longer be disposed of in landfill. In the longer term, it may well be possible to mine disused landfill sites for resources creating further business opportunities for owners of these assets.

Q. Will the proposal limit the ability of suppliers to compete?

There are no measures in the Regulations that control or substantially influence the price a supplier may charge. Neither do any of the proposals limit the scope of innovation to introduce new products and technologies. In fact the intent is for the regulatory measures to help drive investment in new technology and products by providing market certainty on what materials are available from which to extract resource value. We are supporting this innovation through grant funding (up to £170,000) to support innovation in recycling technologies or the development of

new products from recycled materials, where there is significant potential to increase reprocessing potential in Scotland/develop value-added products.

The proposal will limit the ability of landfill operators to compete with other waste management services and landfill operations in England due to the proposed ban on material to landfill.

The proposal will limit the ability of suppliers of macerator equipment to freely compete within a Scottish market due to the proposed ban on macerator use.

Q. Will the proposal reduce supplier's incentives to compete vigorously?

The Regulations will not exempt suppliers from general competition law; require or encourage the exchange between suppliers, or publication of information on prices, costs, sales or outputs; or increase the cost to customers of switching between suppliers.

It is not anticipated that the proposals will limit or reduce the supplier's incentives as prices for the main services required under the proposals (collection of dry recyclables and food waste, processing of materials and residual wastes) will be based on a free market system, with the consumer ultimately negotiating the price they seek to pay for collection and reprocessing contracts.

The proposal does contain measures that will lead directly to the collection of more robust and accurate data on the volumes and fates of waste arising from households, local authorities and construction and demolition projects. The information is intended to be published but is not anticipated to act as an agent to reduce the ability of any one supplier or group of suppliers to compete with each other.

5.4 Test run of business forms

No new forms are being proposed as part of the introduction of the new legislation.

6. Legal aid impact test

The Regulations do not create any new offences or sanctions. It is therefore very unlikely that they will result in increased legal aid expenditure.

This assessment has been discussed with the Legal Aid team who have agreed with our view above.

7. Enforcement, sanctions and monitoring

7.1 Overview

The regulations will not introduce any new enforcement powers, however existing powers exercised by SEPA and by local authorities will be extended. The new measures do not introduce any new offences as such, they only extend the parameters of existing laws. Therefore the existing penalties for non-compliance will be effective.

7.2 Awareness and communication

Communication is vital to the successful implementation of the proposals and early campaign work to raise awareness of the new measures will be important. Successful implementation should significantly reduce the need for stringent enforcement measures being taken at a later stage. The delivery of effective communications and awareness raising and the engagement of the waste management sector in delivering the message directly to their customers will be key.

SEPA and Zero Waste Scotland will have an important role in providing communications and advice to business ahead of and during implementation of the regulations. It is envisaged that this work will take a number of forms, for example,

- campaign work – trade press etc;
- preparation of materials for waste management companies to use when engaging with customers;
- one to one advice to business.

SEPA will engage with its regulated industries and others to advise on the new requirements. Zero Waste Scotland has a SME support and advice programme with the intention of reaching 3000 businesses per year.

7.3 Enforcement

The power to enforce Section 34 of the Environmental Protection Act 1990 is shared by both SEPA and the Local Authorities. The regulations and the accompanying Duty of Care Code of Practice will maintain this position to ensure efficient implementation and enforcement.

SEPA regulates over 4000 significant industrial processes which provides an opportunity to advise on and enforce the new duties. Not all of these facilities produce the key materials listed in Section 34, but all should take account of the waste hierarchy and apply it in the management of their waste.

SEPA carries out Duty of Care audits when necessary, either as a result of fly-tipping incidents or as part of sector based 'harms' initiatives such as the recent successful work on tyre fly-tipping in the west of Scotland. These activities provide opportunities to engage with waste producers and provide advice on their duty to manage waste responsibly, taking account of the waste hierarchy.

SEPA also regulates the waste management industry directly including over 60 active landfills and the list of incinerator facilities making it well positioned to enforce the landfill and incinerator bans.

Although Zero Waste Scotland does not have a statutory function with respect to enforcing the regulations, their role is crucial. Effective communications and campaign actions should lead the rest of the work.

With regard to food waste collection, Local Authorities already visit many businesses to carry out trade waste inspections. For example, in North Lanarkshire the duty on businesses to produce waste contracts is used regularly by Environmental Protection Officers and Environmental Health Officers. In the financial year 2009/10 over 1000 duty of care inspections were made as part of their investigations into fly tipping complaints or proactive visits to businesses checking that appropriate arrangements are in place for waste removal.

Food hygiene inspectors visit many premises and the potential to capitalise on this existing role by incorporating a check for segregated food waste into their inspection work will be investigated.

Complaints that a particular producer does not have a compliant collection service could be investigated by the relevant Local Authority. However, it would be envisaged that SEPA would assist with the investigation of major producers with multiple sites cutting across two or more Local Authority boundaries.

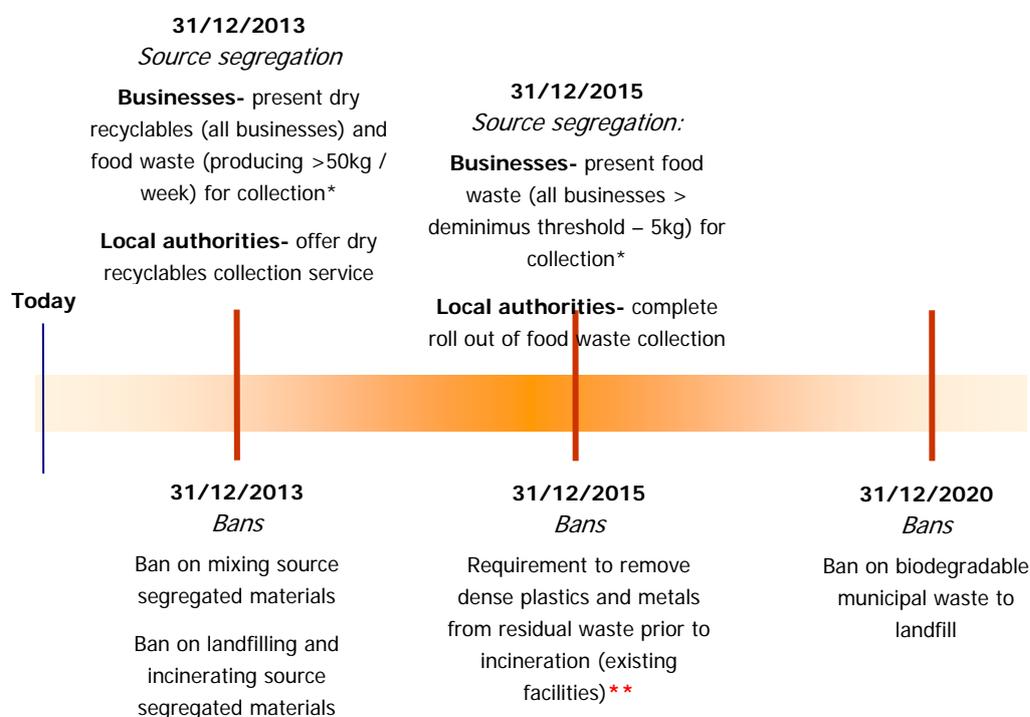
Complaints that a waste carrier is not providing an adequate service to allow a producer to fulfil their duty would be investigated by SEPA.

Detailed discussion with Local Authorities and SEPA on their specific roles is ongoing with the aim of implementing the measures without adding significant additional burden on existing resources. The Scottish Government and SEPA are committed to monitoring and reviewing the effectiveness of these changes.

8. Implementation and delivery plan

8.1 Overview

The measures set out in the Regulations will be implemented incrementally as outlined in Figure 5.



* Applies to businesses involved in food production, food retail or food preparation

** For new facilities, this requirement will come into effect on commencement of the regulations

Figure 5 Timetable for implementing the regulatory measures

Our work to support implementation of the Regulations is already underway. Our efforts, which encompass action by Zero Waste Scotland and SEPA are targeting three areas: supporting local authorities, supporting businesses and supporting the waste industry. These are described below.

We have also established a programme board that brings together influential practitioners and experts from a range of sectors to advise and direct the delivery of the Scottish Government's Zero Waste Plan and Regulations. The board is not simply a forum for listening to the views of stakeholders; its members are tasked with helping drive forward the necessary changes within their respective sectors.

We are also establishing a targeted implementation programme with Zero Waste Scotland and SEPA to support roll out of the Regulations. This will include establishment of new sector specific support programmes, and realignment of existing programmes of support.

A series of guidance papers will be issued to coincide with the Regulations coming into force as will a new Duty of Care Code of Practice. Drafts of these papers formed part of the consultation on the draft regulations.

Post implementation review will be an ongoing exercise. Statistics on waste management trends, including recycling rates, are published annually by SEPA; these provide key insights into performance and will allow basic tracking of the impact of the Regulations. These annual exercises will be supplemented by targeted data gathering exercises, and work is already underway to improve data on waste arising from the C&I sector and its composition. These and other data analysis exercises will help provide information that industry can use to better understand investment opportunities, for instance in reprocessing facilities for key recyclable materials.

8.2 Supporting local authorities and the NHS

Zero Waste Scotland is providing support to local authorities on a range of issues, from technical support to assistance with campaigns. There is dedicated support to local authorities through the Local Authority Support Manager and a number of other resources, both internal and via contracted 3rd parties. Local authorities can draw on these resources to help them shape their services and support the necessary changes that are likely to be required to meet the Zero Waste Plan and the Regulations. As outlined earlier, an emphasis is currently being given to supporting roll out of food waste collection services. Additionally, Scottish Futures Trust is charged with helping local authorities secure value for money when establishing contracts for their residual waste management needs.

Zero Waste Scotland is also undertaking a mapping study of the public sector to gather intelligence on current waste arising, waste management practices and the degree of information provision and training in relation to resource efficiency. It is intended that this study will be used to develop an engagement programme with the sector in order to deliver the zero waste regulations and other lasting changes.

In parallel with this study, a specific programme of work is being delivered with the NHS. In addition to a mapping exercise similar to that undertaken with the public sector, Zero Waste Scotland is working with key members of the NHS to identify and deliver projects focussing on key issues facing the sector, including procurement, waste prevention and management and behavioural change.

The programme of work being taken forward by Zero Waste Scotland with the NHS includes the following:

- A mapping study of the sector is currently underway to gather intelligence on current waste arisings, waste management practices and the degree of information provision and training in relation to resource efficiency. This study will be undertaken in collaboration with Health Facilities Scotland and the NHS Waste Management Steering group to ensure that it meets the needs of the sector and allows ZWS to make an informed decision regarding the content and format of the support programme to be delivered from 2012-2015.

- **Exemplar projects:** From the mapping study, and working with the steering group, ZWS will identify a range of areas where detailed project work could be delivered to support the NHS in meeting the requirements of the regulations and/or adopt more resource efficient practices in their operations.
- **Ad-hoc support:** This support is available to provide site specific support e.g. resource efficiency reviews. Work is already underway with NHS National Services in two areas: providing input to the national waste management tender for non-clinical domestic waste, and undertaking a resource efficiency review at their two facilities.
- **Additional resource:** An additional resource in terms of a seconded member of staff has been proposed to the NHS to provide support and drive projects forward.

8.3 Supporting Businesses

It is vital that Scottish businesses have access to information to make it easier for businesses to implement change and improve resource efficiency, cut costs and improve competitiveness. Zero Waste Scotland has developed free online training courses to give SMEs the tools needed to improve their resource efficiency and environmental performance, and identify the associated economic benefits.

A range of online resources are available to support and complement the training modules, including technical publications and tools, a business recycling directory and construction waste exchange tool and specific materials tailored for micro and small businesses. In addition, businesses can engage with technical and industry experts at workshops delivered throughout the year.

Zero Waste Scotland are currently running a pilot around new business models for SME recycling which will focus on working with businesses to facilitate collaborative procurement of waste management services. The first pilot is with Enterprising Bathgate; a survey undertaken early in 2011 indicated that 62% of the businesses in the district are micro businesses (<5 employees). One of the aims will be to understand the cost impact to the businesses of using the additional recycling service vs their existing service. Zero Waste Scotland are also keen to do some research to understand compliance costs (outwith a collaborative procurement model) for micro businesses, through engagement with a number of local authorities.

From April 2012, a wider funded programme will be available supporting BIDS, community groups or groups of properly constituted businesses (i.e. a co-op) who wish to explore a business-led initiative to increase their recycling levels.

From this information Zero Waste Scotland will develop guidance, tools and templates and relevant case studies.

Sector specific support is also being provided. The Scottish food and drink manufacturers are eligible for free Resource Optimisation Review. These reviews,

focusing on waste associated with products and packaging, will look at the full range of activities on site in order to identify opportunities to cut costs, improve efficiencies and make environmental savings. Support is also available after the review to assist with the implementation of key recommendations.

For the construction sector, support is available in a variety of areas including procurement document reviews, management system reviews for construction waste recording and reporting and the provision of awareness and training sessions. In addition, a series of supply chain workshops are being run with host companies to engage with SME construction contractors and designers. The programme is underpinned by online tools and publications including the resource exchange tool, facilitating the reuse of construction materials within the industry.

8.4 Supporting the waste industry

Zero Waste Scotland is providing direct support to the industry through the following initiatives:

Food Waste Infrastructure and Collections: Deminimus grant funding (up to £170k, match funded) is available to cover start-up costs for commercial food waste services or additional infrastructure at existing treatment facilities.

Certification to PAS100/PAS110: Free consultancy support (2 and 3 days respectively) is available for compost producers and operators of AD facilities to achieve certification to PAS100 and PAS110.

Recycling Innovation Fund: Deminimus grant funding (up to £170k) is available to support innovation in recycling technologies or the development of new products from recycled materials, where there is significant potential to increase reprocessing opportunities in Scotland/develop value-added products.

Waste Prevention Innovation Fund: Deminimus grant funding available (up to £50,000) to support innovation in product, process and service design where there is significant potential to reduce primary resource use, reduce waste or transform end-of-life recovery for products.

In 2010 Zero Waste Scotland ran a competitive capital grant scheme (total value £5m) for new plastics reprocessing facilities in Scotland. Work is ongoing to secure investment.

8.5 Awareness raising and communication

Communication will be vital to the successful implementation of the proposals and early campaign work to raise awareness of the new measures will be important. Successful implementation should significantly reduce the need for stringent enforcement measures being taken at a later stage. The delivery of effective communications and awareness raising and engagement of the waste management sector in delivering the messages directly to their customers will be key.

SEPA, Zero Waste Scotland and the waste management industry will have an important role in providing communications and advice to business ahead of and

during implementation of the Regulations. It is envisaged that this work will take a number of forms for example,

- High level campaign work – trade press etc;
- Preparation of materials for waste management companies to use when engaging with customers;
- One-to-one advice to business.

SEPA will engage with its regulated industries and others to advise on the new requirements. Zero Waste Scotland has a SME support and advice programme with the intention of reaching 3000 businesses per year.

8.6 Post implementation review

These regulations will drive important changes, and understanding their success and responding to barriers to success or unforeseen consequences will be essential. Post implementation review therefore will be an ongoing exercise, and a formal review will be undertaken and reported upon within 10 years of the Regulations coming into force.

Statistics on waste management trends, including recycling rates, are published annually by SEPA, and these provide key insights into performance and will allow basic tracking of the impact of the regulations. These annual exercises will be supplemented by targeted data gathering exercises, and work is already underway to improve data on waste arising from the C&I sector and its composition. These and other data analysis exercises will help provide information that industry can use to better understand investment opportunities, for instance in reprocessing facilities for key recyclable materials.

We are also aiming to produce new information on where Scotland's waste-resources ultimately end up. This will help track the amount of recycled waste being exported: a key indicator of how well Scotland is meeting the challenge of encouraging the development of the reprocessing sector in Scotland.

Some of this information will come from SEPA, but some will come directly from local authorities through biennial reporting of information to the public on recycling services, including information on the destination of material collected for recycling.

Zero Waste Scotland already operate a series of business support programmes. These will provide opportunities to gain direct feedback from business on the changes they are facing, as well as opportunities to help business adopt to changes.

9. Summary and recommendation

Based upon the evidence available, including our discussions with businesses, the public and service providers, we recommend adoption of Option 3. The potential costs savings over a business as usual (option 1) scenario are substantial, and the environmental rewards are greater still.

The refinements made to the Regulations post consultation will, we believe, help minimise short term investment costs and provides the lead-in times necessary for local authorities and business to adopt to the changes being brought forward.

Table 6 and 7 provide a summary of the main benefits and costs of each option

Option	Financial benefits	Financial Costs	Overall cost/benefit
Option 1 (baseline)	N/A - Baseline	N/A - Baseline	N/A - Baseline
Option 2	<p>Financial benefits in the region of £1,847 million* compared to the baseline (option 1) scenario.</p> <p>Average annual economic benefits of around £169 million per annum</p> <p>Household Net financial savings of £473m (material revenues and savings in residual waste management costs). Annual financial revenues and savings of £43m</p> <p>Industrial and commercial Net savings of £1,313m (material revenues and savings in residual waste management costs). Annual financial revenues and savings of £120m</p> <p>Construction and demolition Net savings of £61m (relative savings in residual waste management costs). Annual financial savings of £6m</p>	<p>Additional costs in the region of £1,660* million compared to the baseline (option 1) scenario.</p> <p>Average annual cost of around £152 million per annum</p> <p>Household Net financial costs of £273m (collection, treatment, sorting). Annual financial costs of £25m</p> <p>Industrial and commercial Net financial costs of £1,377m (collection, treatment, sorting). Annual financial costs of £126m</p> <p>Construction and demolition Net financial costs of £10m (collection costs). Annual financial costs of £0.9m</p>	<p>Option 2 estimated to bring about total savings in the region of £187 million compared to the baseline (option 1) scenario.</p> <p>Total average annual saving of around £17 million per annum</p> <p>Household Net overall saving of £200m Annual saving of £18m</p> <p>Industrial and commercial Net overall cost of £64m Annual costs of £6m</p> <p>Construction and demolition Net overall saving of £51m Annual saving of £5m</p>
Option 3	Total additional saving over and above those outlined under option 2 of £20-40million		

* Total costs over the period 2011 to 2025

** Average annual savings and costs are annual averages of real term costs and revenues over the period 2011-2015.

Table 6 Sector breakdown of main financial benefits and costs. All costs and savings/ revenues are expressed as NPV (£million, 2011-2025)

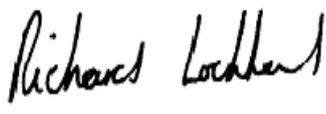
Option	Other Benefits	Other Costs	Notes
Option 1 (baseline)	Similar to the benefits outlined for option 2, but likely to deliver lower rates of recycling, with consequently lower reductions in greenhouse gas emissions.		
Option 2	<p>Potential to leverage up to £1 billion of new investment in infrastructure. Production of energy from processing food in anaerobic digestion facilities and treatment of residual wastes in thermal treatment plants.</p> <p>Estimated 521 Kt CO₂e reduction in carbon emissions over the period to 2020, thereby contributing to climate change targets.</p> <p>Monetised environmental benefits of around £180m per year.</p> <p>Increased recycling rates, with consequential reduction in demand for virgin materials, helping to create, in resource terms, a more self-sufficient society.</p> <p>Economic opportunities for Scotland through the creation of new jobs in the waste management and reprocessing sectors and the construction of new infrastructure.</p> <p>Supports businesses to become more resource efficient, making them more competitive and less wasteful whilst also reducing costs.</p>		<p>Requires willingness from the waste management sector to deliver the required infrastructure.</p> <p>Planning system also a key factor in the delivery of new infrastructure. Needs to respond to the identified need for new facilities.</p> <p>Globally, demand for resources continues to increase. This, in turn, drives up prices. Many of these resources are finite and it is critical</p> <p>Number of jobs created obviously dependent on new infrastructure and services being delivered.</p> <p>Requires businesses to be proactive and willing to adopt change. Significant opportunities for those that do.</p>
Option 3	<p>Other benefits under Option 3 mirror, to a great extent, those under Option 2. However there are some additional benefits and these are identified below.</p> <p>More time for smaller businesses and local authorities to prepare for and adopt new collection services for food waste. Smaller businesses also have more time to make use of the support services available from Zero Waste Scotland prior to adoption of new services.</p> <p>Landfill retained as a last option for certain industrial wastes, thereby removing risk of creating orphan wastes with no disposal route.</p> <p>Less risk of an over capacity of residual waste treatment infrastructure to process Scotland's residual wastes. Also ensures that Scotland develops the right mix of treatment infrastructure.</p> <p>Provides operators of thermal treatment facilities more time to put in place the infrastructure necessary to pre-treat any unsorted wastes prior to incineration.</p> <p>The ban on the disposal of macerated food into the public sewer network either directly or indirectly will ensure that food waste capture is</p>		<p>Moving the date back to 2015 for small businesses and household waste collections will have some impact on how quickly we can reduce methane emissions from landfill, but the impact is not considered to be significant.</p> <p>The landfill ban under this option still covers some 95% of the waste stream. For the 5% of industrial type wastes not covered by the landfill ban, it is anticipated that the ever increasing cost of landfill will drive these wastes from landfill to other disposal routes.</p>

	<p>maximised and that it is treated higher up the waste hierarchy, i.e. recycled not simply disposed off. It will also reduce the cost to the public purse of clearing blockages in the sewer network caused by fats, oils and grease which arises due to food waste disposal.</p>		
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Table 7 Summary of other benefits and costs for each option

10. Declaration and publication

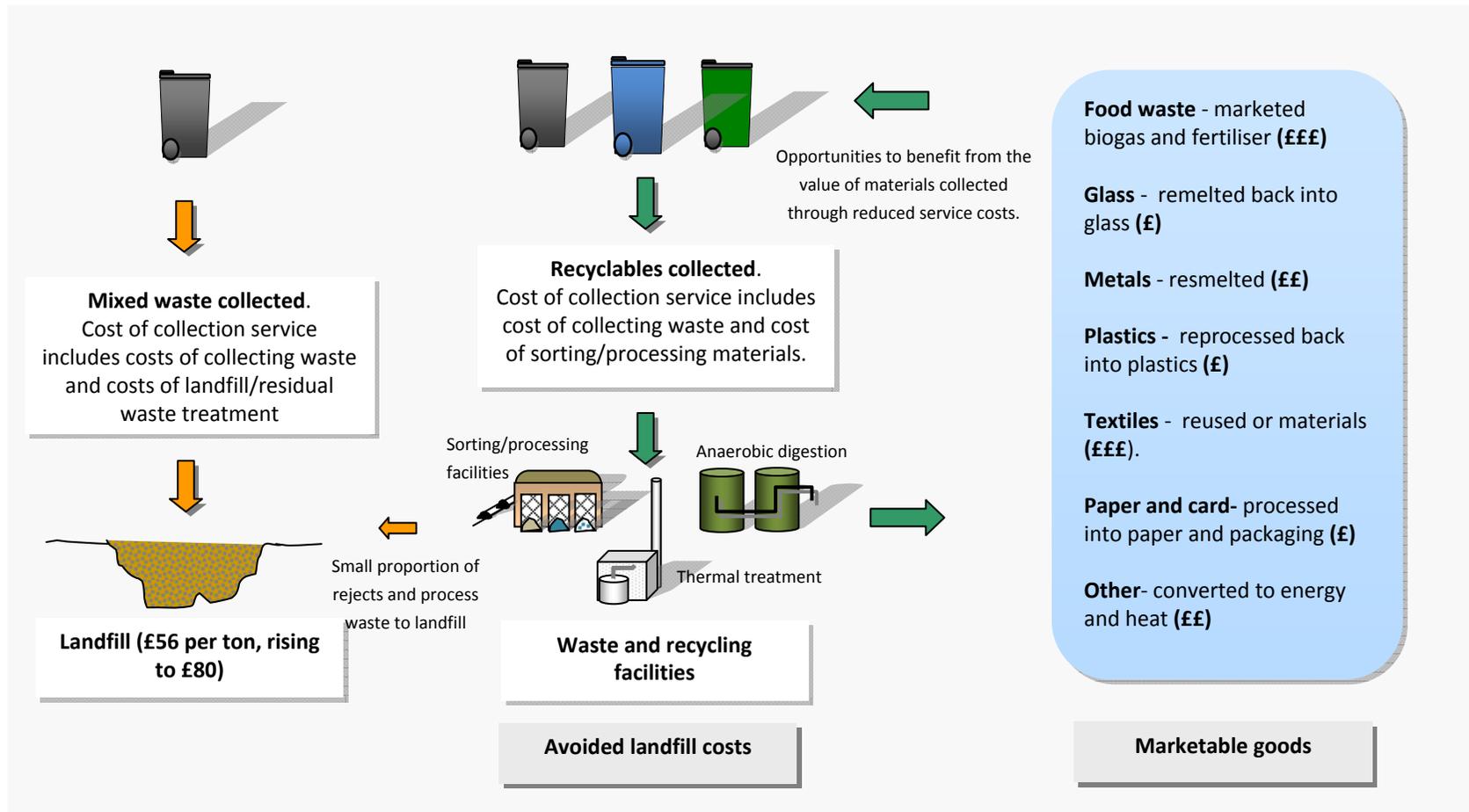
I have read the impact assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs. . I am satisfied that the business impact has been assessed with the support of businesses in Scotland.

Signed: 

Richard Lochhead MSP, Cabinet Secretary for Rural Affairs and the Environment

Date: 15 March 2012

Annex 1 Recycling, avoided landfill tax and economic opportunities



Annex 2 Modelling costs and benefits

Overview

The main financial figures outlined in the costs and benefits section draw on work commissioned by the Scottish Government to examine the costs and benefits of implementing the zero waste plan, and supporting regulations.

The Economic Assessment of the Zero Waste Plan for Scotland (July 2011) was commissioned by WRAP on behalf of the Scottish Government and completed by Eunomia Research and Consulting.

<http://www.zerowastescotland.org.uk/ZWPcostbenefit>

This study examined current and future trends in waste management, waste arising in Scotland, the costs of current and future waste management options (including collection, treatment and disposal) and the value of key materials in the waste stream.

Key assumptions and Uncertainties

The cost modelling data underpinning this BRIA includes taxes such as the landfill tax and subsidies such as the renewable heat incentive. The benefit of this approach is that the costs outlined are more likely to reflect what the various players within Scotland will face under the proposals.

The main assumption and sources of data relating to the modelling of the mass flows and costs of collection, sorting, waste treatment and material revenues are outlined within Section 4 of WRAP's report on the economic assessment of the Zero Waste Plan for Scotland. The assumptions and sources are not repeated here for reasons of brevity and the reader is referred to the main source.

One of the critical areas of uncertainty within the modelling is the assumptions used to calculate the residual waste treatment costs (which acts as a significant counter-balance to the additional investment needed to be made under the Regulations). The WRAP report noted above examines in detail two scenarios deviating from the main assumptions:

- a lower than modelled cost for residual waste treatment, the net effect of which is to reduce the volume of waste sent to landfill and increase the volumes sent to residual treatment as demand is stimulated by lower capital costs; and
- a flatter demand curve for residual waste treatment and lower costs, where the market is increasingly open and treatment of waste exports/imports are competitive in price terms, stimulating demand for residual waste treatment and ultimately reducing the volumes of waste sent for recycling via composting and digestion.

The assessment of costs and benefits must therefore be interpreted bearing in mind the range of assumptions and sensitivities, where small changes can create large market effects. The WRAP report highlights that the market could be at a tipping point with regard to moving from landfill to residual waste treatment, with

small sensitivities having big impacts on the business cases for commissioning new waste infrastructure.

The modelling within the BRIA is also subject to a number of uncertainties, a change in which could be reflected as either increasingly positive net benefits or increasing costs. The following are the main uncertainties, but this list is not exhaustive:

- Many of the cost/benefit calculations rely on the full value of the material collected from businesses and households being realised by the producer. The waste industry will be required to make significant investment in new waste management and recycling infrastructure and these costs will need to be recovered. It is anticipated that these costs are likely to be recovered through new contracts for collection services, however should the waste industry decide to retain some or all of the value realised from the sale of additional dry recyclables under the Regulations, there will be significant changes to the impact for businesses and local authorities.
- The modelling assumes a gate fee for digestion of food waste via AD (electricity only) of £44 per tonne based on unit costs from the latest WRAP Gate Fees Survey. Based on the experiences of other countries (e.g. Ireland), diversion of food waste not only stimulates the market for digestion and composting but the gate fees for high quality feedstock can reduce, which would yield further cost savings for the key waste producers. The sensitivity of changes in these fees has not been modelled but it is likely that Scotland would follow a similar pattern and costs to businesses could be significantly lower for food waste disposal than modelled in this BRIA.
- The split of separate and co-mingled collection has not been explicitly factored into the models and as such the figures do not reflect future decisions that may be taken by local authorities to co-collect a range of dry recyclables, the impact of which is predicted to be overall lower collection costs (despite higher sorting costs) to local authorities. The extent to which local authorities will use flexibility (offered in Option 3 where the service will not reduce the overall quality of the recyclate) remains an uncertainty that will affect costs.

Annex 3 C&I sector breakdown of financial costs/benefits:

Option 2 v's baseline (Option 1) costs

The following costs are based on a sector analysis of the figures presented in the WRAP costs benefit study commissioned by the Scottish Government. The business sectors were broken down by NACE¹³ code to provide a more accurate picture of the types of business within Scotland and the number within each sector.

The modelling for these costs is based upon a number of fairly conservative assumptions on the future shape of Scotland's waste management industry. If, for instance, residual waste treatment costs dropped, for example as a reaction to increased competition, we would instead see savings across this sector of the order of £1-2 million per annum when compared to the baseline.

The difficulties of accurately predicting the financial impact of the regulations on different sectors are discussed in Section 4 and explored further in Annex 2.

Sub-sectors	Net Costs total costs relative to baseline scenario (£m)	Net annual average cost relative to baseline scenario (£m)
Fishing	£0.2	£0.02
Mining and quarrying	-£0.1	-£0.01
Food and drink	£6.2	£0.41
Textiles, apparel and leather	-£0.1	-£0.01
Wood and paper	-£0.7	-£0.05
Chemicals	-£0.6	-£0.04
Mineral products	-£0.2	-£0.01
Metals and metal products	-£0.2	-£0.01
Machinery, vehicles and equipment	-£0.2	-£0.0
Miscellaneous manufacturing	-£0.1	-£0.0
Coke, oil, gas and electricity	-£0.5	-£0.03
Water, sewerage and waste industry	-£0.6	-£0.04
Trade	£19.8	£1.32
Transport and storage	£2.0	£0.13
Hotels and restaurants	£7.3	£0.49
Information and communication	£1.8	£0.12
Financial and insurance services	£0.9	£0.06
Professional, technical and scientific activities	£4.4	£0.29
Other services	£10.2	£0.68
Public administration and defence	£2.6	£0.17
Education	£3.6	£0.24
Health	£6.1	£0.41
Arts, entertainment and recreation	£2.1	£0.14
Total	£64	£4.26

¹³ Although it is more common to use SIC codes within a BRIA, the choice of NACE was made in order to align specific sectoral and sub-sector waste analysis results. This is because SEPA used NACE as standard on their recent Scottish business waste surveys, a major source of relevant data for the BRIA.