ACCOUNTS COMMISSION

Benchmarking refuse collection

A review of councils' refuse collection services

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- following up issues of concern identified through the audit, to ensure satisfactory resolutions
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- carrying out national value for money studies to improve economy, efficiency and effectiveness in local government
- issuing an annual direction to local authorities which sets out the range of performance information which they are required to publish.

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This report is published by Audit Scotland on behalf of the Accounts Commission. Comments and queries should be addressed to John Lincoln or Martin Christie.

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We would like to thank the study's Advisory Group, comprising a range of experts from councils and other bodies. The Group provided valuable advice and acted as a useful sounding board for the study team. See Appendix 1 for membership of the Group.

The Accounts Commission takes sole responsibility for the contents of this report.

Summary

In conducting this study, the Commission wishes to assist councils to achieve Best Value in their refuse collection services. It has provided all councils in Scotland with operational and financial benchmarking information. Councils are expected to use this information to challenge their current levels of performance and take action to achieve the standards of the best.

The Commission last reviewed the refuse collection service in 1990. Since then, there have been substantial productivity improvements

- The gross cost of refuse collection has risen from £90 million in 1990 to £98 million in 1998/99, a 9% increase, which is less than the rate of inflation.
- Over the same period, the tonnage of refuse collected by councils increased by 14%, the number of refuse collection employees fell by 44% from 4,800 to 2,700, and the number of vehicles employed fell by 25%.

The cost of collecting household and commercial refuse varies among councils

- In most councils, the average cost of collecting household and commercial refuse ranges from £30-£40 per property per year, which is broadly similar to councils in England and Wales.
- The cost of collecting refuse in rural councils is higher because they are more sparsely populated.
- The average cost to councils of separately uplifting bulky items of waste ranges from £5-£15 per uplift. Twelve councils cover some of their costs by charging for this service.

Councils need to know the real cost of providing refuse collection services, in order to set appropriate charges and make informed policy decisions about levels of service and allocation of resources to support individual collection services

- Over three-quarters of councils do not maintain separate trading accounts for commercial refuse services.
- Councils should aim to recover all of their costs of collecting and disposing of commercial refuse through charging. However, based on available study data, it is estimated that, across Scotland, councils may be subsidising their commercial collection services by as much as £9.7 million a year.
- Most councils need to develop activity costing systems to enable them to know the real cost of providing individual refuse collection services.
- Councils should take steps to reduce the avoidance of charges for collecting commercial refuse.
- Councils should review their charging policies for chargeable collection services.

Councils need to ensure that resources are used efficiently and effectively by improving performance monitoring and review

- Examples of areas where the study has identified scope for efficiency improvements include:
  - management of sickness absence and bonus schemes
  - management of vehicle replacement programmes, including the number of reserve vehicles
  - continuous review of the efficiency of refuse collection routes.
- Refuse collection managers need to further develop their use of performance information to monitor and review service performance.

Councils face significant challenges in meeting environmental targets

- In 1998/99, the overall level of waste recycled by Scottish councils was 3.8%, well below the government's year 2000 target of 25%.
- Councils that invest in separate collections of material for recycling, eg, paper, tend to have higher recycling levels.
- Because of falls in the market price of recyclable materials, a number of councils have withdrawn or are considering withdrawing separate collections.
- If councils are to meet government recycling and landfill targets, as set out in the National Waste Strategy, they will have to give waste management a higher priority. This will involve developing an effective waste management strategy, in partnership with other councils and agencies, and allocating sufficient funding to support expensive, but environmentally desirable, collection and recycling activities.
- The Scottish Executive has a strategic role to play and should consider how it can assist councils to meet recycling and landfill reduction targets.

External auditors will be challenging councils to use the benchmarking information supplied to identify areas for improvement and take action to improve performance

- All councils are expected to prepare action plans to make performance improvements.
- Auditors will be reviewing the implementation of these plans.

Introduction

Why look at the refuse collection service?

Refuse collection is a highly visible service. It is unique in being provided to all homes, usually on a weekly basis. It is a valued service; 31% of the members of the People's Panel[1] in Scotland ranked refuse collection among their five most important public services, higher than the police (27%) or the fire and emergency services (23%). Only GP services (46%) and NHS hospitals (38%) were ranked as more important.

The Commission last reviewed councils' refuse collection services in 1990. Since then there have been a number of changes in the external environment in which the refuse collection service operates. This study looks at how councils have responded, or will need to respond, to these changes.

- **Local government reorganisation:** As a result of local government reorganisation, the number of refuse collection authorities has reduced from 56 to 32. The aggregation of former district councils into the new unitary councils presented challenges and opportunities for refuse collection managers. Challenges included, for example, the need to harmonise different employee conditions of service, levels of collection charges, refuse collection contracts and vehicle types. However, significant opportunities for service improvements arose from reorganisation. These included the opportunity to achieve economies of scale by reducing the number of depots and vehicles required, and to review the efficiency of routes by reconfiguring them to optimise productivity. This study provides councils with detailed information to assist them in their review of refuse collection routes.

- **Introduction of Best Value:** All councils in Scotland undertake refuse collection services, having won these contracts in competition with the private sector. In 1997 the government suspended the Compulsory Competitive Tendering (CCT) regime and introduced Best Value. This has resulted in some refuse collection services not being subject to market testing for seven years. Best Value has an emphasis on customer focus, delivering services to the standards that customers expect and need whilst achieving value for money. This study provides councils with information to support their Best Value reviews.

- **Environmental targets:** Since the Rio Earth Summit in June 1992, there has been a government target which states that, by 2000, councils should recycle 25% of household waste. A landfill tax has been introduced to discourage the disposal of waste in landfill sites. The landfill tax rate was increased from £7 per tonne to £10 per tonne from April 1999, and will rise by £1 each year until at least 2004.

[1] In 1998 the Cabinet Office commissioned MORI and the School of Public Policy at Birmingham University to set up the People's Panel as part of a wider programme to modernise government and make it more responsive to users.

In addition, the Landfill Directive[2] requires a reduction in biodegradable municipal (household) waste taken to landfill sites. In response to this Directive, the Scottish Environment Protection Agency (SEPA) has published a National Waste Strategy for Scotland, which has been adopted by the Scottish Executive. At the heart of this strategy is the proposal that area waste plans should be produced by groups of councils working with enterprise agencies in consultation with waste producers and the waste industry. This study provides baseline information on refuse collection services to support the production of area waste plans.

Study objectives

In conducting this study, the Commission wishes to help councils to achieve Best Value by assisting them to benchmark their refuse collection services using validated information. Access to information on the cost and performance levels achieved by other councils is essential to reviewing services. This information prompts councils to challenge their own practices and to review the impact of changes. The Accounts Commission's publication, *'Measuring up to the best, A manager's guide to benchmarking'*, provides guidance in this area.

This study provides benchmarking information on councils' refuse collection services at both a national and local level. It provides baseline data on current practice and the performance of each council's refuse collection service. While this report is principally concerned with refuse collection services, it recognises the impact of refuse collection on other aspects of waste management, in particular, refuse disposal and recycling activities. The information collected during this study will support councils in:

- challenging their current levels of performance
- introducing service improvements
- reducing costs, where possible
- reviewing charging policies
- conducting their Best Value service reviews and allowing them to compare their performance on a like-for-like basis with other councils, and
- formulating area waste plans in response to the National Waste Directives.

An additional objective of the study is to encourage all council refuse collection managers to agree a standard set of key operational indicators and use these to monitor the performance of their services over time.

About the study

The study involved an extensive data-gathering exercise covering all aspects of the refuse collection service, including:

- refuse collection costs and income
- analysis of resource inputs (eg, employees and vehicles) and outputs (eg, tonnage collected and properties served)
- analysis of refuse collection route performance, including establishing performance benchmarks for different types of refuse collection routes
- service quality issues, such as the number of complaints
- arrangements for performance monitoring and review.

The study was conducted in collaboration with the Association for Public Service Excellence (APSE) Scottish Region (formerly known as ADLO) and has received excellent support from refuse collection managers in all 32 councils. They have been helpful in providing the prescribed service data and ensuring

[2] Council Directive 1999/31/EC on the landfill of waste (better known as the Landfill Directive).

that the data provided reflects the actual performance of their councils. The data was collected during the spring of 1999 and relates to the financial year 1998/99.

The study has two main outputs. In addition to this report, the study team has already provided councils and auditors with benchmarking software containing the performance indicators derived from the study data. The performance information is contained in two separate modules. The first includes over 100 indicators covering all aspects of the refuse collection service; the second provides comparative performance information for over 500 refuse collection routes. A full list of these indicators is included in Appendix 2.

To facilitate comparison, councils were arranged into comparable family groups. This means that councils can compare their performance on a like-for-like basis. The refuse collection route information was also analysed using a family group approach. Details of the methodology used to create these groups are included in Appendix 3.

Councils are expected to use this information to identify areas where performance can be improved and to prepare action plans to implement changes. External auditors will be reviewing the implementation of these plans.

Structure of the report

This report is in five sections. After this section:

Section two describes the operation of the refuse collection service and the scale of the service in terms of total tonnage managed. It also looks at the overall costs of providing the service, the level of income generated and the use of trading accounts and activity costing.

Section three identifies the main changes in productivity since 1990 and provides financial and operational benchmarking information on the components of the refuse collection service including: mainstream refuse collection (including income for commercial refuse collection), special uplift services and separate collection of materials for recycling. It then goes on to examine service quality issues.

Section four examines councils' arrangements for monitoring and reviewing service performance, looking at the key employee and vehicle management issues that councils should address to improve current performance.

Section five looks at the important challenges facing the refuse collection service. It makes recommendations on specific areas where further service improvements could be made by most councils. It then suggests ways in which councils could respond to the challenge of meeting government environmental targets.

The refuse collection service

The core refuse collection activity undertaken by all councils is the routine collection of domestic and commercial refuse (referred to in this report as mainstream refuse collection). For most domestic properties, the collection frequency is weekly, but for some (eg, multi-storey properties) it may be up to three times per week. For most commercial properties the collection frequency is higher, usually two to three times per week, with some properties receiving a daily service.

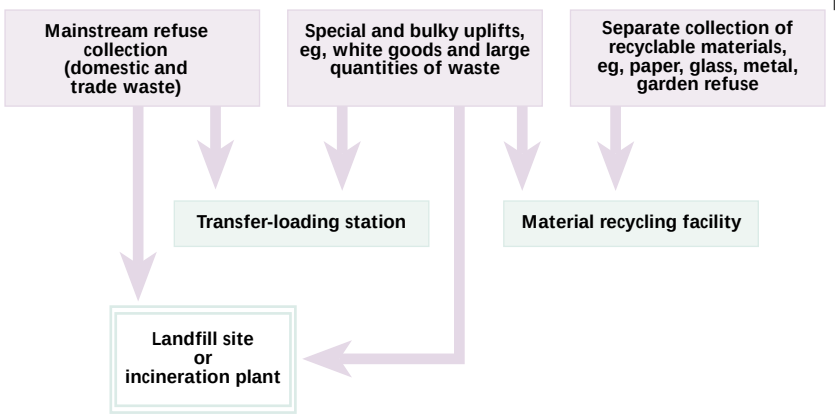
A typical mainstream refuse collection route involves a vehicle and its crew travelling from their base depot to the first collection point, uplifting refuse along the collection route, taking the collected refuse to an initial disposal point (eg, a transfer-loading station (TLS)[3] or material recycling facility (MRF)[3]) or a landfill site, returning to the collection route, and after taking its final load to the disposal point, returning to the depot. Routes generally consist of a mixture of domestic and commercial properties, although councils may operate separate commercial routes in urban areas.

Other refuse collection services that may be provided by councils include:

- separate collection of recyclable materials such as paper, cardboard and glass
- provision of a special uplift service for bulky domestic refuse (ie, special uplifts), mainly to households, on request
- giving assistance to householders unable to move wheeled bins to the kerbside
- provision of skips for the removal of domestic and commercial refuse
- special arrangements for the collection of hazardous or clinical waste.

Exhibit 1 illustrates the principal components of the refuse collection service and their links with interim and final disposal points.

Exhibit 1: Principal components of refuse collection



Note: The potential exists for mainstream refuse to be taken to a material recycling facility. However, at the time of the study this process was not widely used.

[3] Material recycling facility – A facility for the sorting and baling of mixed, or separated at source, refuse to recover recyclable materials such as paper, cardboard, metals, plastics and glass.

Transfer-loading station – A facility located close to the point of collection where refuse is transferred to large haulage vehicles for transportation to treatment or disposal facilities. Transfer-loading stations are generally used in urban areas where local landfill sites are not available and in rural areas where it is not economic for expensive refuse collection vehicles to travel long distances to landfill sites. Transfer-loading station costs are included in the cost of refuse disposal.

Councils have a statutory duty to arrange for the collection of household refuse and the Environmental Protection Act 1990 prescribes that no charge is to be made in most cases for the collection of household refuse. Councils do, however, have discretion to charge for the uplifting of bulky domestic refuse. In addition, councils have a statutory duty to provide civic amenity sites to enable the public to dispose of their household, but not commercial, refuse.

The Scottish Executive's assessment of local authority expenditure needs assumes that councils will achieve full cost recovery for collecting and disposing of commercial refuse. Councils should, therefore, aim to recover their full costs through charges.

Refuse collection is an integral element of every council's waste management strategy. There are important interactions between refuse collection and other waste management activities, for example:

- A council can reduce its refuse collection costs by investing in more transfer-loading stations rather than taking refuse collected direct to landfill sites, but this, in turn, may increase its refuse disposal costs.
- A poor quality refuse collection system may result in more litter, which could pose additional burdens on a council's street cleansing service, in addition to its detrimental effect on the environment.
- Increased charges for collecting commercial refuse and uplifting bulky domestic refuse may result in lower take-up of these services leading to problems with fly-tipping and to environmental problems.
- Increased provision of civic amenity sites and 'bring' centres (eg, bottle banks), with facilities for the public to separately dispose of recyclable materials, may reduce the number of requests for special uplifts and improve council levels of recycling.
- Separate (kerbside) collection of recyclable materials will increase recycling levels and reduce refuse disposal costs by avoiding landfill tax, but will increase refuse collection costs.

Councils need to consider these interactions when making decisions about their refuse collection services and recognise the potential impact of such decisions on their council's overall waste management strategy.

Tonnage of refuse collected by councils

The total quantity of waste generated in Scotland amounts to about 12 million tonnes each year, comprising approximately three million tonnes of household waste, two million tonnes of commercial waste and seven million tonnes of industrial waste[4]. Councils normally collect all household waste and a proportion of commercial waste but are not usually involved in the collection of industrial waste.

Exhibit 2a shows the tonnage of domestic and commercial refuse managed by Scottish councils and its source. About 87% of this refuse is collected, with civic amenity sites accounting for the remaining 13%. Although civic amenity sites are not part of the refuse collection service, they are a major disposal route of household waste and a means of separately collecting waste for recycling, therefore, they have been included to give a complete picture. Mainstream collection accounts for 83% of the household and commercial refuse managed by councils.

Exhibit 2b shows the methods of disposing of this refuse. At the time of the study, over 96% of household and commercial refuse managed by councils was taken to landfill sites.

[4] *'National Waste Strategy: Scotland'*, Scottish Environment Protection Agency (SEPA).

Exhibit 2: Tonnage of commercial and domestic refuse managed by Scottish councils

a: Source of refuse

Most refuse is collected via mainstream collections ...

Source of refuse	Total (tonnes)	Percentage of total
Mainstream collection (household and commercial)	2,378,400	83%
Separate collections of paper, cardboard, glass, metal and garden refuse	67,200	2%
Special uplifts	46,900	2%
Civic amenity sites*	368,700	13%
Total	2,861,200	100%

b: Disposal method

... and disposed of via landfill.

Source of refuse	Taken to landfill (tonnes)	Recycled (tonnes)	Percentage recycled
Mainstream collection (household and commercial)	2,364,800	13,600	1%
Separate collections of paper, cardboard, glass, metal and garden refuse	13,300	53,900	80%
Special uplifts	45,700	1,200	3%
Civic amenity sites*	327,300	41,400	11%
Total	2,751,100	110,100	
	96.2%	**3.8%**	

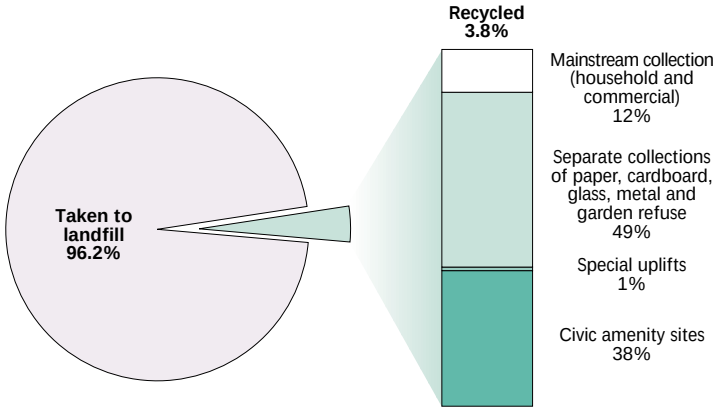
Note: Civic amenity sites are not part of the refuse collection service.

Source: Local audit returns

Exhibit 3 illustrates the proportion of refuse that is being recycled and the source of that refuse. Although separate collections only account for 2% of the total refuse collected by councils, they account for over half the material recycled.

Exhibit 3: Sources of material for recycling

Most material for recycling is collected separately.



Source: Local audit returns

In 1998/99, the average proportion of refuse recycled by Scotland's councils was 3.8% of the total tonnage collected[5], well below the government's 25% target. This compares with a figure of 8.1% achieved by councils in England, with many other European Union countries achieving levels much higher than this. For the Accounts Commission's reported performance indicators for 1998/99, only Angus, Argyll & Bute, Perth & Kinross and Scottish Borders estimated that they recycled more than 10% of their household refuse, but no council came close to achieving the 25% target.

At the data-gathering stage of the study there was no large-scale incineration of waste in Scotland, although incineration plants[6] in Dundee and Shetland have recently been brought into service.

The cost of refuse collection services

Exhibit 4 gives a breakdown of the refuse collection costs in Scottish councils, by the type of services provided. The mainstream collection service accounts for about 85% of the total cost of collection, with special uplifts and separate collections making up 9% and 5% respectively of total costs. Special uplifts and separate collections are more expensive methods of individually collecting refuse from properties, compared to mainstream collection.

Income from refuse collection services

Exhibit 5 gives a breakdown of the total £29.5 million income received by Scottish councils for refuse collection services. Over two-thirds of this total is raised from charges for collecting commercial refuse. Income from recycled material represents only 4% of the total income, although this proportion can vary depending on the market price of recyclable materials.

[5] The figure published in this report is different from the 5% figure published in the Accounts Commission's 1998/99 statutory performance indicator pamphlet *'The environment'*. The figure quoted here is based on the tonnage recycled, whereas the statutory performance indicator figure is based on the unweighted average of councils' percentage recycling rates.

[6] Incineration plants – Specifically designed facilities for the controlled burning of waste at high temperatures, usually with some form of energy recovery, eg electricity generation.

Exhibit 4: Breakdown of refuse collection costs

Mainstream collection accounts for almost 85% of collection costs.

Collection service	Gross cost of collection	Percentage of total	Gross cost per tonne collected
Mainstream collection	£83.77m	85%	£35
Special uplifts	£9.03m	9%	£192
Separate collections	£4.45m	5%	£66
Other services, eg collecting clinical waste	£0.84m	1%	
Total	**£98.09m**	**100%**	

Source: Local audit returns

Exhibit 5: Breakdown of refuse collection income

Commercial refuse income accounts for more than two-thirds of income.

Source of income	Income	Percentage of total
Commercial refuse	£20.14m	69%
Special uplifts	£1.00m	3%
Provision of skips	£3.82m	13%
Other	£1.49m	5%
Recycling	£1.28m	4%
Income from sales	£1.73m	6%
Total	**£29.46m**	**100%**

Source: Local audit returns

Managing the cost of individual refuse collection services

The refuse collection service comprises many discrete activities. Some of these are governed by statute; others are discretionary, for example:

- councils are required to charge for commercial refuse collection to enable them to fully recover their costs
- councils generally cannot charge for the uplift of domestic refuse, but can charge for special collections of bulky domestic refuse
- government targets have been set for recycling, but councils are free to decide the means of achieving these targets.

All of these activities have cost and income implications. However, because they did not maintain separate trading accounts, many councils could not readily supply information on the cost of providing individual refuse collection services. If the refuse collection service is to be effectively managed, councils need to know the cost of each component of the service.

In addition, only a minority of councils carry out activity analysis to enable them to calculate the unit cost of providing services, taking account of service volumes and resources involved in doing the work. Councils need to maintain separate trading accounts supported by activity costing, otherwise the real cost of providing separate elements of the service cannot be known.

Benchmarking refuse collection services

Scotland-wide changes since the 1990 study

Since 1990, there have been substantial productivity improvements in the refuse collection service provided by Scottish councils. The cost of refuse collection has risen from £90 million in 1990 to £98 million in 1998/99, a 9% increase, which is less than the rate of inflation. Over the same period, the tonnage of refuse collected increased by 14%, the number of employees fell by 44% from 4,800 to 2,700, and the number of vehicles employed fell by 25%. Exhibit 6 highlights some of the changes in the refuse collection service since 1990.

Exhibit 6: Changes in the refuse collection service over the past ten years

There have been significant productivity improvements since 1990.

Indicator	1990	1999
Tonnes of refuse collected	2.2 million	2.5 million
Gross cost of refuse collection	£90 million	£98 million
Operatives employed	4,800	2,700
Vehicles employed (including reserve vehicles)	1,200	900
Main collection method	Backdoor	Kerbside wheeled bin
Service visits per week	3.6 million	2.9 million
Gross cost per tonne collected	£41	£39
Tonnes collected per vehicle per year (including reserve vehicles)	1,800	2,800
Tonnes collected per operative per year	460	925

Sources: Local audit returns 1999, Accounts Commission report 1990

This improvement in productivity has been made by councils making more efficient use of resources, principally employees and vehicles, by:

- changing the collection method from backdoor collection (generally requiring a driver plus three or four loaders) predominant in 1990, to the kerbside wheeled bin system (generally requiring a driver plus two loaders) used by most councils today[7]. Research has shown that the amount of refuse collected tends to rise and the level of recycling tends to fall when the kerbside wheeled bin collection method is used[8]
- introducing new technology – including bigger capacity, more manoeuvrable collection vehicles
- extending the use of driver-only routes in sparsely populated areas.

[7] At the time of the study only Aberdeen City, Scottish Borders, Orkney and Shetland did not make substantial use of the kerbside wheeled bin system.

[8] *'Waste Matters, Good practice in waste management'*, Audit Commission, 1997.

Comparing the cost of refuse collection among councils

It is difficult to make like-for-like comparisons between councils at a whole service level because of the variation in the refuse collection services provided among councils. While all councils provide a mainstream refuse collection service to all householders, the provision of special uplifts and separate collection services varies among councils. All councils provide a commercial refuse collection service but their market share varies. Meaningful comparisons can, however, be made by breaking down the total refuse collection service into its individual components, which is the approach adopted in this report.

The use of family groups of councils having similar circumstances can assist in making like-for-like comparisons. For the purposes of this study we have created family groups based mainly on the population dispersion[9] and, to a lesser extent, the number of properties served. Councils have been divided into three groups, urban, mixed urban/rural and rural.

The level of refuse collection income raised by councils varies, and income may be allocated by councils to refuse collection and/or refuse disposal. To ensure like-for-like cost comparisons, the study uses the gross cost of collection to compare councils.

Cost of mainstream refuse collection

The study aimed to collect information on the cost of collecting domestic refuse separate from the cost of collecting commercial refuse. However, as only a few councils maintain separate trading accounts for these collection activities, the cost analyses have been carried out taking domestic and commercial refuse collection costs together.

Exhibit 7 compares the average annual gross cost of collecting mainstream refuse from domestic and commercial properties. Most councils fall in the range of £30-£40 per property per year. Nine councils have mainstream refuse collection costs of over £40 per year, including the three islands councils (where costs are over £50 per property per year). Mainland councils that have a higher cost of mainstream collection than might be expected for their circumstances are highlighted. While all councils should look to review their performance, these councils should conduct a local review to determine the reasons for their higher cost of collection, then take appropriate action.

Local factors may influence the cost of mainstream refuse collection; the most significant of these is population dispersion. Councils with higher levels of dispersion tend to have higher refuse collection costs[10] because vehicles travel longer route distances. Other local factors include:

- the variation in distance from the main population centres to landfill sites
- the type of property served – collection of refuse from certain property types such as tenements may be more time intensive and therefore more expensive
- the local characteristics of the area: some councils have to transport refuse collection vehicles on ferries, increasing time and costs.

In addition, local circumstances at the time of the study will also have had an effect. For example, the City of Edinburgh Council was in the process of changing its collection method from kerbside sacks to kerbside wheeled bins. This transitional phase increased its 1998/99 collection costs.

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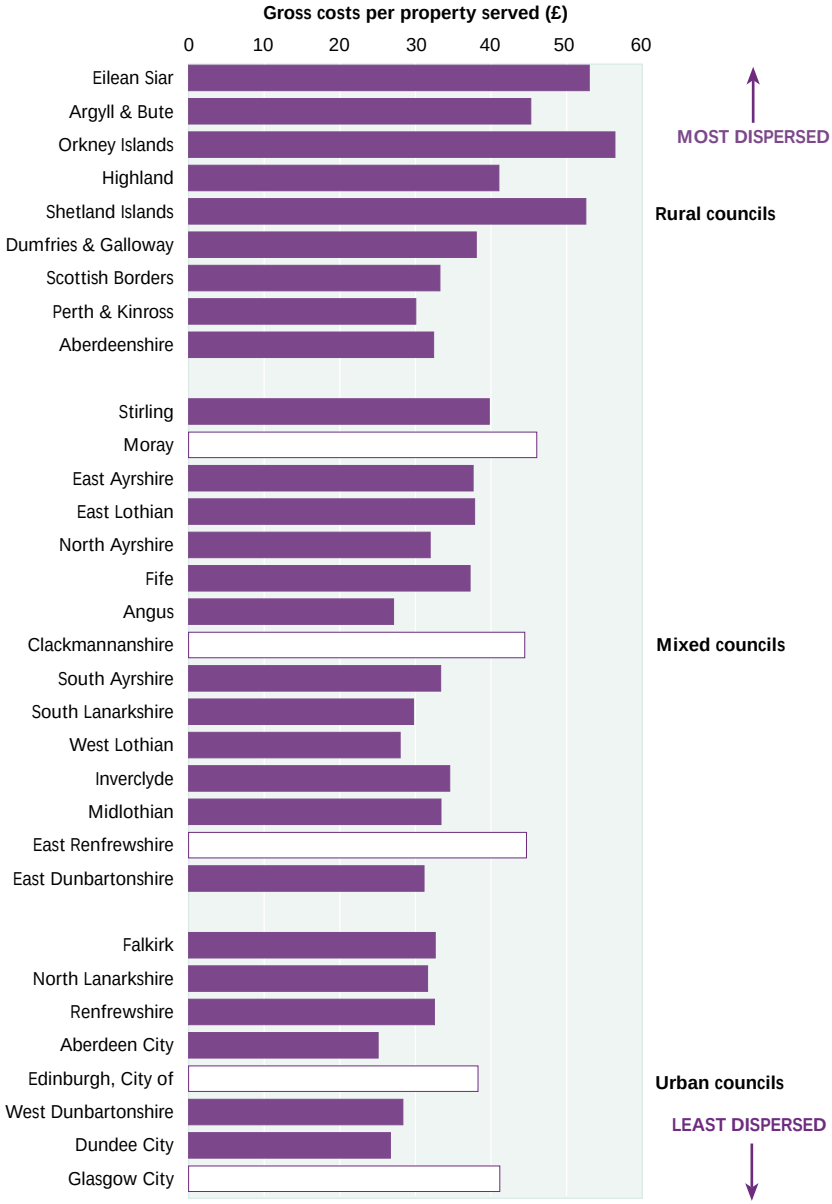
[9] Population dispersion measures the degree to which a population is spread across the council's area. The Scottish Executive Central Research Unit provided Dispersion data.

[10] The study found a significant correlation between mainstream collection costs and population dispersion, r^2=0.66.

Exhibit 7: Annual gross cost of mainstream refuse collection per property served

The cost of collection tends to increase with population dispersion, although there is variation among family groups.



Note: Mainland councils with higher than expected collection costs are highlighted.

Source: Local audit returns

The study found that the cost of refuse collection in Scotland is broadly similar to that in England and Wales, when allowance is made for the increased sparcity of some Scottish councils (information for councils in England and Wales was provided by the Association for Public Service Excellence).

To support benchmarking at a more detailed local level, information was collected on all mainstream refuse collection routes in Scotland. The route information allows all councils to make comparisons with other councils that operate similar types of routes. For example, urban routes in predominantly rural councils can be compared with other, similar urban routes in all councils. Details of the methodology used and the family groups created for the route information are included in Appendix 3.

Income from commercial refuse

The charges made by councils for collecting commercial refuse vary, resulting in differences in income raised for a similar level of collection activity. For councils undertaking around 4,000 commercial uplifts a week, the amount of income raised in a year ranges from £220,000 to £640,000. While the cost of collecting commercial refuse will vary among councils for the same level of activity, the difference in income generated suggests that some councils are not charging sufficient sums to recover the cost of collection and disposal.

The Scottish Executive's policy is for local authorities to recover all costs associated with the collection and disposal of commercial waste. Its circular on The Controlled Waste Regulations[11] states that charges should be "realistic and should have a direct relationship to the cost of providing the service. The overall aim should be to achieve full cost recovery".

In order to establish whether councils were achieving full cost recovery in the operation of their commercial refuse collection services, we asked councils to supply information on the cost of collecting commercial refuse and the amount of commercial income received. While all 32 councils were able to provide details of their commercial refuse collection income, only 17 councils were able to supply information on the cost of operating their commercial refuse service (these include those councils that maintain trading accounts and others that provided an estimate for the purposes of this study).

Because of the limited information available on commercial refuse collection costs, we compared the gross cost per tonne of collecting and disposing of mainstream refuse collection with the income received per tonne, to assess whether councils cover their costs in full. The box below explains our calculation. We estimate that there is an overall shortfall of £9.7 million compared to the amount of income that councils would need to raise to recover their costs in full.

Comparing the amount of income raised with the total cost of collecting and disposing of commercial refuse.

Total income from commercial refuse services	£20m	(a)
Total tonnage of commercial refuse collected	540,000	(b)
Average income per tonne collected (a / b)	£37 per tonne	(c)
Average cost of mainstream refuse collection	£35 per tonne	(d)
Average cost of waste disposal (including landfill tax)	£20 per tonne	(e)
Total cost of collection and disposal (d + e)	£55 per tonne	(f)
Average shortfall in income (f - c)	£18 per tonne	(g)
Estimated total shortfall in income across Scotland (g * b)	**£9.7m**	

Note: In using £35 per tonne we are assuming that the cost of commercial refuse collection per tonne is the same as that for domestic refuse collection. However, an argument could be made that, in some cases, the collection of commercial refuse is at marginal cost to mainstream domestic collection.

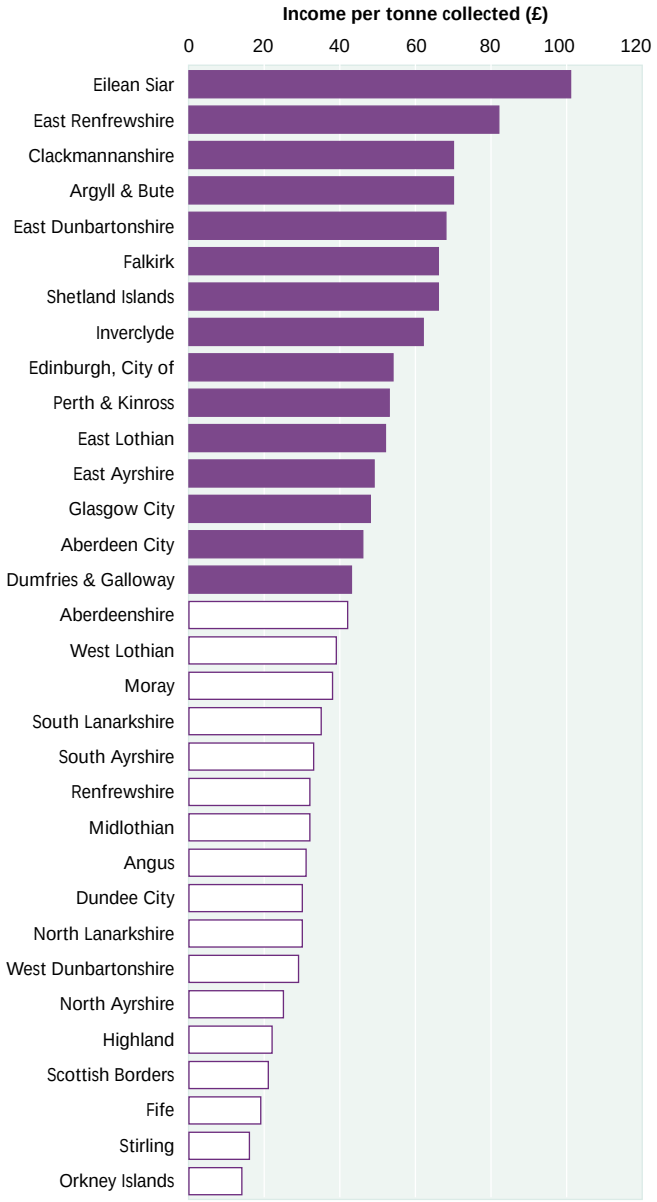
Source: Local audit returns

[11] Scottish Office Environment Department Circular 24/92, *'The Environment Protection Act 1990 – Parts II and IV, The Controlled Waste Regulations 1992'*, HMSO.

It is likely, therefore, that some councils are subsidising the cost of their commercial refuse service from their council's general funds. Exhibit 8 shows the income per tonne for commercial refuse for each Scottish council. Most councils having an income of less than £45 per tonne are probably not recovering their cost of collecting and disposing of commercial refuse. In addition, a few councils having an income greater than £45 per tonne may not be recovering their costs.

Exhibit 8: Income per tonne of commercial refuse collected

Most councils having an income of less than £45 per tonne are probably not recovering their cost of collecting and disposing of commercial refuse.



Note: For four councils, Aberdeen City, Scottish Borders, Fife and Orkney the tonnage of commercial refuse was estimated.

Source: Local audit returns

Increasing the level of income, however, may not mean an increase in charges made for collecting commercial refuse. Glasgow City Council estimates that over 20% of commercial premises in its area are not paying for collection (10% within the city centre and 50% elsewhere). A joint study undertaken between SEPA and the council found that 56 out of 121 premises outwith the city centre were operating without a statutory duty of care notice[12]. Glasgow City Council is now acting to reduce the level of avoidance.

The special uplift service and links to civic amenity site provision

All councils provide, on request, a special uplift service for the removal of bulky items such as furniture or domestic appliances. The proportion of special uplifts carried out within five days of request is one of the Commission's statutory performance indicators. In Scottish councils, this varies from 57% - 100% of uplifts (median 93%). The volume of special uplifts undertaken varies between councils (eg, from 42,000 - 385,000 among urban councils).

The gross cost to councils of providing special uplift services is £9 million, which represents about 9% of the total cost of refuse collection. The total amount of income raised through charges for this service is £1 million. The cost of collecting bulky uplifts is about £192 per tonne, over five times the cost of mainstream refuse collection.

The average gross cost to a council of each special uplift is generally in the range of £5-£15 per uplift, although in some councils this will be offset by income from charges. Twelve councils usually charge, while a further eight may make a charge if the number of items to be collected exceeds a specified total (eg, five bulky items). The remaining 12 councils provide all special uplifts free of charge. Although no council recovers the total cost of the bulky uplift service through charges, four councils, Dundee City, Perth & Kinross, Clackmannanshire and Dumfries & Galloway recover a significant proportion of their costs through charges.

Exhibit 9 shows the variation in take-up of the special uplift service among councils and identifies separately the councils that charge and those that normally provide the service free of charge. Take-up varies between 4 - 98 uplifts per hundred properties per year. Councils that charge for the service generally have lower take-up rates.

Two other factors were also found to have an effect on levels of take-up. These were:

- location – take-up of the service is generally lower in rural areas
- the level of public access to civic amenity sites (which provide householders with an alternative free means of disposing of bulky items[13]).

The level of civic amenity site provision can be measured in terms of the number of sites provided and their hours of opening. The level of provision of civic amenity sites (both supervised and unsupervised) varies among councils from 0.3 hours to 13 hours each week per thousand households. Access to these sites will vary, depending on their location, opening hours and the level of car ownership.

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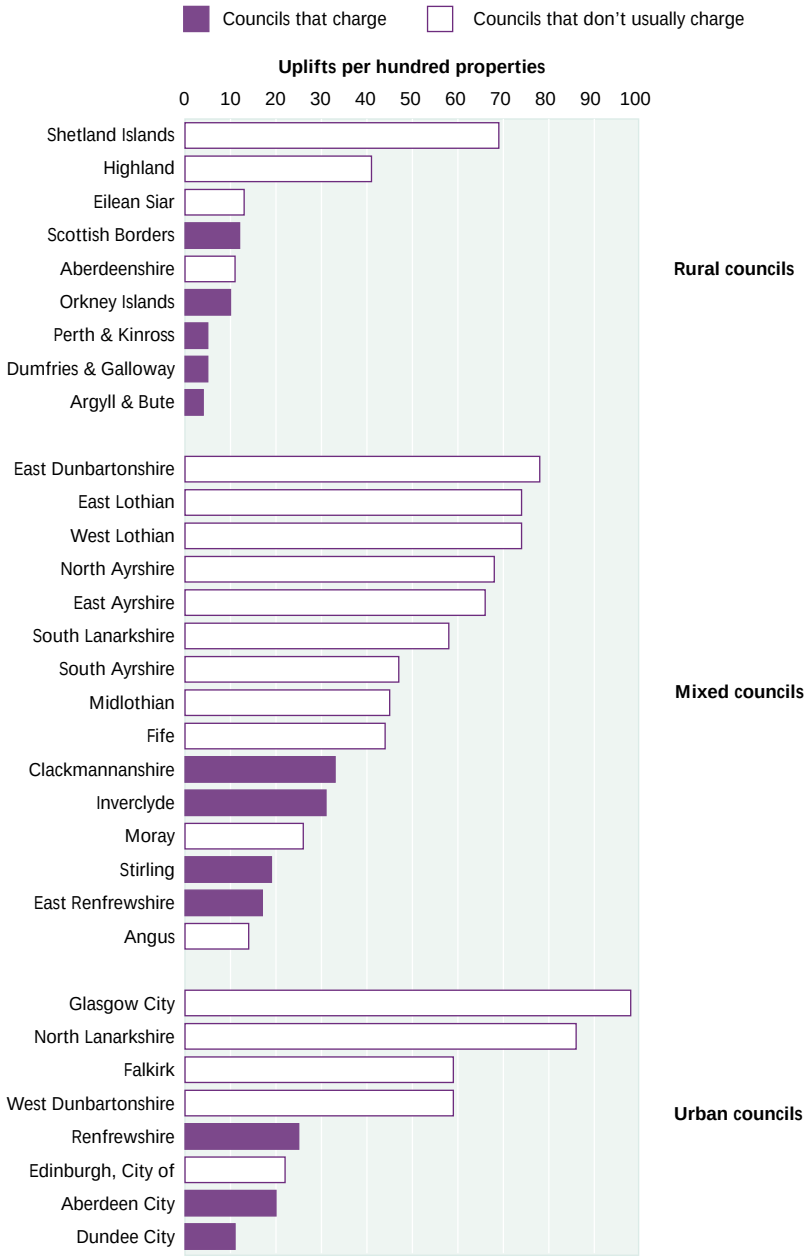
[12] To comply with the Environmental Protection Act, traders are required to possess a duty of care notice showing that they are disposing of their refuse to a licensed body, eg, a council or licensed private company.

[13] The study found a significant correlation between the level of civic amenity site provision and the take-up of the bulky uplift service (r^2 = -0.36) and population dispersion (r^2 = -0.38).

Exhibit 9: Uptake of the special uplift service

Councils that charge for the special uplift service usually have a lower uptake of the service.



Note: Fife charges in one of its three areas.

Source: Local audit returns

Council managers have reported that householders are increasingly using the special uplift service for the removal of building waste arising, for example, from the installation of new fitted kitchens. When such work is undertaken by commercial contractors the council is, in effect, collecting commercial refuse from domestic properties. The special uplift service is expensive to provide and councils may wish to consider their policies on the types of refuse to be collected and review their charging policies for particular types of special uplift.

Separate collection of recyclable materials

In addition to its mainstream collection service, a council may also separately collect materials that can be recycled or reused. Separate collections increase the total cost of refuse collection because they usually require an additional visit(s) to properties over and above the mainstream collection visit(s). The effectiveness of separate collections depends on the support of householders and businesses to separate materials such as paper, cardboard and glass from their general waste.

Not all councils undertake separate collections and, in those that do, the service may be limited to commercial properties or to particular households within the council's area. Exhibit 10 shows the number of councils that separately collect paper, cardboard and glass for recycling together with the number of routes involved. Councils may also work in partnership with the private and voluntary sectors to collect material for recycling.

Exhibit 10: Separate collections for recycling

Less than half of councils operate a separate collection service.

	Paper	Cardboard	Glass
Number of councils operating the service	13	13	15
Total number of routes operated	64	30	27

Source: Local audit returns

In the past, councils have been able to find ready markets for recyclable materials. However, refuse collection managers have indicated that the current low market price for recycled materials is making separate collections difficult to justify in cost terms.

Because it is no longer considered economic, several councils have withdrawn, or are considering withdrawing separate collections of waste paper and cardboard. A similar picture applies to glass – green glass currently has no market value. However, councils that invest in separate collections have higher overall recycling levels. Councils now face a real choice between the economic cost of collection and the environmental benefits of recycling.

In addition to separate collections, material for recycling may also be collected at civic amenity sites. Taken together, they account for 87% of the household and commercial waste recycled by councils (see Exhibit 3). Exhibit 11 gives a breakdown of the types of materials collected for recycling and the proportion of each material recycled. Almost all glass and metal are recycled; 87% of paper and cardboard are recycled, but only 38% of garden refuse is recycled.

Exhibit 11: Recycling levels of paper, cardboard, glass, metal and garden refuse

Most paper, cardboard, glass and metal are recycled, but most garden refuse is taken to landfill.

Recyclable material	Total tonnage taken to landfill	Total tonnage recycled	Percentage recycled
Paper	4,610	29,816	87%
Cardboard	1,230	8,583	87%
Glass	119	23,904	99%
Metal	143	9,975	99%
Garden refuse	30,877	19,147	38%

Note: This exhibit gives a breakdown of material collected via civic amenity sites and separate collections.

Source: Local audit returns

Service quality

Best Value emphasises the importance of ensuring that council services are firmly focused on the needs of residents/citizens across all council services. Councils are already using a variety of approaches to establish what residents expect from services. The Commission's report, *'Can't get no satisfaction? Using the gap approach to measure service quality'*, provides guidance to councils on assessing service quality by comparing customer expectations of service with their perception of services actually delivered.

Customer surveys

One of the main methods that councils use to gather information on service quality is through customer satisfaction surveys. This information can be used to judge whether the service is meeting users' expectations and where action may be required to improve the quality of service provided. For commercial customers it can also be used to ascertain whether users believe that the service represents value for money and to judge reaction to proposed changes in charging systems.

Just over half of councils (18) had carried out one or more refuse collection customer survey(s) since reorganisation. The annual number of surveys has increased markedly from only four in 1997 to ten in 1998.

These surveys have gathered information on a number of issues, for example:

- the overall level of satisfaction with the refuse collection service
- the level of satisfaction with particular service areas, eg, civic amenity site location, opening hours and ease of access
- particular service issues that customers would like their council to address.

Surveys have consistently shown high degrees of customer satisfaction with over 90% of customers being satisfied with the refuse collection service they receive.

Analysis of service complaints

Customer complaints are a valuable source of information in identifying areas where the service is not meeting customer expectations and needs to be improved. For refuse collection the main causes of customer complaints are:

- bin not emptied
- excess refuse (side waste) not collected
- spillage not cleared
- missed pull-out (assistance not given, as scheduled, to householders unable to put their refuse out for collection).

Exhibit 12 shows the number of refuse collection service complaints received by Scottish councils. The study found that the number of complaints received in a year varies from about 1 to 55 complaints per thousand properties served. But these figures need to be treated with caution as the ease with which complaints can be made to councils varies, enquiries are sometimes logged as complaints and, of course, not all complaints may be justified. In addition, complaints invariably arise when changes are made to the service, for example, the introduction of a new collection method can lead to a temporary rise in complaints.

Exhibit 12: Complaints per thousand properties served

The number of complaints varies markedly between councils.

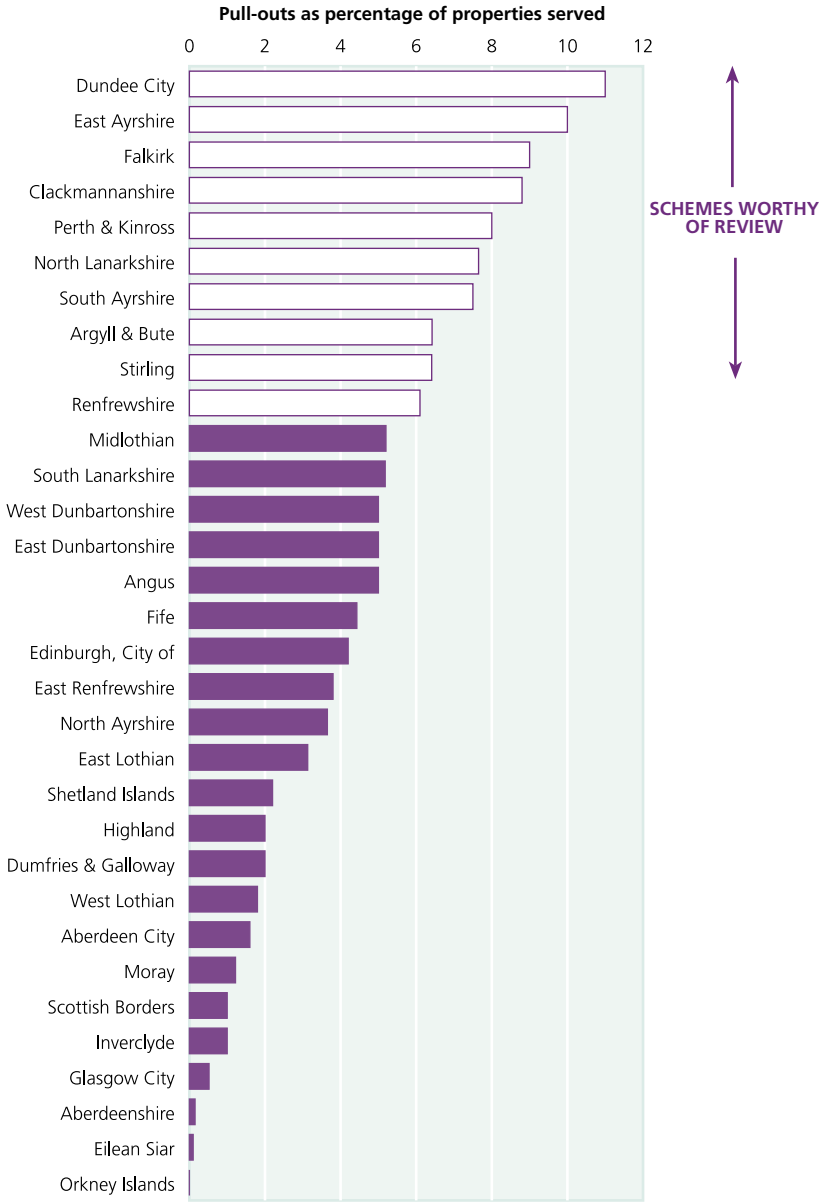
Source: Local audit returns

Assisted pull-out schemes

The wheeled bin system requires householders to move the bin from their property to the kerbside for collection. Some householders may be unable to do this because of illness or infirmity. In such cases a pull-out service may be arranged where the refuse collection loader collects, empties and returns the bin. The eligibility criteria for this service varies among councils. Some councils provide the service simply on request, others require a visit from a council officer, while some require a medical certificate. This leads to a significant variation in the level of provision among councils (Exhibit 13).

Exhibit 13: Percentage of properties provided with assisted pull-outs

There is a large variation in the level of assisted pull-outs among councils.



Source: Local audit returns

Eligibility criteria and hence likely take-up, need to be weighed against the costs of providing this service. Refuse collection managers have assessed that this service takes three times as long as a normal kerbside uplift. On this basis, a 10% level of pull-outs will increase collection costs by 20%.

Although the level of requests for a pull-out service will vary according to the adopted policy of councils and the demographic profile of their area, most refuse collection managers would not expect the level of take-up to exceed 5% of properties served[14].

[14] Source: Discussion with refuse collection managers during the course of the study.

Monitoring and reviewing service performance

Up-to-date performance information is essential if financial and operational service objectives are to be met. Managers need to be able to identify variations from expected performance and to be able, where necessary, to act to remedy poor performance. Guidance on management information requirements for DLOs and DSOs is included in the Commission's report, '*Understanding our business*'.

Using the COMPARE data to monitor performance

The study benchmarking data, given to all refuse collection managers, provides detailed cost and performance information across all important aspects of the refuse collection service. However, it is not possible nor practicable to include details of all of that information in this report. All councils are expected to review the COMPARE data and make improvements in areas where their council is not performing as well as others. A list of the indicators supplied to councils is included in Appendix 2.

The remainder of this section of the report provides information on the issues that most councils require to address. It concentrates on employee and vehicle resources because they make up over three-quarters of the cost of providing refuse collection services. The remainder of total costs comprises – client, central support and administration costs (15%), supplies and services (4%), capital charges (other than vehicles) (2%) and direct property costs (1%). Guidance on managing sickness absence and bonus schemes is included in the Commission's report, '*Rewarding work*'.

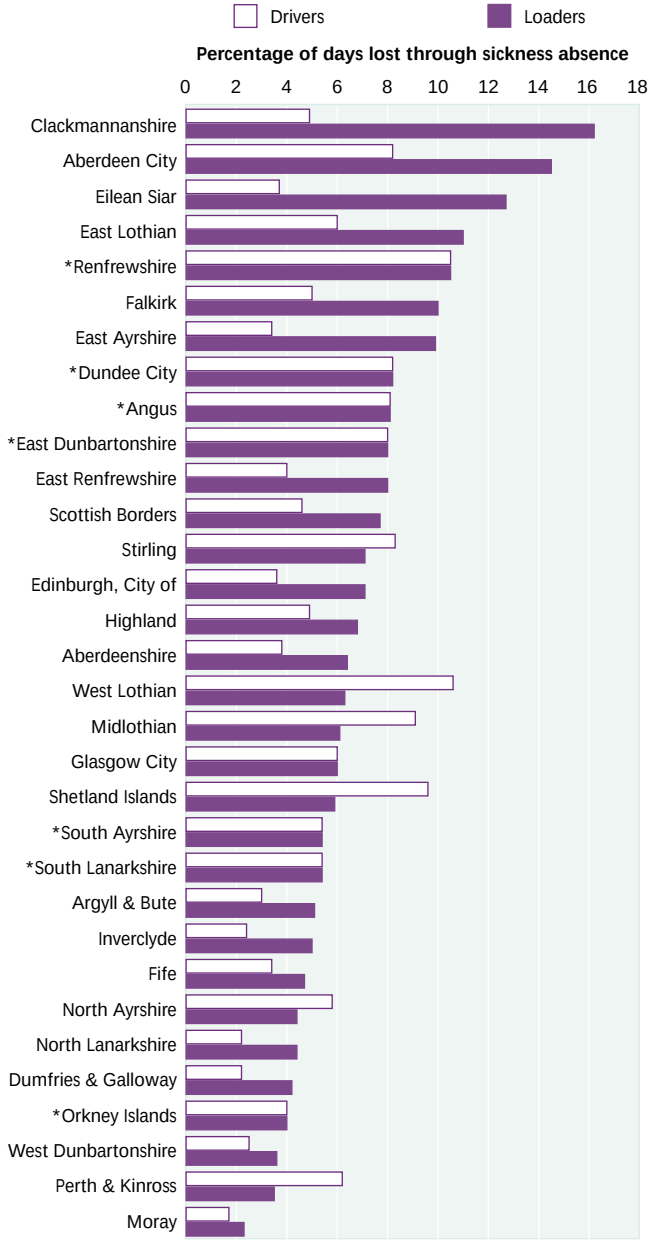
Need to improve management of employee sickness absence

The study found a large variation in sickness absence rates among councils, ranging from 2% - 16% (Exhibit 14). In most councils, the level of sickness absence for loaders (median 6.3 days) is higher than that for drivers (median 5 days). The study did not find a link between the level of sickness absence and the level of bonus or overtime. Excessive sickness levels add a significant on-cost to the pay bill, and the causes of sickness absence should be identified and addressed by council managers.

Councils with high levels of sickness absence should examine their procedures for managing absence, and set realistic targets. When assessing the level of sickness absence, the impact of long-term sickness absence should be recognised. This is particularly relevant to smaller councils, whose percentage absence can be distorted by long-term sickness of one or two employees. All councils should aim to control sickness absence to the lower quartile level, ie, below 5% for loaders and 4% for drivers.

Exhibit 14: Sickness absence rates for refuse collection employees

There is a large variation in sickness absence rates among councils.



Note: *These councils could only provide a combined figure for drivers and loaders.

Source: Local audit returns

Need to review employee bonus schemes

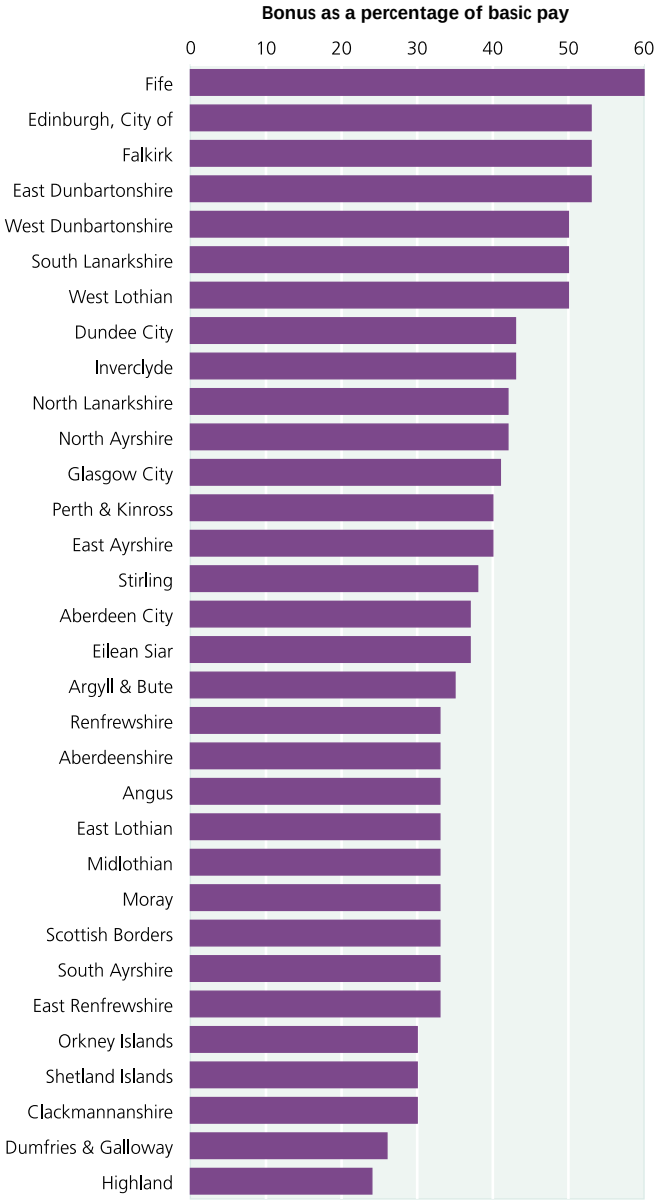
Bonus schemes are a means by which management can motivate employees to improve productivity. However, they cannot work successfully unless they are the subject of regular review and take account of the changes in workload demands on collection crews. On reorganisation, unitary councils inherited a number of different schemes from the former councils. However, the study found that about half of councils had not formally reviewed their bonus schemes since reorganisation. Some councils reported that the bonus scheme in operation had not been formally reviewed within the last ten years.

A number of councils have discontinued their traditional work study-based schemes and replaced them with fixed bonus or performance output-based schemes, linked to quality of service and workload (eg, properties served per week). Other councils have consolidated bonuses into employees' basic pay entitlement.

The study found significant variations in the levels of bonus payments among councils, ranging from 24% - 60% of basic pay, averaging 41% across Scotland (Exhibit 15). Bonus payments generally range from £2,700 - £4,750 a year.

Exhibit 15: Bonus as a percentage of basic pay

The level of bonus varies from 24% to 60% of basic pay.



Note: South Lanarkshire and Clackmannanshire have harmonised pay and conditions and now pay a salary to loaders and drivers. The amount of bonus consolidated into their salary structure broadly represents 50% and 30% of their former basic pays, respectively.

Source: Local audit returns

Performance incentive payment schemes are only justified if they can be demonstrated to provide improved value to the authority. The findings of this study suggest that bonus schemes are worthy of review in a number of councils. There will also be an opportunity, in the near future, for councils to evaluate the role of incentive payments as part of their implementation of the single status agreement for all council employees.

Need to review vehicle replacement programmes

Refuse collection services in Scotland operate over 900 specialist refuse collection vehicles. These vehicles are expensive. Specialist compaction vehicles, including lifting mechanisms, currently cost £150,000. Therefore, councils need to optimise their availability and productive use, at an economical cost. Councils should be looking to strike an appropriate balance between replacement and ongoing maintenance cost, over the life of a vehicle.

Vehicle replacement requires careful financial planning to balance the increased maintenance and running costs and poorer reliability of older vehicles against the cost of replacement. However, the study found that only 38% of councils conduct a cost/benefit analysis to help determine the optimum time to replace a vehicle. About 40% of councils are behind in their vehicle replacement programmes, and may consequently be incurring higher vehicle costs.

Scope for reducing vehicle reserve fleets

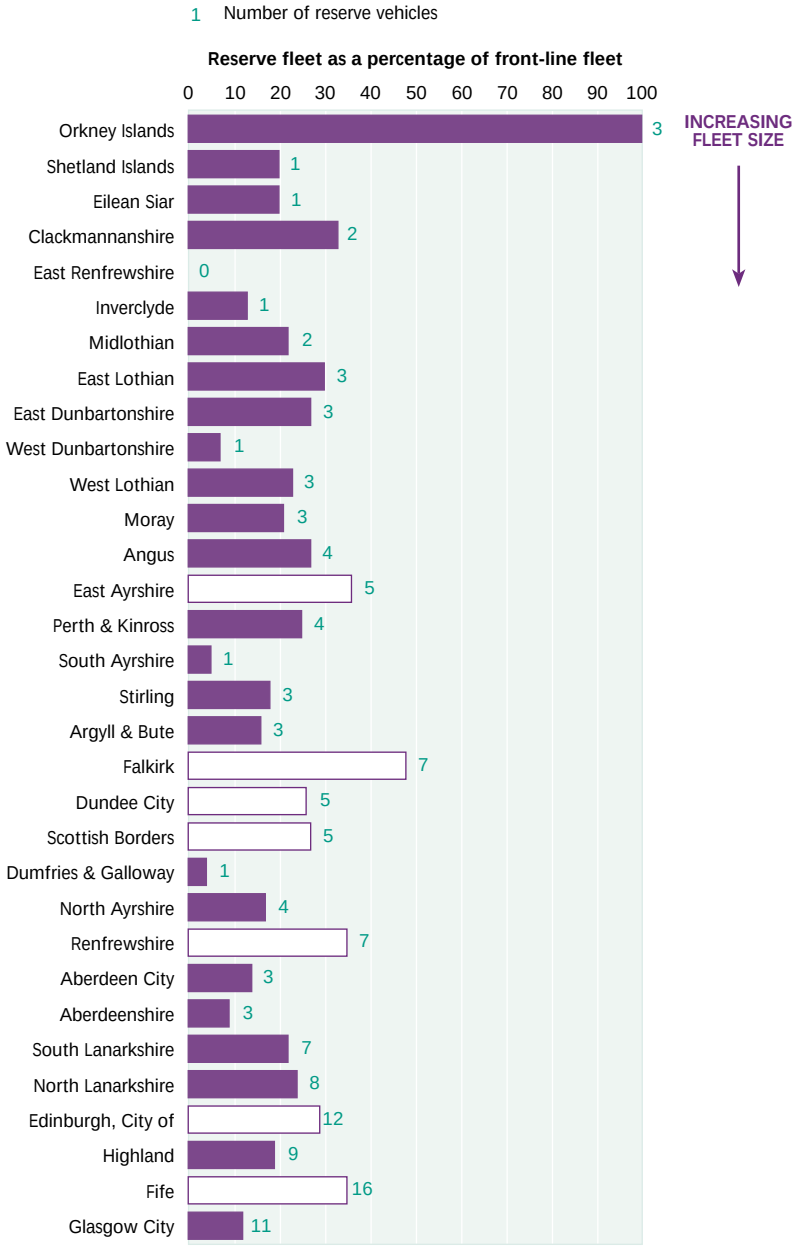
In addition to the front-line refuse collection fleet, councils operate a reserve fleet, mainly to provide back-up cover when front-line vehicles are being repaired or serviced. The reserve fleet generally comprises vehicles that are beyond their planned replacement date and towards the end of their useful life.

The levels of reserve fleet held by councils generally ranges from approximately 10% - 30% of the front-line fleet (Exhibit 16). Economies of scale apply to the size of the reserve fleet required, with councils having larger fleets generally being able to operate a proportionately smaller reserve fleet.

Councils should aim to operate their reserve fleet at the lower levels already being achieved by other similar councils. This will involve reducing the vehicle downtime of the front-line fleet, pooling the use of reserve vehicles based at different depots, and identifying opportunities, where they exist, to arrange short-term hires at short notice. Now that nearly all councils operate specialist vehicles to support the wheeled bin method of collection, the opportunity exists for neighbouring councils to 'pool' reserve fleet resources where this is technically and geographically feasible.

Exhibit 16: Reserve fleet as a percentage of front-line fleet

There is scope in some councils to reduce the size of the reserve fleet.



Note: East Renfrewshire has no reserve vehicles. In the event of vehicle failure, replacement vehicles are hired on short-term leases. Councils with higher than expected reserve fleets (above 25%) are highlighted.

Source: Local audit returns

Vehicle communication systems

Most refuse collection vehicles work away from their depot for hours at a time. For operational purposes, it is important that refuse collection supervisors maintain communication links with each vehicle, for example, to arrange assistance to cover for a vehicle breakdown. Radio communication is a cost-effective way of ensuring a quick response to such situations. However, the study found that eight councils do not have radio units in their refuse collection vehicles.

Study recommendations and key challenges for the future

Achieving further improvements in service efficiency

This study has found that the performance of councils' refuse collection services has improved, both in terms of cost and service efficiency, since the Commission's earlier 1990 study. However, it has identified that some scope remains for further improvements.

Not all councils have taken steps to realise the opportunities provided by local government reorganisation. Some unitary councils continue to operate their refuse collection service as separate operational units based on their former district council areas. This can have the effect of councils:

- operating a larger vehicle reserve fleet than may be necessary
- providing varying standards of service across their areas
- operating different employee conditions of service.

Recommendation

All councils should ensure that they take steps, where appropriate, to:

- *manage resources on a service-wide basis rather than on a discrete area basis*
- *review the scope for rationalising, vehicles, depots and other resources*
- *standardise the different practices and procedures inherited through local government reorganisation, including employee conditions of service and the level of service provision across their area.*

Councils need to know the real cost of providing individual refuse collection services. Otherwise, they cannot make informed policy decisions about levels of service and prioritise the allocation of council resources. There are clear benefits to councils in maintaining separate trading accounts and using activity costing information, for example:

- setting charges to recover an appropriate level of costs, for commercial and other chargeable collection services
- ensuring that their commercial refuse service breaks even, and is not subsidised by councils' general funds
- making a case to councillors for an appropriate amount of council subsidy to support expensive, but environmentally desirable services, eg, the separate collection of material for recycling and reuse
- preparing option appraisals on the use of employee and vehicle resources, ensuring the best configuration of routes to minimise the total cost of refuse collection.

Recommendation

All councils should maintain separate trading accounts for their commercial refuse collection services to ensure that they meet the requirement of aiming to recover the full cost of the service. In addition, councils should consider developing activity costing systems to enable them to know the real cost of providing individual refuse collection services – most particularly, the cost of separately collecting waste for recycling and reuse.

Councils are expected to recover the full cost of collecting and disposing of commercial refuse through charges. But, not all councils do so. Councils have to meet the cost of uplifting refuse where commercial premises avoid payment of collection charges. This study has estimated that across Scotland, councils are subsidising commercial refuse collection to an amount totalling some £9.7m a year.

In addition to charging for the collection of commercial refuse, councils have discretion to reduce their costs by charging for the special uplift of bulky domestic items. There is a significant variation in the income raised by councils from charges and the amount of income raised by councils undertaking around 20,000 uplifts a year ranges from nil to £140,000. Twelve councils do not charge for the separate uplift of bulky household refuse.

Recommendations

Councils should review their charging policies for the collection of commercial refuse and for chargeable collection services, eg, bulky uplifts. This will require councils to assess the impact of charges on take-up of the service, the levels of indiscriminate dumping of refuse and the use of civic amenity sites.

Councils should take steps to reduce the avoidance of payment of charges for collecting commercial refuse.

The study has identified a number of areas where cost reductions are possible. Employee and vehicle resources are the largest components of refuse collection costs, and specific areas that warrant attention include:

- **management of sickness absence** – to reduce the time lost due to sickness absence to below 5% for loaders and 4% for drivers
- **review of bonus schemes** – to ensure that they continue to provide incentives for higher productivity
- **review of route collection performance** – refuse collection managers should use the benchmarking information provided to focus their review of route performance (see Appendix 3)
- **review of refuse collection reserve fleet** – to achieve an optimal level of reserve vehicles consistent with having sufficient back-up to support the front-line fleet.

Recommendation

Councils should use the benchmarking information provided to identify areas where performance should be improved.

Many councils assist householders in moving their wheeled bin to the kerbside for collection, by providing an assisted pull-out scheme. In some councils, one in ten people receive the assisted pull-out service, adding significantly to the cost of service provision. The box over leaf describes the approach adopted by one council, which has enabled it to provide an acceptable standard of service at reduced cost.

Good practice example

North Ayrshire Council has successfully introduced a scheme where, in most instances, pull-outs are conducted on a fortnightly basis, halving the cost of the service. This is possible because households eligible to receive the pull-out service are generally single occupants or people who are incapacitated due to age or infirmity. For such households, a standard (240 litre) wheeled bin has sufficient capacity to hold two weeks' refuse.

Recommendation

Councils should review their policy on assisted pull-outs, including the criteria to be used to determine entitlement to receive the service. The cost of implementing the adopted policy should be assessed and take-up of the service should be regularly reviewed.

In response to Best Value, councils are giving an increased customer focus to their services. Eighteen councils have conducted refuse collection surveys since reorganisation. If the Landfill Directive targets are to be achieved, the importance of consulting with users will increase as councils will be relying on all producers of waste (both domestic and commercial) to generate less waste and to support councils in their recycling initiatives.

Recommendation

Councils need to continue to maintain close consultation with householders and businesses in their area, encouraging them to reduce waste and to support the local council in its recycling initiatives. Councils should use the results of consultation processes to inform the development of their waste management strategies and mount publicity campaigns to encourage waste minimisation.

An objective of the study was to develop a national framework of key operational indicators that refuse collection managers could use to monitor and benchmark the performance of their service in the future. We have developed a draft framework and held discussions with refuse collection managers. However, at the time of producing this report, the framework had not been finalised and agreed. The study team will continue to work with refuse collection managers and aims to complete this work in the near future.

Meeting environmental targets

The widespread adoption of the wheeled bin method of collection has led to significant improvements in the efficiency of the refuse collection service over the past ten years. However, this has also had the effect of increasing the overall amount of refuse collected by councils. This makes it more difficult for councils to achieve, by 2006, the European Commission's Landfill Directive target (reducing the amount of biodegradable household waste going to landfill sites to 75% of the 1995 level).

The failure of councils to meet the year 2000 recycling target set by the government in 1992, suggests a major shift in attitude is required if the new targets are to be met. To date, a number of reasons have been offered by councils for the lack of progress. In the main, lower recycling levels relate to the withdrawal by councils of costly separate collections of waste material for recycling.

While some councils have made better progress than others, there remains a significant gap between current levels of recycling and the levels likely to be needed to meet the National Waste Strategy targets. This study has identified areas where councils themselves can take steps to help achieve these targets. We suggest that:

- **councils should give waste management a higher profile** – if councils are to meet recycling and landfill targets, they will have to give waste management a higher priority. This will involve working in partnership with other councils and agencies, and allocating sufficient funding to support more expensive, but environmentally desirable, collection and recycling activities
- **councils should invest efficiency savings and additional income to help meet environmental targets** – the study has shown that councils have already taken significant steps to improve service efficiency. Nevertheless, scope remains to make service improvements, most particularly in the areas of vehicle and employee resources. However, the amount of money that could be saved for reinvestment in the service is unlikely to be more than 5% – about £5 million across all councils in Scotland. Significant scope exists for councils to increase the amount of income raised from charges, most particularly for the collection of commercial refuse.
- **councils should take the lead in promoting the minimisation of environmental waste in their area** – the Waste Minimisation Act 1999 confirmed council powers to expend money on waste minimisation activities. Ways in which this can be done include:
  - ensuring waste minimisation in their own activities and by reusing waste
  - conducting waste awareness campaigns, encouraging the public and businesses to support waste minimisation and recycling initiatives in their area
  - changing the culture and attitude of the public towards support for recycling initiatives, through piloting and promoting innovative schemes. Public attitudes to waste minimisation and recycling also need to change. Only 15% of people in Scotland use recycling facilities at least once a week, but 43% of the population (43%) never do so[15]
  - providing the public with ready access to recycling facilities (eg, bottle banks, civic amenity sites, etc)
  - participating in disposal schemes that add value by making use of waste before final disposal (eg, incineration with energy recovery through the generation of electricity)
  - encouraging householders to compost suitable household and garden waste. While most councils dispose of garden refuse in landfill sites, some councils have been able to remove garden refuse from the waste stream by composting. The box below describes one such scheme.

Good practice example

Perth & Kinross Council provides skips for green garden waste at its civic amenity sites. A private contractor then composts the waste. Some of this compost is then sold at civic amenity sites. To encourage recycling, members of the public receive a free ticket for a monthly prize draw for a mountain bike each time they bring green waste to the site. In 1998/99 over 4,000 tonnes of green garden waste were collected. This initiative has saved the council £22,000 (avoided disposal costs and income from the sale of compost) and reduced the amount of biodegradable waste going to landfill.

[15] Scottish Household Survey, 1999.

- **councils should develop waste management strategies and business plans to support SEPA's National Waste Strategy** – in order to meet the requirements of the National Waste Strategy, councils will need to increase their levels of recycling and their reusing of waste. Initiatives to do this could include:
  - entering into consortia arrangements with other councils in their waste strategy area
  - learning from best practice recycling initiatives already piloted (eg, some councils have partnerships with the voluntary sector to collect materials for recycling)
  - developing business cases that recognise the opportunity cost of paying landfill tax on waste that could be recycled
  - reviewing the scope for more partnership working with the private and voluntary sectors, for example, councils may wish to enter into agreements with the private sector to share facilities or to create the infrastructure (eg, incineration and material recycling facilities).

However, the infrastructure necessary to support change on the scale required to meet the 2006 landfill target, is not currently in place in Scotland. Significant investment will be required to develop new strategically located facilities. Options include:

- material reclamation facilities to segregate recyclable waste from mainstream refuse
- incineration plants to convert waste to energy
- separate collection of recyclable waste
- increased provision of supervised civic amenity sites.

Examples of the scale of financial investment required can be illustrated by a costed option appraisal contained in a consultation document prepared by Lancashire County Council (Exhibit 17). In addition, such facilities are likely to take a considerable length of time to bring on-stream. Decisions on concerted action by councils need to be taken soon if the Landfill Directive targets are to be met.

Exhibit 17: Illustrative capital costs for municipal waste management facilities

Waste management options	Purpose-built waste facility	Capital expenditure
Energy from waste	Incinerator with energy recovery 200,000 – 400,000 tonnes per year	£40 – £85 million
Processing to separate recyclable materials	Materials reclamation facility (MRF) 30,000 – 45,000 tonnes per year	£3 – £4 million
Composting – kitchen and garden waste	Composting plant	£3 million
Anaerobic digestion (AD)	AD plant 30,000 tonnes per year	£25 million

Source: Lancashire County Council, 1999

Irrespective of the waste management strategy adopted, costs are likely to rise significantly. Exhibit 18, again taken from Lancashire County Council, provides an illustration of the potential increases in costs that may result from different waste management options.

Exhibit 18: Illustrative costs of waste management options

Reducing the amount of refuse going to landfill is likely to cost more.

Waste management option	Cost per tonne	Cost per household per year
Existing landfill based system		
Collection – mixed	£19.71	£22.23
Treatment – landfill disposal	£26.49	£29.89
Total	**£46.20**	**£52.12**
30% recycling, 70% landfill		
Collection – mixed (70%)	£19.71	£15.56
– segregated (30%)	£100.00	£33.84
Treatment – processing (30%)	£50.00	£16.92
– landfill (70%)	£26.49	£20.92
Total		**£87.24**
60% energy from waste (EFW), 40% landfill		
Collection – mixed	£19.71	£22.23
Treatment – incineration + EFW (60%)	£50.00	£33.84
– landfill (40%)	£26.49	£11.95
Total		**£68.02**
30% recycling, 60% EFW, 10% landfill		
Collection – mixed (70%)	£19.71	£15.56
– segregated (30%)	£100.00	£33.84
Treatment – processing (30%)	£50.00	£16.92
– Incineration + EFW (60%)	£50.00	£33.84
– landfill (10%)	£26.49	£2.99
Total		**£103.15**

Source: Lancashire County Council, 1999

The Executive has invited SEPA and local authorities to complete their first area waste strategies in response to the National Waste Strategy by the end of this year. Councils need to analyse the sources and types of waste generated by their local communities and develop an integrated waste management strategy. The scale of the task and investment required to achieve desirable environmental objectives will require councils to work both together, and with the private sector.

The Scottish Executive has a strategic role to play in encouraging councils to make progress towards the targets for reduction of waste to landfill set out in the Landfill Directive. Councils are unlikely to be able to provide the level of investment required to meet the Directive targets. The Scottish Executive will wish to examine all options for meeting the Landfill Directive targets and their likely costs and benefits before considering the level of any financial support to councils. Targets will need to be agreed between SEPA, councils and the Scottish Executive, and progress against targets monitored.

This study provides baseline information that will assist in this process.

Appendix 1: Membership of study advisory group

Karen Anderson, Contracts Manager, West Lothian Council

John Crawford, Head of Protective Services, East Ayrshire Council

Euan Dobson, Policy Officer, COSLA

David Dorward, Director of Finance, Dundee City Council

John Ferguson, Policy Advisor (Waste), SEPA

Robert O'Neill, Depute Director, Cleansing Services, Glasgow City Council

John Summers, Director, Keep Scotland Beautiful

Blair Thompson, Cleansing and Transport Manager, South Ayrshire Council

Appendix 2: The COMPARE software and refuse collection indicators

The COMPARE software

COMPARE is a software tool initially developed by the Audit Commission and used by Audit Scotland by agreement with the Audit Commission. Its purpose is to assist auditors and audited bodies to analyse benchmarking information. The following exhibits describe the refuse collection operational indicators made available to each council.

Exhibit 1: The COMPARE indicator map for council refuse collection services

Map heading	Indicator
Gross Costs	
Mainstream	Gross cost of mainstream refuse collection per uplift
	Gross cost of mainstream refuse collection per tonne collected
	Gross cost of mainstream refuse collection per property served
Domestic	Gross cost of domestic refuse collection per tonne collected
	Gross cost of domestic refuse collection per uplift
	Gross cost of domestic refuse collection per property served
Non-domestic	Gross cost of non-domestic refuse collection per tonne collected
	Gross cost of non-domestic refuse collection per property served
Separate collections	Gross cost of separate collection of materials for recycling per tonne collected
	Gross cost of separate collections per property served
Special uplifts	Gross cost per bulky/special uplift
Breakdown of costs	
Overall	Breakdown of costs into staff, vehicles, supplies and other costs
	Breakdown of other costs (property, capital charges, overheads)
	Gross cost of refuse collection and disposal per property served
Staff	Gross cost of refuse and disposal per tonne collected
	Staff cost as a percentage of gross cost of refuse collection
	Staff cost per property served
Vehicles	Vehicle costs as a proportion of gross cost of refuse collection
	Vehicle costs per property served
	Vehicle cost (excluding loan charges, and finance and operational leasing charges) as a percentage of vehicle costs
	Vehicle finance charges, and finance and operational leasing charges as a percentage of vehicle costs
Supplies and services	Supplies and services as a percentage of gross cost of refuse collection
	Supplies and services cost per property served
Overheads	Overheads (direct administration expenses, client costs and central support costs) per property served
	Central support cost per property served
Income	Main sources of income
	Income from charges (expressed as a proportion of gross cost of refuse collection)
	Income from commercial refuse collection service as a proportion of cost of commercial collection
	Proportion of total income allocated to refuse collection/refuse disposal
	Proportion of gross cost of uplifting bulky domestic refuse recovered through charges

Service information	
Service efficiency	Average service visits per loader per week
	Average service visits per vehicle per week
	Average number of uplifts per vehicle per annum
	Average tonnage collected per RCV per annum (mainstream and separate collections inc. special uplifts) for front-line fleet
Service visits	Average number of service visits per week for domestic properties
	Average number of service visits per week for non-domestic properties
	Average number of service visits per week for separate collections - domestic
	Average number of service visits per week for separate collections - non-domestic
	Average number of service visits per week for special uplifts - domestic
Service quality	Percentage of domestic properties on assisted pull-out scheme
	Hours of civic amenity provision each week, per 1,000 population
	Total number of service complaints as a proportion of properties served
	Total number of repeat calls as a proportion of properties served
	Proportion of special uplifts carried out within 5 days of request
	Date of last customer survey
Tonnage managed	Tonnage of clinical waste collected per annum
	Tonnage of hazardous waste collected per annum
	Breakdown of the sources of refuse
	Road waste and other waste expressed as a percentage of total refuse managed
	Percentage of mainstream refuse recycled
	Percentage of separate collection recycled
	Percentage of civic amenity sites recycled
Staffing information	
Crewing arrangements	Crewing arrangements for domestic/commercial and combined routes (totals) - Driver +0,1,2,3,4 or 5 loaders
Sickness absence	Percentage of days lost due to sickness/industrial injury (Drivers)
	Percentage of days lost due to sickness/industrial injury (Loaders)
Overtime and bonus	Average bonus paid as a proportion of basic pay
	Normal working week (hours)
	Average overtime (drivers)
	Average overtime (loaders)
Staff numbers	Breakdown of staff numbers by type of staff
Vehicle fleet information	
	Breakdown of refuse collection vehicles by type of vehicles
	Reserve fleet as a percentage of total fleet

Exhibit 2: Indicators used in the analysis of refuse collection routes

Map heading	Description
Efficient use of resources	
Vehicles	Spare capacity per visit to landfill site or transfer loading station
	Tonnage collected per day
	Kg collected per property
Loaders	Kg collected per loader per day
	Units serviced per loader per day
Efficient use of routes	
Effective planning	Proportion of productive miles per route
	Average number of miles per visit to landfill site or transfer loading station
	Tonnes per visit to landfill site or transfer loading station
	Tonnes per productive mile
	Number of miles per day
Productivity	Tonnes per mile
	Units serviced per day
Contextual information	
	Type of properties served
	Proportion of productive mileage
	Vehicle payload
	Crew size
	Units collected per mile (productive + unproductive)
	Units per productive mile

Appendix 3: Family groups

Council family groups

When benchmarking performance among councils, it is important that the comparisons are made are on a like-for-like basis. The creation of family groups of councils having similar circumstances can be very helpful in this regard. Family groups may be used to make realistic estimates of the improvements in performance that may be feasible. However, it must be emphasised that the family groups developed for this study are not intended to be definitive. Councils may wish to derive other relevant groupings for their own benchmarking purposes.

We have used two factors to create the family groups; they are based mainly on the population dispersion and, to a lesser extent, the number of properties served.

- Population dispersion – measures the degree to which a population is spread across the council's area. This is considered to be an important determinant in services that have a significant transport component, such as refuse collection. The Scottish Executive's Central Research Unit provided this information.
- Number of households – measures the scale of the service provided. This is important where there may be economies of scale (as, for example, in the level of refuse collection reserve fleets).

We created three main groups (Exhibit 3), numbered 1-3, each of which are sub-divided into two smaller groups (a and b). Users would normally use the larger groups for initial comparisons, but may wish to use the smaller groups where more detailed analysis is required. Refuse collection managers have accepted these groupings as providing a reasonable basis for making comparisons.

Exhibit 3: Family Groups for refuse collection

Group 1 Rural councils		Group 2 Mixed Councils		Group 3 Urban councils	
a) Very highly dispersed	**b) Highly dispersed**	**a) Mainly rural**	**b) Mainly urban**	**a) Slightly dispersed**	**b) City councils (not dispersed)**
Eilean Siar	Scottish Borders	Angus	East Renfrewshire	Renfrewshire	Aberdeen City
Orkney Islands	Perth & Kinross	Moray	Inverclyde	Falkirk	City of Edinburgh
Shetland Islands	Aberdeenshire	South Ayrshire	Midlothian	East Dunbartonshire	Dundee City
Argyll & Bute	Highland*	North Ayrshire	West Lothian	North Lanarkshire	Glasgow City
Highland*	Dumfries & Galloway	East Ayrshire	Fife	West Dunbartonshire	
		East Lothian	South Lanarkshire		
		Stirling	Clackmannan-shire		

Note: *Highland Council has a highly dispersed population and can reasonably be included in either group.

Route performance family groups

In addition to collecting information at a council level, benchmarking data has also been collected for core mainstream collection routes. Routes have been categorised into 13 groups based on:

- collection method
- 'density' of the location of properties served by each route
- proportion of commercial, tenement and multi-storey properties included in combined domestic/non-domestic collection routes.

The wheeled bin method of collection is the predominant method used by councils and this allowed the study team to develop performance benchmarks for nine different groups of wheeled bin routes.

Because few councils supplied details of the productive route mileage (the distance from the first collection point to the last collection point, excluding all trips to interim or final disposal points and trips to the depot), the property density is calculated using the total route mileage including trips to and from the depot and disposal points. The actual property density for each family group, therefore, will be considerably higher than that shown in the tables below.

a: Wheeled bin routes

	Percentage of commercial & multi-storey properties		
Domestic properties per route mile	Low (less than 0.9%)	Medium (0.9% - 9.9%)	High (more than 9.9%)
High (over 27)	Family group 1	Family group 2	Family group 3
Medium (5-27)	Family group 4	Family group 5	Family group 6
Low (less than 5)	Family group 7	Family group 8	Family group 9

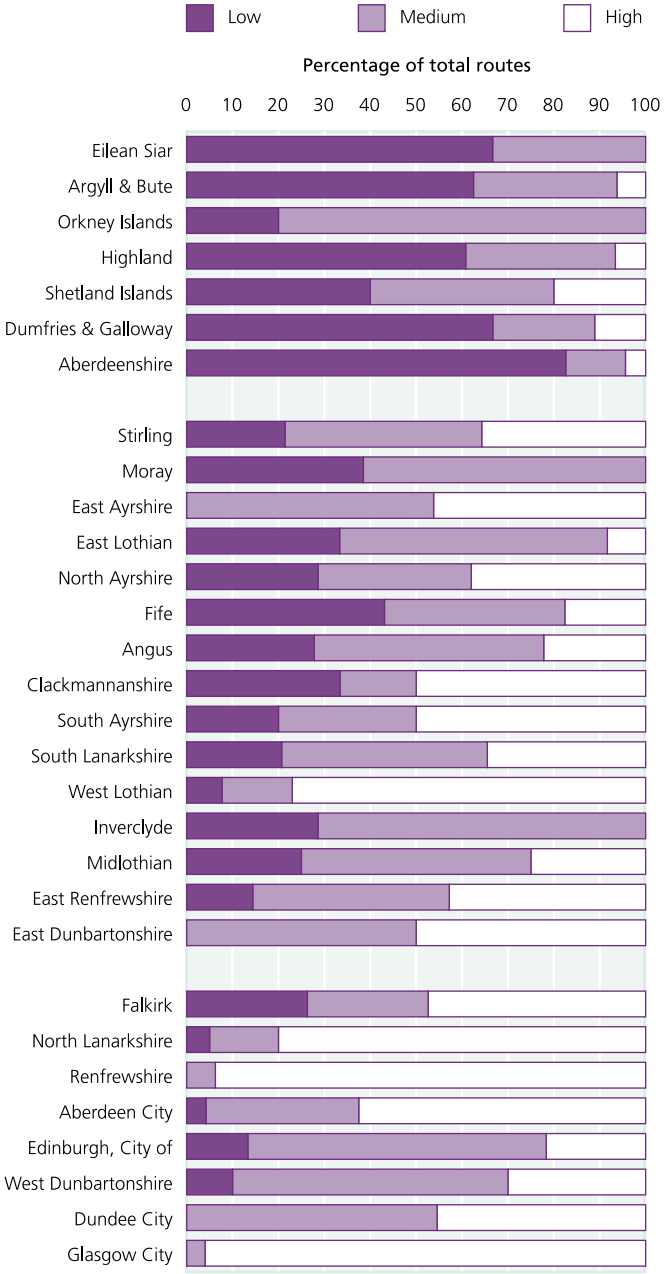
b: Other collection method routes

Family group 10	Kerbside collection (sacks and bins), high property density.
Family group 11	Kerbside collection (sacks and bins), low property density.
Family group 12	Mainly commercial refuse routes (ie separate collection of commercial/trade refuse).
Family group 13	Back-door collection.

Exhibit 4 shows the profile of high-, medium-, and low-property density routes across councils. As would be expected, the proportion of each type of route reflects the sparsity of the council population, with most councils having a mixture of route types. Councils can use this information to identify other councils that operate similar types of routes. For example, urban routes in predominantly rural councils can be compared with other, similar urban routes in all councils.

Exhibit 4: Proportion of high, medium and low-property density routes in each council

Most councils have similar types, in varying proportions.



Note: Perth & Kinross and Scottish Borders Councils did not provide information on the number of properties served per route, therefore their routes are excluded from this analysis.

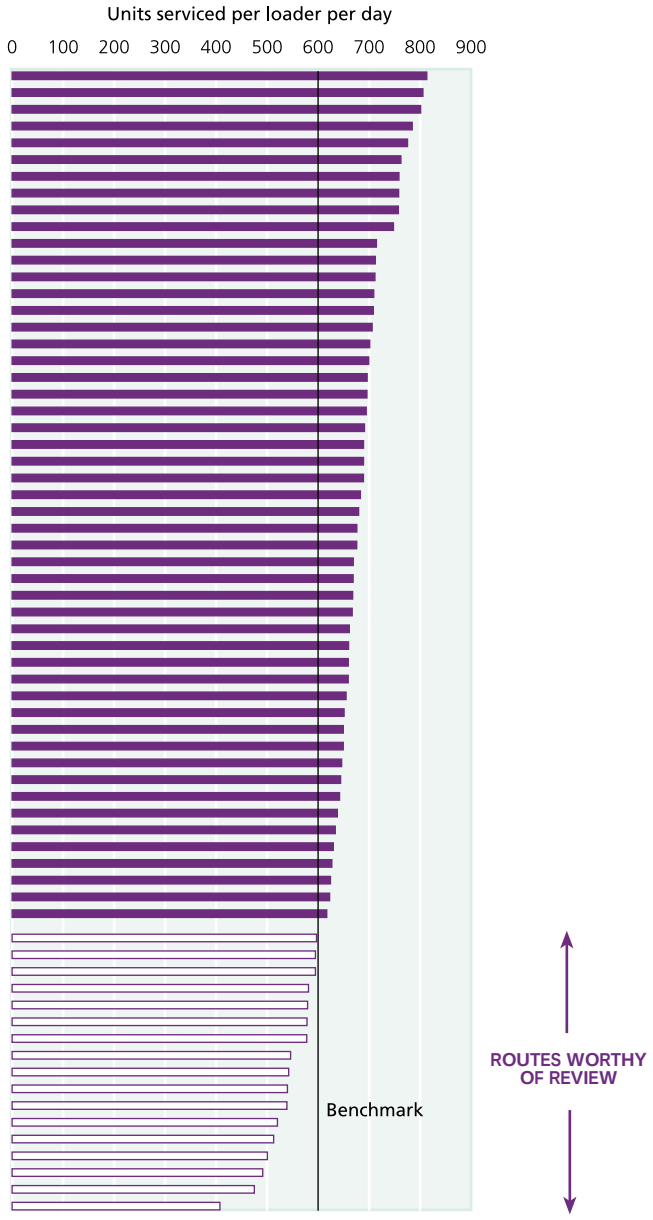
Source: Local audit returns

The route performance information provided to councils enables managers to assess if the crew complement and vehicle size is appropriate for the route type and whether there is an opportunity to review their council's network of routes. For example, Exhibit 5 shows the productivity of refuse collection loaders for wheeled bin Family Group 1. This Group is a wheeled bin route with:

– a high property density (over 27 domestic properties per total route mile)
– a low percentage of commercial and multi-storey properties (less than 0.9%).

Exhibit 5: Properties served per loader per day (Wheeled Bin Group 1)

Although loaders in this group have broadly similar productivity levels there is scope for improvement on some routes.



Note: Routes are included from the following councils: Aberdeenshire, Clackmannanshire, Dundee City, East Dunbartonshire, East Renfrewshire, City of Edinburgh, Falkirk, Fife, Glasgow City, Midlothian, North Ayrshire, North Lanarkshire, Renfrewshire, South Ayrshire, South Lanarkshire and West Dunbartonshire

Source: Local audit returns

There are 69 refuse collection routes in this Group, with sixteen councils represented (including such diverse councils as Glasgow City, Clackmannanshire, Aberdeenshire and East Renfrewshire). Most of the routes in this Group have broadly similar productivity levels with over half the loaders serving between 600 - 700 properties per day. All the crews for these routes consist of a driver plus two loaders, and almost all of the vehicles have a payload between 11 - 13 tonnes.

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