



Skills for the Waste Management Sector in Scotland

March 2005
FINAL REPORT

Prepared for Forward Scotland

by
Connect 3 Consultants Limited
with
Sustainable Development Research Centre

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Executive Summary

In January 2005 Forward Scotland commissioned Connect 3 Consultants Limited to map the skills set of the waste management sector. The objective of this mapping exercise was to obtain a clearer understanding of the following skills and training issues facing the waste management sector:

- Skills base required now and in the future
- Current entry routes and career paths within the sector and possible future routes
- Current training provision and potential future needs

Methodology

The information for this study was obtained through consultation with key industry players and training providers. A combination of detailed interviews (involving 12 organisations) and shorter telephone interviews (involving 52 organisations) were undertaken. In addition ten training providers were contacted.

The Industry's Current Skill Base

The findings of the study indicate that the industry employs a predominantly low and semi-skilled workforce consisting of drivers, plant and machine operatives and labourers. In most organisations this workforce is supported by a relatively small management structure.

Many of the professional skills required by the industry are contracted through waste management and specialist consultancies or the engineering manufacturers of plant. Such companies are more inclined to recruit graduate level entrants; this is also true of the support organisations such as the regulator, research institutes and training providers.

Anticipated Future Skills Base

There is an almost unanimous view that the skills needs of the industry are changing. The main factors driving these changes are considered to be legislation, followed by new technology and the need to enter new markets.

The overall skills profile of the industry is considered likely to remain much as it is, with a heavy emphasis on drivers, plant and machine operatives and labourers. In addition there will be a higher level of new craft related skills in areas such as plant managers, plant maintenance, process engineering and technical level staff such as chemists and lab technicians.

In addition to the need for additional types of skills within the industry there was a stronger view that there was a general need to "skill up" the existing workforce, in particular in relation to improving understanding of the regulatory issues and market awareness.

The sector suffers high turn-around of staff in low skilled jobs and is believed to suffer from an image problem therefore finding it difficult to attract new staff.

Training and Career Paths

Training provided by the industry at present tends to focus on the need to develop practical skills such as driving machinery and health and safety. The provision of waste specific training appears to be limited. No clear career paths were identified although labourers can move to become drivers and supervisors. However, progress seems to be driven more by aptitude than skills with many companies preferring to train the right people for the job.

Training Provision

The industry has a well-developed competency assessment framework developed by the Waste Management Industry Training and Advisory Board (WAMITAB). This could provide a means to develop the industry specific skills of the low and semi-skilled workforce in particular. Uptake of this training, apart from where it is a legal requirement is currently low.

This suggests that training, in particular at operational level within the sector is undervalued. This view was also endorsed by a number of the consultees who believed that there was a need to strengthen skills across the industry to place it in a position to respond effectively to the changes required of it.

Training provision for manager or supervisory staff is limited.

Conclusions

Changes in the policy and regulatory framework are inevitably affecting the skills required by the workforce.

- Development of new technology will require the need to attract new skills to the waste management sector such as plant managers and process engineers, analytical skills and chemistry.
- More professional skills will be required in areas such as contract management, business development, financial management and human resource management to grow existing companies and manage the challenges offered by the large PPP contracts.
- There is a need to develop the skills of the low and semi skilled workforce at both operator and supervisor level to ensure they are competent to address the needs of the changing regulatory framework and additional requirements placed on them by the growing complexity of the industry itself.

The presence of a well established competency assessment programme developed by WAMITAB provides an ideal starting point for the industry to develop the skills of the low and semi-skilled workforce. It also offers the opportunity for the industry to develop progression options for these employees. This would raise the overall competency of the industry and in the long term is likely to improve staff retention and the overall image of the industry.

In relation to more senior managers training opportunities are limited but there is growing recognition that the range of skills now required by managers within the industry are broadening and greater support to those employed in these areas would benefit the industry.

Recommendations

- 1 Further work needs to be undertaken to determine the best mechanism to encourage the industry to improve the skills and competence of their workforce. As part of this the following needs to be considered;
 - Funding support programmes
 - Extending the available NVQ/SVQ qualifications to be applicable to a greater number of industry players.
 - Undertaking more specific consultation with the industry on the adequacy of this training provision and best delivery methods
 - Improving awareness of the availability of training and identifying ways to support the industry both professionally and financially in developing competence assessment frameworks for their staff.
 - Improving the career opportunities for young entrants through a form of apprenticeship.
 - Encouraging, perhaps through statutory means, an ongoing professional development scheme.
- 2 In relation to management training, in particular those skills that drive the industry forward, further work is required to characterise more specifically what these training and education needs might be.
- 3 To improve the image of the sector in relation to those from higher education, linkages between the key higher education institutes and the industry needs to be improved.
- 4 The role of the community sector in providing trained entrants to the private sector should also be further investigated to find ways in which the benefits from the community programmes can be better realised.

Introduction

In July 2001 Forward Scotland and the Environment Task Force Working Group established the Jobs in the Environment Support Unit (JITESU). A three-year funding package was secured which has looked at opportunities for the creation of environment related job opportunities in Scotland. A number of research studies were commissioned by JITESU including one to assess the existing and potential job market in waste management (Ref 1).

The findings of this study indicated that there is considerable uncertainty about the current number of jobs in waste management, with estimates varying from WasteWatch figures of 1,700 to Strathclyde Labour Market Intelligence Survey figures of 20,800. The study concluded that potential additional jobs in Scotland are likely to number in the region of 10,000 to 12,000, the majority of which are likely to be in collection services in the public sector. The extent to which job opportunities in other areas will increase is harder to estimate. For example, although more recovery will be required, automated plant may be introduced, reducing employment requirement. The introduction of new technology will in many cases require a smaller but more highly trained workforce (Ref 1).

JITESU funding expired in July 2004 but Forward Scotland are progressing this initiative through the *Environment Jobs Scotland* project funded by the Scottish Executive Sustainable Development Directorate and Jobcentre Plus.

Following on from the initial study to establish the growth potential of the waste management sector it was felt it was important to gain a better understanding of the existing skills base in the sector and how this might need to change to ensure there is an appropriate supply of skilled labour to meet future demands. The starting point for this was to undertake a skills set mapping study for the waste management sector.

Forward Scotland commissioned Connect 3 Consultants Limited working with the Sustainable Development Research Centre (SDRC) to undertake this study during the period January to March 2005.

This project is closely related to ongoing work by the Energy and Utilities Skills Council¹ who have turned to investigating the wastes management sector in recent months. The remit of their study is to undertake (along with 5S Consulting) a comprehensive functional and occupational map of the entire waste management sector across the UK.

¹ Licensed by the UK government and working under licence to the Department for Education and Skills (DfES) Energy & Utility Skills is the Sector Skills Council (SSC) representing the needs of employers, in the electricity, gas, waste management and water industries

1.1. Objectives

The objective of this mapping study was to obtain a clearer understanding of the following skills and training issues facing the waste management sector:

- Skills base required now and in the future
- Current entry routes and career paths within the sector and possible future routes
- Current training provision and potential future needs

The output from the study is presented in the following report. A seminar to discuss the findings of the report and how to take forward key issues identified will be held on the 20th May 2005. The output from the discussions undertaken at the seminar will also form part of this study.

1.2. Methodology

The information for this study was obtained through consultation with key industry players and training providers. Consultation was undertaken at two levels:

- Detailed half to one hour interviews were conducted with a number of key industry representatives. Discussions were focussed round a semi-structured questionnaire, a copy of which is contained in Appendix 1. The aim of these discussions was to explore some of the key issues facing the industry in terms of skills and training needs, and to obtain an understanding of the skills base within the industry, typical career paths and training provided.

Those involved in these discussions were selected to represent a cross section of the industry. Twelve organisations assisted in the more detailed interviews. These included:

- 1 Local Authority
 - 3 large integrated waste management companies
 - 3 small to medium sized enterprises
 - 1 government agency
 - 1 small consultancy and training provider
 - 2 large waste management consultancies
 - 1 university
- In addition, to act as a check on the findings from the detailed interviews, a broader range of companies were approached to take part in a short structured telephone interview. The questionnaire used is presented in Appendix 2.

These organisations were taken from a database of waste management companies in Scotland compiled from publicly available sources. A total of 52 organisations out of about 200 contacted provided responses to the telephone questionnaire. The responses from these 52 organisations are summarised and presented graphically in Appendix 3.

In addition to the above organisations, telephone interviews were conducted with 10 training providers.

The information obtained from these various consultation processes forms the basis of the study findings presented in this report.

At the start of the study there was a desire through the consultation process to develop a series of skills matrixes for the industry which would include job types, associated qualifications, means of developing skills and skills changes. However, it became clear fairly early on that to achieve this would involve a far greater and more detailed level of consultation with key industry players. It was also established that this aspect of the study would be covered by the Sector Skills Council work.

The Forward Scotland study has therefore been focussed at a higher level aiming to identify key issues for the sector as a whole relating to skills, training and recruitment. The broad skill base within the industry has been identified and is discussed further in Section 2.

1.3. Report Structure

The following report is structured as follows:

- Section 2 sets the context for the waste management industry describing briefly the policy and regulatory context for waste management and some key issues currently facing the sector.
- Section 3 describes the current skill base of the sector and anticipated changes in this skill base over the next five years.
- Section 4 discusses training provision for the waste management industry
- Section 5 presents the conclusions; and
- Section 6 presents the recommendations.

The views of the industry established using the telephone questionnaire are presented in a series of graphs summarising responses to each of the 19 questions posed. These are presented in Appendix 3.

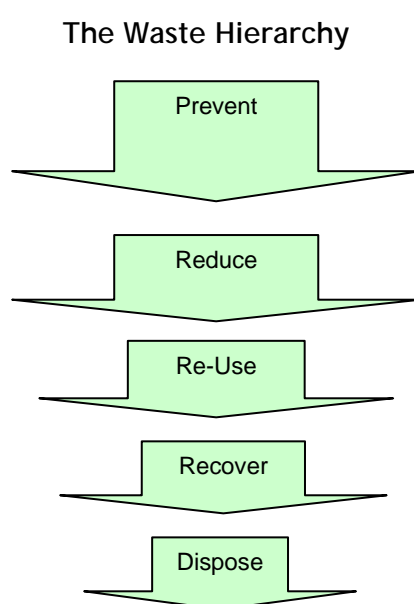
1.4. Acknowledgements

We would like to acknowledge the co-operation of all the organisations that assisted us in this study by providing information and views either through meetings or over the telephone. Without this information there would have been little substance to this report. We have been in contact with nearly 70 organisations through the course of the study and cannot therefore name them all but would like to thank them all for their kind co-operation in providing the information requested.

2. Setting the Context

2.1. Policy Regulatory Framework

There have been some fundamental changes in the policy and regulatory framework relating to waste management in the last few years which have had significant effects on the waste management industry. There is currently a move away from compliance driven regulation, focussing on the regulation of waste management facilities and ensuring the correct consignment of waste, to regulation and policy that aims to change the way in which we manage the waste itself. This is driven by the waste hierarchy where the emphasis is now on the prevention and reduction of waste rather than simply managing its disposal.



The principal piece of legislation driving these changes is the Landfill (Scotland) Regulations 2003 which implements the majority of the EU Landfill Directive², in the context of the EU Waste Framework Directive³ and associated provisions. These legal instruments have introduced bans on the disposal of certain types of waste to landfill such as hazardous liquid waste and corrosive, flammable and infectious substances and have set challenging targets for reduction in the quantities of municipal biodegradable waste to be disposed of to landfill. The regulations have also introduced a ban on the co-disposal of hazardous and non-hazardous waste with landfills now having to be licensed for one or other type of waste. This has reduced the capacity for landfill disposal of waste in Scotland to one site. The restrictions on the use of landfill as a waste management option has been accompanied by a new and complex set of laws and policies driving a move to

² 99/31/EC

³ 91/156/EEC

greater resource recovery and recycling, as well as significant efforts in the minimisation of the production of wastes.

Scotland's response to the changing legal and policy framework is described in the National Waste Plan. The Plan is built around fulfilling the aims of the waste hierarchy and meeting the requirements of the Landfill Regulations.

The key elements of the plan are:

- To introduce wide-spread kerbside collection
- Stop the growth of municipal waste produced by 2010
- Achieve 25% recycling and composting of municipal waste by 2006 and 55% by 2020
- Recover energy from 14% of waste
- Reduce landfilling of municipal waste from about 90% to 30%
- Provide waste minimisation advice to businesses: and
- Develop markets for recycled materials to help recycling become viable and reduce costs.

Plans for the management of non-municipal waste are less well developed but are primarily driven by the improved environmental performance required of landfills by the Landfill Regulations and increased recycling demanded by private sector clients. The National Waste Strategy sets no targets for waste reduction in this area but has the following broad objectives:

- To encourage waste minimisation and recycling by industry through designing out wastes, developing cleaner technologies and increasing the recycled content of product and packaging
- Developing a Best Practicable Environmental Option (BPEO) methodology for use by industry to develop and implement waste management arrangements.

To achieve these objectives there needs to be improved recovery of materials and energy from the waste streams. A greater variety of alternative disposal routes to landfill need to develop and there needs to be greater opportunities for the reprocessing of waste. These drivers are all currently influencing the development of the waste management sector as described in Section 2.4 in more detail.

Other supporting legislation which is also driving the recovery markets are the EU End of Life Vehicles Directive and WEEE Directive.

The End of Life Vehicles (ELVs) Directive aims to encourage the reuse, recycling and other forms of recovery of ELVs and their components, and to ban or restrict certain hazardous substances in their manufacture.

In a similar way the WEEE Directive aims to increase recycling of electrical and electronic equipment and reduce the environmental impact of products at end of

life. Producers and distributors of electrical and electronic equipment will be responsible for taking back and recycling products. Targets are set for recycling.

A further piece of legislation changing the management of waste is the Animal By-Products (Scotland) Regulations 2003. These regulations introduce a ban on landfilling of animal by-products wastes by December 2005 unless they have been pre-treated at an approved facility. Alternative disposal routes, such as composting will need to be used. At present there are only a limited number of approved facilities in Scotland accepting a very narrow range of wastes, insufficient to meet the required capacity.

2.2. Types of organisations making up the sector

The waste management sector is a very diverse sector constituting a range of types of organisations both in terms of their size and activities. Figure 2.1 shows the key types of organisations operating in the sector.

Organisations Driving the Industry

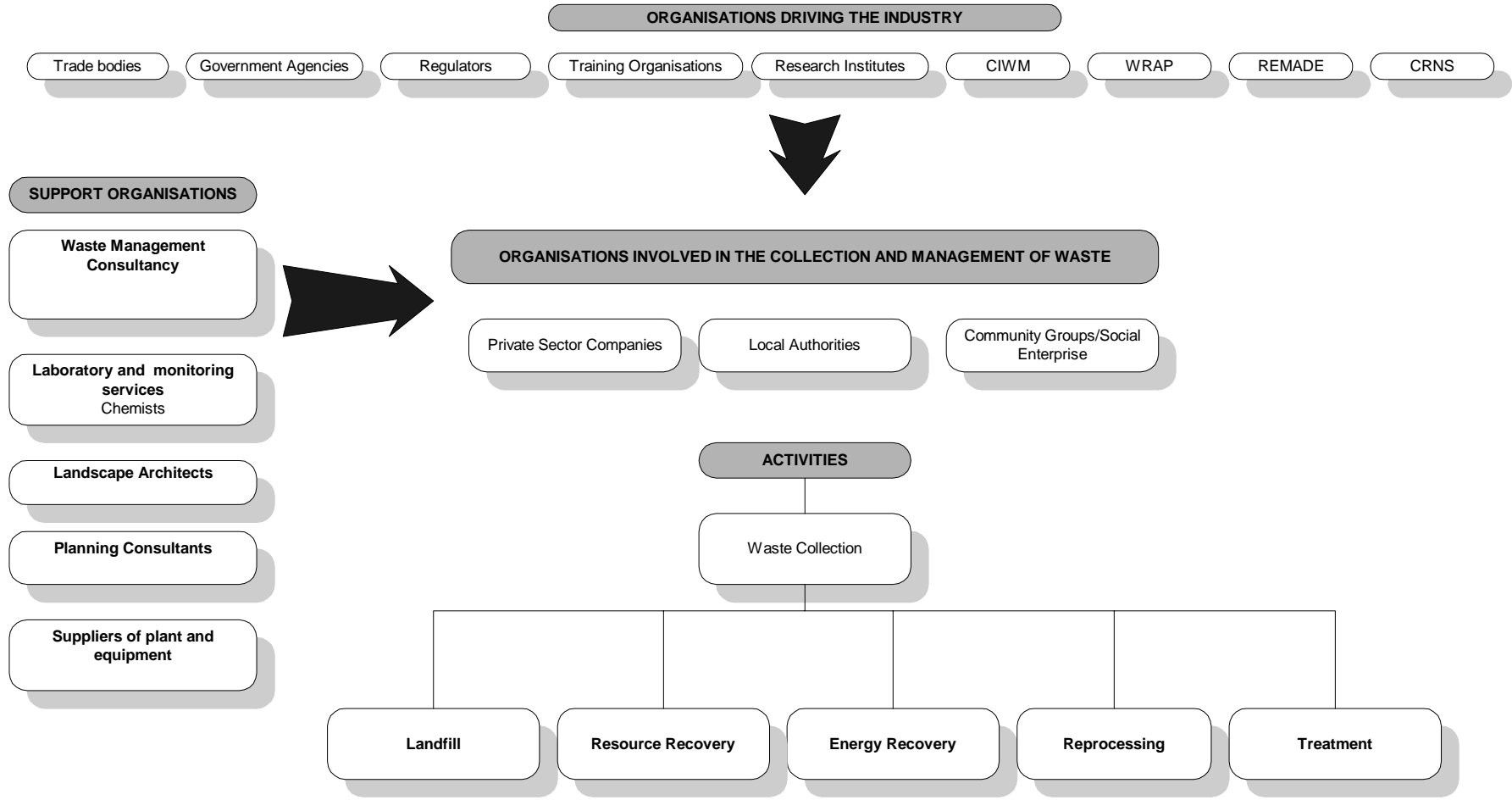
The drivers for the sector are represented by the government agencies, regulatory bodies and training and research institutes. These are the bodies, which set policy and supporting regulations, regulate its application and support the development of the sector in terms of ensuring the development of skills and provision of information. The main industry association, the Chartered Institution of Waste Management (CIWM), plays an important role in the development of the skills of the sector. There are also a number of organisations which have been established to support the industry in meeting the needs of the changing regulatory framework such as the Waste and Resources Action Programme (WRAP), REMADE Scotland and the Community Recycling Network for Scotland (CRNS). A brief description of the role of each of these organisations is provided below.

CIWM - The Chartered Institution of Waste Management is the leading professional body for waste and resource management. It has over 6,000 members, mostly in the UK but also in the Irish Republic, and 250 members elsewhere in the world.

WRAP - is a not-for-profit company supported by funding from DEFRA, the DTI and the devolved administrations of Scotland, Wales and Northern Ireland. It is working to promote sustainable waste management by creating stable and efficient markets for recycled materials and products and has an on-going research programme.

REMADE Scotland - a recycling research programme launched in 1999 to encourage a more sustainable waste management approach and improve Scotland's recycling performance through market analyses and standards development. Supported by the public and private sector, it is delivered by the Caledonian Shanks Centre for Waste Management, Glasgow Caledonian University, and specialist consultants.

Figure 2.1 Overview of the Waste Management Sector



CRNS- Community Recycling Network for Scotland (CRNS) is a network set up by RAGS (Recycling Advisory Group Scotland) to provide support and information for community led organisations involved in the recycling, recovery, reuse, composting, reduction and waste education initiatives

CIWM and WRAP in particular have been involved in the development of course and competency levels for the industry which are discussed later in the report.

Waste Management Organisations

The types of organisations involved in waste management itself are predominantly private sector companies and the Local Authorities. In addition there are a significant number of small community-based or social enterprises working in the sector.

Local Authorities

Local Authorities have a statutory duty to make arrangements for the collection and disposal of municipal (domestic) waste. Traditionally in Scotland Local Authorities have been responsible for the disposal of municipal waste while the private sector has focussed on industrial waste. This situation has changed significantly over the last few years with the development of Private Finance Initiatives and Private Public Partnerships (PPPs). Under these arrangements a growing number of Local Authorities are tendering their waste management services to the private sector generally over 20 to 25 year contracts. In many cases the Local Authorities retain responsibility for collection of the waste and promotion of waste minimisation and recycling. They therefore remain significant employers in the sector.

Private Waste Management Companies

The private companies involved in waste management range considerably in size and type. The largest companies tend to be "total" waste management companies offering their clients a comprehensive service for the disposal of their waste, utilising sub-contractors where they are unable to provide the service themselves. There are a whole range of smaller companies including small start up companies, also family companies and those specialising in the recovery of a particular waste stream.

The Community Sector

Additionally, there are a significant number of community and social enterprises⁴ involved in the waste management sector in Scotland. Community Recycling Network for Scotland (CRNS) lists over 100 members on their web site involved in recycling, recovery, reuse, composting, reduction and waste education initiatives.

⁴ A social enterprise is generally a non-profit distributing company with a major portion of income being derived from trading and that invests any profits/surpluses into its charitable activities. See www.socialeconomyscotland.info

Most of the groups are charities, community groups or social enterprises. The majority of groups are involved in the collection, resale and distribution of used furniture. Other activities include aluminium can collection, other kerb side collection, bicycle refurbishment, computer refurbishment, education initiatives and the distribution of composting bins.

Most of the groups in Scotland are not for profit organisations which in many cases require government grants and subsidy to survive. They rely on volunteer support to undertake much of their work and in a number of cases the groups are specifically aiming to serve a social function through the work they do. For example by providing refurbished equipment for onward sale to community groups and individuals at affordable prices and through employing and training people with special needs, or the long-term unemployed.

Support Organisations

The waste management sector employs a relatively small number of qualified professionals and relies on a number of key support companies involved in consultancy or specialist equipment and plant supply. The industry would tend to use these types of organisations to assist in permitting, obtaining planning permission, design and development of sites and plant and monitoring and analytical services.

2.3. Typical Business activities

Typically organisations involved in waste management will be involved in one or more of the following activities:

Landfill

Although the Landfill Regulations are ensuring a move away from landfill this has been the predominant method for disposal of waste in Scotland to date and will continue to form a proportion of the waste management technologies used in the future.

Resource Recovery

The National Waste Strategy is driving the need to move up the waste hierarchy in terms of re-use and recycling which in turn, increases the need for improved segregation of waste or resource recovery. This may either take place at source through for example, kerb side collection and recycling schemes, or through the separation of mixed waste streams either manually or using machinery. Key organisations such as Local Authorities and total waste management companies are looking at ways to improve resource recovery and there are a number of smaller companies which specialise in the recovery of a particular waste stream.

Energy Recovery

This includes waste to energy plant and the recovery of gas from landfill to produce energy. The National Waste Strategy sets a target to recover energy from 14% of waste. To date uptake of this technology, apart from in relation to recovery of landfill gas, has been limited but this form of waste management is seen as being one which will develop in the future.

Reprocessing

Reprocessing is the use of segregated waste to make a new product, for example manufacture of glass bottles using recycled glass. Reprocessing can be interpreted in a number of ways from the final processing of the recovered waste or resource to make a new product, or the processing of the waste material to make it suitable for use in another process. The companies that took part in this study who considered themselves to be reprocessors tended to be involved in initial reprocessing, specialist activities such as reprocessing excavated soil to make it suitable for reuse, and engineering activities involving the reuse of tyres.

The main volume of reprocessing activity in Scotland is through existing manufacturing facilities such as glass, plastic and paper manufacturers who are using a proportion of recycled materials as raw materials to replace virgin feed stock. These companies were not included in the study as they would generally not consider themselves to be part of the waste management industry and their skills base is linked to their manufacturing processes rather than resource recovery which is generally, although not always, undertaken by third parties.

Treatment

Waste may be treated to make it reusable as is the case in composting, waste oil recovery, wastewater treatment from industrial facilities or may be treated to make it inert and therefore suitable for landfill disposal.

2.4. Market Drivers

The regulatory and policy changes described above are acting as significant drivers in the development of the waste management industry which is currently in an evolutionary phase. The drivers are leading the large traditional waste management companies to diversify from reliance on landfill to other technology options and to improve their recovery operations. It has also led to the establishment of a range of new industry players in many cases focussing on the recovery of one particular resource or waste stream.

For the larger players there are challenges in moving from being cost managers, controlling the movement of waste from their customers to landfill facilities, to high investment businesses involved in diversification. As a result businesses are having to take a more holistic approach to the business function.

For new players in the market there are issues relating to profitability, ability to grow and diversify in a rapidly evolving and highly regulated market.

Therefore at the same time as there are apparent significant opportunities for growth in the sector; it also faces a number of challenges:

- **The low and variable value of recycled materials-** recycled products currently have low and (more importantly) variable value in the market place and the cost of the infrastructure for collection and treatment often outweighs the resale value, leading to very low profit margins.
- **Lack of confidence in recycled products** - there is still a resistance to the use of products made up of recycled materials in the market place, often due to a lack of performance standards.
- **Cost of business start up and investment in new technology** - in many cases the establishment of a new waste management company or diversification of an existing company involves the need for a site to operate from, equipment and transport infrastructure which involves the need for considerable capital investment at a time when the value of recovered material and the size of waste stream may be poorly understood.
- **Problems obtaining planning permission** - this has been an on-going and well recognised problem for the industry where new development opportunities are being hampered by problems in findings suitable sites due to local opposition to waste related developments. This is magnifying the risks for the industry associated with development and diversification strategies.

The operating environments for these businesses needs to be recognised when discussing the issues they face in relation to developing and training of their workforce. A number of the smaller one-site operations (around 10% of the total organisations called) felt unable to respond to the survey as they described themselves as being too busy doing the job to even think about skills base or training. A number of other companies contacted were no longer in operation or had been unable to start up due to cost constraints.

These issues all reflect the many challenges the waste management industry is still facing in adapting to a new and rapidly changing regulatory framework.

The general view however, seems to be that over time, the industry will consolidate with many of the smaller players being taken over by larger players. There will continue to be reliance on landfill but the industry will also need to adopt a range of new technologies. The proportion of waste recovered will increase either through segregation at source, or from mixed waste streams with a possible move to greater mechanisation of sorting processes where significant volumes of material are available to justify the investment costs.

Many of the larger total waste management companies are currently focussing on growth through winning more PPPs contracts with the Local Authorities. These long-term contracts will provide them with greater security for any investment made in new technology or facilities.

The smaller companies are mainly focussing on private sector rather than municipal waste, although some specialist treatment companies such as those involved in composting may have secured Local Authority contracts. A number of the smaller specialist companies, for example those involved in oil recovery or industrial wastewater treatment, have been in business for some time and are well established while others are new start up companies and still building their business.

In addition there is a major expectation⁵ on social enterprises to contribute to the development of the industry but the survey undertaken in this project indicated that there is concern as to their capacity to deliver on the massive tonnages of materials to be recycled.

The current evolutionary phase of the industry, and the study findings, reflect to some degree the diversity of the industry. The responses were, in some cases, quite different depending on the background of the companies and the broader issues they are currently dealing with.

⁵ "The community sector plays a significant role in reducing, reusing and recycling waste and raising awareness" Ross Finnie 09/03/2005
<http://www.scotland.gov.uk/News/Releases/2005/03/09144517>

3. Skills Profile of the Waste Management Industry

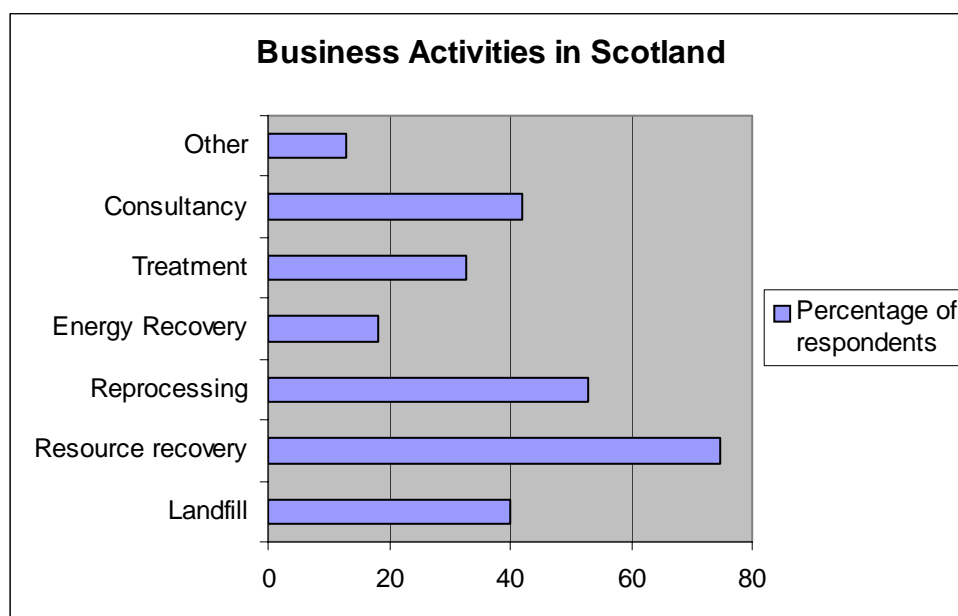
3.1. Profile of Organisations taking part in the study

As part of the study we consulted with 66 organisations, these were made up of:

- 14 Local Authorities
- 10 training providers including WRAP, REMADE and CRNS
- 2 waste management consultancies
- SEPA the industry regulator
- 32 private sector companies
- 7 community social enterprises

The data presented in Appendix 3 and in the graphs in the following chapter are those received from 33 private sector waste management companies, 14 Local Authorities and 7 social enterprises. The consultation with other supporting organisations and regulators are reflected in the associated discussion. The ownership of the organisations which took part in the study was found to be largely Scottish with a small proportion of national and international companies. The respondents to the survey represented a broad range of business activities as can be seen in Figure 3.1.

Figure 3.1 - Business Activities of the Organisations Surveyed⁶



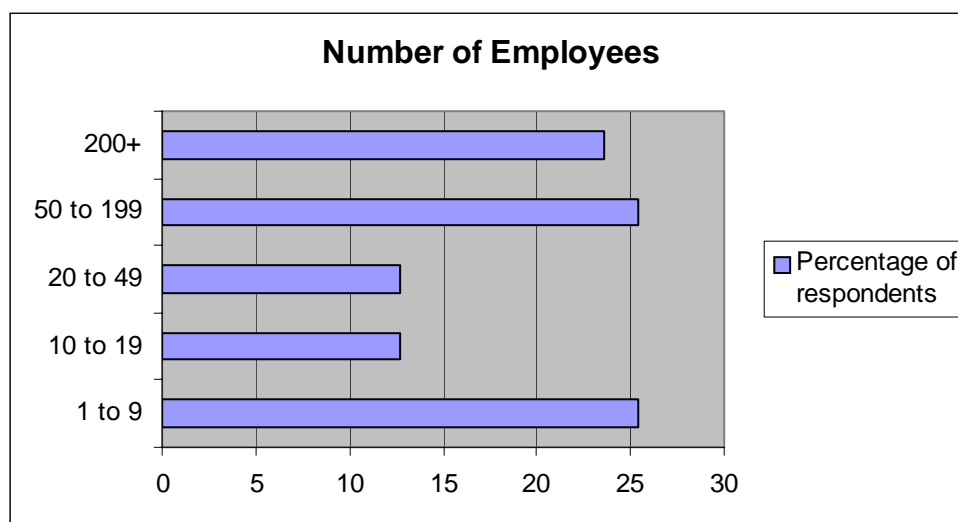
⁶ Other studies, such as the EUSkills project, have separated out collection as an activity, but all respondents could be expected to be collecting wastes from households or business clients. There are only a few companies involved in collection only.

Over 70% of the respondents were involved in resource recovery in some way. This reflects the growing impact on the sector of the policy and regulatory changes and the greater application of the waste hierarchy philosophy. All the Local Authorities contacted were active in this area. Around 50% of the respondents described themselves as being involved in reprocessing which appears, from the information available, to mean some form of processing of the waste beyond simple collection. Major reprocessors of waste such those involved in the manufacture of plastics, paper and glass were not included as part of this study.

Half of the companies who described themselves as being involved in consultancy were Local Authorities who have included their Education Officers, Community Waste Advisors and Business Advisors in this category.

Figure 3.2 shows the average number of employees in Scotland for the organisations surveyed. This figure shows that organisations representing a range of sizes took part in the study. All but one of the organisations employing more than 200 employees were Local Authorities who represent the largest employers in this sector in Scotland. The survey included almost 50% of Scottish Local Authorities and has therefore captured a significant proportion of the large employers.

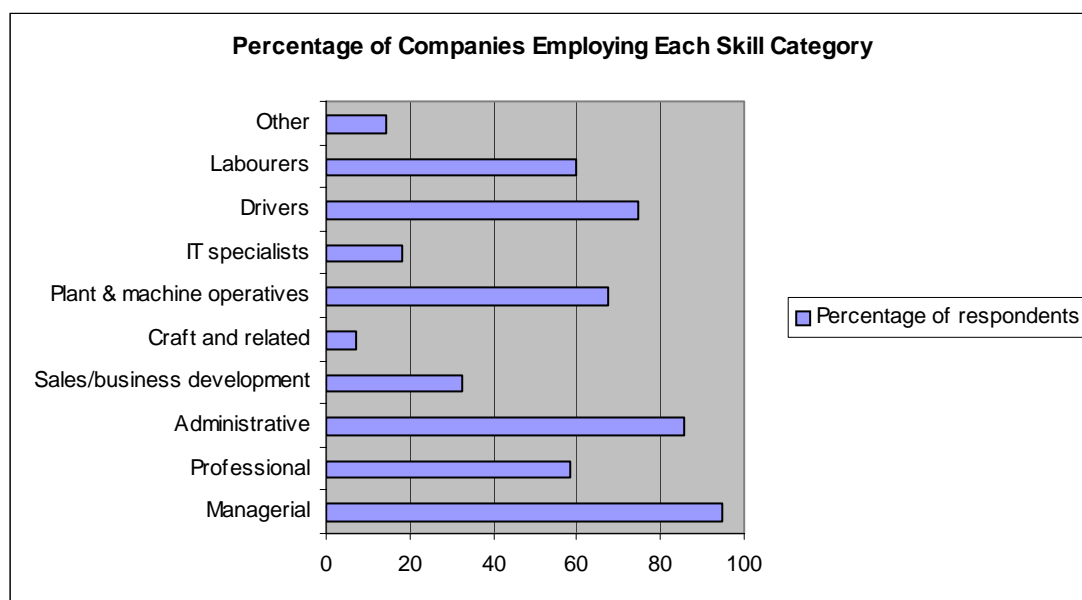
Figure 3.2-Number of Employees in the Organisations Surveyed



3.2. Current Skills Profile

The range of skills employed by the organisations which took part in the survey are presented in Figure 3.3.

Figure 3.3-Skills Employed by Organisations Taking part in the Survey



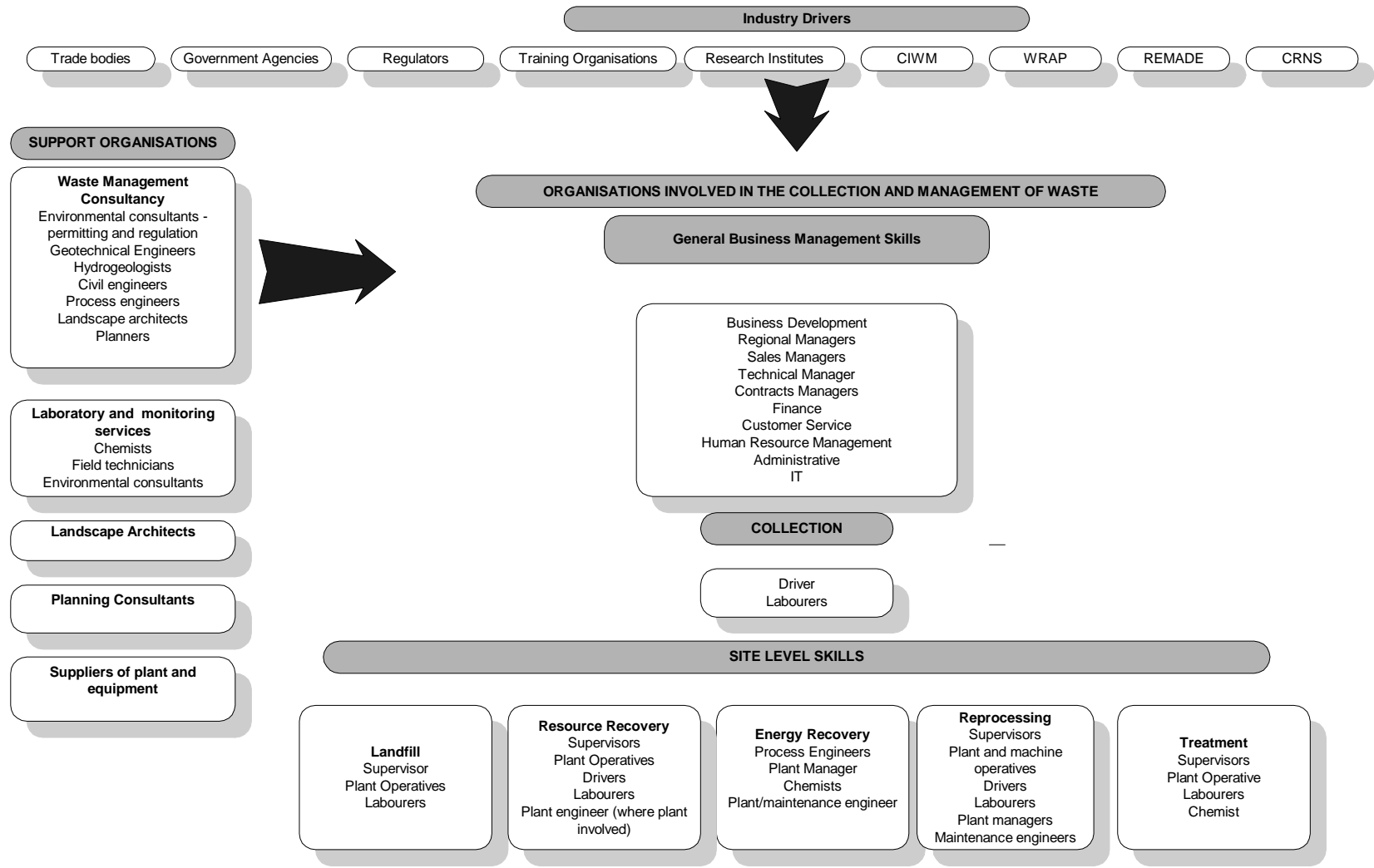
As would be expected almost all organisations employ managers and administrative staff with the other main categories of employee being drivers, plant and machine operatives and labourers. A broad overview of the skills base within the industry drawn from the consultation process is provided in Figure 3.4.

From Figure 3.4 it can be seen that there are a range of general business skills which are common to all organisations. The extent to which organisations employ or have access to these skills varies and is very size dependant. Some of the larger total waste management companies have a well development business management structure while in smaller companies all these skills may be vested in a single individual.

At the facility level the skill base is relatively consistent with almost all types of operation relying on a supervisor managing one or more plant and machine operatives, labourers or drivers. The exception to this is where some kind of process or plant is installed where there may be the need for additional skills such as plant management, maintenance or monitoring.

Energy recovery, which apart from landfill gas recovery, is limited in Scotland, will require plant operatives capable of managing and running the plant.

Figure 3.4 Typical Skills in the Waste Management Sector



Thus, it can be seen that organisations that are involved directly in the collection and management of waste operate from a relatively low skill base. Many of the professional skills required by the industry are contracted through waste management and specialist consultancies or the engineering manufacturers of plant. Such companies are more inclined to recruit graduate level entrants; this is also true of the support organisations such as the regulator, research institutes and training providers.

In addition to defining their skills base, organisations were asked to indicate the approximate proportion of their staff employed in the different skills categories. The responses to this question are presented in Appendix 3. Many organisations experienced difficulty in doing this and were only able to provide very broad estimates, the findings from this question are therefore not considered to be very reliable.

In addition, the figures in Appendix 3 do not include the Local Authorities who were not comfortable with providing any proportional estimates of their workforce. In the majority of cases they reported that 75 to 80% of staff were employed in practical jobs such as driving, labouring and operating plant and machinery with the remainder involved in administration, finance and management. In the private sector it is also clear from our discussions with representatives from the sector that for the vast majority of companies the main proportion of employees work in the former three areas.

These findings are born out by other studies such as work by DG Associates on a Workforce Development Plan for the industry (Ref 2). They suggest that approximately 70% of the labour force falls into the "semi-skilled/unskilled" category, with 5% in the professional/technical/managers category and the balance divided across administrative and skilled trades categories.

Professional staff are employed by 12 of the 14 Local Authorities and by the larger total waste management companies. A number of the small start up companies were also being established by people from professional backgrounds such as engineering.

Although a reasonable number of organisations indicate that they employ professional staff, the estimates of the proportion of professional staff employed in the sector would suggest that the figure is low-between 5 to 10%. This would concur with the views we obtained from the more in-depth interviews and other study estimates (Ref 2).

The main employers of professional staff are the support organisations to the industry and the regulator (see Figure 2.1). A significant proportion of the industry relies quite heavily on external consultancy support for much of the professional work required relating to permitting, monitoring, site development, gaining

planning permission etc. Both the regulatory community and specialist consultancies report that they employ almost entirely graduates with Bachelors or Master degrees. The consultancies reported recruiting graduates from a variety of backgrounds including civil engineering, mechanical engineering, environmental science, geotechnical specialists and planners.

3.3. Current Skills Shortages

The views on current skills shortages within the industry were variable with the only fairly consistent response relating to problems in recruiting drivers. This appears in part to be linked to a general shortage of drivers and for some organisations locational issues such as having difficulty in paying competitive rates compared to other industries in their areas. There was considerable concern expressed that the impending European Road Transport Directive⁷, which will reduce drivers working hours, could further exacerbate the driver shortage problem.

After drivers, the main skills shortages were identified in plant and machine operatives and managerial staff with around 15% of respondents identifying shortages in these areas. Skills shortages were reported by a small number of respondents in relation to all skill areas provided.

In many cases it was not considered that there were particular skills shortages but more a difficulty in attracting the right kind of people to the industry. There was a feeling that it was difficult to recruit educated and experienced people. Many organisations also reported problems in retaining staff, in particular labourers, leading to high turnover of site based staff.

It was acknowledged that in many cases, the working conditions were hard and the sector is competing in wage terms with the service sector, which can offer more pleasant working environments. Terms such as “the industry is not sexy” were used on several occasions.

The image of the industry was not only considered a problem at operator level but also an issue for attracting new staff for management level positions. In particular, skills relating to the continual need to keep up with regulatory changes and understand the market implications of these changes were lacking in smaller companies and there was a perceived need to bring young people into the industry to train them up. Similar problems were also mentioned by some of the larger total waste management companies who are relying on managers who have served a long term in the industry. There is a perception supported by very limited data (Ref 2), that the waste management industry is represented by an aging workforce. We understand the Sector Skills Council project will be investigating this issue

⁷ 2002/15/EC

further. Therefore building the experience and skills of new and younger entrants to the industry will be key to its future success.

About 20% of respondents did not consider they were experiencing any skills shortages.

The support organisations and regulators reported the key skills issue as relating to experience rather than training. In the case of the regulator, graduates are employed from a fairly broad range of environmental related degrees and then undergo fairly extensive training to prepare them for their particular role as regulator. It was felt, however, that many of these graduates lack experience of the drivers and constraints of the private sector and have a poor understanding of business processes.

In the same way, the consultancies experience little problems in recruiting graduates with first degree disciplines. The issue is, instead, the difficulty in recruiting waste-experienced people. Candidates are required with 1 to 2 years waste management industry experience or for more senior positions 10 to 15 years and such candidates are hard to come by.

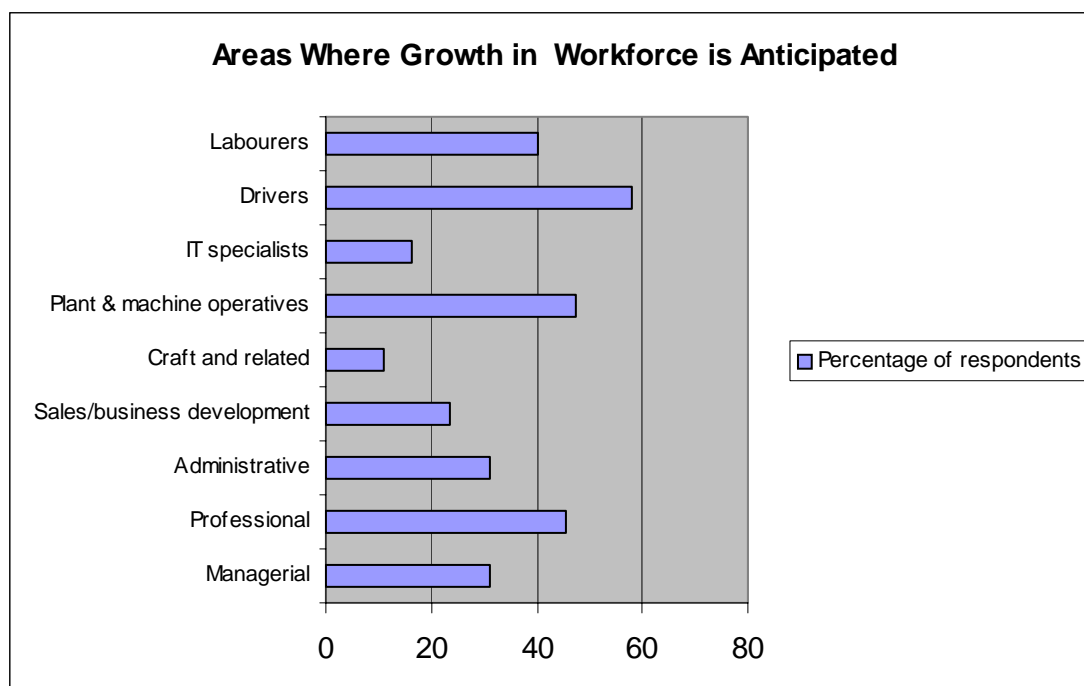
3.4. Anticipated Changes in Skills Needs

There was an almost unanimous view (over 95% of respondents) that the skills needs of the industry were changing. The main factor driving these changes was considered to be legislation (over 80% of respondents) followed by new technology and the need to enter new markets.

Organisations were generally anticipating staff increases across the board (see Figure 3.4) with still a heavy emphasis on drivers, plant and machine operatives and labourers. There is a general recognition, however, that in addition to these skills, there is likely to be more specialists required for the management of new plant such as waste to energy, or other materials recovery plant. Thus, although the overall skills profile of the industry is likely to remain much as it is, there will be a higher level of new craft related skills in areas such as plant managers, plant maintenance, process engineering and technical level staff such as chemists and lab technicians involved in analysing hazardous waste and processed waste to ensure they meet product standards or to monitor plant emissions.

The process related and analytical skills were seen as being available in other industries such as power generation but the industry would need to attract people away from these other industries if they don't train them themselves.

Figure 3.4 - Areas where Growth in the Workforce is Anticipated



In addition to the need for additional types of skills within the industry there was a stronger view that there was a general need to “skill up” the existing workforce, in particular in relation to improving understanding of the regulatory issues and market awareness, particularly driven by waste acceptance criteria governing what wastes can be managed by each facility

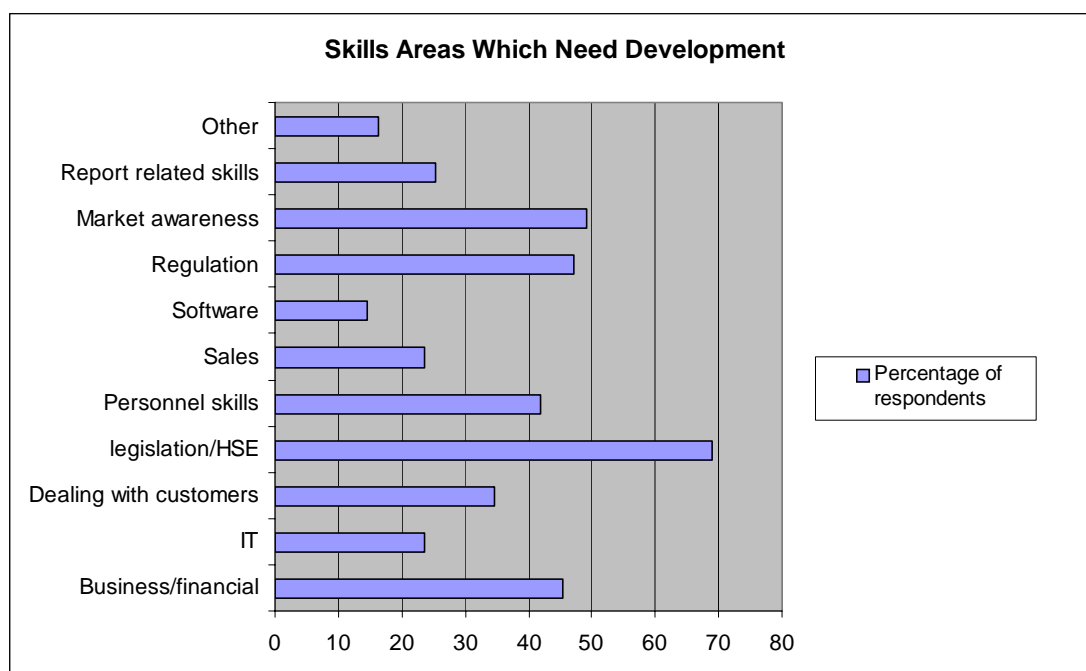
Figure 3.5 shows the responses to the question “What skills do you feel need to develop in the industry to meet future needs and improve competitiveness”

All skills were considered to need development by over 10% of the respondents. Regulatory and market awareness skills are seen as being of most importance but closely followed by business and financial planning. In particular, many of the small and start up companies mentioned this as an area for development as they were currently unable to afford to employ people in this area but saw it as an important need for the future.

Business and financial skills and market awareness were also mentioned as skills that needed developing by all the social enterprises. Social enterprises will need to focus on building viable businesses with sound financial management if they are to be sustainable in the longer term.

Customer-facing skills were seen as being of increasing importance to a number of respondents and others mentioned that improvements in personnel skills were required to improve recruitment and retention in the sector.

Figure 3.5 Skills Areas Which Need Development



Those who responded in the 'other' category, either did not feel that there were any skills that the sector needed to develop, or mentioned issues such as the need to bring more young people into the industry to replace those with the considerable knowledge who were leaving.

The need to improve skills within the industry is considered to be of relevance at all levels from site operatives to managers as they all face a growing complexity in their day to day management of issues.

Another skill area that was seen as lacking, which is considered of particular relevance to those companies aiming for growth though obtaining more Local Authority contracts, was contract management skills.

Amongst the consultancies, there is seen to be a need to develop more specialists as the legislation becomes more complicated and reliant on new technologies. They perceive that much of the industry will continue to outsource specialist skills and the Private Public Partnership arrangements are likely to provide more opportunity for consultants as more technologies are endorsed, need planning and permitting and there is a need to monitor progress against legislative requirements.

The findings relating to skills shortages are also borne out in other studies. The DG Associates report suggested that the growth of the industry is likely to be in similar proportions to now but that at every level there will be a need to further develop technical skills and knowledge. For example, the job of waste manager has

evolved and as there are increasing options for waste disposal there will be a call for people to make more complex judgements. This study also indicated that higher order technical skills in the workforce are likely to grow through development of new technologies and there would be an increased demand for graduates. (Ref 2)

3.5. Career Development

The majority of respondents indicated that there were no clear career paths at either operative or management level. Within Local Authorities and the larger waste management companies it seems that labourers can progress to drivers and operatives and finally to supervisory level. Aptitude is seen as a more important driver to progression than skills, as it is always possible to train people with the right characteristics.

A number of organisations indicated that they preferred to identify good people internally and send them on training courses to become drivers or plant operatives rather than employ ready trained people from outside who might not have the right aptitude. It seems, however, that much of the training is not waste management specific, but rather related to plant operation and health and safety.

In most organisations there is a clear split between the operative and management levels, with little transference between the two. There are exceptions to this, in the case of those who have been in the industry for a long time and worked their way up to management level. Management staff achieve career progression either by transferring into the industry from other environmental or logistics businesses or moving to a new employer. There is a very limited but apparently growing layer of middle management comprising HR staff, accountants, operational and systems management staff with experience in waste management.

Within the support industries, career progression is better established. Within consultancies graduates move through the organisation as they gain suitable experience and generally at some stage chose between a management and technical career path.

3.6. Recruitment

The majority of respondents found staff through local advertisement or referral. National newspapers were only used for senior positions. Over 60% of respondents reported that they used job centres but the general view was that job centres were not the preferred route as they rarely produced suitable candidates.

Skills Set Mapping-Waste Management Sector

15% of respondents reported that they used New Deal staff. These were all Social Enterprises and Local Authorities. New Deal is not seen as being an option by the private sector unless they are required to consider these candidates through their Local Authority contracts. Around 30% of respondents used student placements over half of which were Local Authorities.

4. Training and Development

The skills mapping process has indicated that the majority of the skills with respect to day-to-day operations of organisations in the sector are not unique to the sector but are transferable from other industry sectors. In particular, this includes drivers and plant operatives. It is recognised, however, that there is a need to improve the overall competence of those involved in waste management to reflect the growing complexity of the issues faced by the sector, and to improve its overall image and ability to retain staff. This section concentrates on the available training provisions within Scotland which can help fulfil this need and is specific to the waste management sector.

4.1. Current Waste Management Training Provision in Scotland

Certificates of Technical Competence (COTCs)

The waste specific training provided to those involved in the industry is largely driven by the requirements of the 1994 Waste Management Licensing Regulations. These regulations require the person in charge of a licensed facility to be technically competent. The legislation prescribes the method of demonstrating technical competence which has to be through certification by the Waste Management Industry Training and Advisory Board (WAMITAB). WAMITAB have developed an N/SVQ (National/Scottish Vocational Qualification) based system which leads to the award of the statutory Certificate of Technical Competence (COTC) relevant to the type of facility. WAMITAB have also, since 1997/8, developed non-statutory Certificates of Competence, which complement the COTC but are not a legal requirement.

The main N/SVQs available to the industry are summarised in Appendix 4.

Vocational qualifications are generally available at 5 levels:

- Level 1-operative
- Level 2 - Operative/technician
- Level 3 - supervisory
- Levels 4 and 5 Managerial and Professional

COTC skills are not primarily delivered through training, but rather through recognition of structured competencies gained for on-site experience and verified by independent assessors. A significant level of coaching and informal learning occurs during this process, and the assessors provide structured training.

COTC certificates do not have to be renewed and therefore there is little requirement on operators to up-date or refresh their skills.

According to WAMITAB⁸, by late 2004, they had awarded 6,000 statutory COTCs since 1996. Scotland is estimated to represent 1/10th of that number. WAMITAB has also awarded 2,000 non-statutory COCs, but estimate that the proportion rewarded in Scotland has been much lower than that for the statutory awards. In England take up of non-statutory awards has been improving in the last 18 months. This is thought to be driven by the availability of funding for employers through the Employment Training Partnership. No equivalent funding is available in Scotland

DG Associates (Ref 2) estimated take up of COCs between 1998 and 2002 to present about 1.5% of the potential target market in the UK.

CIWM

CIWM provide a number of 1-3 days courses on a variety of topics such as the Packaging Waste Regulations, Pollution Prevention Control for landfill, Environmental Management Systems, Duty of Care and site licensing. A list of the courses currently available is provided in Appendix 4. These courses are aimed at providing an introduction or refresher to those working in the industry, but do not provide formal qualifications.

In addition CIWM offer a Certificate in Supervisory Management aimed at those working in or aspiring to take up a supervisory position in the waste management position and an HNC in Waste Management. The HNC is designed to develop competencies required at junior to middle management in the waste management industry. This course is available by day release from a number of colleges and also a distance-learning version.

CIWM have also recently launched a Waste Awareness Certificate which is designed for all employees who have responsibilities for dealing with waste and aims to provide an introduction to waste management. This day course covers types of waste, explains the waste hierarchy and explains key legal obligations such as the Duty of Care.

Stow College was originally the Scottish training provider for the Certificate of Supervisory Management and HNC. Stow, however, ceased to provide the course around two years ago. We understand that Lauder College is in discussions with CIWM to become a new Scottish training provider.

Despite the availability of these qualifications uptake is relatively poor. For example there are currently 5 Scottish candidates on the HNC distance learning course. We also understand from the key training providers in Scotland that up take of the Waste Awareness Certificate has been low. CIWM have informed us that during 2004 567 delegates attended their training courses of which 16 were Scottish.

⁸ Pers comm. Ray Burberry Qualifications Manager, WAMITAB, March 15th 2005

The poor uptake of available vocational training by the industry suggests that the industry either has a low awareness of the availability of these course or that the industry places low value on the building of the competency and skills of its workforce

WRAP

WRAP also offer a number of one and two day courses but these are largely focussed on the management of organic waste and composting and include courses in developing Organic Waste Management Strategies, composting and improving organic waste operations.

Further Education

At degree level there are really only two courses in Scotland which have a focus on waste management. These are:

- **University of Paisley** - MSc/PGD Waste Management with Environmental Management. This course aims to enable graduates to develop the technical and managerial skills increasing required by industries under pressure to eliminate waste.
- **Glasgow Caledonian University**-MSc/PGD Waste Management accredited by CIWM.

The Glasgow Caledonian course is currently being modified in response to a recent consultation exercise conducted with the industry. It will also be available as an on-line course.

A number of other Universities include elements of waste management within broader environmental courses including:

- **University of Abertay** - MSc / PGD Industrial Environmental Management, BSc Natural Resources Management
- **University of Strathclyde**⁹ - BSc (Hons) Environmental Protection and Pollution Control, and Civil Engineering with Environmental Management
- **University of Strathclyde** - MSc in Science, Technology and Sustainability
- **University of Stirling** - BSc Environmental Science / MSC Environmental Management
- **University of Aberdeen** - MSc Sustainable Rural Development
- **University of Edinburgh** - MSc Environmental Sustainability
- **Heriot-Watt University** - undergraduate modules in Environmental Management and Technology, Civil and Environmental Engineering

⁹ this course is currently discontinued due to lack of interest

- **UHI Millennium Institute** - undergraduate modules in Environment and Heritage Studies, Sustainable development and Environmental management
- **Scottish Agricultural College** - undergraduate module within Sustainable Environmental Management

These latter training providers are not specifically training graduates for employment in the waste management industry but for a broader industry need.

There are no formal statistics available regarding the employment of Graduates from the main postgraduate course in waste management at Caledonian University. It is believed, however, that these graduates are largely employed by the regulatory and consultancy sector with a smaller number entering the industry mainly through Local Authorities. Indeed, one of the consultancies we spoke to has close links to the University and regularly provides student placements for summer projects.

The University of Abertay works with the Knowledge Transfer Partnerships (KTP), a Department of Trade and Industry initiative. Supported by Scottish Enterprise Tayside, this programme supports knowledge transfer by placing recently qualified graduates (known as KTP Associates) in companies to manage challenging projects central to the companies' development needs. An academic specialist in the relevant area will monitor the work of the graduate throughout the period and the information gathered is then used in the development of future programmes.

The extent to which KTP Associates have been placed within the waste management industry was not established. However, this type of mechanism presents an opportunity for improving links between the industry and academic institutions which will be essential in attracting new graduates to the industry.

4.2. Training Provision within the Industry

Most of the organisations who took part in the survey provided some level of training to their employees through a combination of internal and external training. Most of them did not however mention training specific to waste management. Typical types of internal training provided included:

- Background information relevant to the business
- Regulatory requirements,
- HSE,
- IT,
- Environmental awareness,
- Customer services
- Quality

External training included:

- Driver training (including HGV and ADR)
- Manual Handling
- Plant operation
- HSE
- Confined space entry
- Legislation
- Management courses

In general, respondents focussed the discussion almost entirely on the non waste management specific training and skills development and had to be encouraged to consider these. Those who did mention waste management specific training made reference to COTC training, WRAP courses and in a small number of cases waste awareness training through consultants or similar.

Information available suggests that few of the, now significant, workforce undertake any structured accredited training relevant to the industry. The WAMITAB structure has enforced a level of competency development (without the requirement for external training) but take up outside the statutory obligations has been minimal. There are currently no requirements for holders of COTCs to provide evidence of continuing competence or of updating/refreshing skills and knowledge.

Very few respondents had structured training or development programmes for staff, the small proportion of companies with Investors in People accreditation were Local Authorities. Training appears to be responsive rather than proactive with people sent on training courses to fulfil a particular need at the time. For example the need to multi skill operatives and train more drivers or plant operatives to provide greater flexibility of the work force.

This and the generally poor take up of vocational courses indicates that training, in particular at operational level, within the sector is undervalued. This view was also endorsed by a number of the consultees who believed that there was a need to strengthen skills across the industry to place it in a position to respond effectively to the changes required of it.

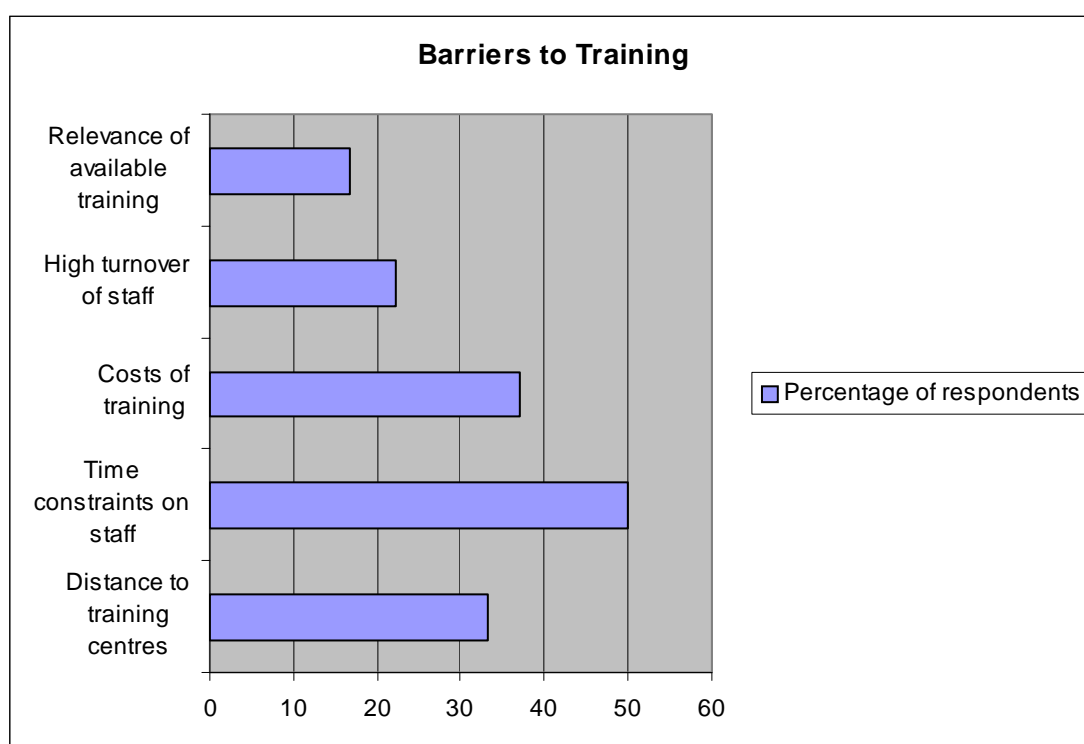
There were exceptions to this position with a few of the larger waste management companies recognising the need to provide broader, more industry specific training in particular for supervisors. A number of these organisations have now developed internal management training programmes aimed at developing the supervisors capability in a range of management skills required for effective site management and management of staff. These organisations are recognising that the industry needs to mature in its attitude to training and recognise the broader range of skills now required by key operatives to both ensure the future success of the industry but also to contribute to staff retention and greater productivity.

A number of the well established social enterprises also have well developed training and development programmes for their staff linked to their broader organisational philosophies. In general they experience much lower turn around in low or semi skilled staff.

For many of the smaller companies, there was also a need for skills development in areas such as legislation and market awareness. These organisations, in many cases, do not have the resource to develop internal training packages. Time constraints on staff was seen as a major issue.

The industry's perception of barriers to training and development of staff is presented in Figure 4.1.

Figure 4.1 - Barriers to Training and Development of Staff



4.3. Adequacy of Current Training Provision

The response to the adequacy of the training was very variable although the majority of the respondents felt the availability and content of the training available was good. Around 28% of respondents felt the availability of training needed to be improved and about 18% felt the content of available training needed to be improved.

It should be understood, however, that these comments related to the general training requirements of the industry, not just to those elements which were specific to waste management within the sector.

5. Conclusions

Historically, the waste management industry has been able to operate with a low skill base, employing a very small number of professional staff. It has consisted of a relatively small number of companies focussing on well-established technologies and the Local Authorities dominating the sector in terms of employment.

Against this background, training and development of staff beyond the minimum requirements to undertake the work, in particular at operational level, was not considered to be of significance and has been largely under-valued. Although the COTC system encourages informal skills exchange, few of the now significant workforce have undertaken any form of structured or accredited training. The WAMITAB structure has enforced a level of competency development but take up outside the statutory obligations has been minimal.

The industry has not historically seen itself to be limited by a lack of skills, but is now going through a process of major change. Policy and regulatory drivers have forced many of the larger industry players to diversify and invest. This combined with the move by Local Authorities to PPPs is engaging the larger players in the private sector in much more significant scales of operation. This is requiring development of their core management functions to include a broader range of professionals. There are also a growing number of new companies who are entering the field involved in various types of activity, who are developing their range of sector specific skills and market understanding.

These changes are inevitably affecting the skills required by the workforce.

- Development of new technology will require the need to attract new skills to the waste management sector such as plant managers and process engineers, analytical skills and chemistry.
- More professional skills will be required in areas such as contract management, business development, financial management and human resource management to grow existing companies and manage the challenges offered by the large PPP contracts.
- There is a need to develop the skills of the low and semi skilled workforce at both operator and supervisor level to ensure they are competent to address the needs of the changing regulatory framework and additional requirements placed on them by the growing complexity of the industry itself.

These skill level requirements are set against a backdrop of an industry which has an image problem and therefore finds it difficult to attract new staff which are required at all levels from graduate to labourer. The industry also suffers from a high turn over of staff in low skilled jobs.

The difficulty of the sector in attracting “new blood” and retaining staff is both a factor of the image of the sector but is also probably directly linked to the lack of personnel development and competency assessment framework. Work by WAMITAB and others indicates that there is clear link between the degree of development and training a workforce receive and the extent to which they feel valued by their employer.

A number of the larger, well established, companies have already begun to recognise this issue and introduce, for example, management training programmes for supervisors. For much of the industry, however simply getting the job done and maintaining profitability takes much of their focus.

Despite the relatively low level of skills and development training for low and semi skilled staff the waste management sector has in place a well established NVQ/SVQ programme through the WAMITAB COTC requirements, which goes a long way to fulfilling the industry needs. CIWM have also recently introduced the Waste Awareness Certificate which is also designed in part to fulfil this need.

At this level a structured knowledge and competency framework exists but uptake by the industry beyond simple legal compliance is poor. There is an opportunity for the industry to build on this competency framework and encourage the waste specific skills development of low and semi-skilled staff, which form the majority of the workforce. This could offer the opportunity for progression options for these employees and would both raise the overall competency of the industry. It is also, in the long term, likely to improve staff retention and the overall industry image.

In relation to more senior managers, training opportunities are limited. This might reflect the limited research in academia to develop new information for the sector. There is, however, a growing recognition that the range of skills now required by managers within the industry are broadening and greater support for those employed in these areas would benefit the industry.

To attract new graduates to the industry there is a need to develop career paths and opportunities at management level to encourage people into the sector, closer links between the industry and the key training institutions would help serve this purpose. In particular, the regulators and consultancies that at the moment employ the majority of graduates have indicated that operational experience in the industry is lacking in their workforce.

The community sector represents a small but significant employer in the waste management sector a role which is recognised and encouraged by the Scottish Executive through a number of funding programmes.

This sector serves two key purposes:

- to encourage recycling within the local community;
- to work with marginalised workforces such as the long-term unemployed to provide a supported working environment. Through funded training programmes such as New Deal, people who would otherwise not be considered by the wider waste industry can be trained and gain experience so that they could then go on to more permanent employment.

There is currently a perception that there are no benefits to the private sector in being involved in schemes such as New Deal and they would only become involved if required to do so by their clients (typically local authorities). The private sector is not structured in such a way as to provide support for vulnerable staff. However, the social enterprises are part of the process of increasing the skills of the workforce more generally, a role little recognised outside the sector.

6. Recommendations

The findings of this study indicate that there is a general need to improve the sector specific skills of the industry at all levels to prepare the sector for the future and to improve the image of the sector. It is however also clear that the organisations involved in the sector are currently struggling with a range of other issues relating to changes in the sector, which preclude structured and methodical training programmes.

The project being undertaken by the Energy and Utility Skills Council, at a national level, includes a functional and occupational mapping process which will identify the skills requirements across the whole industry. A Labour Market Investigation associated with this will provide better information on the demographic size and structure of the industry. These will lead to National Occupational Standards with recognised routes to qualification beyond that of WAMITAB.

Within this national picture in mind, the following need to be considered in Scotland.

Further work needs to be undertaken to determine the best mechanism to encourage the industry to improve the skills and competence of their workforce. As part of this the following needs to be considered;

- Funding support programmes for employers to take up non-statutory training and competency opportunities. This appears to have improved uptake in England where funding is now available.
- Extending the available NVQ/SVQ qualifications to be applicable to a greater number of industry players.
- Undertaking more specific consultation with the industry on the adequacy of this training provision and best delivery methods taking account of the broader constraints on the sector.
- Improving awareness of the availability of training and identifying ways to support the industry both professionally and financially in developing competence assessment frameworks for their staff.
- Improving the career opportunities for young entrants through a form of apprenticeship.
- Encouraging, perhaps through statutory means, an ongoing professional development scheme.

In relation to management training, in particular those skills that drive the industry forward, which are not reflected in occupational mapping, further work is required to characterise more specifically what these training and education needs might be. Regulatory skills, market awareness and business and financial planning were all skills that the sector was seen as needing to develop. These are the skills that support change management within the industry and enable it to respond to external change. The levels and types of skills development training required in this area was beyond the scope of this study and will require further analysis to allow the development of appropriate training requirements.

To improve the image of the sector in relation to those from higher education and to improve the knowledge base of those entering the industry the linkages between the key higher education institutes and the industry needs to be improved. Consideration should be given to development of Knowledge Transfer Partnerships or sandwich type courses where undergraduates are exposed to the industry in more detail.

The role of the community sector in providing trained entrants to the private sector should also be further investigated to find ways in which the benefits from the community programmes can be better realised.

7. References

- 1 Colin Murchison of the Caledonian Shanks Centre for Waste Management, Assessment of the Existing and Potential Job market in Waste management in Scotland, March 2003.
- 2 DG Associates, Waste Management Sector, Workforce Development Plan, July 2002

Appendix 1 – Long Interview Proforma

Skills Set Mapping-Waste Management Sector

COMPANY NAME		
Name of Contact		
Position in Company		
Location of HQ		
Other locations		
Ownership	Scottish	
	National	
	International	
	Other	
Nature of business activities, which of the following do they include: Landfill, Resource Recovery, Reprocessing, Energy Recovery, Treatment Consultancy or other (please state).		
Type of organisation - social enterprise, local authority, private independent, other		
Do you have IIP accreditation	Yes	
	No	
	Working towards it	
	Intend to in the future	
Do you conduct other formal skills review? e.g. appraisal		
Is there a specific HR function?		
Number of employees in Scotland	1-9	
	10-19	
	20-49	
	50-199	
	200 or over	
8. CURRENT SKILLS		
<p>Please describe, in broad terms, the nature of your workforce, e.g. managers, supervisors, operators, drivers, and, if possible, give an indication of the proportion of your employees in each group.</p> <ul style="list-style-type: none"> • Managerial • Professional • Administrative / clerical • Sales/business development • Craft & related • Plant & machine operatives • IT specialists • Drivers • Labourers • Other occupations 		

Skills Set Mapping-Waste Management Sector

Please describe typical qualifications at entry level for each group of employees
Please describe typical internal training provided for employees
Please describe typical external training provided for employees
Can you describe typical career paths for the different types of employees described (complete table 1)
Do any of these groups of employees have skills specific to the industry, that can't readily be transferred to or from another industrial sector, what are these?
Are there any skills shortages in these areas? Do these relate to experience or training? <ul style="list-style-type: none">• Technical skills - operations, maintenance• Scientific knowledge• Managerial/business skills• Financial• Strategic• Planning• Permits and regulatory affairs• Information technology• Customer care• Personal skills
Do you use external training providers? Who are these? Do you consider current provisions adequate? <ul style="list-style-type: none">• University• Technical College• School• Training provider
What subjects/titles of courses were procured last year? What level?

9. FUTURE SKILLS	
How do you see the industry changing over the next 10 years?	
<ul style="list-style-type: none"> • Expansion of the industry • Changing industry structure • Change in types of technology • Increased requirements for compliance with legislation • Role for social enterprise 	
How will this affect the skill base required within the industry? For example will there be more skilled jobs or more 'low-skill' labour?	
Consider:	
<ul style="list-style-type: none"> • Market drivers and new technologies requiring a greater level of competence • Company growth / expansion into new areas or skills which the company's current workforce does not have • Requirements for IT skills • Customer service requirements • Management • General skills improvement to ensure safe working practices 	
Are there any skill areas you feel need to develop to meet future needs and improve competitiveness?	
Business/financial planning	
IT	
Dealing with customers	
Knowledge of legislation/HSE	
Personnel skills	
Sales	
Software	
Regulation	
Market awareness	
Report related skills	
Other, please specify	
Do you anticipate there will be a need for different training provisions in the future?	
10. Internal training	11. External training
Placements/secondments/mentoring/tool box talks/internal accredited courses/induction courses/e-learning	General education/ vocational/job specific/e-learning

Skills Set Mapping-Waste Management Sector

In which areas do you conduct in-house training?	
In which areas do you conduct external training?	
In which areas do you conduct in-house training?	
Do you think the skills of the current workforce are transferable to future needs?	
In which of the following areas do you anticipate the size of the workforce will increase over the next five years?	
Managerial	
Professional	
Administrative	
Sales/business development	
Craft & related	
Plant & machine operatives	
IT specialists	
Drivers	
Labourers	
Others	
If other please state	
Do you believe future development of the industry is in any way inhibited by skills or experience shortages, e.g., business start up, business diversification, embracing new technology?	
How does the company keep up with changes? Journals/ websites/professional bodies/colleagues/conferences	
RECRUITMENT	

Skills Set Mapping-Waste Management Sector

What recruitment methods do you use?	
Do you employ staff through any of the following schemes?	
New Deal	
Student placement	
Other, please specify:	
Have you experienced any difficulties in recruiting ?	

Appendix 2 – Short Interview Proforma

Skills Set Mapping-Waste Management Sector

Date		
Company name		
Name of contact		
1. Type of organisation		
	Private company	
	Local Authority	
	Social Enterprise	
	Other	
2. Ownership		
	Scottish	
	National	
	International	
	Other	
3. Business activities in Scotland (more than one box can be ticked)		
	Landfill	
	Resource recovery	
	Reprocessing	
	Energy recovery	
	Treatment	
	Consultancy	
	Other	
If other please state		
4. Number of employees in Scotland		
	1-9	
	10-19	
	20-49	
	50-199	
	200 or over	
5. In which of the following skills areas do you employ in Scotland people and in approximately what proportions?		
	People employed (tick box)	Proportion (%)
Managerial		
Professional		
Administrative		
Sales/business development		
Craft and related		
Plant & machine operatives		
IT specialists		

Skills Set Mapping-Waste Management Sector

Drivers		
Labourers		
Other		
If other please state		
6. Have you experienced any skills shortages or difficulties in recruiting in any of these areas:		
Managerial		
Professional		
Administrative		
Sales/business development		
Craft and related		
Plant & machine operatives		
IT specialists		
Drivers		
Labourers		
Other		
If so, can you give a reason why, e.g., lack of experience, qualifications, and nature of the job.		
7. Do you believe the skills needs within the industry are changing?		
Yes		
No		
Don't know		
8. If yes, what factors are driving the change in skills needs?		
Changes in legislation		
New technology		
Greater reliance on IT		
Company expansion & diversification		
Need to enter new market areas		
Other		
Where other, please clarify		

Skills Set Mapping-Waste Management Sector

9. In which of the following areas do you anticipate the size of the workforce will increase over the next 5 years?	
Managerial	
Professional	
Administrative	
Sales/business development	
Craft and related	
Plant & machine operatives	
IT specialists	
Drivers	
Labourers	
Other	
Where other, please specify	
10. Are there any skill areas you feel need to develop in the industry to meet future needs and improve competitiveness?	
Business/financial planning	
IT	
Dealing with customers	
Knowledge of legislation/HSE	
Personnel skills	
Sales	
Software	
Regulation	
Market awareness	
Report related skills	
Other	
If other please clarify	
11. Do you have IIP accreditation?	
Yes	
No	
Working towards it	
Intend to in the future	
12. Do you conduct formal skills reviews?	
Yes	
No	
Don't know	
13. What type of training do you provide for your staff?	
None	

Skills Set Mapping-Waste Management Sector

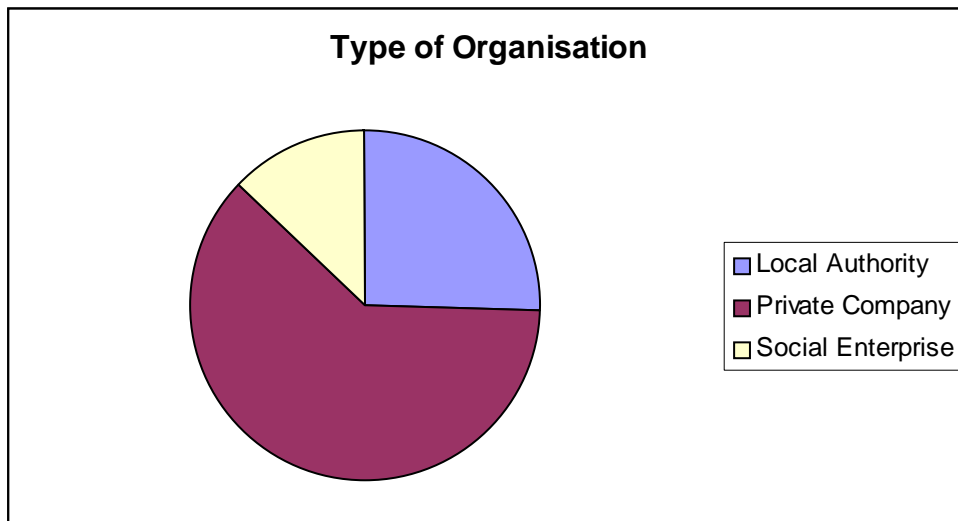
In-house only		
In-house & external		
External only		
14. In which areas do you conduct in-house training?		
15. In which areas do you conduct external training?		
16. If external, what training providers do you use?		
17. How do you rate the adequacy of external training provision?		
	Availability	Content
Good		
Adequate		
Needs improvement		
Don't know		
Additional comments:		
18. Are any of the following barriers to training & development of staff within your business?		
Distance to training centres		
Time constraints on staff		
Costs of training		
High turnover of staff		
Relevance of available training		
Additional comments		
19. What recruitment methods do you use?		
Advertising in national papers		
Advertising in local papers		

Skills Set Mapping-Waste Management Sector

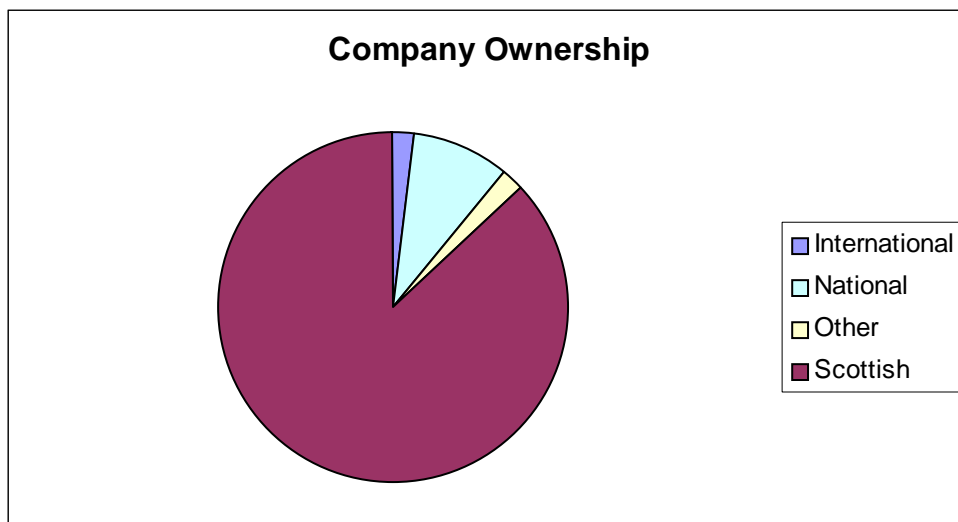
Job Centres	
Referral	
Local advertising	
Other	
Do you employ staff through any of the following schemes?	
New Deal	
Student placement	
Other, please specify:	

Appendix 3 – Findings of the Telephone Interviews

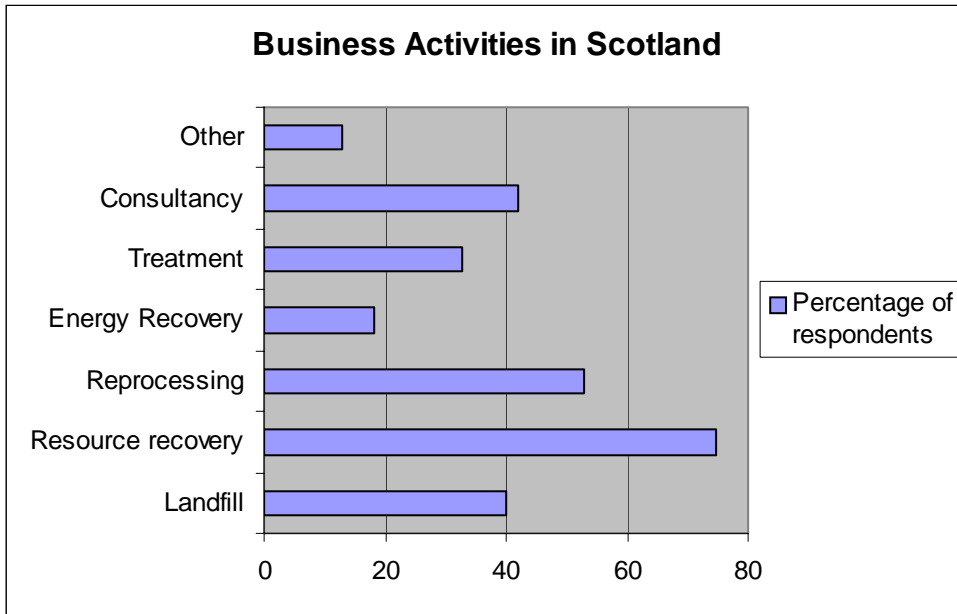
1. What type of organisation are you?



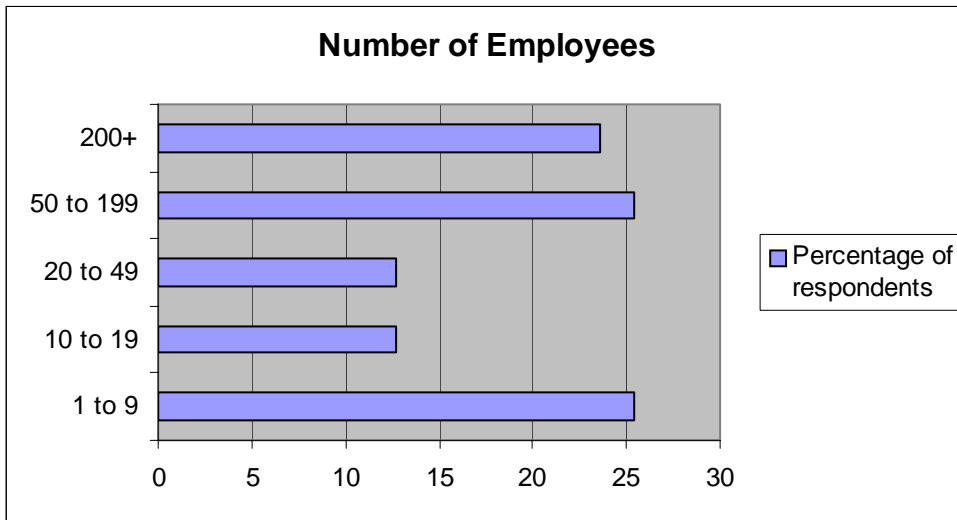
2. What is the ownership of the organisation?



3. What are your main business activities in Scotland?

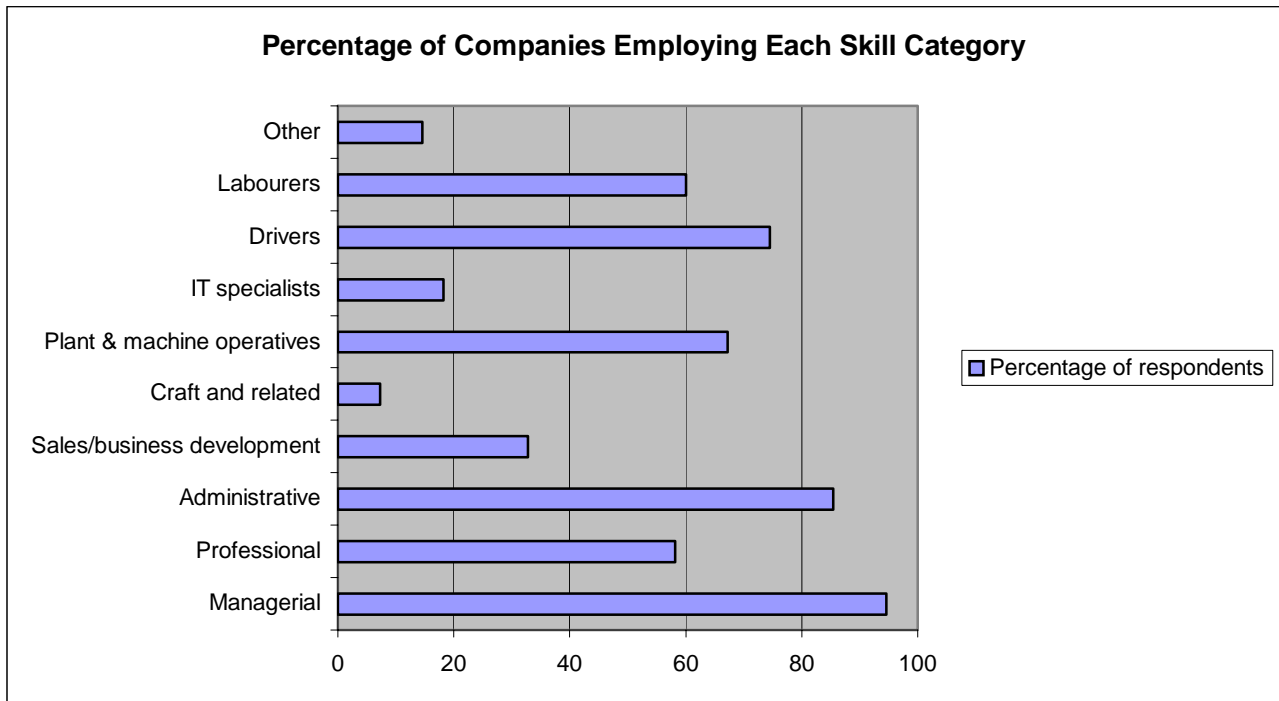


4. How many employees do you have in Scotland?

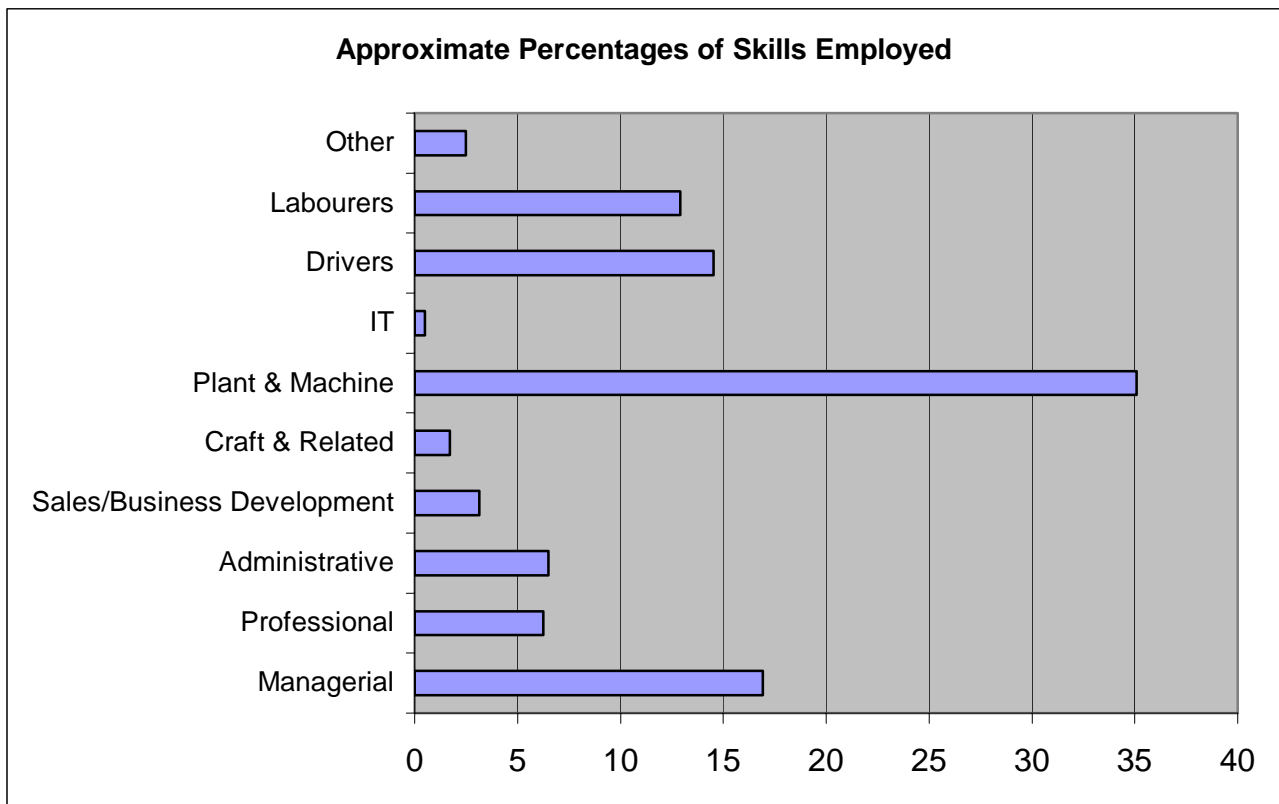


The organisations which employ more than 200 people are almost all Local Authorities

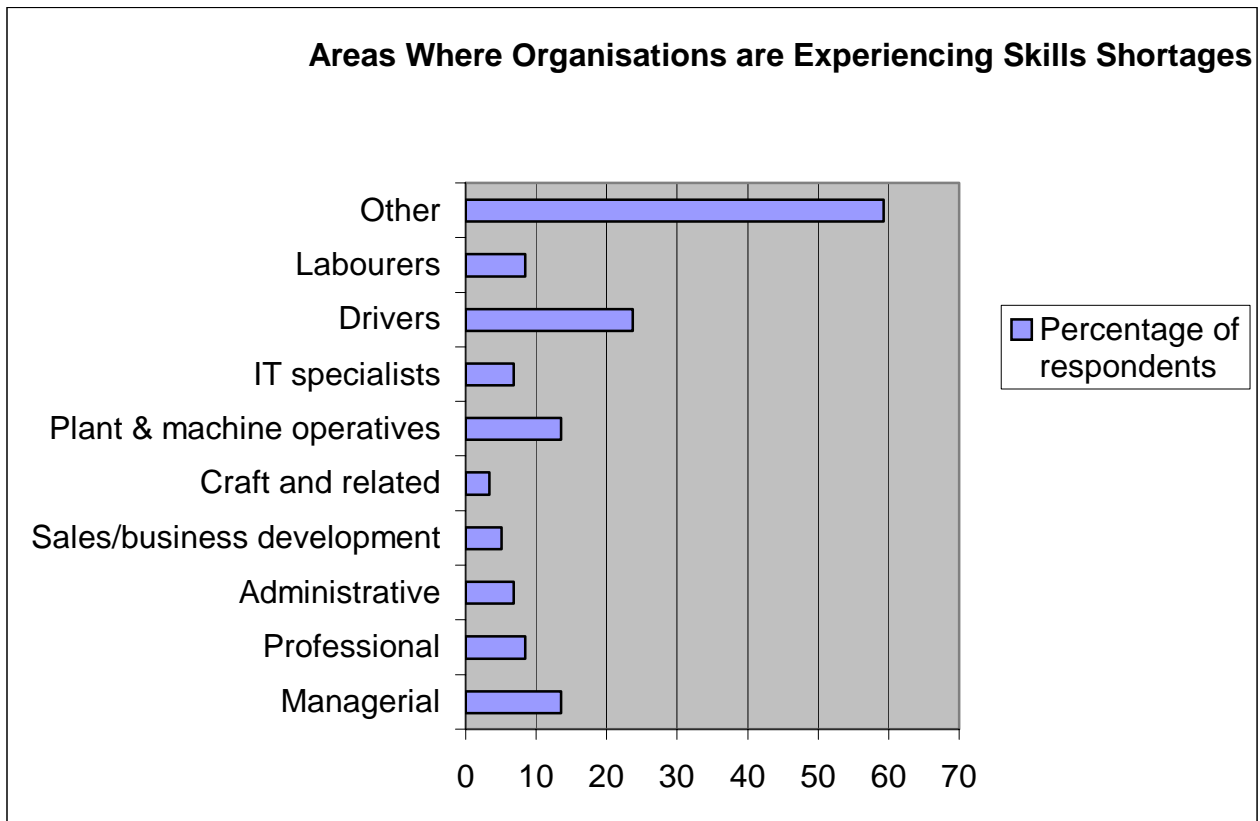
5. In which of the following skills areas do you employ people in Scotland?



What is the proportion of people employed in these skill areas?

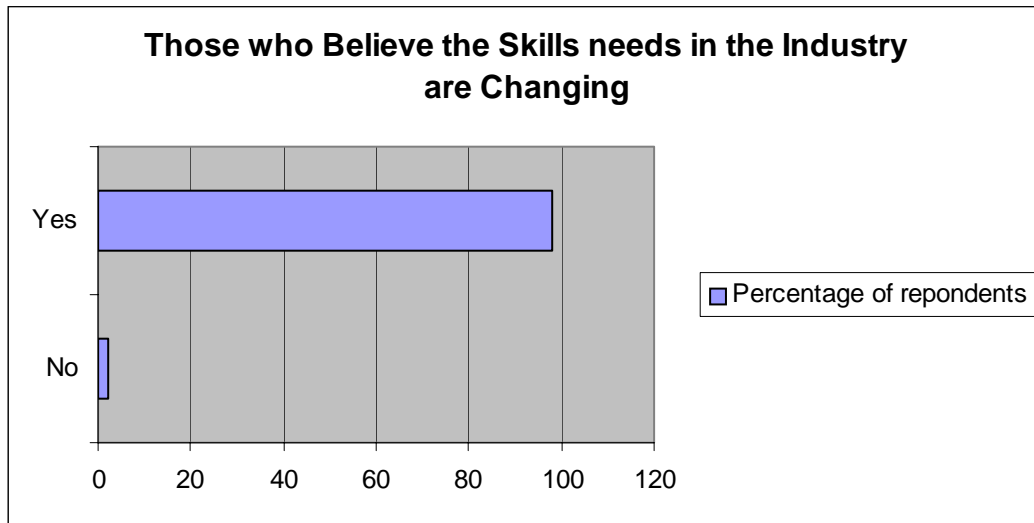


6. Have you experienced any skills shortages or difficulties recruiting in any of the areas provided?

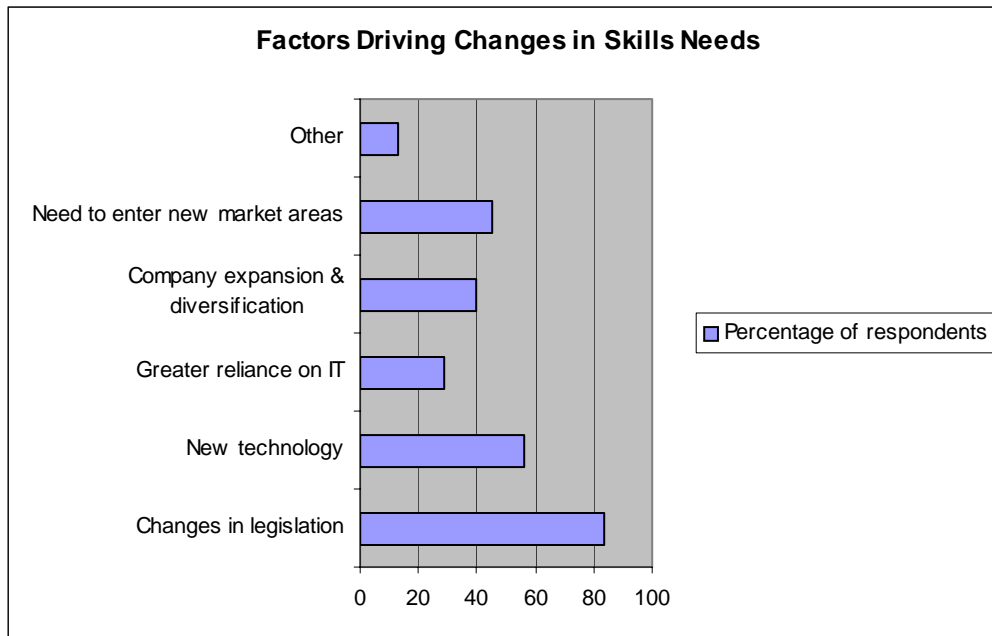


Reasons for other, 20% of respondents did not experience any skills shortages, the other expressed problems not in terms of skills shortages but general lack of education and experience in the candidates on offer leading to problems of rapid staff turnover.

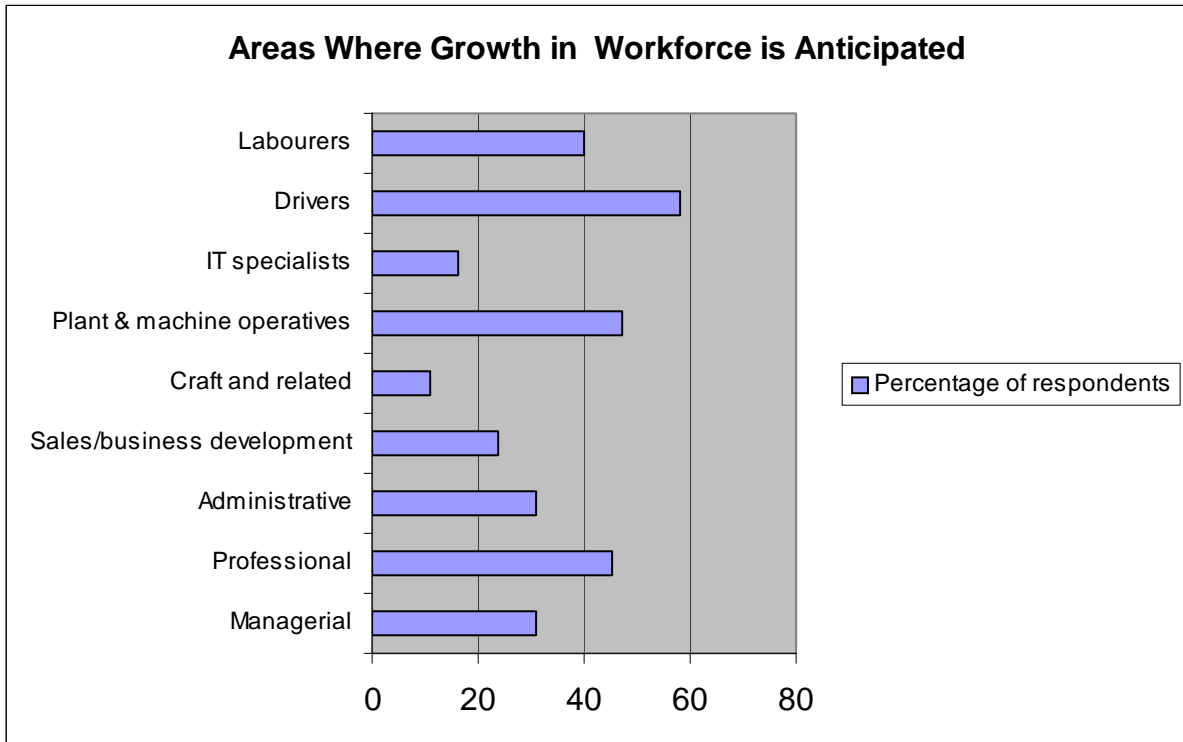
7. Do you believe the skills needs within the industry are changing?



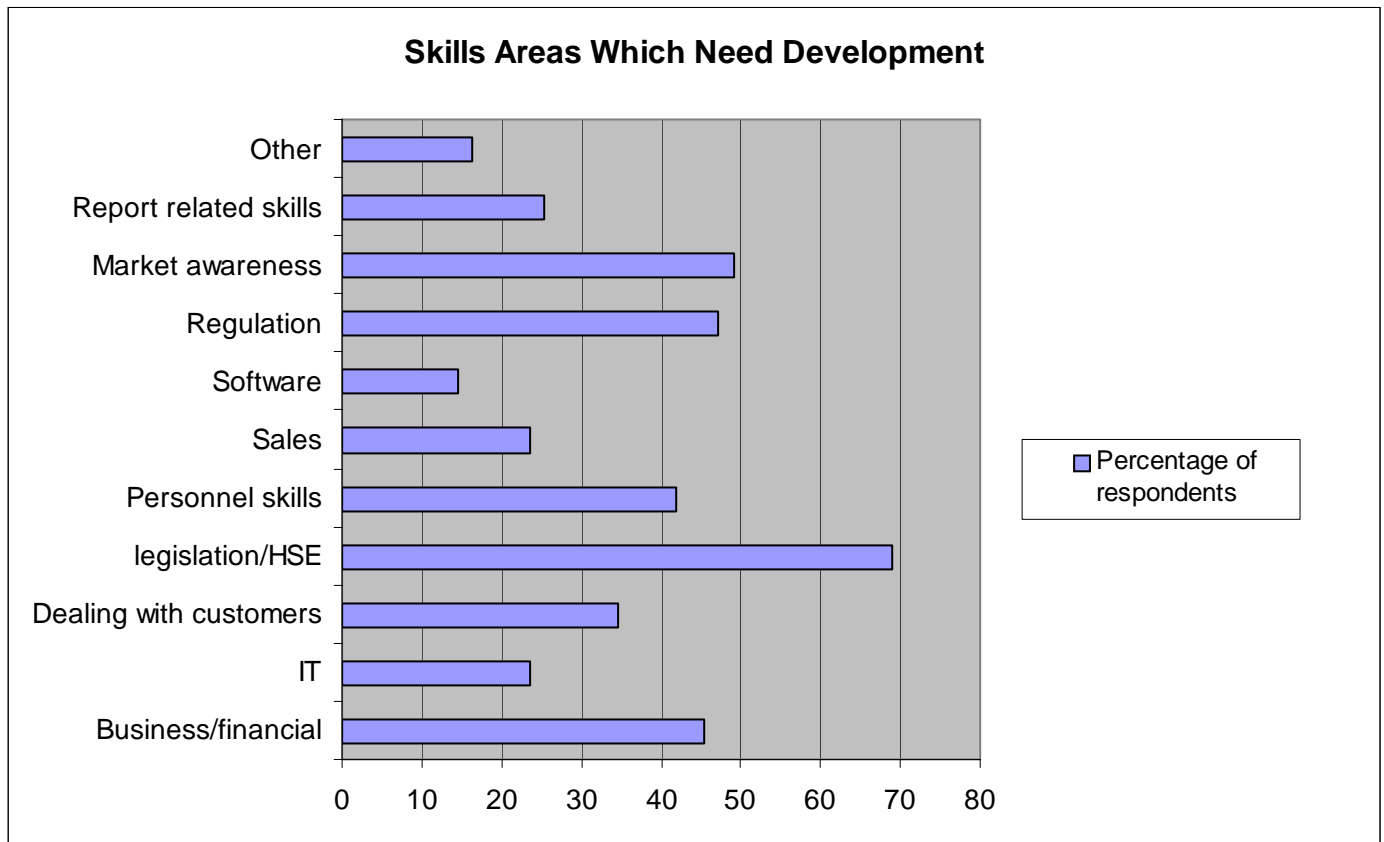
8. If yes, what factors are driving the change in skills needed?



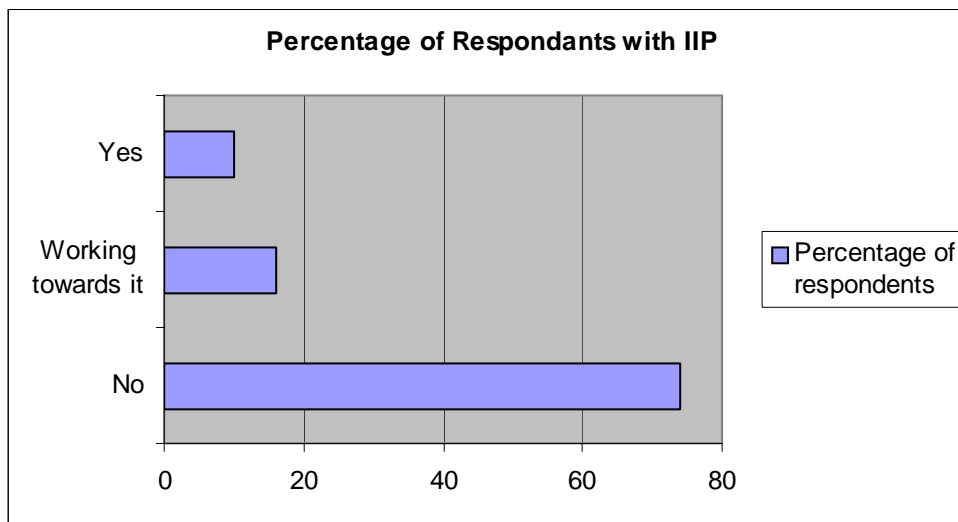
9. In which areas do you anticipate the size of your workforce will grow in the next 5 years?



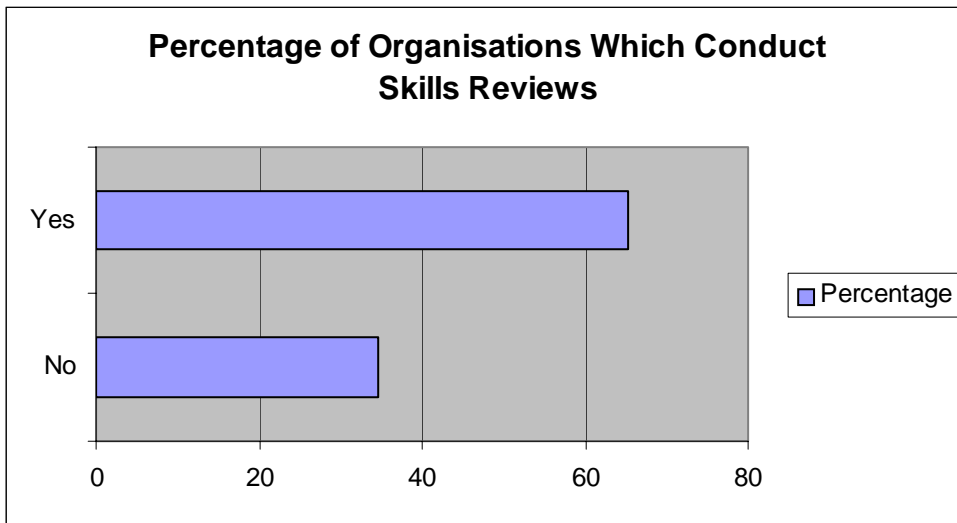
10. What skills do you feel need to develop in the industry to meet future needs and improve competitiveness?



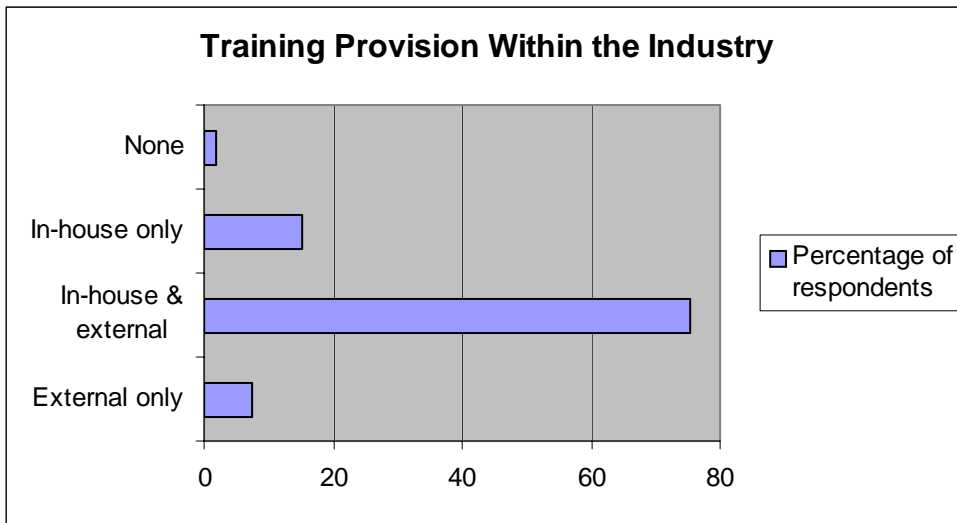
11. Do you have IIP accreditation?



12. Do you conduct formal skills reviews?



13. What type of training do you provide your staff?



14. In which areas do you conduct in-house training?

- Most companies seem to offer some form of in-house induction training. This covers a broad spectrum of skills that vary from company to company, but frequently include some of the following elements:
 - Background information relevant to the business
 - Regulatory requirements,
 - HSE,
 - IT,
 - Environmental awareness,
 - Customer services
 - Quality.
- Some form of technical training is also frequently present and covers such skills as plant operation (including fork lift), teaching new skills to tradesmen, composting etc.
- Social enterprises often provide training on specialist skills such as basic furniture restoration, basic electronics/joinery etc.
- Some of the in-house training is subject to external accreditation, for example, fork lift operations.

15. In which areas do you conduct external training?

External training provision is varied and may include a number of elements already mentioned in Question 14, for example:

- HSE
- Confined space entry
- Plant operation
- Legislation
- Management courses
- Driver training (including HGV and ADR).

First Aid skills and offshore training are also available externally.

There is also a degree of external training provision which may be described as more specific to the waste industry. This includes the following elements:

WAMITAB

WRAP course
 Waste awareness training
 COTC and NVQ level 4
 HNC in waste management
 Composting

16. Which external training providers do you use?

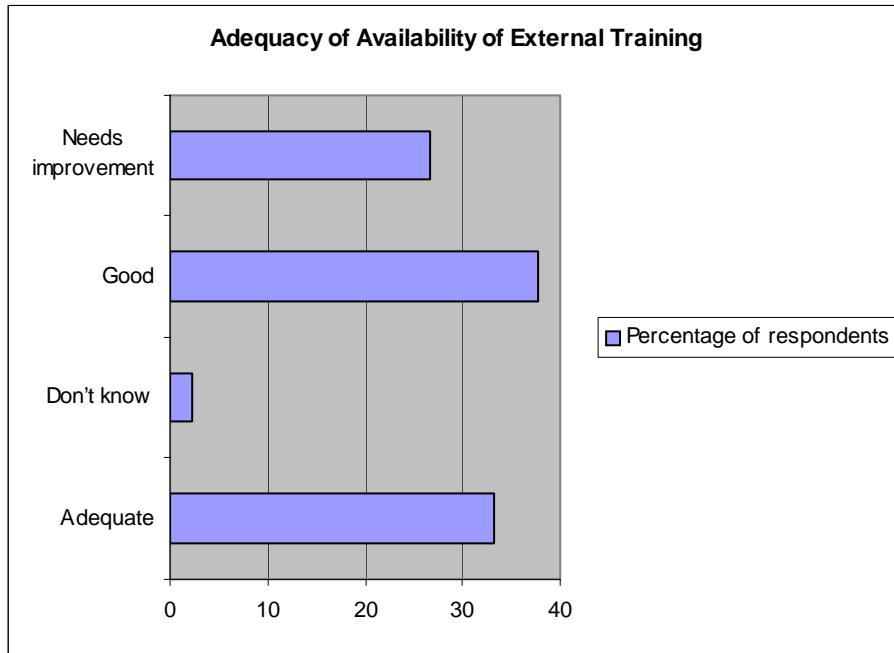
Table to show external training providers identified by survey

				Skill category			
				First Aid	Driving Skills	Waste Specific Training	
Training Providers	Red Cross	Registered driving instructors	Central Training (fork lift)	WRAP (various courses)	*WamCal ((Environmental & waste Management Training)	SEPA	
		Ritchies Training Centre (ADR/fork lift/plant etc)					LAGTA Group Training Ltd (LGV, Plant and Health & Safety).
							CIPD (Chartered Institute of Personnel & Development)
				Local Colleges & Universities			

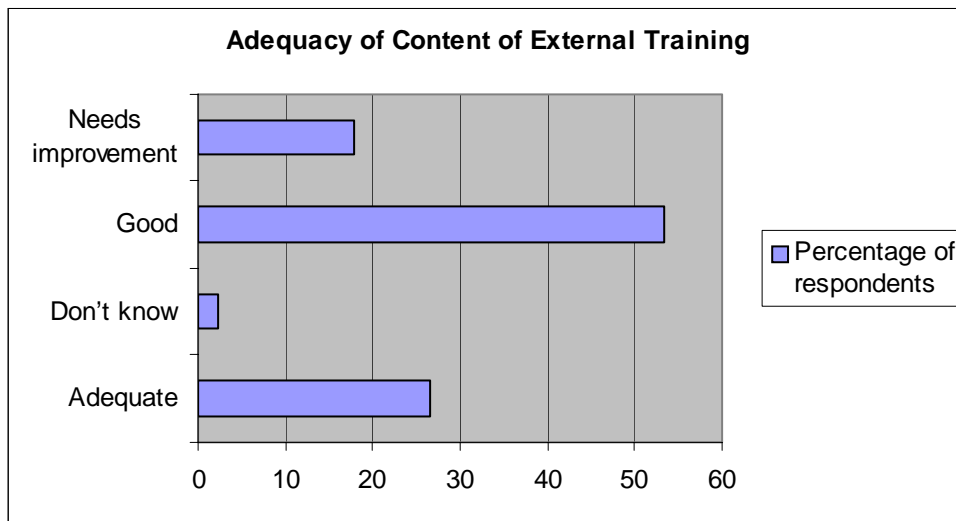
*WamCal provide vocational training leading to SVQ or NVQ qualifications at levels 1-4. They also provide training leading to the Waste Management Certificate of Technical Competence (COTC) awards.

NB: A number of respondents were unable to provide specific names of training providers but rather mentioned "accredited companies/agencies/consultants/qualified and authorised training providers".

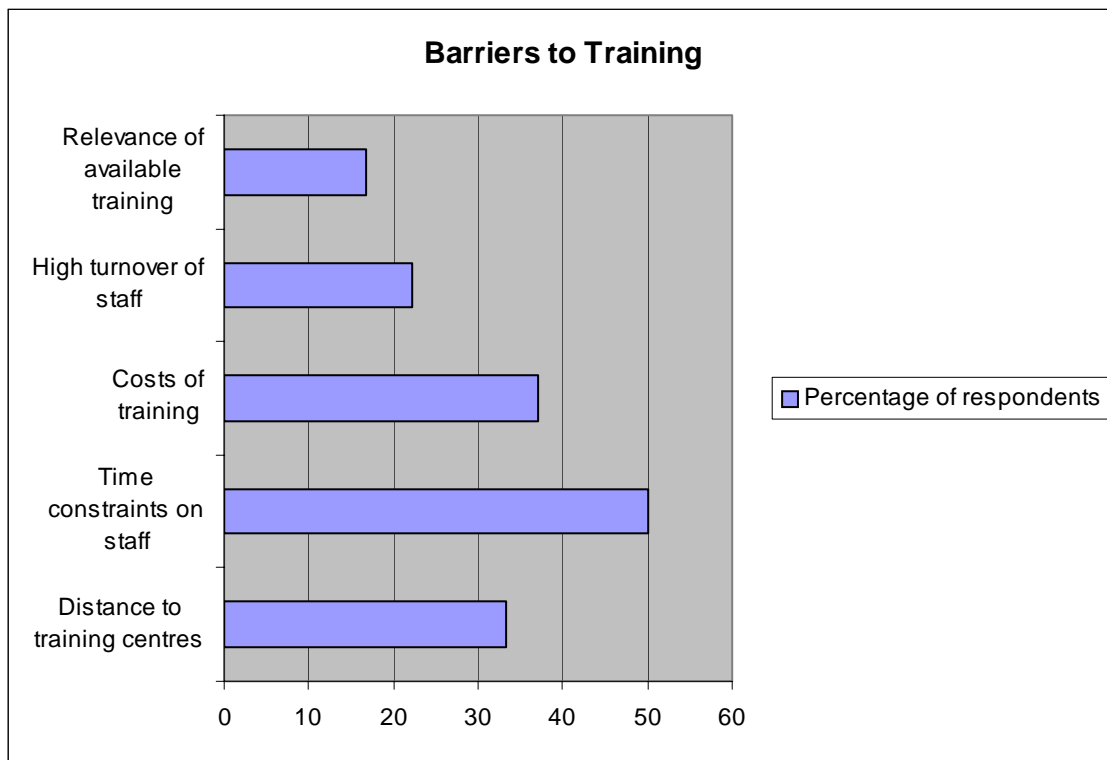
17a. How do you rate the adequacy of the availability of external training?



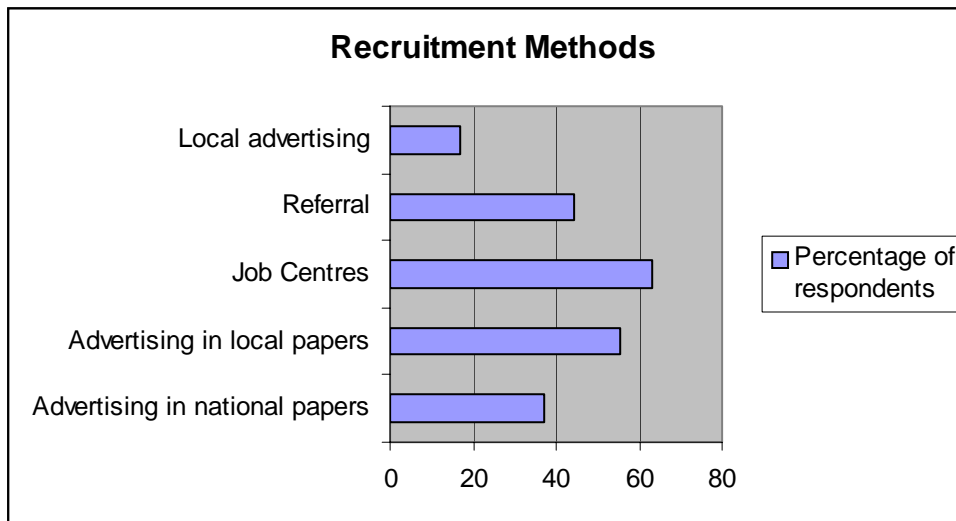
17b. How do you rate the content of external training?



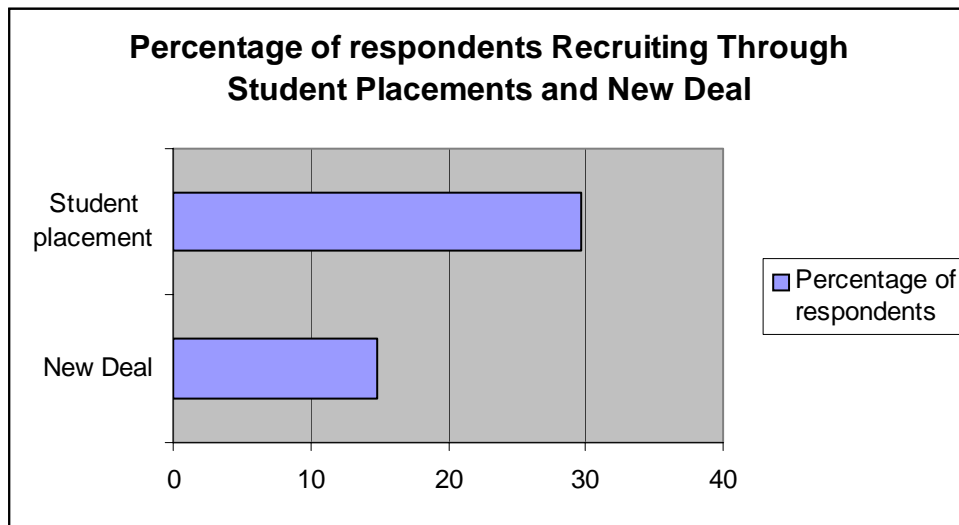
18. Are any of the following barriers to training and development of staff within your organisation?



19a. What recruitment methods do you use?



19b. Do you employ staff through student placement or New Deal schemes?



The organisations using New Deal were all Social Enterprises or Local Authorities. 56% of those offering student placements were Local Authorities.

Appendix 4 - Available Sector Specific Training

SVQ's Available for the Waste Management Industry

COURSE	SVQ LEVEL
Waste Management Operations: Managing Landfill Hazardous Waste	4
Waste Management Operations: Managing Landfill Non-Hazardous Waste	4
Waste Management Operations: Inert Waste	3
Waste Management Operations: Managing Treatment Hazardous Waste	4
Waste Management Operations: Managing Treatment Non-Hazardous Waste	4
Waste Management Operations: Managing Transfer Hazardous Waste	4
Waste Management Operations: Managing Transfer Non-Hazardous Waste	4
Waste Management Operations: Civic Amenity Site	3
Waste Management Operations: Managing Incineration	4
Waste Management Operations: Closed Landfill	3
Managing Landfill Operations: Special Waste	4
Managing Landfill Operations: Biodegradable	4
Landfill Operations: Inert Waste	3
Managing Treatment Operations: Clinical or Special Waste	4
Managing Treatment Operations: Biodegradable Waste	4
Treatment Operation: Inert Waste	3
Managing Transfer Operations: Special or Clinical Waste	4
Managing Transfer Operations: Biodegradable Waste	4
Transfer Operations: Inert Waste	3
Managing Incinerator Operations: Special Waste	4
Civic Amenity Site Operations	3
Waste Management Operations	1
Waste Management Operations: Waste Collection	1
OPS1L Waste Management Operations: Landfill	1
Waste Management Operations: Treatment	1
Cleaning and Support Services	1
Waste Management Operations	2
Waste Management Operations: Waste Collection	2
Waste Management Operations: Landfill	2
Waste Management Operations: Treatment	2
Cleaning and Support Services (Highways & Land)	2
Waste Management Supervision	3
Managing Waste Collection Operations	4

Currently Available CIWM Courses

- Packaging Waste Regulations
- PPC for Landfill - Managing the Re-Permitting Process
- An Introduction to the Management of Wastes
- Environmental Management Systems & Environmental Auditing
- Solutions to Contaminated Land
- Duty of Care
- The Management of Refuse Collection & Kerbside Recycling
- Practical Management and Control of Landfill Gas
- Leachate Monitoring
- Geology, Hydrogeology, Hydrology and Landfill
- Introduction to Waste Legislation
- Site Licensing/Exemptions from Waste Management Licensing
- Industrial Hazardous Waste Management
- Practical Waste Management
- The Management of Healthcare Wastes
- Advanced Landfill Gas Management
- Legislation for COTC Candidates
- The Management of Refuse Collection and Kerbside Recycling
- Special Waste/Hazardous Waste Regulations
- Practical Aspects of Landfill Gas & Ground Water Monitoring
- Evaluating Strategic Options to Meet Statutory Recycling Targets