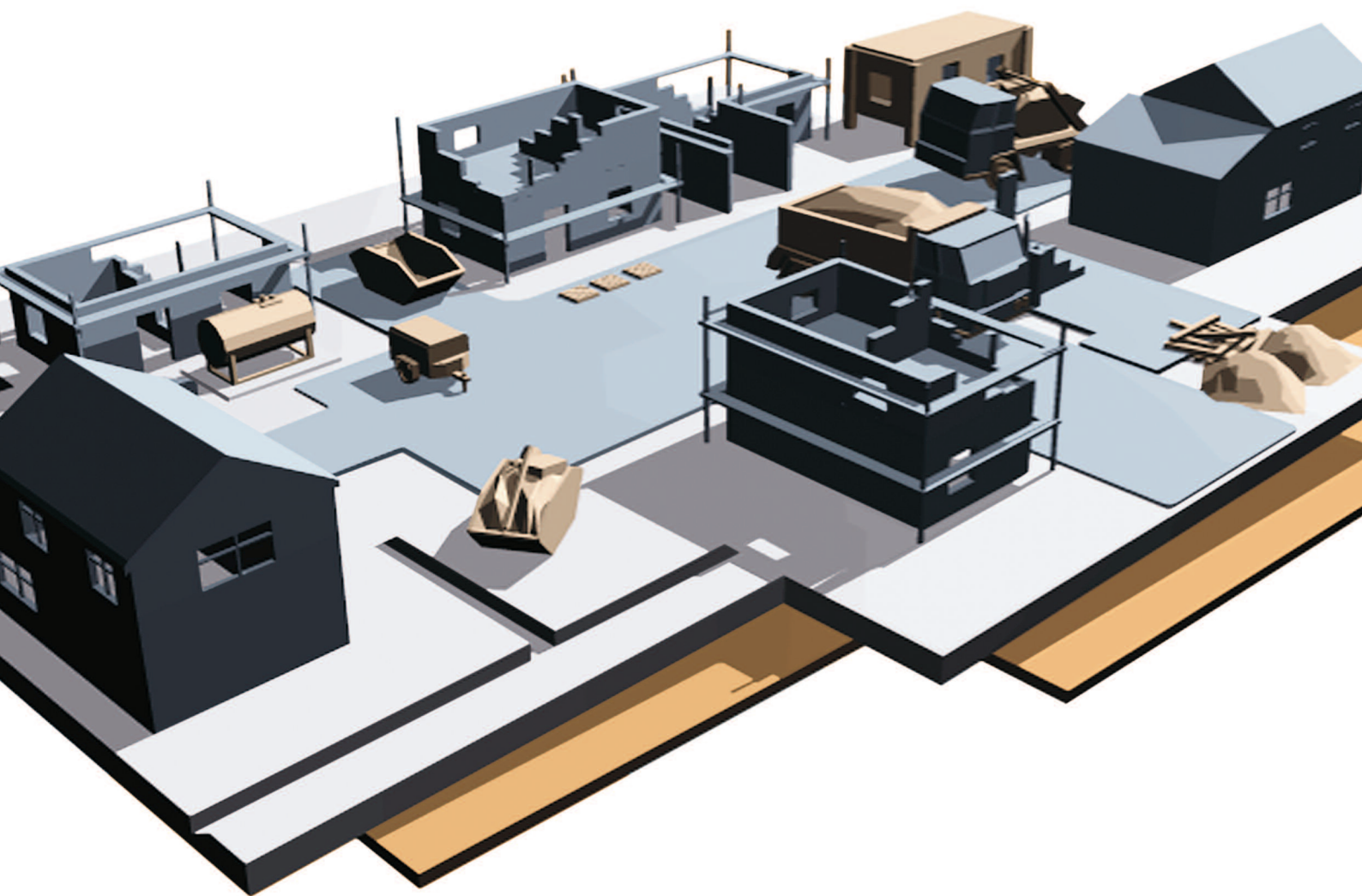


*An introduction to
Site Waste Management Plans*





*An introduction to
Site Waste Management Plans*

This Good Practice Guide was produced by
Envirowise

Prepared with assistance from:

BRE

Summary

UK construction sites consume vast amounts of materials every year and generate about a third of all UK waste. Construction sites face ever increasing waste disposal costs - costs that represent only a fraction of the true cost of waste. Some 10 - 30% of the materials that end up as waste on construction sites have never actually been used - a major waste of resources.

Significant cost savings and other benefits can be achieved by implementing better waste management on construction sites. In addition, clients are increasingly demanding evidence of improved environmental performance and specifying the use of waste monitoring and targets.

To help improve waste management, Site Waste Management Plans (SWMPs) were introduced in a Voluntary Code of Practice (CoP) published by the Department of Trade and Industry (DTI) in 2004. The Voluntary CoP was aimed at contractors and clients. It set out a basic structure for SWMPs and provided guidance on how companies could best use them. Many leading companies of all sizes have found SWMPs to be a useful tool, helping them to reduce waste and improve waste management. Drawing up and implementing a SWMP for each project enables companies to save money and improve their environmental performance by providing a framework that encourages resource efficiency and waste minimisation.

The UK Government and Devolved Administrations have recognised the potential for mandatory SWMPs to tackle issues such as fly tipping and to raise the standards for all to a level playing field. A consultation on proposals to make SWMPs a legal requirement in England took place from 2 April to 9 July 2007. The consultation suggested that, depending on the outcome, regulations could be brought into force in April 2008.

This Good Practice guide has been based on the DTI Voluntary CoP and is aimed at helping companies that have not yet used SWMPs to get started in advance of the potential introduction of regulations. This Guide is aimed at all sizes of company and all those associated with construction projects (sub contractors, architects, surveyors, suppliers, planners, etc). It explains:

- what is meant by resource efficiency;
- the benefits of Site Waste Management Plans;
- what's involved in a Site Waste Management Plan;
- how to produce and implement a Site Waste Management Plan.

Industry examples in the Guide illustrate the benefits of using SWMPs to improve resource efficiency and reduce waste. The guide also highlights the advice and support available from Envirowise and other organisations to help construction companies reduce the volume of raw materials and other resources used during a construction build.

It is anticipated that companies using SWMPs based on the DTI Voluntary CoP will be much better placed to adjust their SWMPs to comply with any new regulations than companies that do not have any SWMPs. However this Guide cannot predict and should not be used to address new regulatory requirements. It is expected that new guidance will be provided to accompany any regulations that are introduced.

Users of this Guide are strongly advised to look out for Government announcements on the outcome of consultations and any plans to introduce regulations. The Envirowise Construction Enews Bulletin 'BrickSandMortar' will inform on developments. Readers can register to receive this Enews by sending their email address to construction@envirowise.gov.uk

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1.1 Why reduce waste?

UK construction sites use around 360 million tonnes of resources each year and generate some 100 million tonnes of waste (equivalent to a third of all UK waste). Estimates suggest that 10 - 30% of the materials that end up as waste on-site have never actually been used - a major waste of resources. In addition, the true cost of waste can be up to 15 times more than the cost of waste disposal.

The true cost of waste

A study by AMEC on eight yard skips found that costs increased by 150% when labour and materials were added to the skip hire charge (see Table 1).

Table 1 Example costs

Item	Cost (£)
Skip hire	85
Labour costs to fill skip	163
Cost of materials put in skip	1,095
Total	1,343

To remain competitive, construction companies need to reduce the amount of waste they send for disposal to minimise:

- the loss of valuable raw materials they have paid for;
- the spiralling costs of disposal to landfill;
- the extra costs associated with the reclassification of certain wastes (eg fluorescent lighting) as hazardous¹.

Significant cost savings and other benefits can be achieved by implementing better waste management on construction sites. In addition, clients are increasingly demanding evidence of improved environmental performance and specifying the use of waste monitoring and targets.

1.2 Site Waste Management Plans help to reduce waste

Site Waste Management Plans (SWMPs) are an important tool for construction companies of all sizes. They help companies save money by providing a framework that encourages resource efficiency and waste minimisation (see Section 1.3). Drawing up and implementing a SWMP will also improve your company's environmental performance. However, SWMPs are site-specific and need to be produced for each project - though many elements will be common, eg the importance of segregating different wastes.

¹ For advice on which wastes are classed as hazardous and the regulations governing hazardous waste, contact Envirowise or the regulators (see Section 7).

SWMPs were originally developed as a Voluntary Code of Practice (CoP) published by the Department of Trade and Industry (DTI) in 2004². This code, which is aimed at contractors and clients, sets out a basic structure for SWMPs and provides guidance on how companies can best use them.

The UK Government and Devolved Administrations have been consulting (see box below) on proposals to make SWMPs mandatory for projects over a minimum value. However, their benefits (see Section 2) apply to construction and demolition projects of all sizes.

Site Waste Management Plans: the legislative position*

At present SWMPs are voluntary. However the UK Government and Devolved Administrations have been consulting on proposals to make SWMPs mandatory

In England, proposals to make SMWP mandatory were set out in a Defra consultation which closed on 9 July 2007. Here, SWMPs are seen as a mechanism for tackling fly tipping, demonstrating compliance with existing waste regulatory controls, improving resource efficiency and raising the standards for all to a level playing field. It is proposed to use powers in the Clean Neighbourhoods and Environment Act 2005³ to make SWMPs mandatory for construction and demolition projects over a suggested minimum value of £250,000. Depending on the outcome of this consultation SWMPs could be mandatory in England from April 2008.

In Scotland, SWMPs are seen by the Scottish Executive as essential for good practice. The latest draft of Scottish Planning Policy 10 (SPP10) Planning for Waste Management states that proposed new developments with a project value of over £250,000 should be supported by a Site Waste Management Plan.

In Northern Ireland, sustainable construction guidance for public sector contracts issued by the Central Procurement Directorate in February 2006 requires SWMPs for all projects over £200,000.⁴ The Northern Ireland Waste Management Strategy 2006 – 2020, published in March 2006 by the Department of the Environment⁵, notes that this guidance is equally applicable to private sector developments and announces the Department's intention to consult on proposals for a statutory requirement to prepare SWMPs.

In Wales, SWMPs are also seen as valuable for the dissemination of best practice and legislation may occur later. The Welsh Assembly Government aims to improve resource efficiency and increase recycling by supporting Construction Excellence Wales in its work with all construction and demolition sectors. It has also initiated projects to reduce flytipping activity through education and enforcement. Local authority planning departments in Wales are also promoting resource efficiency and recycling in the form of guidance contained in Planning Technical Advice Note TAN 21 and in the Aggregates Advice Note MTAN 1. Public sector construction waste policy is being progressed through the Sustainable Buildings Project Action Plan announced in February 2007.

Local authorities throughout the UK are increasingly requiring the use of SWMPs within supplementary planning guidance as material considerations for assessing planning applications. In addition, the Government's Code for Sustainable Homes⁶ requires the use of a Site Waste Management Plan as a minimum requirement for waste.

Legislation and policy are constantly changing and being updated. **For the latest information, please contact the Environment and Energy Helpline free on 0800 585794.**

* As of July 2007.

² Download a copy by following the link on the Construction Sector page on the Envirowise website (www.envirowise.gov.uk).

³ Section 54 of the Clean Neighbourhoods and Environment Act 2005 gives the Secretary of State in England and Welsh ministers the power to make regulations to require developers and contractors to produce a written site waste management plan for construction and demolition projects.

⁴ See Guidance Note 3 (www.cpdni.gov.uk/index/guidance-for-purchasers/sustainable-construction.htm)

⁵ www.ehsni.gov.uk/environment/wasteManage/strategyeni.shtml

⁶ See the Sustainable Construction pages of the DTI website (www.dti.gov.uk) or go to www.planningportal.gov.uk/uploads/code_for_sust_homes.pdf to download the code.

Although SWMPs focus mainly on activities on-site for managing waste, there are opportunities to link to other stages of the construction process and to incorporate them within company and site procedures (see Table 2).

Table 2 SWMPs within the construction process

Element	Action
Procurement	<ul style="list-style-type: none"> ■ Establish systems and methods of procuring materials, including working with the supply chain.
Design	<ul style="list-style-type: none"> ■ Work with the design team to design out waste in the first place, eg use standard sizes, modular construction. ■ Feed back results from implementation of the SWMP.
Contracts	<ul style="list-style-type: none"> ■ Oblige sub-contractors and waste management contractors to participate in the SWMP process including any on-site activities, eg segregation of waste materials.
Processes	<ul style="list-style-type: none"> ■ Embed the SWMP within environmental and quality management systems, procedures and policies.
On-site	<ul style="list-style-type: none"> ■ Provide a framework for implementation of waste management procedures and targets on-site.

1.3 What is resource efficiency?

Resource efficiency means using resources such as materials, water, energy and effort more efficiently and effectively. It's about getting the most out of what you have, ie maximising the use of materials and reducing and recovering waste.

Resource efficiency has many benefits including:

- reduced purchasing costs for raw materials;
- reduced handling and transport costs;
- reduced waste disposal costs;
- potential revenue from recovered materials;
- easier compliance with environmental legislation;
- improved environmental performance;
- improved market position through increased competitiveness and better public image.

Resource efficiency through SWMPs reduces costs

Implementing SWMPs and resource efficiency allowed Taylor Woodrow Construction to save:

- 3% of build costs;
- 20% of materials on-site;

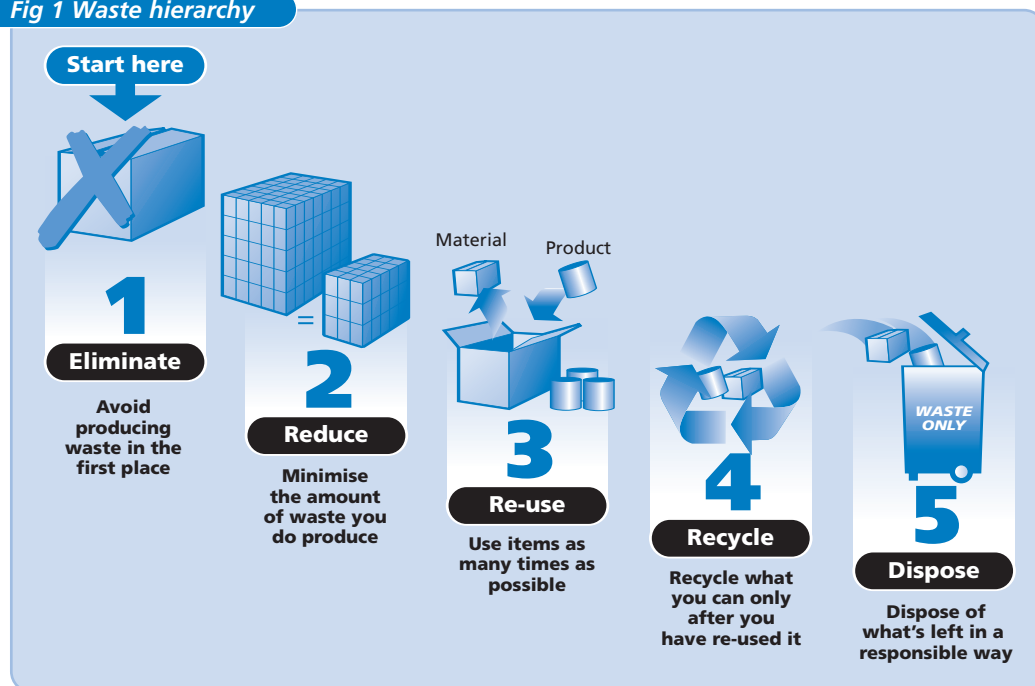
Segregation of different wastes resulted in a saving of 0.2% of total project costs.

1.3.1 What is waste minimisation?

As a technique for resource efficiency, waste minimisation (also known as waste prevention and resource reduction) is the design, purchase, manufacture or use of products/materials to reduce the amount of waste generated. Recycling is not waste prevention, but an effective way of managing waste materials once they have been generated. Waste minimisation actually reduces the amount of raw material used and, therefore, the amount of wasted resources discarded.

Follow the waste management hierarchy (see Fig 1) for the best long-term benefits and look for solutions for your organisation that are as close as possible to the top of this hierarchy.

Fig 1 Waste hierarchy



WasteWise: Increased profits at your fingertips (IT313) is an interactive waste minimisation CD-ROM that brings together all the essential information companies need to minimise waste and save money.

Examples of how construction companies have achieved cost savings and other benefits from reducing waste are given in:

- *Saving money and raw materials by reducing waste in construction: case studies* (GG493);
- *Saving money and raw materials by reducing waste in construction: case studies from Scotland* (GG500).

To obtain copies of these and other free Envirowise publications, visit www.envirowise.gov.uk or call the Environment and Energy Helpline free on 0800 585794.

1.4 The purpose of this Guide

This Good Practice Guide is based on the current DTI Voluntary Code of Practice (CoP) for SWMPs. It is intended to help construction companies save money and improve their environmental performance by preparing and implementing Site Waste Management Plans for their projects (particularly those over £250,000 in value). Its practical advice applies to all sizes of company and to all those associated with construction projects (sub-contractors, specialist contractors, architects, surveyors, suppliers, planners, etc).

It is anticipated that companies using SWMPs based on the Voluntary CoP will be much better placed to adjust their SWMPs to comply with the regulations than companies that do not have any SWMPs. However this Guide cannot predict and should not be used to address the regulatory requirements. It is expected that new guidance will be provided to accompany the regulations.

Users of this Guide are strongly advised to look out for Government announcements on the outcome of consultations and any plans to introduce regulations. The Envirowise Construction Enews Bulletin 'BrickSandMortar' will inform on developments. Readers can register to receive this Enews by sending their email address to construction@envirowise.gov.uk

The following sections describe:

- the benefits of Site Waste Management Plans;
- what's involved in a Site Waste Management Plan and who should be involved;
- the stages involved in producing a Site Waste Management Plan;
- practical advice on implementing a Site Waste Management Plan;
- a simple ten-point action plan;
- sources of further information and advice
- a sample detailed Site Waste Management Plan.

Industry examples in the Guide illustrate the benefits of using SWMPs to improve resource efficiency and reduce waste.

Further free advice on how to reduce the volume of raw materials and other resources used during a construction build is available from Envirowise (see Section 7.1). Visit www.envirowise.gov.uk or call the Environment and Energy Helpline free on 0800 585794.

The benefits of SWMPs

Adopting a site approach for managing waste has numerous benefits including:

■ **Cost savings.** SWMPs provide a framework to provide cost savings by:

- better management of materials both on-site and off-site;
- improved management of waste for recovery rather than disposal;
- sending less waste to landfill for disposal.

Costs for waste management are only going to increase. The construction industry currently pays an estimated £200 million/year in Landfill Tax; this tax will increase at a rate of £8/year from 1st April 2008 until at least 2010/2011 for active waste. It is also increasingly expensive to dispose of hazardous waste.

■ **Compliance with contractual obligations.** SWMPs provide evidence of compliance with contractual obligations between the contractor and the client/developer. Some companies already require contractors to consider good practice initiatives and the use of SWMPs to ensure that off-site waste disposal is reduced and regulatory controls are met. SWMPs can also be used as contractual obligations between the main contractor and sub-contractors; this ensures 'buy-in' at all levels.

SWMPs are a key tool for compliance with likely future contractual requirements from public and private sector clients and forthcoming legislation (see Section 1.2).

■ **Compliance with environmental legislation.** All those who produce or handle waste from construction activities have a legal responsibility under the Duty of Care legislation⁷ to ensure that the waste is taken care of and passed to someone authorised to receive it (eg a registered waste carrier or a licensed site).⁸ Failure to comply can result in an unlimited fine.

SWMPs provide a framework to enable sites to:

- comply with waste legislation;
- manage risk;
- help them to work with the regulators;
- demonstrate compliance with the law.

■ **Better working practices on-site.** A tidier, cleaner site generally means a safer and healthy site for workers. Good site procedures go hand in hand with good waste management on-site. According to the Health and Safety Executive (HSE), 50% of construction site accidents are related to messy and poorly organised sites.

■ **Corporate and Social Responsibility (CSR).** More companies are recognising the benefits of engaging with the CSR agenda and reporting publicly on their activities. Banks and other financial institutions increasingly rate environmental and social impacts as important. SWMPs provide a framework for companies to improve their performance on waste and to report this to their investors, shareholders and other stakeholders.

⁷ See www.defra.gov.uk/environment/waste/management/doc/index.htm

⁸ There are public registers of waste carriers/brokers and licensed waste management sites (see Section 5.3).

What does a SWMP involve?

There is no one template or standard format for a SWMP as it will depend on:

- the company's procedures and practices;
- the size and type of the project (eg a small project will require less information within a SWMP than a larger one)

As a minimum, a SWMP should identify:

- the person responsible for waste management on-site;
- the types of waste that will be generated;
- waste management options for these waste streams;
- the use of appropriate and licensed waste management contractors and sites;
- a plan for monitoring and reporting on the quantity of waste.

To be effective, it is vital that the SWMP is simple and easy to follow, with clear procedures for waste management.

An SWMP involves the following stages:

- writing the SWMP;
- assigning responsibility for implementation;
- identifying likely waste arisings, types and amounts;
- determining the best waste management methods (on- and off-site) for the different wastes;
- optimising the supply and procurement of materials;
- communicating the plan and training staff on how it will be implemented;
- setting up systems to segregate and handle wastes on-site to encourage recovery;
- making sure the site complies with the Duty of Care;
- collecting data on waste generated during the project;
- reviewing the SWMP regularly;
- drawing up recommendations for future projects.

Advice on these stages is given in Sections 4 and 5, which cover drawing up the SWMP and putting it into practice respectively.

3.1 Who should be involved?

Ideally everyone working on a construction site should be involved in its SWMP.

An effective SWMP requires commitment and support at all levels including:

- **Client.** Clients should encourage the use of a SWMP, maintain an interest in it and be provided with feedback on its implementation and achievements. Clients can use the results of SWMPs as a basis for their CSR reporting and targets.

- **Design team.** Involving the design team in drawing up the SWMP will make it easier to minimise waste in practice. A site can use the SWMP as a mechanism for feeding back waste issues related to design or design changes to the design team.
- **Planners.** The local authority planning department may require the development of a SWMP or be interested in the SWMP - especially if it contributes to the overall quality of the local environment and wider policies and targets.
- **Regulator.** The regulators (see Section 7.2) can provide advice on waste legislation and practices on-site. Having a SWMP will help if:
 - the site is visited by the regulator;
 - licences or exemptions are required for certain waste management activities.
- **Suppliers.** Waste can be reduced or taken back from site by working with the supply chain (especially on the procurement of materials). A SWMP can highlight what types of materials will produce waste and provide a focus for discussions with the supply chain.
- **Sub-contractors.** Sub-contractors will produce waste on-site and are thus a critical part of a SWMP. They need to be brought into the SWMP (either voluntarily or contractually) and communicated to effectively. If a large amount of demolition waste is likely to be produced, it is essential to liaise with the demolition contractor.
- **Waste management contractor.** Providers of waste management services will be able to provide assistance and advice on on-site and off-site waste management options.
- **Environmental team.** Your head office or regional office environmental team may have a SWMP template and will be able to provide advice and assistance. They may also be able to tell you about useful practices and lessons learnt from other SWMPs.
- **On-site.** Someone on-site needs to be made responsible for implementing the SWMP; a 'waste champion' should also be appointed (see Section 4.2). In addition, the project team (site engineers, quantity surveyors, etc) should know about and be aware of the SWMP.
- **End user.** If known, it may be useful to involve the end user in the SWMP. It will offer ownership of the process and may encourage them to continue good waste management procedures - especially if these have been designed into the building.
- **Facilities management.** Decisions made in the construction process (especially in the design) will affect operational waste management. Facilities management will be responsible for ensuring effective waste management during the building's operational phase.
- **Community.** The wider community may have some interest in on-site operations including waste management. The SWMP can help to communicate on-site practices and gain a good relationship with the community.
- **Other organisations.** It maybe useful to involve organisations such as Envirowise, WRAP⁹ and others that can provide assistance in writing and implementing SWMPs (including training). They may also have useful case studies.

⁹ Waste and Resources Action Programme (see Section 7.3)

Drawing up a SWMP

This section outlines the stages involved in producing a SWMP for your site and explaining to everyone what they need to do to fulfil its requirements. Section 5 describes what needs to be done to put the plan into practice.

4.1 Writing the SWMP

The role of the person writing the SWMP will differ between companies. When the SWMP is written will also differ.

- If a SWMP is written at the pre-planning stage to take account of design and waste minimisation issues, then the developer or client or the architect's representative may be responsible.
- If the SWMP is written at the tender stage or at the beginning of the construction phase, then the contractor will be largely responsible. The contractor may also have to develop and use any SWMP produced by other parties.

It is important that the person or team writing the SWMP has some knowledge of waste issues and the construction programme. Ideally they should also be responsible for implementation of the SWMP (see Section 4.2).

The writer of the SWMP should be supported by the wider project team, which should be consulted in a partnership approach. The project team includes:

- client;
- design team;
- regulators;
- environmental team;
- sub-contractors (especially the demolition contractor);
- supply chain.

4.2 Making the SWMP work

The SWMP should be:

- viewed as common practice on-site;
- embedded within the company's policies and site procedures, eg within existing environmental management systems or quality systems.

It is essential that the SWMP is supported by management and accepted by the project team (including sub-contractors).

It is also important that the SWMP is communicated effectively to everyone on-site (see Section 4.6) and be made widely available. For example, discuss it as part of the pre-meeting process with sub-contractors.

Training should be given as required and records kept of this training.

SWMPs offer a template for bringing together existing documentation and ensuring that legal requirements are met. Therefore they should act as a tool for managing waste rather than being seen as an additional burden to someone who is already busy.

4.2.1 Site responsibility for the SWMP

One person on-site (eg project manager or site manager) should be made responsible for implementation of the SWMP. This person needs to:

- be able to communicate to everyone working on-site and motivate them to follow the SWMP;
- be able to provide or source the necessary resources and training;
- have a good knowledge of the contract and the various parties involved.

4.2.2 Waste champion

In addition, it is helpful to nominate someone on-site as a 'waste champion', eg site manager, site foreman, crane operator or fork lift driver.

The waste champion should be someone with an interest in waste management and environmental issues, and have knowledge of the overall project. They should report regularly to the person responsible for the SWMP and have the resources, knowledge and power necessary for its implementation. If appropriate (eg on smaller sites), the person responsible for implementing the SWMP could also be the waste champion for the site.

The role of the waste champion should include:

- promoting awareness of the SWMP among the workforce;
- monitoring and reporting on waste generation on-site;
- monitoring and possibly enforcing waste segregation on-site;
- monitoring the effectiveness of the SWMP;
- forming a good working relationship with the waste management contractor;
- encouraging suggestions for better waste management on-site.

Saving money through waste minimisation: teams and champions (GG27) describes how waste champions and teams help to boost the success of a waste minimisation programme. To obtain your free copy, visit www.envirowise.gov.uk or call the Environment and Energy Helpline free on 0800 585794.

4.3 Identifying likely waste arisings, types and amounts

Knowing the types of waste and the estimated amounts arising from each part of the work programme will help to determine:

- what types/numbers of containers are needed for the different project stages;
- when best to implement segregation for different waste streams.

As a rough guide:

- inert wastes (eg concrete, bricks and blocks) will be generated in the first phases of the project;
- timber waste may be generated throughout the project;
- plastic waste will tend to increase as the project progresses;
- packaging waste will increase as the project progresses and may be as much as 35% by volume during the fit-out stages;
- some waste types (eg office and canteen wastes) will be present throughout the project.

An example template for recording your estimates is given in Fig 2 (overleaf). This can be photocopied and filled in, or you can generate your own version.

Any waste arising from demolition works should be included in your estimates. The types and amounts of demolition waste can be estimated by carrying out a pre-demolition audit and/or using the Institution of Civil Engineers (ICE) Demolition Protocol.¹⁰

Useful Envirowise publications

Packaging waste arising during a construction project can be estimated using the Construction Packaging Waste Estimator provided free with *Managing packaging waste on your construction site* (GG606).

The *Decorator environmental information sheet* (EN608), *Labourer environmental information sheet* (EN609), *Carpenter environmental information sheet* (EN610) and *Bricklayer environmental information sheet* (EN611) contain information about the various types and amounts of waste generated by different skills.

Waste mapping: your route to more profit (ET219) guides companies through the first stages of finding out where waste occurs on their sites.

These and other Envirowise publications are available free of charge from www.envirowise.gov.uk or the Environment and Energy Helpline (0800 585794).

¹⁰ A tool for increasing resource efficiency in demolition projects (<http://icextra.ice.org.uk/tlml/demolition>)

Fig 2 Example template for recording estimated waste arisings

Project name								
Project address/location								
Main contractor								
Person responsible for waste management on-site (name and title)								
Person and company completing this form (if different)								
Material	Types of waste							
	Quantity (in m ³)							
	Re-used on-site	Re-used off-site	Recycled for use on-site	Recycled for use off-site	Sent to recycling facility	Sent to WML exempt site	Sent to landfill for disposal	
Inert*								
Active*								
Hazardous								
TOTAL								

WML = Waste Management Licence

*For the purposes of the Landfill Tax

Source: DTI Voluntary Code of Practice, July 2004

4.4 Planning for waste management

The various options for the likely waste arisings on-site should follow the waste hierarchy (see Fig 1). Start by considering ways to prevent and reduce waste. Then look at re-use and recycling (on- and off-site), recovery of energy and finally disposal.

It may be useful to talk to your waste management contractor to establish the options available for waste once it is removed off-site.

Planning for waste management will help to:

- decide whether any specialised equipment is required on-site, eg a mobile crusher for recycling aggregates;
- provide advance warning if exemptions or licences are required;
- plan for the appropriate use of space and containers.

In terms of waste minimisation, it will also support any discussions with the design team and client. For example, if ceiling heights are designed to correspond with board heights, there should be less off-cuts, particularly for partition walls where boards can be ordered in bulk, cut to floor-ceiling height.

This information can be combined with your waste estimates to set targets for:

- segregation on-site;
- recycling of materials;
- diversion of waste from landfill.

Annex A shows a detailed example of a Site Waste Management Plan for a fictional project. For a comprehensive checklist that you can adapt for use in your own project, see *Managing packaging waste on your construction site* (GG606).

4.5 Optimising material supply and procurement

The amount of waste generated on-site can be reduced significantly by looking at the way in which materials are procured and supplied to site. Wastage rates for materials can be reduced through:

- better ordering systems;
- less packaging;
- take-back schemes.

This requires the supply chain to become part of the SWMP process. Initiatives include:

- specifying products that create less waste and are not hazardous if they enter the waste stream;
- greater use of off-site prefabrication and modular construction;
- setting up agreements with suppliers to take back excess materials and packaging, eg plasterboard and insulation off-cuts;
- adopting systems such as 'just-in-time' delivery and procurement;
- specifying re-usable and recyclable packaging;

- re-using waste generated on-site, eg demolition waste;
- using materials and products with a high recycled content;
- on-site batching of materials;
- good quality control systems to inspect materials delivered to site for damage before acceptance.

Managing packaging waste on your construction site (GG606) gives practical advice on how to save money by reducing material losses, waste disposal costs and waste handling costs associated with packaging waste (on average 34% of waste from construction sites). To obtain your free copy, visit www.envirowise.gov.uk or call the Environment and Energy Helpline free on 0800 585794.

Supply chain initiatives and other measures reduce waste

Kier Build at Project Green at Bristol Harbourside has implemented a number of supplier initiatives including:

- off-site inspection of materials;
- just-in-time deliveries
- inspection prior to off-loading.

Measures to reduce on-site waste, and thus waste costs, include:

- ensuring there is adequate and secure storage for materials;
- less double handling;
- accurate measurements of materials required.

4.6 Communication and training

A SWMP will only be effective if everyone on the site knows what needs to be done.

The type of communication will depend on the level of knowledge required with regard to the SWMP. Communication methods include:

- introducing the SWMP as part of the site induction process, possibly incorporated within health and safety requirements on-site;
- toolbox talks on waste management and the SWMP;
- higher level workshops involving the project team to identify progress on the SWMP and implementation of measures;
- displaying posters that raise awareness and keep waste 'on the agenda'. Possible topics include:
 - the amount and types of waste produced on-site, eg shown in graphs and pie charts;
 - waste management procedures, eg segregation and waste handling;
 - figures on the amounts of waste recycled, diverted from landfill, etc.
- newsletters to update site personnel.

There are also many informal communication mechanisms that can be utilised.

Toolbox talks should be specific to the site and be given to site operatives. Supervisors can be given 'a train the trainer' package and made responsible for the delivery of toolbox talks. This can be part of their contractual obligations.

Managing packaging waste on your construction site (GG606) includes a free waste segregation poster and example toolbox talk on packaging waste. To obtain your free copy, visit www.envirowise.gov.uk or call the Environment and Energy Helpline free on 0800 585794.

Communication and training reduce waste

The NoWaste (NoW) project undertaken by Bovis Lend Lease and Greenfile Developments addresses construction waste at site level by raising awareness and developing skills.

At two trial sites in London, the two companies achieved a 5% improvement in the benchmark scores using the Constructing Excellence waste key performance indicator ($\text{m}^3/\text{£}100\text{k}$), when compared with projects where no special training or awareness raising measures were taken.

At a further site in Cambridge, waste was reduced by around $3 \text{ m}^3/\text{£}100\text{k}$ over a six month period, equivalent to a saving of around £35,000 by adopting the NoWaste programme on site.

For more information on Constructing Excellence's key performance indicators (KPIs), visit www.constructingexcellence.org.uk/zones/kpizone/default.jsp

Putting the SWMP into practice

This section contains practical advice to help you achieve resource efficiency and cost savings through implementing your SWMP.

5.1 Segregation of materials and waste handling on-site

Where possible, segregate different waste materials on-site. This not only makes it easier to re-use materials, but it will also save money as container prices for segregated materials are usually less than those for mixed skips because it is easier to recycle the separated materials.

The following will help you achieve effective segregation (see Fig 3):

- Follow the advice given by WRAP in its series of 'Recycling in Construction: how to' guides on segregating and recycling materials such as plasterboard, wood, plastics, glass and concrete. These guides can be downloaded from the WRAP website (www.wrap.org.uk).
- Label containers clearly using appropriate signage. A national colour coding scheme has been developed by ICE and WasteAware Construction (see www.wascot.org.uk/construction/index.asp). *Managing packaging waste on your construction site* (GG606)¹¹ contains a poster based on this coding scheme.
- Allocate designated areas for containers in suitable locations. Space for segregation needs to be considered when planning the project.
- Use appropriate containers, eg satellite bins at the work face.
- Empty containers regularly to prevent lack of space and possible contamination (which reduces the value of the materials for recycling).
- Communicate clear procedures for waste segregation to site personnel.
- Train site personnel via toolbox talks and the site induction programme.
- Publicise the segregation scheme, eg via posters.
- Enforce the segregation scheme using appropriate personnel (eg the waste champion) carrying out spot checks.
- Use incentives/penalties to encourage segregation.
- Encourage ideas from site personnel through a suggestion scheme.

Assessing the likely amount of waste generated from the work programme will allow you to:

- establish the viability of segregation for each waste type;
- ensure the appropriate container is used, eg concrete waste needs a larger container than cardboard or plastic wastes.

You may also need to consider using balers and other systems such as compaction. Compaction is particularly important as void space in skips can be up to 40%.

¹¹ Available free of charge from www.envirowise.gov.uk or the Environment and Energy Helpline (0800 585794).

5.1.1 Working with contractors

Encourage sub-contractors to segregate the waste they produce. Some projects require sub-contractors to participate through contractual obligations.

Insisting on segregation reduces costs

Contractors at Greenwich Millennium Village¹² were contractually obliged to segregate their waste. This resulted in cost savings of £4,000 for the first phases of the project through segregation alone.

Set up segregation systems in conjunction with your waste management contractor to ensure:

- the correct types of containers are provided;
- there are regular uplifts;
- you receive help in monitoring, enforcement and training;
- there are end markets for the waste materials segregated.

If there is a lack of space on-site to achieve segregation, the project team should work closely with the waste management contractor to ensure that the mixed containers used are sorted for recycling at a waste facility and high recycling rates are achieved subsequently.

5.1.2 Hazardous waste

All hazardous wastes should be segregated on-site to:

- ensure they are stored safely;
- avoid contaminating other wastes with hazardous materials (to avoid even higher disposal costs).

Hazardous wastes on construction sites include certain types of treated timber, paint and their containers (depending on how empty they are), fluorescent tubes, mastics and adhesives.

The *Decorator environmental information sheet* (EN608), *Labourer environmental information sheet* (EN609), *Carpenter environmental information sheet* (EN610) and *Bricklayer environmental information sheet* (EN611), available free from Envirowise¹³, contain information about which types of waste may be classified as hazardous.

If a site produces over 200 kg of hazardous waste, it will have to register with the appropriate regulator (see Section 7.2) as a producer of hazardous waste.

For advice on all aspects of hazardous waste, including the rules governing its transfer off-site and disposal:

- contact the appropriate regulator (see Section 7.2);
- call the Environment and Energy Helpline free on 0800 585794;
- visit the NetRegs website (www.netregs.gov.uk).

¹² See www.englishpartnerships.co.uk/millcomms.htm

¹³ Visit www.envirowise.gov.uk or call the Environment and Energy Helpline on 0800 585794.

Segregation is a key part of waste management procedures

Simons Construction Ltd's environmental policy for 2005/06 states that it will 'segregate waste for recycling or re-use whenever conditions permit, or to otherwise use waste handlers that sort and recycle waste, reducing the quantity of waste sent for landfill or incineration.'

The company operates a basic waste segregation system at all its sites. It currently has separate containers for:

- general waste (non-hazardous);
- inert waste;
- mixed metals;
- hazardous waste.

Simons Construction calculates that it saves £27.90/tonne for segregating waste - a saving of 37% compared with mixed skips. The company has applied a 20/40/60 rule on construction waste which means if it can reduce its total waste by 20%, it will reduce its costs by 40% and the amount to landfill is reduced by 60%. Mixed waste disposal currently costs 0.4% of the project cost.

5.2 Waste handling on-site

As with waste segregation it is important to consider:

- the positioning of containers;
- the movement of waste around site, eg the use of hoists for moving waste to ground level.

The delivery, storage and transportation of materials around site need to be planned carefully. A major cause of waste is from poor storage of materials and transportation.

Some sites employ specialist logistics contractors, who manage the delivery of materials as well as waste movements on-site.

5.3 Complying with the Duty of Care

A SWMP should provide a framework to ensure that the site complies with the Duty of Care (see Section 2). This includes:

- ensuring that all wastes are stored safely and securely;
- checking that all waste contractors have the appropriate licences;
- filling out waste transfer notes properly;
- filling out consignment notes for hazardous waste properly;
- keeping copies of all waste transfer notes for two years.

Practical ways of ensuring that your site is complying with the Duty of Care include:

- check the public registers maintained by the Environment Agency and SEPA of all licensed waste carriers and brokers. These can be inspected at their local offices or are available online:
 - Environment Agency: www.environment-agency.gov.uk/publicregister
 - SEPA: www.sepa.org.uk/regulation/rocas/
- fill in and sign waste transfer notes so that they include:
 - the appropriate six-digit European Waste Catalogue code;¹⁴
 - what the waste is and how much there is;
 - the type of container;
 - the time, date and place the waste was transferred from;
 - the names and addresses of both people involved in the transfer;
 - the waste carrier's registration number;
 - the waste licence number of the facility (if appropriate);
 - details of any broker involved in the transfer of the waste.
- keep a site diary and logbook of all waste movements;
- keep copies of all waste licences, waste transfer notes and consignment notes;
- link payments to final copies of waste transfer notes;
- ensure staff receive appropriate training;
- make sub-contractors aware of site procedures (particularly if they are responsible for their own waste);
- make spot checks on facilities and waste movements;
- carry out audits of paperwork held (licenses, waste transfer notes, consignment notes);
- monitor the performance of waste contractors and visit their facilities;
- liaise with the regulator's local office.

5.4 Data collection and analysis

Successful waste minimisation relies on knowing the extent of the problem and measuring the progress being made. Collecting and analysing waste data will also help you to monitor the effectiveness of your SWMP.

It is important that someone is assigned to collect relevant data and that these are reported on regularly at site level. This will help you identify whether targets are likely to be met and what actions, if any, need to be taken.

¹⁴ You can download a copy of the European Waste Catalogue from the Envirowise website (www.envirowise.gov.uk/download.aspx?o=166037). If necessary, ask your regulator for advice.

5.4.1 Data collection

Different types of data can be collected on the waste generated from the project including:

- type of waste generated on-site;
- amount of waste generated on-site;
- segregation rates;
- re-use on- and off-site, recycling rates and diversion of waste from landfill;
- wastage rates of different materials;
- costs and savings;
- waste movements;
- sources of waste;
- waste profile over the course of project;
- levels of damaged materials.

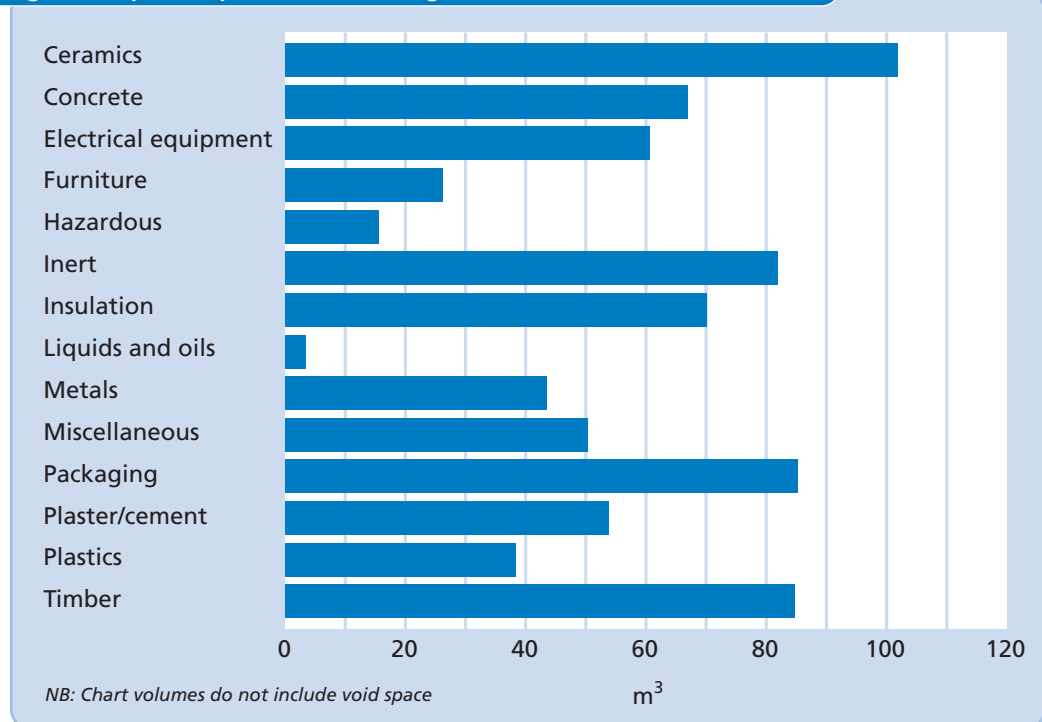
Your waste management contractor or waste broker can provide waste data - especially if this service is written into the contract. These data usually include information on:

- the type of waste generated (broken down by EWC codes);
- tonnages generated/removed;
- amounts recycled (typically for the waste facility overall and not per construction site).

On-site contractors can use their own systems to record the type and amount of waste generated (usually in volume). Contractors can also analyse the information on waste transfer notes (if the waste management contractor does not do this already).

Fig 3 shows a typical example of the composition of waste generated on a construction site.

Fig 3 Example composition of waste generated on a construction site



5.4.2 Data analysis, benchmarking and setting targets

Analyse your collected data to:

- provide feedback about the SWMP to site workers, clients, designers and other members of the project team;
- monitor the site's performance in minimising waste;
- set realistic targets within the SWMP;
- provide information for corporate reports.

Key performance indicators

Data can be compared across sites, company-wide, against previous projects and against national averages. Key performance indicators (KPIs) can be used and the two most common are:

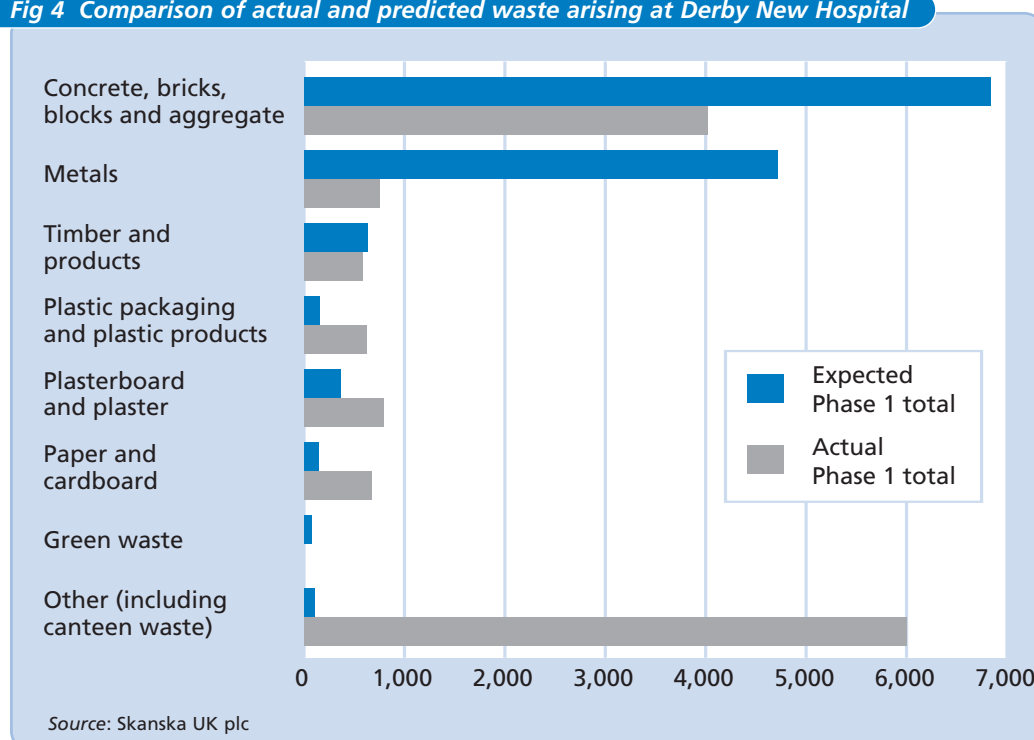
- volume of waste (m³) per £100,000 of project value;
- volume of waste (m³) per 100 m² of project floor area.

Constructing Excellence (see Section 7.3) provides information on the first KPI. Other KPIs include:

- number of skips/containers per project (mixed/segregated);
- cost of waste disposal per project/overall;
- amount of waste per dwelling/unit size;
- diversion of waste from landfill.

It is also useful to compare the actual amount of waste arising and the associated costs with the predicted values (see Fig 4). This comparison will help you estimate waste amounts and set waste reduction targets in the future.

Fig 4 Comparison of actual and predicted waste arising at Derby New Hospital



Setting targets

Targets can be set for a project or a company. These should be realistic and reviewed regularly.

Project chooses per dwelling waste reduction target

The Allerton Bywater Millennium Community¹⁵ near Leeds, which will provide 520 homes and 25,000 m² of commercial and community space, has a target to reduce average construction waste (excluding groundwork) to a maximum 25 m³ per dwelling. The waste totals reported will exclude any waste segregated at source on-site.

Corporate reporting

Any waste data collected and targets set can be used:

- within an environmental management system (EMS);
- for environmental and corporate social responsibility (CSR) reporting.

CSR report highlights progress in reducing waste

Taylor Woodrow included information on waste generation in its Corporate Social Responsibility report for 2005 as shown in Table 3. This shows that waste volumes per dwelling fell by 16% between 2003 and 2005, while the cost fell by over 30% during the same period.

Table 3 Waste management in UK house building

	2003	2004	2005
Target volume of waste per dwelling	N/A	33.0 m ³	29.7 m ³
Actual volume of waste per dwelling	36.2 m ³	31.4 m ³	30.3 m ³
Cost of waste disposal per dwelling	£513	£422	£351

Source: www.taylorwoodrow.com/downloadables/csr2005.pdf

5.5 Regular reviews

Once a SWMP is implemented, it is important to review it regularly to ensure it is:

- being followed;
- practical and appropriate;
- amended as necessary.

For example, the SWMP could be included as an agenda item for weekly/fortnightly/monthly meetings.

You can also arrange for the SWMP to be audited by an appropriate person (eg someone from the head office environmental team) to ensure its effectiveness.

¹⁵ See www.englishpartnerships.co.uk/millcomms.htm

5.6 Applying the lessons learnt

It is important that recommendations and lessons learnt from the implementation of one SWMP can be applied to other sites and throughout the company. This can be achieved by various means:

- Debrief the client and project team in terms of the successes, targets, recommendations, good and bad practice.
- Include the SWMP as an agenda item for post-contract reviews.
- Establish benchmarks and new targets based on SWMP experience, aiming for continual improvement.
- Hold educational/training workshops within the company on SWMP experiences.
- Ask the head office environmental team to audit and collate SWMP information from all sites and make company-wide recommendations.
- Update policy and procedures including environmental management systems.
- Incorporate the results in annual reports and company newsletters.
- Establish an area for SWMPs on the company intranet.
- Agree financial incentives for meeting/exceeding targets.
- Publicise success.
- Provide feedback to:
 - procurement team;
 - design team;
 - sub-contractors;
 - supply chain;
 - waste management contractors.
- Use previous SWMP information and experiences for:
 - new tenders;
 - pre-qualification exercises;
 - pre-contract meetings.

Action plan

Use this simple ten-point action plan to help you make savings by improving resource efficiency at your site.

- ✓ Make someone responsible for writing the SWMP.
- ✓ Assign responsibility and agree procedures for implementing the SWMP.
- ✓ Identify likely waste arisings, types and amounts.
- ✓ Plan for the likely waste management methods on- and off-site.
- ✓ Communicate the SWMP to all concerned and provide training as necessary.
- ✓ Ensure waste is segregated where possible and handled effectively on-site.
- ✓ Monitor the site's compliance with the Duty of Care.
- ✓ Record and monitor waste generation and management.
- ✓ Review the SWMP regularly.
- ✓ Undertake a post-project review and transfer best practice to other sites and projects.

A wealth of advice and support to help you reduce waste at your site is available from the organisations listed in Section 7.

7.1 Free help from Envirowise

The **Environment and Energy Helpline on 0800 585794** can:

- put you in touch with a technical expert - free of charge;
- provide free, up-to-date advice on environmental issues;
- tell you about relevant environmental and other legislation that could affect your business, eg the latest hazardous waste legislation;
- send you copies of free, relevant Envirowise publications;
- suggest other sources of information;
- signpost and arrange other appropriate support – workshops, training events, on-line tools and site visits.

All Envirowise's free information and advice can also be accessed via its website (www.envirowise.gov.uk).

7.2 Regulators

Environment Agency

The Environment Agency regulates a wide range of businesses in England and Wales. Guidance for the construction sector is available from:

www.environment-agency.gov.uk/business/444304/502508/

Tel: 08708 506506 (enquiries)

Scottish Environment Protection Agency (SEPA)

SEPA regulates a similar range of businesses in Scotland. Guidance for the construction sector is available from: www.sepa.org.uk/wastemin/sector/construction.htm

Tel: 01786 457700 (Corporate Office); for nearest local office, see phone book or

www.sepa.org.uk/contact/index.htm

Waste Action Line 0800 389 5270

Environment and Heritage Service Northern Ireland

General guidance on waste management is available from:

www.ehsni.gov.uk/environment/wasteManage/waste_management.shtml

Tel: 028 9054 6422 (general waste enquiries)

NetRegs

NetRegs is a website developed by the three regulators that provides practical advice to help companies in the UK to understand their legal obligations with respect to waste management.

www.netregs.gov.uk

7.3 Others

Waste and Resources Action Programme (WRAP)

The WRAP Construction website offers practical guidance and tools to help companies improve materials resource efficiency at every stage of the construction process.

www.wrap.org.uk/construction/

WRAP Helpline: 0808 100 2040

National Industrial Symbiosis Programme (NISP)

NISP is a business-led initiative that facilitates links between industries from different sectors to create sustainable commercial opportunities and improve resource efficiency.

www.nisp.org.uk

Tel: 0121 766 4560

Construction Resource Efficiency (CoRE)

CoRE is a regionally based pilot programme designed to draw together government-funded work relating to construction resource efficiency.

www.smartwaste.co.uk/core.jsp

Constructing Excellence

Constructing Excellence is funded by the DTI and offers case studies, regional clubs and information on KPIs including waste.

www.constructingexcellence.org.uk

Helpdesk: 0845 605 55 56

CIRIA

CIRIA offers many publications on on-site waste management and best practice.

Construction and waste resources website: **www.ciria.org/cwr**

Online database of construction recycling sites: **www.ciria.org/recycling**

Tel: 020 7549 3300

Construction Industry Environmental Forum (CIEF)

CIEF holds regular events on sustainable construction including waste management and resource efficiency.

www.cief.org.uk

Tel: 020 7549 3300 (CIRIA)

HAZRED

HAZRED is an EU-funded project that aims to help small and medium-sized businesses prevent and reduce their production of hazardous waste. Construction is one of its six key industry sectors.

www.hazred.org.uk

National Green Specification (NGS)

NGS is an independent organisation supported by the Government that offers specifications and guidance for new build, refurbishment and demolition waste management.

www.greenspec.co.uk

Recovynyl

Recovynyl supports the collection and recycling of PVC waste from the construction and demolition sectors.

www.recovynyl.com

SALVO

SALVO offers a directory of suppliers of architectural salvage including used timber, bricks, stone and cast iron.

www.salvoweb.co.uk

SMARTWaste

SMARTWaste is a collection of software-based tools designed to help companies reduce construction waste on-site.

www.smartwaste.co.uk

Sample Site Waste Management Plan

DETAILED Site Waste Management Plan Example for Project Y

VERSION NUMBER: v1

DATE:

AUTHOR: Build It Ltd

1. PROJECT TITLE: Project Y

2. LOCATION: High Street, London

3. NATURE OF PROJECT:

- Large modern secondary school in urban area
- Scope of project:
 - demolition of existing buildings and re-levelling of site
 - construction of new school
 - facilities management
- Asbestos survey has been carried out: no asbestos found on premises
- Contract period should be assumed as 24 months (starting in July)
- Situated on a main road, therefore access to site is limited with deliveries and vehicle movements carefully controlled
- Use of a consolidation/bulking up centre, 10 miles away
- Limited space on site for storage and segregation of materials

4. PROJECT AIM

At Project Y we are committed to implement the project environmental plan and the SWMP so that it is effective, accurate and economical, we are expending time and a lot of effort to ensure that the procedures put into place are working and are maintained.

5. MANAGEMENT

The Senior Construction Manager is environmental co-ordinator of the project and as such is responsible for instructing workers, overseeing and documenting results of the SWMP. The Environmental Department will monitor the effectiveness and accuracy of the documentation during the routine site visits.

Position	Name	Contact Details
Client		Head Quarters
Client WM Representative (if applicable)		
Project Manager		Project Office
Project Environmental Co-ordinator		Project Office
Waste Management Co-ordinator		Project Office
Document Controller	TBA	Project Office

6. DISTRIBUTION

The contractor shall distribute copies of this plan to the Planning Supervisor, Client, Site Manager and each Subcontractor. This will be undertaken every time the plan is updated.

7. INSTRUCTION and TRAINING

The contractor will provide on-site instruction of appropriate separation, handling, recycling, reuse and return methods to be used by all parties at all appropriate stages of the Project.

Toolbox talks will be carried out every month on waste issues and all subcontractors will be expected to attend. The SWMP will also be mentioned in the site induction process. This will ensure that everyone feels they are included and that their participation is meaningful.

8. WASTE MANAGEMENT ON SITE

Surplus or waste materials arise from either the materials imported to site or from those generated on site. Imported materials are those, which are brought to the project for inclusion into the permanent works. Generated materials are those, which exist on the project such as topsoil, sub-soil, trees and materials from demolition works etc.

However, there are other considerations to waste management such as waste reduction, segregation of waste, disposal of waste, financial impacts of waste disposal and recording, monitoring, education and reviewing. This plan outlines the procedures that have been put in to place and demonstrate how they benefit the environment, how we can measure the effects and how these procedures and practices are sustainable.

FORECAST VOLUMES (m³) OF POTENTIAL WASTE ON SITE

WASTE Category & Types	ENABLING WORKS (including DEMOLITION)		CONSTRUCTION WORKS	
	Tick	Estimated Quantity (m ³)	Tick	Estimated Quantity (m ³)
e.g. concrete	✓	400	✓	50
Inert Waste				
Rock				
Gravel			✓	250
Sand			✓	250
Aggregates			✓	250
Concrete	✓	10	✓	115
Tarmac	✓			500
Brick / Blocks	✓	1,060	✓	Block 100 Brick 200
Top soil (uncontaminated)	✓	30		12,000
Sub soil (uncontaminated)	✓			9,000
Bulk excavated (uncontaminated)	✓			
Glass	✓	10		
Polystyrene				30
Plastics (non biodegradable)	✓			
Other:				
Other:				
Other:				
Sub TOTAL		2,010 m³		22,405 m³
Active/ biodegradable Waste				
Plasterboard	✓	2	✓	150
Gypsum products				(Incl in above)
Metals – reinforcement	✓		✓	145
Metals – steel	✓		✓	50
Metals - offcuts			✓	71
Timber	✓	3	✓	335
Cardboard			✓	50
Paper			✓	30
Biodegradable plastic			✓	5
Canteen waste			✓	250
Trees	✓	60	✓	20
Vegetation (shrubs, bushes)	✓		✓	(incl in above)
Other:				
Other:				
Other:				
Sub TOTAL		65 m³		1,106 m³
Hazardous Waste				
Topsoil (contaminated)				
Sub soil (contaminated)				
Bulk excavated (contaminated)				
Asbestos	✓	1		
Explosive				13 m ³
Flammable	✓			
Toxic	✓			
Other:				
Other:				
Other:				
Sub TOTAL		1 m³		13 m³
TOTAL VOLUMES		2,076 m³		23,524 m³

**PRIORITISING WASTES REQUIRING WASTE MANAGEMENT ENABLING WORKS
(including DEMOLITION): Waste Type, Category and Origin**

Waste Types	Waste Category	Origin of Waste
e.g. <i>Bricks</i>	<i>inert</i>	<i>Demolition of existing buildings and walls.</i>
1 Concrete	Inert	Site Strip & Demolition
2 Tarmac	Inert	Site Strip
3 Brick/block	Inert	Site Strip & Demolition
4 Timber	Active/Bio	Demolition Works
5 Subsoils	Inert/Hazard	Site Strip
6 Metals	Active/Bio	Site Strip & Demolition
7 Asbestos	Hazardous	Demolition Works
8 Plasterboard	Active/Bio	Demolition Works

9. WASTE MINIMISATION

At Project Y we have, from a very early stage, looked at how we can minimise the waste produced, thereby reducing the amount of waste to be removed from the project. Trade Contractors, Design Team and Suppliers are all being encouraged to look at ways to minimise the amount of waste produced at the work face. Up to date actions are recorded in the table below:

Action	Responsibility	Date Action Commenced
The wash down point for the concrete wagons is in a suitable location so that the washed out aggregates formed part of the fill.	Site Manager	06/06/05
Substructure - when the bases are being poured that we had other bases excavated so that any surplus concrete could be utilised as blinding.	Construction Manager	01/05/05
Materials, which arrive on pallets, are unloaded and the pallets are stored neatly and removed from site once the numbers are sufficient to make collection economical.	Site Foreman	01/05/05
Plasterboard sheets are made to standard sizes to suit the wall heights and to reduce the amount of off cuts.	Design team	23/03/05

All of the above act to reduce the amount of waste and surplus materials, which traditionally would be skipped and sent to landfill. We are continually identifying waste minimisation actions and these will be updated in the above table.

10. SEGREGATION

A specific area shall be laid out and labelled to facilitate the separation of materials for potential recycling, salvage, reuse and return. Recycling and waste bins are to be kept clean and clearly marked in order to avoid contamination of materials. The labelling systems shall be the Waste Awareness Colour Coding Scheme. If the skips are clearly identified the bulk of the workforce will deposit the correct materials into the correct skip. Skips for segregation of waste identified currently are:

- Wood
- Metal
- Brick/rubble
- Canteen waste

As works progress and other trades come to site other skips will be placed to enable certain waste to be removed from site. This is likely to include:

- Plasterboard
- Paper and cardboard (bagged up)

11. MANAGEMENT

Disposal of Waste All surplus or waste materials fall into three categories for management, these are:

- Re-used
- Recycled
- Landfill

a. Re-used

If surplus materials can be used in the permanent works they are classified as materials, which have been **re-used**. If they are surplus to requirements and need to be removed from site and they can be removed and used in their present form, they can be removed from site for **re-use**.

b. Recycling

If the surplus material cannot be re-used in its present form but could be used in a different form, it is sent for **recycling** such as 50x50 timber to make chipboard.

c. Landfill

If either of the above cannot be satisfied then the only option left is to send the surplus materials to **landfill**. At Project Y landfill is a last resort.

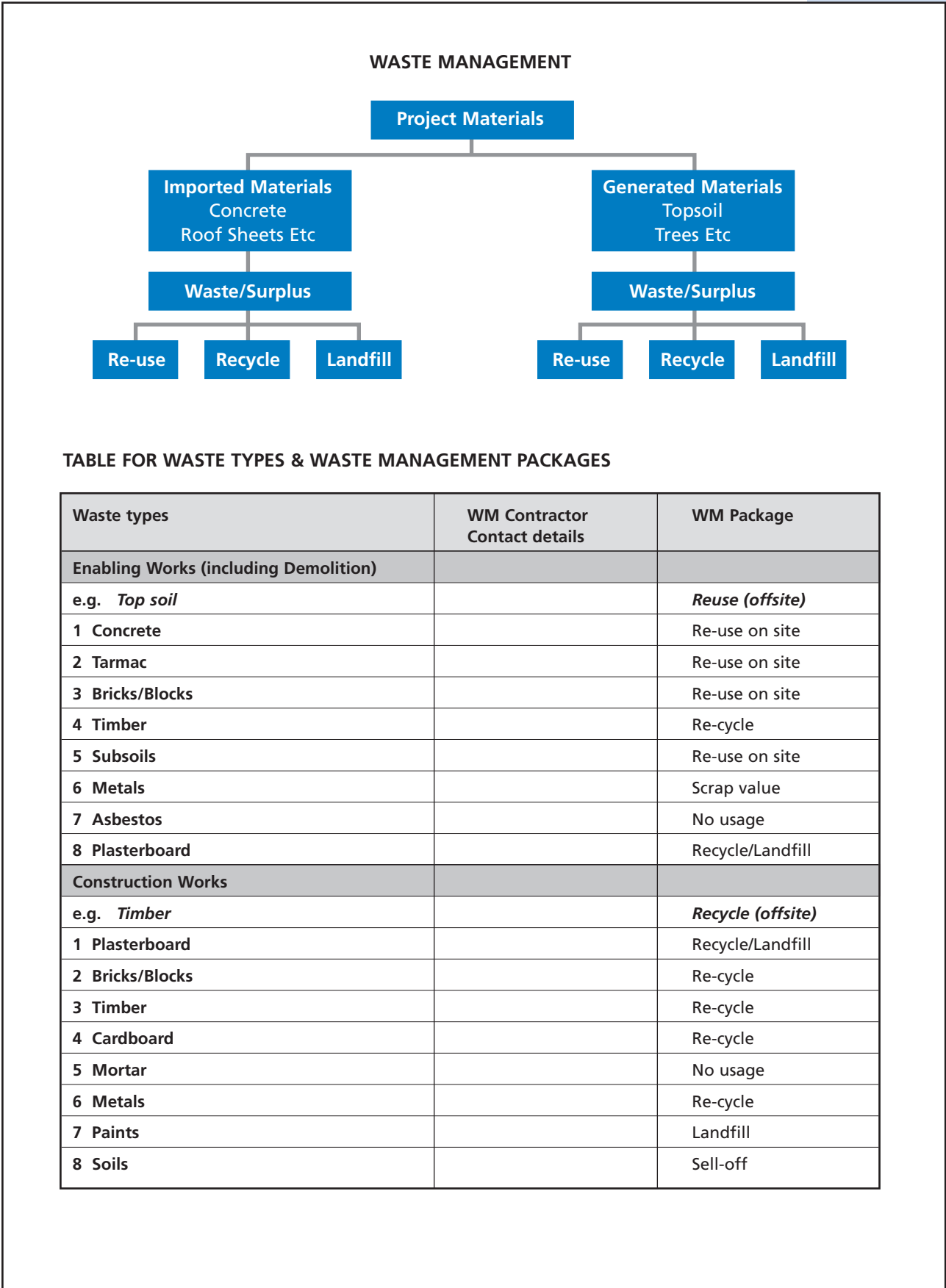


TABLE FOR WASTE TYPES & WASTE MANAGEMENT PACKAGES

Waste types	WM Contractor Contact details	WM Package
Enabling Works (including Demolition)		
e.g. <i>Top soil</i>		Reuse (offsite)
1 Concrete		Re-use on site
2 Tarmac		Re-use on site
3 Bricks/Blocks		Re-use on site
4 Timber		Re-cycle
5 Subsoils		Re-use on site
6 Metals		Scrap value
7 Asbestos		No usage
8 Plasterboard		Recycle/Landfill
Construction Works		
e.g. <i>Timber</i>		Recycle (offsite)
1 Plasterboard		Recycle/Landfill
2 Bricks/Blocks		Re-cycle
3 Timber		Re-cycle
4 Cardboard		Re-cycle
5 Mortar		No usage
6 Metals		Re-cycle
7 Paints		Landfill
8 Soils		Sell-off

12. MONITORING

The Subcontractors will fill in a weekly log of all materials that come on to site, and we will receive a printed sheet from the waste disposal company of the exact amount of waste materials removed from site. This sheet from the disposal company also identifies how much materials went to landfill and how much went for recycling.

WEEKLY MONITORING OF THE WASTE MANAGEMENT PLAN – DATA COLLECTION SHEET

		Date					
	M3	Mon	Tue	Wed	Thur	Fri	Comments
Top Soil	Imported						
	Generated On Site						
Sub Soil	Imported						
	Generated On Site						
Brick & Concrete	Imported						
	Generated On Site						
Timber	Imported						
	Generated On Site						
Trees	Imported						
	Generated On Site						
Paper	Imported						
	Generated On Site						
Cardboard	Imported						
	Generated On Site						
Metals – reinforcement	Imported						
	Generated On Site						
Metals – steel/GI Sheet	Imported						
	Generated On Site						
Plastic	Imported						
	Generated On Site						
Tarmac	Imported						
	Generated On Site						
Glass - Ordinary	Imported						
	Generated On Site						
Glass - Glazing	Imported						
	Generated On Site						
Plasterboard	Imported						
	Generated On Site						

		Date					
	M3	Mon	Tue	Wed	Thur	Fri	Comments
Canteen waste	Imported						
	Generated On Site						
Asbestos	Imported						
	Generated On Site						
Explosive/Flammable <i>Oil, Chemicals, Paint etc</i>	Imported						
	Generated On Site						
Toxic	Imported						
	Generated On Site						
General Mixed Waste	Imported						
	Generated On Site						

The skips need to be monitored to ensure that contamination of segregated skips does not occur. Therefore we will hold regular tool box talks on how the waste management system is working and point out that an uncontaminated skip for recycling costs £55 but should it get contaminated then it has to go to landfill at a cost of £89 per skip.

We will continually review the type of surplus materials being produced and change the site set up to maximise on re-use or recycling and the use of landfill will be the last option.

This plan will be included as an agenda item at the weekly construction meetings. In addition, the plan will be communicated to the whole project team (including the client) at the monthly meetings. This will include any updates from the last version.

Date	Organiser	Attendance Record (name and company)	Notes taken by

The plan will also be analysed by the Corporate Environmental Department during their audits (6 monthly) and they will be responsible for transferring any best practice and solutions throughout the company. The Environment Team will also visit the waste transfer facility to ensure that we are effectively discharging our 'duty of care'. They will also periodically follow waste transfer vehicles to their final point of disposal to monitor compliance.

WASTE MANAGEMENT PLAN IMPLEMENTATION CHECKLIST

Checks (please tick ✓)	Yes	No
Have terms and commercial rates been agreed with WM contractor(s)?	✓	
Have data reporting procedures been agreed with WM contractor(s)?	✓	
For off site WM or disposal are all the waste destination details verified?	✓	
Has a waste segregation / collection area been prepared?	✓	
Has the WM area been adequately sign posted?	✓	
Has a WMP planning meeting been set?	✓	
Has the WM document control / filing system been set up?	✓	
Have all necessary BLL staff and contractors read and signed the WMP?	✓	
Have all the WM training / briefing requirements for staff been met?	✓	
Have all the WM training / briefing requirements for contractor/s been met?	✓	
Have the waste management targets been set?	✓	
Has the WMP been approved by the Project Manager?	✓	
Comments / Further Actions:		
1. Discuss / debate with the Internal Team Members and agree quantities / values etc		
2. Discuss / agree strategy with the Waste Management Subcontractors (Thompsons)		
3. Issue the Weekly Monitoring - "Data Collection Sheet" to Subcontractors		
4. Include Waste Management Plan within Tender Documentation		

RELEVANT SIGNATURES

Contractor:

Date:

Sub-contractors:

Date:

Client:

Date:

Envirowise - Practical Environmental Advice for Business - is a Government programme that offers free, independent and practical advice to UK businesses to reduce waste at source and increase profits. It is managed by Momenta, an operating division of AEA Technology plc, and Serco TTI. Envirowise is funded across the UK by the DTI and Defra and the Business Resource Efficiency and Waste (BREW) Programme in England, the Scottish Executive in Scotland and the Materials Action Programme (MAP) in Wales.

Envirowise offers a range of free services including:

- ✔ Free advice from Envirowise experts through the Environment and Energy Helpline.
- ✔ A variety of publications that provide up-to-date information on waste minimisation issues, methods and successes.
- ✔ Free, on-site waste reviews from Envirowise advisors, called *FastTrack* visits, that help businesses identify and realise savings.
- ✔ Guidance on resource efficiency clubs across the UK that provide a chance for local companies to meet regularly and share best practices in waste minimisation.
- ✔ Best practice seminars and practical workshops that offer an ideal way to examine waste minimisation issues and discuss opportunities and methodologies.



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