

## Reduce, Reuse, Recycle

Managing your waste

# Introduction

The construction industry creates over 100 million tonnes of waste per year, more than 3 times the amount generated by the 21 million households in the UK put together. Over 10% of this waste (13 million tonnes!) consists of unused materials; in other words, materials that have been delivered to site and ended up in a skip without being used. In today's industry, where the availability of landfill sites is becoming increasingly scarce and the demand on limited natural resources causes ever greater concern, the mountain of waste being produced is simply untenable.

**In order to tackle this problem, the construction industry via the Strategic Forum for Construction has committed to a 50% reduction in the amount of waste it sends to landfill by 2012.**

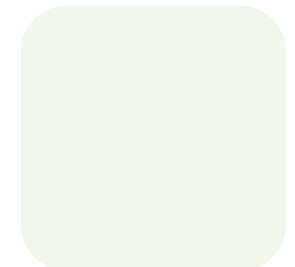
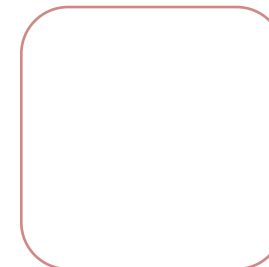
However, the key question in an area so big and complex is where to start. NSCC believes it is about everybody playing their part: in the same way that the majority of us now recycle our waste at home, we should all be doing our bit at work too. This guidance has been prepared by NSCC with assistance from WRAP (Waste & Resources Action Programme) to encourage you to think about how you manage your waste and to offer some practical tips for 'doing your bit'.

NSCC understands that running your business comes first; however, it has come up with easy to follow suggestions for managing your waste, which will not only assist you in meeting your environmental responsibilities but will also improve your profitability by reducing your costs.

Further information can be obtained from Envirowise, a Government-funded programme, which offers UK construction firms free advice on practical ways to become more resource efficient, minimise waste and disposal costs, and comply with new regulations.

**Envirowise** - Free telephone helpline: 0800 585 794

*Good waste management: a win-win proposition*



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## What Is 'Waste'?

'Waste' is typically defined as an object or substance discarded by its owner after use. However, if the construction industry is going to meet its target of halving the amount of waste that it sends to landfill by 2012, a change in our understanding of 'waste' is required to move away from this idea that waste is something that is dirty, messy and needs to be got rid of. If waste was to be redefined as 'an object that no longer has any beneficial use', the objective would be to keep reusing it until it was of no value – rather than discard it after it had been used once.

Construction waste is categorised as 'controlled waste' and is subject to waste-related legislation, which means that there is a 'duty of care' on those who produce it to ensure its safe keeping, transportation and subsequent recovery or disposal. By focusing on the **3 Rs** of Reduce, Reuse and Recycle, this guidance looks at alternative ways in which Specialist Contractors can handle their construction waste instead of dumping it in a skip destined for landfill.

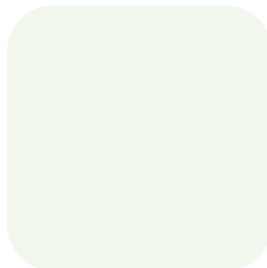
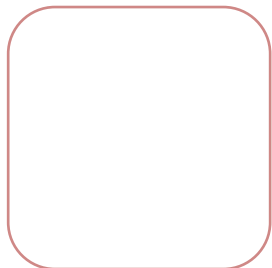
This guidance does not cover hazardous waste (anything that may cause harm to people or the environment such as asbestos, chemicals and sealants), the disposal of which is controlled by strict laws.

## Reaping The Rewards

The business benefits of managing your waste are numerous and varied. As well as improving your 'green credentials', managing your waste will also increase your efficiency and save you money and resources. The key reasons for re-thinking your company's waste policy include:

- ✓ **Fulfilling environmental responsibilities**  
Managing your waste efficiently will allow you first and foremost to meet your environmental responsibilities. Cutting the amount of waste you send to landfill and reducing the quantities of raw materials you use will contribute to your Corporate Social Responsibility (CSR) agenda and enable you to promote a good environmental image.
- ✓ **Increased profitability**  
Reducing the amount you spend on waste will have a significant effect on the bottom line of your projects. With increases in the aggregates levy on the use of virgin materials and the ongoing rise of landfill taxes, the economic savings to be made from good waste management are significant.

**The true cost of waste is higher than most people think: including the cost of material production, purchase and transport; skip hire; and landfill taxes, it actually amounts to around 15 times the cost of disposal.**



The true **cost** of waste amounts to 15 times the cost of disposal



✓ **Improved site conditions**

Decreasing the amount of waste on site and managing more effectively what remains will lead to cleaner and safer sites. Good waste management on site, which includes, for example, encouraging your workers to think about where they place their waste, will also result in a better site image. More importantly, it could also lead to improved health and safety as there are likely to be fewer accidents if materials and waste are stored properly.

✓ **Meeting legal obligations**

You are legally required to handle and dispose of your waste safely and responsibly, so waste management should already be company policy. A formal waste management policy (see 'Recording Your Waste Management Policy' on page 20) can help you to demonstrate how you meet your legal requirements. Even if you do not have your own policy, the client or main contractor on a site may require you to manage your waste as part of working to their policy.

✓ **Better business**

With pressure on clients and contractors to improve their environmental performance, there is a real advantage to be had by Specialist Contractors that manage their waste. As it becomes increasingly common for better resource efficiency to be included as a contractual requirement, the ability to demonstrate good waste management could differentiate you from your competitors. A clear waste management policy which includes effective recovery and recycling of resources could enhance your reputation and give you the edge when tendering for new projects.

## The 3 Rs - Reduce, Reuse, Recycle

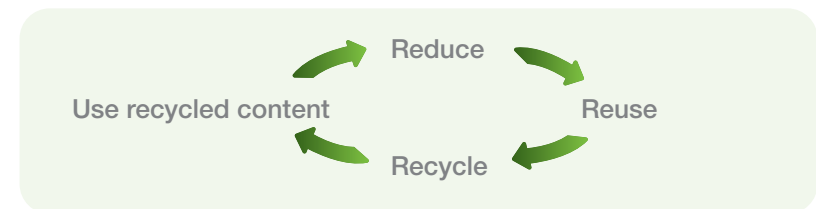
The 3 Rs are concerned with better resource efficiency in accordance with the following principles:

**Reduce** – eliminating the generation of waste, where possible by stopping it coming on to site in the first place

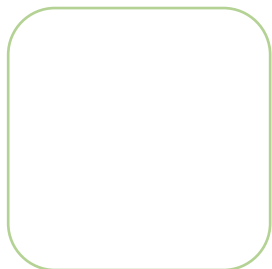
**Reuse** – making use of materials in their original state on the same site or at other sites

**Recycle** – turning materials into new products for other purposes.

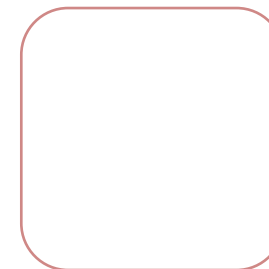
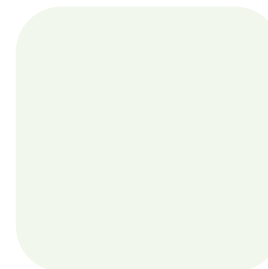
The final stage in this process, which completes the 3 Rs 'loop', is the specification and use of materials with higher **recycled content** on future projects to further reduce the demand on natural resources.



This guidance contains practical tips in each of the above four areas to help you improve your efficiency in the use of materials and ultimately reduce the amount of waste that you send to landfill.



There is a real **advantage** to be had by Specialist Contractors that manage their waste





### *Eliminating the generation of waste*

The first and most important step in cutting the amount of waste you eventually send to landfill is reducing the quantity that you actually produce in the first place. There are a number of ways in which you can 'design out' waste just by reviewing how your works are designed and installed. By planning work properly at the outset of a project, you can greatly reduce the amount of materials that end up in the skip at the end of it.

#### **Get involved in the design process**

Early involvement of the supply chain in the design process is the most effective way of eliminating the amount of waste produced on a project. By considering the layout, materials and sequencing with the contractor and other sub-contractors, you can help to predict the exact quantities required for the project and remove the need for the safety net of over-ordering materials.

#### **Don't over-order materials**

There is a double cost to over-ordering: firstly when you pay for materials that aren't used, and secondly when you pay to dispose of them. Materials are over-ordered to avoid expensive delays occurring during a project; however, more integrated working would provide visibility into the exact quantities required to do away with this safety net.

**It is estimated that 5 landfill sites could be saved every year if the construction industry rid itself of its culture of over-ordering!**

#### **Consider off-site manufacture**

Off-site manufacture can cut waste radically depending on the types of systems used. Off-site 'production line' processes have been proved to decrease waste by optimising cutting patterns and schedules. Materials can also be delivered directly to the production line eliminating packaging, and products stored under cover reducing weather damage.

#### **Look at your specifications**

Designing the job to make use of standardised components wherever possible within the design will eliminate waste from off-cuts. An alternative where this is not possible is working with manufacturers to produce components that are made to fit the design; in other words, procuring size-specific items which do not require cutting to size.

#### **Improve logistics**

The cost of waste relates not only to materials but also losses in productivity caused by inefficiency and poor logistics. A technique known as 'lean construction' focuses on getting rid of activities that do not add value to minimise wastage on all aspects of a project. Improving your logistics to reduce, for example, the number of times that materials are handled has the potential to minimise waste in all its forms.

#### **Review your storage arrangements**

If you can eliminate the need to store materials on site, you reduce the risk of them being damaged, for example by the weather, and having to be thrown away. By ordering materials just before they are needed and then storing them in a dry, secure place, you will decrease wastage. If materials are routinely damaged during transportation, it is advisable to review the distribution methods.

#### **Eliminate packaging**

Ask yourself whether packaging is essential or an excuse to avoid taking responsibility. By educating your workforce to handle items properly, you may be able to send products unwrapped, thereby getting rid of excessive packaging waste. Alternatively consider different types of packaging such as heavy duty or permanent packaging which can be reused – you may wish to specify to your suppliers that they implement reusable packaging systems such as returnable pallets and crates.



### *Making use of materials in their original state*

In today's industry, it is simply no longer justifiable to throw away perfectly good materials. As part of managing your waste, you should consider how you can make use of common surplus materials arising from your projects such as bricks and timber off-cuts either on the same site or at other sites. Where this is not possible, you should liaise with your suppliers about returning the materials to them.

There are also websites where you can advertise leftover building materials, so even if you cannot reuse them yourself, you may be able to find someone else that can.

**WhatDoIDoWithThis.com** - [www.whatdoidowiththis.com](http://www.whatdoidowiththis.com)

**TradeLeftovers** - [www.tradelleftovers.com](http://www.tradelleftovers.com)

Remember reusing materials is not only good for the environment; it can also lead to cost savings by reducing the amount of new materials that are required.

Below are some simple suggestions for reusing common types of 'waste' materials.

#### **Bricks and tiles**

Bricks and tiles in good condition can be reused on site for construction provided that they meet relevant British standards – indeed 'old' bricks and tiles on new builds are often seen to add aesthetic appeal and character to buildings. Bricks that do not meet the regulations can be used in applications such as landscaping where structured load-bearing is not a requirement. Any bricks and tiles that you cannot use can be offered to other projects that can reuse them via organisations such as CIRIA.

**CIRIA** - Telephone: 020 7549 3300  
[www.ciria.org.uk/recycling](http://www.ciria.org.uk/recycling)

Where reclaiming bricks and tiles on site for reuse, you should assign an appropriate area for stacking and storage to keep damage to a minimum, and train site workers in handling and separation techniques (for example removing mortar from bricks).

#### **Inert materials**

Inert materials such as concrete, brick, asphalt, soils and stones can be reused on site as hardcore or for backfill at other excavation sites. Topsoil can be reused for landscaping or as part of compost once necessary tests have been carried out.

#### **Timber off-cuts**

Timber can be reclaimed from numerous sources on site including floorboards, rafters, doors, window frames and fencing. Temporary formwork can typically be reused four times before disposal. If reusing wood on site, you should always check it first to ensure it is of suitable quality and fit for purpose for the intended use. You should also provide a dry area for it to be stacked and stored.

#### **Plasterboard**

You should always try to make use of leftover plasterboard sheets and off-cuts on other projects. Where this is not possible, contact the manufacturer or supplier to see whether you can return any unused sheets to them. Any plasterboard which you are saving for reuse should be stored in a dry place away from activities that could damage it.

#### **Packaging**

The easiest way of ensuring that your packaging waste is reused is by returning it to your supplier. Transport pallets should always be reused rather than thrown away, as disposing of them in skips will result in large void spaces, which will significantly increase your costs. Many pallet firms will actually pay you for slightly damaged or irregular-sized pallets.

Cardboard packaging can be reused for temporary internal floor covering to protect from site traffic, and loose timber can be re-sized and used for formwork.



Reusing materials can lead to **cost savings**





## *Turning materials into new products*

With the potential to turn 100% of non-hazardous construction waste into new products or energy, recycling is crucial in diverting tonnes of valuable material from landfill.

The key to successful recycling is to make it as easy as possible for everyone to segregate their waste. As a minimum, this requires assigning containers for different waste materials with clear signage explaining what can and cannot be disposed of in each one. Having provided the facilities, all site workers then need to be equipped and motivated to make the system work.

Where segregating your waste on site for recycling is not viable, you are encouraged to identify a local waste transfer station that will collect and sort your mixed-waste skips for you – see 'Industry registers of waste management and recycling sites' on page 14.

## Implementing recycling on site

You can begin recycling on site quickly and simply with this 5-point plan:

### 1. Plan your requirements

- Identify the types of waste you are likely to generate and when
- For each type of waste, record how much you are throwing away: look into each skip and count the large items (such as pallets) and estimate the percentage of each waste type by volume.
- Investigate the best options for recycling the different types of waste

### 2. Liaise with waste management contractors

- Know and understand any specific disposal or recycling requirements of the materials you are using such as plasterboard
- Contact waste management contractors to find out how they require waste to be segregated and stored

- Ensure that any recommendations are both feasible and cost effective in the context of your projects
- Where you can't segregate waste on site, identify a local waste transfer station that will collect and sort your mixed-waste skips.

### 3. Set up site segregation

- Replace a mixed-waste skip with different containers for each of the types of waste you are producing
- Clearly label the containers, preferably with waterproof signage, detailing which material can be disposed of in each one – see 'Colour coding your waste' on page 13
- Use simple signs such as 'Plastic only; no plasterboard'
- Place the containers so as to minimise the distance your employees have to carry materials to dispose of them
- On larger sites, use smaller intermediate bins which can be bulked up into skips – find out from your waste management contractor the different sizes of container they offer
- Secure the containers to prevent contamination from dumping by others.

### 4. Train staff

- Encourage buy-in from the start by providing training in the segregation of waste to all employees in the form of on site briefings as part of toolbox talks
- Conduct periodic monitoring of your procedures to ensure compliance
- Commend employees that adhere well to site policy and offer advice to those that are not meeting the requirements
- Consider motivating workers by establishing targets and offering bonuses or incentives for achieving them.

### 5. Review your system

- Inspect segregated material to ensure that contamination is minimised
- Encourage feedback from your site workers
- Review your system to see if and where any improvements can be made
- Measure your progress to see how much you have minimised your waste and where you have made cost savings.



## Colour coding your waste

The 7 most common waste materials found on construction sites have been colour coded as part of the National Colour Coding Scheme for Construction Waste, an industry-specific scheme developed by the Institution of Civil Engineers (ICE), and WRAP has allocated colours for plastics and glass:

Plasterboard	White
Inert	Grey
Mixed	Black
Wood	Green
Hazardous	Orange
Metal	Dark Blue
Packaging	Brown
Plastics	Purple
Glass	Light Blue

You should provide different containers for each of the types of waste you are producing, which are clearly labelled using the above colours so everyone on site knows what is and isn't allowed in each one. The use of standard coding is vital for the achievement of automatic segregation: over time everyone on site will react sub-consciously to colours and symbols on skips and only place in them what they should contain. Standardised signage can be downloaded free of charge from the Waste Aware Construction website.

**Waste Aware Construction** - [www.wasteawareconstruction.com](http://www.wasteawareconstruction.com)

## Where to send your waste

There is a range of ways of recycling your construction waste depending on the material and quantity involved and whether it has been pre-sorted on site. There are a number of online registers of waste management and recycling sites for the industry which deal with all types of materials. When logging onto the websites below, all you will have to do is enter your postcode and the type of material you are looking to dispose of to find an appropriate site in your area.

### Industry Registers Of Waste Management And Recycling Sites

**CIRIA** - an online database of construction-related recycling sites  
[www.ciria.org.uk/recycling](http://www.ciria.org.uk/recycling)

**BREMAP** – a free web-based geographical information system (GIS) to help businesses locate their nearest waste management and recycling sites, and waste transfer stations  
[www.bremap.co.uk/bremap](http://www.bremap.co.uk/bremap)

**WRAP** – offers a number of specific websites for recycling different products  
[www.wrap.org.uk](http://www.wrap.org.uk)

**Waste Directory** – a comprehensive directory of waste sites for all businesses  
[www.wasterecycling.org.uk](http://www.wasterecycling.org.uk)

**Environmental Services Association (ESA)** – represents the UK's waste management industry with over 200 members offering waste collection, disposal and recycling  
[www.esauk.org/directory](http://www.esauk.org/directory)







Below are the most common types of construction waste and details of specialist schemes for recycling them.

### Plasterboard

Plasterboard is classed as a non-hazardous, non-inert waste, which means it can only be disposed of in significant quantities at a limited number of special landfill sites. This makes plasterboard expensive to throw away, so recycling it makes commercial sense.

Damaged gypsum plasterboard and off cuts are re-processed into new boards by plasterboard recyclers which can take demolition waste, waste from rebuilds, production scrap in the form of virgin off-cuts, complete or broken board parts, and gypsum ceilings, floors and walls. At the beginning of 2007, plasterboard manufacturers themselves committed to increasing the take back of plasterboard waste for recycling as part of a voluntary agreement known as the Ashdown Agreement. Details of companies that recycle plasterboard can be found on the WRAP website.

**WRAP** - [www.wrap.org.uk/construction/plasterboard](http://www.wrap.org.uk/construction/plasterboard)

As clean and dry plasterboard is easier and more cost-effective to recycle, you should ensure the containers you use for collecting it are under cover or have a protective covering.

### Inert

Inert materials such as concrete, brick, asphalt and stone can be crushed and screened for use as aggregate or soil. Recycled aggregate is ideal for applications such as general fill, pipe bedding, drainage blankets, capping layers and sub-base – it can even be used in new concrete and asphalt. For information on all aspects of sustainable aggregates including recycling services, WRAP has established a free online service called AggRegain.

**WRAP AggRegain** - [www.aggregain.org.uk](http://www.aggregain.org.uk)

Concrete, brick, asphalt and stone can often all be directed towards the same segregation area; however, where possible, they should be stocked separately.

If you want to recycle inert waste on site to create recycled aggregates or soils, it is worth noting that you may need to register an exemption for the site from the Waste Management Licensing Regulations with the Environment Agency in advance of the works – for further information, visit WRAP's AggRegain website.

### Wood

Wood can be recycled into, amongst other things, landscaping pellets, mulching and chipboard to create new kitchen units. Any timber which cannot first be reused on site should be sent to a recycling depot for cleaning, de-nailing and re-sizing. For recycling wood, WRAP provides a web-based 'find a wood recycling service'.

**WRAP** - [www.wrap.org.uk/construction/plasterboard](http://www.wrap.org.uk/construction/plasterboard)

Recycling your  
plasterboard  
makes  
**commercial  
sense**





### Packaging

Many manufacturers offer recycling schemes for their packaging, in which case you should speak to them about how they would like it segregated and stored on-site prior to collection. Where you are collecting packaging in one container, encourage your workers to use the space efficiently by flat-packing cardboard boxes, compressing plastic film and breaking down off-cuts to manageable sizes.

### Plastics

Plastic for recycling can usually be collected in one container for mixed plastics which includes packaging. The most common plastic on site is post-use PVC (windows, pipes, ducking, gutters and flooring) which can be recycled through the Recovinyl scheme. WRAP also offers a specific website for finding plastic recyclers.

**Recovinyl** - [www.recovinyl.com](http://www.recovinyl.com)

**WRAP Recycle Plastic** - [www.recycleplastic.org.uk](http://www.recycleplastic.org.uk)

Materials fabricated from reclaimed plastic waste are used to make many construction products including structural glazing and sealant tapes, street signs and landscaping materials such as path edging, boardwalks and fencing.

### Glass

Most glass waste comes from windows (flat glass). If flat glass separation is not relevant for your project, consider which other glass wastes are likely to occur (such as catering, containers etc.) and whether these can be collected easily by placing dedicated bins in the canteen. Information on glass recycling can be found on the specific WRAP website.

**WRAP Recycle Glass** - [www.recycleglass.org.uk](http://www.recycleglass.org.uk)

## Use Recycled Content

*Choosing products made from a higher proportion of recycled materials*

The final part of good waste management is specifying and using products with higher recycled content. 'Recycled content' is the proportion by mass of recycled material in products, the use of which helps to reduce demand on both finite natural resources and limited landfill capacity. Clients such as the Olympic Delivery Authority (ODA) are increasingly specifying on their projects the use of recycled content by value. You may already be using a range of mainstream products with recycled content – probably without even knowing it! Substituting more products for those with higher recycled content is a practical way for you to lessen your impact on the environment without increasing your costs or taking risks.

What's more, by buying recycled materials, you will be helping to create a market for them – which will lead to greater demand for recycling and ultimately cut the cost of recycling your waste

### Zero Net Waste

WRAP has developed the concept of 'net waste' to highlight the link between materials and waste, and thereby improve resource efficiency. In simple terms, net waste is the value of materials wasted on a project ('materials out') minus the value of reused and recycled products incorporated into the works ('materials in'). The target of zero net waste (also called 'waste neutrality') is achieved when the amount of reused and recycled materials is equal to the value of materials delivered to site that are wasted.





There are a host of construction products made using a proportion of recycled materials, including panel board products, plastic pipes, plasterboard, blocks and tiles, and aggregates. WRAP has identified alternative materials offering higher recycled content with no penalties in terms of cost, quality or availability for a range of projects.

**Products With Recycled Content**

Information on recycled products can be obtained from:

[www.wrap.org.uk/rcproducts](http://www.wrap.org.uk/rcproducts)

[www.greenspec.co.uk](http://www.greenspec.co.uk)

[www.ciria.org/recycling](http://www.ciria.org/recycling)

[www.aggregain.org.uk](http://www.aggregain.org.uk)

WRAP also offers a free web-based tool which can be used to assess the overall value of recycled content on a project and identify the top 5 to 10 products where it is worth looking for alternative products with higher recycled content.

**WRAP Tool For Assessing Recycled Content -**

[www.wrap.org.uk/rctoolkit](http://www.wrap.org.uk/rctoolkit)

## Recording Your Waste Management Policy

Having considered the ways in which you can manage your waste more efficiently, it is advisable to draw up a waste management policy for your company to provide you with a framework for minimising your waste.

There are no rules about what should be included in a waste management policy – your company's policy should be relevant to your business and include actions and objectives pertinent to your organisation in order for it to have an impact and be successful.

However, a waste management policy will typically record:

- ✓ **The person within your company that has overall responsibility for your waste management policy**
- ✓ **How you minimise your waste by reducing, reusing and recycling**
- ✓ **Targets for reducing the different types of waste you produce**
- ✓ **The waste management sites and contractors you use for all types of waste that require them**
- ✓ **Details of training provided to in house and sub-contract staff**
- ✓ **A commitment to regularly monitor the policy and its implementation to continually improve on your achievements.**

You may also wish to consider appointing a 'waste champion' at each of your sites with responsibility for the daily management, monitoring and enforcing of your company's waste policy, and liaison with waste management companies regarding pick up times etc.



A waste management policy will provide you with a framework for **minimising** waste



### Site Waste Management Plans (SWMPs)

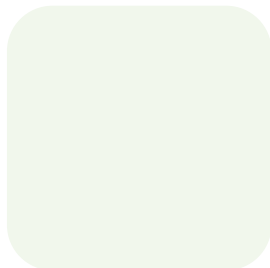
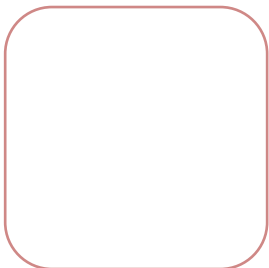
Site Waste Management Plans (SWMPs) were introduced by the former Department of Trade and Industry (DTI) to improve construction waste management and ultimately reduce the amount of waste produced. Although they constitute only a voluntary code of practice at present, they are expected to become mandatory from April 2008 for all projects in England and Wales with a value over £250,000. Their aim is to provide contractors with a framework for demonstrating that they meet their duty of care requirements for waste, and for identifying areas where waste can be minimised and recycling maximised.

It is increasingly likely that you will find contractors incorporating compliance with the requirements of SWMPs into their contracts – you should make sure that you agree any responsibilities and targets within the project SWMP, particularly those that relate to your works.

For further information on SWMPs, NetRegs (a website providing free environmental guidance for small businesses in the UK) has produced a simple guide to SWMPs called *Site Waste – It's Criminal*, which can be downloaded from [www.netregs-swmp.co.uk](http://www.netregs-swmp.co.uk).

## Checklist

1. Record your company's waste management policy and appoint a 'waste champion' at each of your sites
2. Consult waste management contractors to find feasible and cost effective solutions for your waste
3. Involve your staff to ensure buy-in to your waste management policy from the start
4. Evaluate your materials usage to reduce over-ordering and site wastage
5. Return any unwanted packaging to your suppliers for reuse or recycling
6. Reuse any surplus materials on another job or return them to the supplier
7. Designate an area of your site for waste management including segregation
8. Carefully label and place containers and skips to maximise recycling
9. Use materials with higher recycled content where possible
10. Promote your policy, for example in your tenders, to differentiate your company from its competitors



This project has been delivered with support from ConstructionSkills' Management and Supervisory Development Fund, which provides financial backing to encourage innovative ideas that deliver management training benefits across the industry.

