

# Value Green Construction Scheme



**Ten easy steps to increasing your company's profits  
while simultaneously reducing on-site waste**

## What participants have to say about the Scheme...

'The Value Green Construction Scheme has shown us how we can positively influence our impact on the environment. All aspects of the project have been of great benefit to us. The lessons that we learned have now been incorporated across all McNerney construction projects currently underway in the South East.'

*Don McMahon*

**Contracts Manager, McNerney Construction**

'The Value Green Construction Scheme has made a remarkable improvement to our operations – both from an environmental and a financial point of view.'

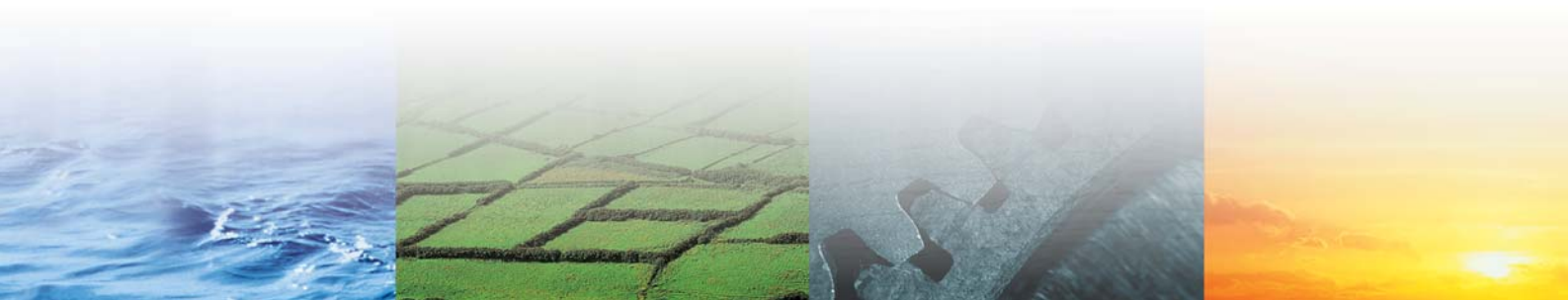
*Dermot Fitzpatrick*

**Dermot Fitzpatrick Ltd**

'While our involvement in the VGCS pilot project has now come to an end, the lessons that we learned during our participation in the project have proved invaluable.'

*Ger Freyne*

**Ger Freyne Ltd**



## Foreword

The Value Green Construction Scheme (VGCS) pilot project was initiated by Waterford Chamber of Commerce and was funded by the Environmental Protection Agency under the Cleaner Greener Production Programme.

The main objective of this pilot project was to prevent and minimise waste arising from building sites, and to prove that by implementing a 'green' policy, building contractors can increase their profits significantly. It is estimated that the industry could save in excess of €115 million per annum if best practice was adopted.

Over a period of nine months in 2002/2003, the three construction companies that participated in the Scheme examined various methods of increasing their operating profits by reducing on-site waste: this involved looking at the waste streams that most commonly occurred on their building sites. The lessons that they learned have been incorporated into this Step-by-Step Guide.

The various recommendations contained here are set out in an easy-to-follow format. In particular, they are aimed at ensuring that you too will be able to make substantial improvements to your bottom line, while simultaneously reducing waste – which has now become one of Ireland's most pressing environmental problems.

The Step-by-Step Guide is available online at [www.waterfordchamber.ie](http://www.waterfordchamber.ie) and on [www.cleanerproduction.ie](http://www.cleanerproduction.ie). Additional information to supplement that contained in this guide is available on [www.raceagainstwaste.com](http://www.raceagainstwaste.com) and [www.epa.ie](http://www.epa.ie).

**Each step is stand-alone. The more steps you implement, the more money you save. The choice is yours.**

*Liam Fennelly*

**President**

**Waterford Chamber of Commerce**

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## Who should read this guide?

This guide should be read by anyone who is working in the construction industry – in particular, managers and staff in construction companies that are interested in increasing their operating profits and reducing on-site waste.

The guide will also be of interest to:

- ✘ builders
- ✘ sub-contractors
- ✘ site managers
- ✘ foremen
- ✘ construction workers
- ✘ environmental managers
- ✘ health and safety managers
- ✘ financial controllers
- ✘ purchasing personnel

## How much will I save?

Construction industry waste costs are generally estimated at between 5% and 10% of a construction company's overall materials bill.

Significantly, the participating companies in the Value Green Construction Scheme (VGCS) pilot project reduced their waste bills by 1%-2% of turnover (i.e. between €60,000 and €200,000 per annum) per company.

If you decide to implement an on-site programme similar to the Value Green Construction Scheme pilot project, a successful outcome will largely be determined by what the VGCS team call the 'three Cs'.

- ✘ **Commitment:** Are you committed to increasing your company's profits while simultaneously making a real contribution to improving the environment?
- ✘ **Cost control:** Have you calculated what on-site wastage is costing your company currently?
- ✘ **Change:** Are you willing to change the way in which your company carries out its business – in order to achieve specific financial and environmental benefits?

## How do I make a start?

Each element of the Value Green Construction Scheme process is designed to be tackled on a 'stand alone' basis.

You may implement some or all of the steps, depending on your company's particular circumstances.

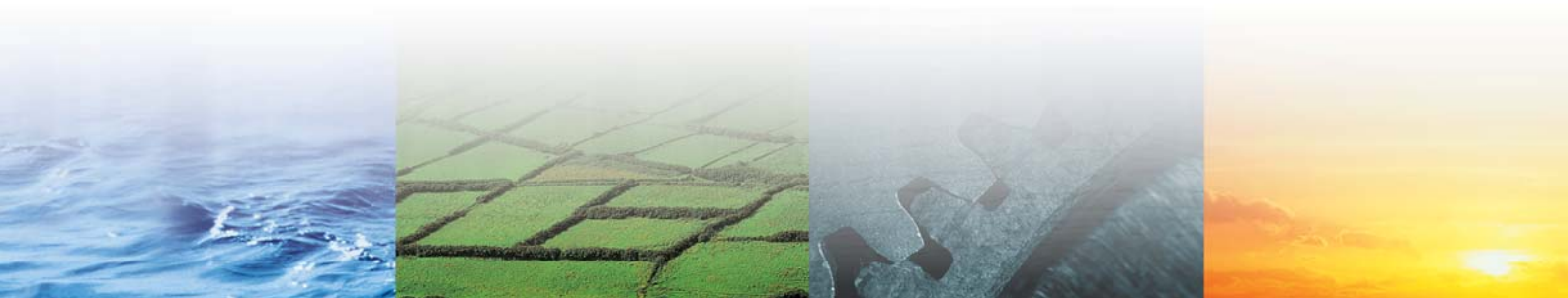
### Why not make a start today?



## THE TEN STEPS PROGRAMME

The Scheme's ten steps focus on three main areas, as follows:

<b>Steps 1 - 3</b>	<b>People</b>	Informing and preparing yourself, your managers, staff and sub-contractors and others for the challenges that lie ahead.
<b>Steps 4 - 7</b>	<b>Controls</b>	Establishing measures to monitor and evaluate your progress.
<b>Steps 8 - 10</b>	<b>The Building Site</b>	Providing adequate on-site resources in order to facilitate waste reduction.



# Steps 1 - 3

## people

### Steps 1 – 3 People

It is important to make all staff aware of what you are trying to achieve by implementing new waste management procedures. Communication at all levels is extremely important as this fosters ownership to ensure buy-in to the scheme.

#### Step 1 Senior Management (Owner / Manager)

Draw up an action plan and announce your company's commitment to reducing on-site waste.

Modify and produce record sheets for reporting purposes. (See Appendices on Page 14).

Put the VGCS on the agenda of every management meeting so that managers may review progress systematically.

#### Step 2 Awareness & Training

Initiatives may include raising initial awareness of the Scheme amongst your staff; carrying out waste management training for the Waste Management Officer on relevant aspects of waste management legislation and so on.

If yours is a large, multi-site operation, you should designate the Waste Management Officer (WMO) to support, monitor and report on the waste management action plan.

Train selected employees on how to complete record sheets and raise awareness of waste management issues and legislation.

Keep employees motivated by providing them with regular feedback on the company's progress to date.

#### Step 3 Sub-contractors/Suppliers

Notify sub-contractors in writing of their legal responsibilities in relation to waste management. (See Appendix (v) 'Notice to all subcontractors').

WMO should monitor, feedback and report on sub-contractor progress.

Use your buying power to negotiate a deal with suppliers whereby they remove packaging from all deliveries sent to site. This will minimise waste being left at the site from the purchasing process.

## Further Information

A Small Change Guide has been developed by the Department of the Environment, Heritage and Local Government and the Chambers of Commerce of Ireland to provide practical advice and tips to help businesses reduce, reuse and recycle.

It explains how to carry out a waste review and implement a plan of action, how to deal with a waste contractor and briefly outlines the waste legislation of most relevance to business.

There are also case studies of companies all over the country who are saving money by recycling and composting their business waste.

The guide is also available online at **[www.raceagainstwaste.com](http://www.raceagainstwaste.com)**.

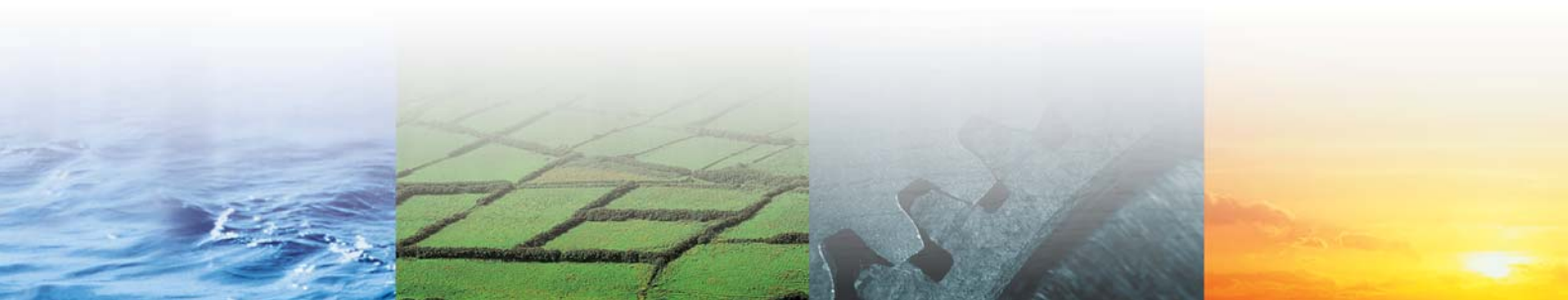
Relevant information can be found on

Waste Contractors

**[www.raceagainstwaste.com/smallchange](http://www.raceagainstwaste.com/smallchange)**

Legislation

**[www.raceagainstwaste.com/leg.htm](http://www.raceagainstwaste.com/leg.htm)**



## Steps 4 – 7 Controls

In order to identify which areas of operational activity give rise to the most significant amounts of waste, and in order to monitor your company's progress in relation to waste reduction, a number of systems need to be established, analysed, implemented and maintained.

### Step 4 Supplier Delivery Record

It is essential to crosscheck supplier's deliveries against your order forms. (See Page 15: **Worksheet No 1**) for an example of a properly completed form, which clearly demonstrates the potential for discrepancies between what is ordered and what is delivered).

It is recommended that oversupplies should not be paid for because, while in theory oversupply is stored until it is required, in reality, oversupply actually becomes waste. You are therefore faced with paying for unwanted materials as well as the cost of unnecessary waste disposal.

### Step 5 Waste Reconciliation Record Sheet

A separate waste reconciliation record sheet should be prepared for each of the main items of expenditure (e.g. concrete, blocks, bricks, timber, roofing materials). This sheet should detail the quantities of each item delivered; it should reconcile those deliveries with the amounts of materials purchased, and then compare those with the amounts of materials actually used on site.

**For example:**

If 300m<sup>3</sup> of concrete was purchased and your quantity surveyor confirms that 270 m<sup>3</sup> was used, this implies wastage of 30 m<sup>3</sup> i.e. 10%.

**Note: Worksheet No. 2,**

Which is set out on Page 16 of this guide, may be used as a template for your company's operation.

### Step 6 Waste Skip Record Sheet

Do you know what costs your company incurred for waste disposal during, say, the previous twelve months? Nine months? Six months? Three months?

**Worksheet No 3**

(a template for which may be found on Page 17 of this guide) will help you to analyse on-site expenditure on waste skips relative to the cost of materials purchased by your company. This worksheet will also help to demonstrate whether your waste costs are reducing. You should use this worksheet to record monthly statistics: an analysis of those statistics will allow you to compare materials costs with waste bin charges for any given month during the financial year.

## Step 7 Materials Collection Record

Do you know how frequently your staff members collect sundry building materials from suppliers?

### Worksheet No 4

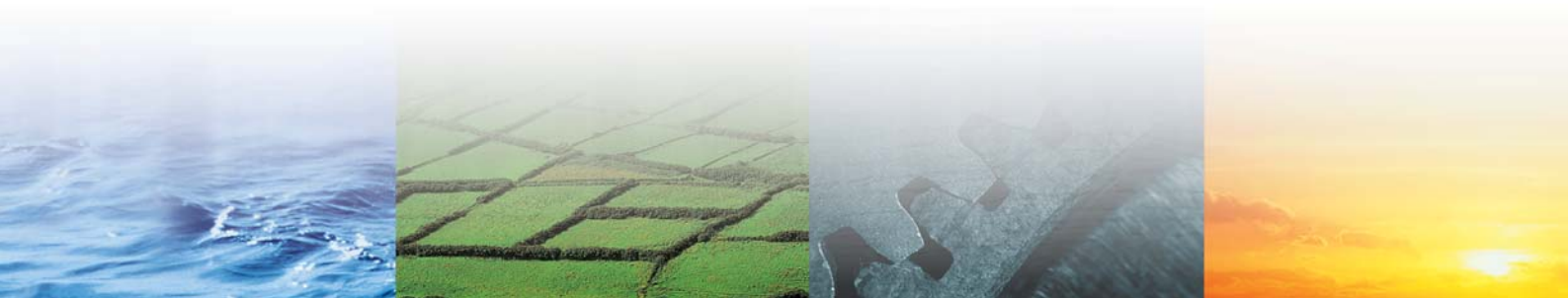
(a template for which may be found on Page 18 of this guide) will help you to ascertain how frequently various materials are collected by the site manager.

Issues to be aware of here include:

- a) Lack of materials planning, as a result of which your company may forfeit bulk-buy discounts unnecessarily.
- b) Supervision of the site when the manager is absent due to being called away on a mundane errand, or for some other reason such as having to travel off-site to source materials/supplies.

You may need to consider the reallocation of staff resources to tasks such as inventory management in order to ensure that managers' valuable time is not wasted unnecessarily in this way.

If materials collection is handled efficiently, the savings may be impressive. For example, the VGCS participants saved €3,000 a year on diesel costs alone excluding savings arising from increased production and bulk buying of materials.



## Steps 8 – 10 The Building Site

**Steps eight to ten are required in order to ensure the facilitation of on-site waste reduction.**

### Step 8 Signage

You should erect signage that reinforces the message: 'Waste Costs Money'. For an example of effective signage, see Page 20.

**Waste management costs money but if you don't deal with it in a proper and sustainable manner it will cost even more.**

Effective signage has a significant impact on both employees and sub-contractors, and it may do a lot to promote and support the range of behavioural changes that are required in order to reduce on-site waste.

### Step 9 Storage

Significant waste may arise in situations where facilities for storing materials are inadequate. Therefore, it is important to ensure that proper storage facilities are available on each site – the

ability to keep materials covered and protected from the weather is particularly important.

### Step 10 'Materials Rescue'

It is important to ensure that a weekly 'materials rescue' is carried out by designated staff members.

The site should be 'combed' with the aid of a 'load all' (e.g. front loader/telescopic loader), and any materials that may be at risk of becoming waste should be collected and placed in appropriate storage facilities. Carrying out this action has the benefit of reducing the amount of new materials needed, reducing the overall level of on-site waste and increasing environmental awareness.

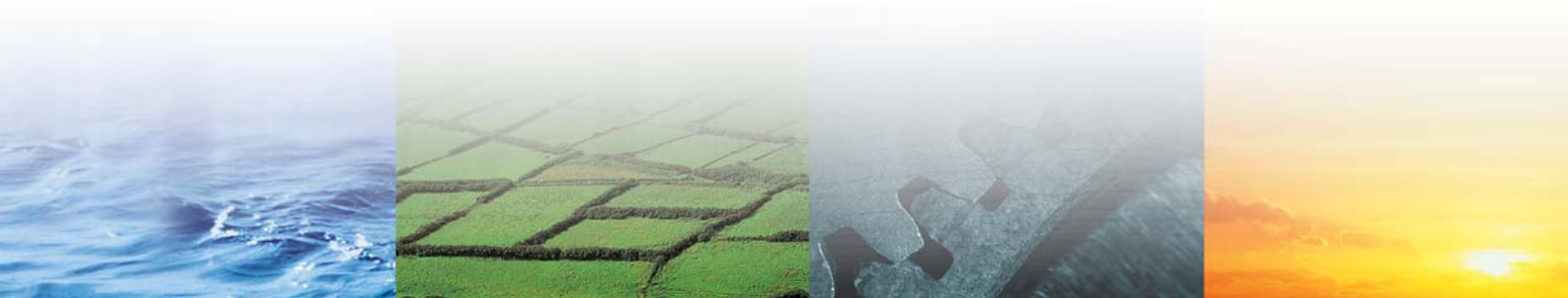
## MONITORING/REVIEWING/ EVALUATING

As outlined in Step 2, progress should be reviewed at weekly/monthly management meetings.

As with all management systems, the VGCS will work for you if it is monitored, and if feedback is given to everyone involved in the Scheme.

Both ownership of (and recognition of achievements) will be vital ingredients in the ultimate success of the Scheme in your company. **In short, involve everyone in every aspect!**

Finally, if your VGCS team has made significant efforts to implement on-site waste management practices, and if they have proved successful in reaching their targets, you might consider organising some kind of celebration to acknowledge their commitment and contribution. This is also an opportunity to publicise the good work done by your company.



## Value Green Construction Scheme Results in Brief

Best practice activity	Annual savings to each VGCS participant	Annual savings to the construction industry nationwide if best practice were to be adopted
Accurate orders and the elimination of oversupply by materials providers	€27,000	€28.5 million
<p><b>Note:</b> Every 1% excess delivery of building materials costs Irish contractors a total of approximately €28.5 million annually.</p>		
Reduced collection of materials by staff (cost of diesel fuel only)	€3,000	€5.7 million
'Materials rescue'	€37,500	€33 million
Return of packaging to suppliers/sub-contractors who then manage their own waste	€7,110	€4.75 million
Reduced waste skip costs arising from increased waste- awareness initiatives	€11,554	€43.7 million
<b>Total</b>	<b>€86,164</b>	<b>€115.65 million</b>

## MORE INFORMATION

If you would like to obtain additional information on the Value Green Construction Scheme initiative, contact:

Michael Cox  
Deputy CEO  
Waterford Chamber of Commerce  
George's Street  
Waterford

**T** 051 311131  
**F** 051 876002  
**M** 086 822 5301  
**E** michael.cox@waterfordchamber.ie

Useful information may also be found on the following websites:

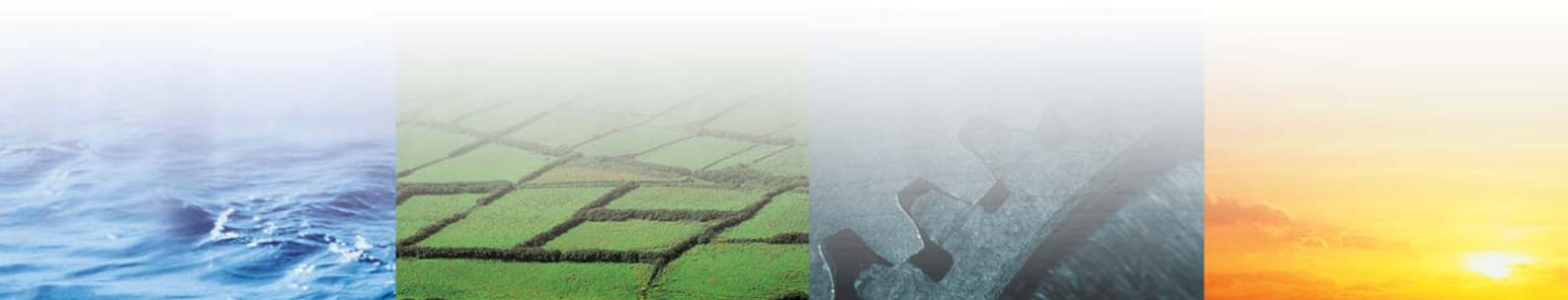
Environmental Protection Agency    [www.cleanerproduction.ie](http://www.cleanerproduction.ie)  
[www.epa.ie](http://www.epa.ie)

Race Against Waste    [www.raceagainstwaste.com](http://www.raceagainstwaste.com)

Department of Environment,  
Heritage & Local Government    [www.environ.ie](http://www.environ.ie)

Construction Industry Federation    [www.cif.ie](http://www.cif.ie)

Enterprise Ireland    [www.envirocentre.ie](http://www.envirocentre.ie)



# appendices



## Appendix (ii) Waste Reconciliation Record Sheet

Worksheet No. 2

Material	Supplier name	Week ending	EXAMPLE
Concrete	XYZ Ltd.	20 February 2004	
<b>Order Calculation</b>	<b>Quantity</b>		
<b>Total Required</b>	1,000 m <sup>3</sup>		
<b>Add Waste Estimate</b>	50 m <sup>3</sup>		
<b>Total Order</b>	1,050 m <sup>3</sup>		

DELIVERY DETAILS		
Actual order	Total delivered	Balance due
9 m <sup>3</sup>	9 m <sup>3</sup>	1,041 m <sup>3</sup>
9 m <sup>3</sup>	18 m <sup>3</sup>	1,032 m <sup>3</sup>
9 m <sup>3</sup>	27 m <sup>3</sup>	1,023 m <sup>3</sup>
9 m <sup>3</sup>	36 m <sup>3</sup>	1,014 m <sup>3</sup>
9 m <sup>3</sup>	45 m <sup>3</sup>	1,005 m <sup>3</sup>

Note: As a result of going through this worksheet exercise, it becomes clear that the actual waste level is 10%, whereas the company's original estimate was that waste levels would be no more than 5%.

If this particular construction company were to continue recording waste levels of 10%, its net profits would be eroded significantly i.e. by an additional 5% over and above the 5% calculated when costing the job.

## Appendix (iii) Waste Skip Record Sheet

### Worksheet No. 3

Materials Month	Purchased	Total Skip Cost	Total Tonnage	Number of Skips	Tonnes per Skip	Cost per Skip	Skip Cost as % of Materials Purchased
Sept 02	€5,408.87	€3,353.50	17.69	8	2.21	€406.69	62%
Oct 02	€9,664.29	€3,382.50	18.55	8	2.32	€422.82	35%
Nov 02	€3,117.45	€1,714.60	11.04	6	1.84	€286.6	55%
Dec 02	€5,055.00	€2,224.20	16.08	5	3.22	€444.84	44%
Jan 03	€6,063.11	€2,243.35	14.29	8	1.77	€280.42	37%
Feb 03	€4,826.60	€2,413.30	16.42	7	2.34	€344.76	50%
Mar 03	€6,440.42	€1,545.70	10.18	5	3.03	€309.14	24%

#### Points to note while completing this worksheet

1. Are costs and tonnage per skip increasing or decreasing? In the example given above, the VGCS initiatives started in September 2002; commitment to the Scheme was high in October and then tapered off in November.

Staff became motivated again when the November results were released thereby leading to improvements in the December and January figures.

The decrease is also attributed to sub-contractors taking responsibility for their own waste; reusing and storing materials (in particular heavy items such as bricks, and maintaining a strict policy of precise ordering (because over-ordering has been proven to increase waste).

2. Are skip costs, as a percentage of overall materials purchased, increasing or are they decreasing?

## Appendix (iv) Materials collection as compared with delivery records

Worksheet No. 4

Collection pattern at XYZ Construction Ltd.

Planable materials requirements

			Total Value	Delivered	Collected
1	06/01/03	Timber	799	799	
2	08/01/03	Timber	415	415	
3	10/01/03	Timber	581	581	
4	13/01/03	Timber	316	316	
5	23/01/03	Timber	110	110	
6	03/02/03	Timber	230	230	
7	13/02/03	Glidevale	108		108
8	13/02/03	Plasticizer	3		3
9	17/02/03	Timber	673	673	
10	17/02/03	Timber	749	749	
11	18/02/03	Timber	48	48	
12	19/02/03	Ironmongery	106	106	
13	24/02/03	Timber	74	74	
14	25/02/03	Timber	464	464	
15	28/02/03	Precast	144	144	
			4,820	4,709	111
				87%	13%
				Delivered	Collected

## Appendix (v)

### Notice to all subcontractors

Re: Disposal of on-site waste at .....site.

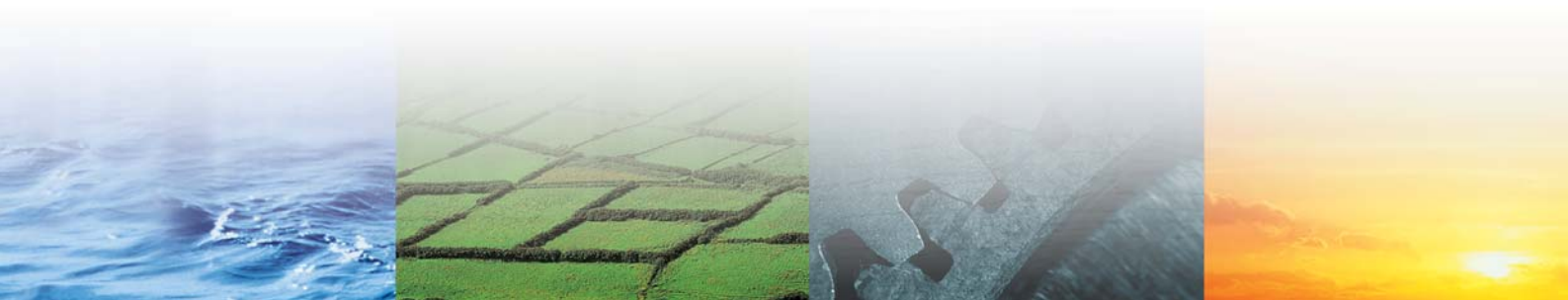
We hereby advise you that the Waste Management Act 1996 (as amended) provides as follows:

- S.32 (1) A person shall not hold, transport, recover or dispose of waste in a manner that causes or is likely to cause environmental pollution.
- (2) A person shall not, save in such circumstances as may be specified under subsection (4), transfer the control of waste to any person other than an appropriate person.
- S.39 (1) Subject to subsections (4) and (7), a person shall not dispose of or undertake the recovery of waste at a facility, on or after such date as may be prescribed, save under and in accordance with a licence under this Part (in this Act referred to as a "waste licence") that is in force in relation to the carrying on of the activity concerned at that facility.

**It is your responsibility to comply with the requirements of the Act. Failure to do so may lead to prosecution.**

Signed.....

Title.....



Appendix (vi) - Signage Examples

**WASTED MATERIAL**



**REDUCE WASTE - REDUCE COSTS**

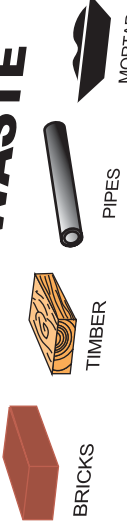
TAKE CARE OF YOUR MATERIALS  
SECURE JOBS FOR THE FUTURE &  
PROTECT THE ENVIRONMENT

**USE SEPARATE WASTE BINS FOR:**

- ✓ PACKAGING
- ✓ TIMBER / PLYWOOD
- ✓ BRICKS, CONCRETE PRODUCTS

**AVOID WASTE AT ALL TIMES**

**AVOID WASTE**



5% EXTRA WASTE  
CAN REDUCE PROFITS  
BY UP TO 25%

**REDUCE WASTE ON OUR SITE**



- ✓ PROTECT OUR ENVIRONMENT
- ✓ REDUCE COSTS
- ✓ SECURE JOBS FOR THE FUTURE

**WASTE SKIPS COST €220**  
**JUMBO SKIPS CAN COST**  
**€1000 - €2000**

**AVOID FILLING THE SKIP**  
**WITH USEFUL MATERIALS**  
**AVOID WASTE AT ALL TIMES**

**MATERIALS & EQUIPMENT PLANNING**

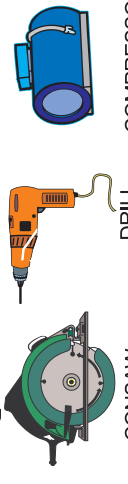
**PLAN YOUR MATERIAL & PLANT HIRE WELL IN ADVANCE**

- ✓ TRY AND ALLOW 3 CLEAR DAYS NOTICE BETWEEN REQUISITION / ORDER DATE AND DELIVERY / USE DATE
- ✓ GOOD PLANNING MAKES SENSE
- ✗ NO PLANNING LEADS TO HIGHER COSTS

**MATERIALS & EQUIPMENT PLANNING**

**WRITE THAT REQUISITION EARLY**  
**ALLOW 3 DAYS FOR DELIVERY**  
**GOOD PLANNING WILL REDUCE COSTS**  
**NO PLANNING LEADS TO HIGH COSTS**

**DO YOU KNOW WHAT PLANT & EQUIPMENT IS ON THIS SITE?**



CONSAW      DRILL      COMPRESSOR

INSIST ON YOUR HIRE COMPANY  
ADVISING YOU WITH A WEEKLY LIST  
**CONTROL EXCESSIVE HIRE & REDUCE COST**

**MATERIALS WASTE = PROFIT EROSION**

**REDUCE WASTE**  
**REDUCE COSTS**



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