

The background of the slide is a photograph of a modern building's facade, featuring a grid of windows and architectural lines that create a strong sense of perspective and depth. The sky is a clear, light blue.

# Setting Requirements for Recycled Content and Waste Management in Construction

**CaSPR Event**

9 October 2007

A low-angle, upward-looking photograph of a modern building's facade. The building features a complex, geometric design with multiple levels of cantilevered balconies and a facade of light-colored, possibly metallic or stone, panels. The sky is a clear, pale blue. The word 'Introduction' is overlaid in large white text on the left side of the image.

# Introduction

# Introductions

## **Sara McGowan**

Senior Project Manager

Mace Ltd

12 years experience in the construction industry with a background in engineering design and sustainability

## **Simon Hall**

Project Manager

Mace Ltd

In depth involvement in the Education sector with a background in capital redevelopment delivery and funding regimes



Material change for  
a better environment

---

# Overview of WRAP

A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural scale.



### Construction

Helping businesses exploit the commercial benefits of resource efficiency.



### Composting

Supporting compost producers and growing markets for compost products.



### Retail

Working with retailers and their supply chains to reduce waste and encouraging recycling.



### Manufacturing

Commercialising the use of recycled materials in place of virgin products.



### Local Authorities

Supporting Councils in their work to deliver better recycling services and more waste reduction.



### Businesses

Growing a successful recycling sector and helping businesses recycle and use recycled products.



### Home, Garden, Schools and Communities

Helping everyone to reduce waste and recycle more stuff more often.



### English Regions, Northern Ireland, Scotland, and Wales

Delivering support where you are.



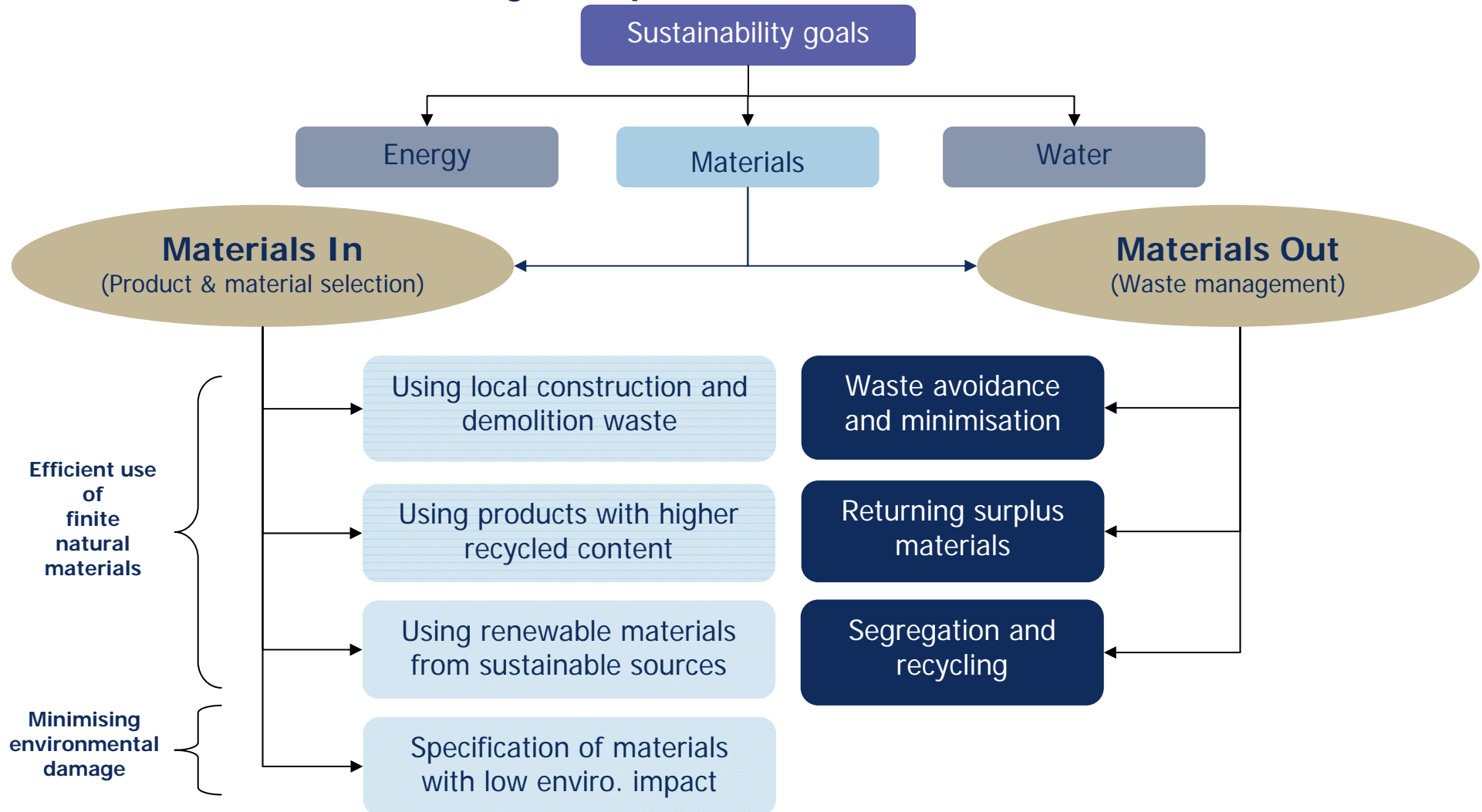
## WRAP's construction focus

"helping deliver Government targets for construction waste by:

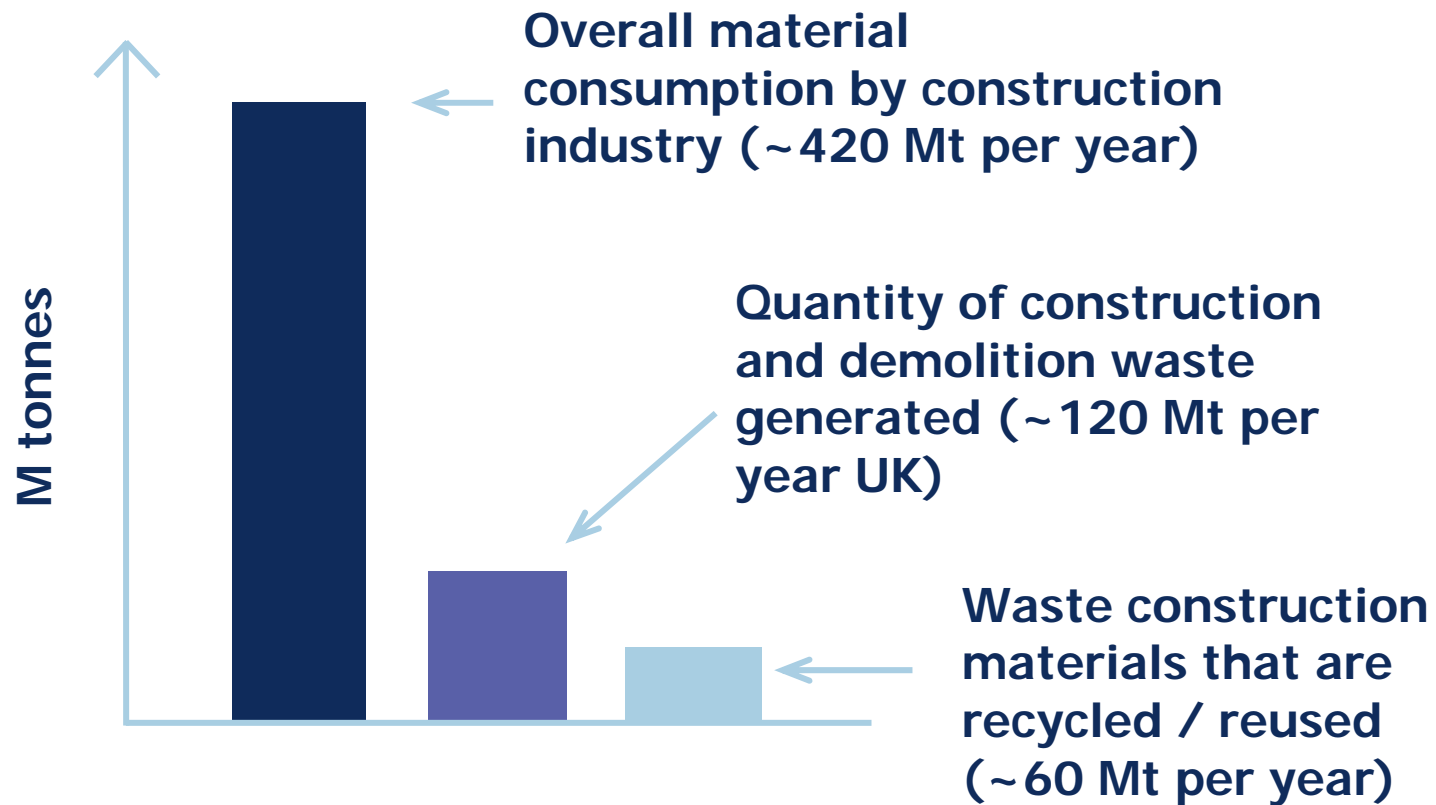
- developing standards and requirements
- getting these adopted by construction clients
- enabling good practice
- supporting investment in waste recovery infrastructure."



# Resource Efficiency as part of Sustainable Construction




## UK material flows in construction





---

# Setting Requirements for Recycled Content

A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural scale.

A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural grandeur.

# Key principles

# What is recycled content?

## **Recycled content.**

The proportion, by mass, of recycled material in a product or packaging.

Defined by ISO 14021 (Standard on environmental labels and declarations).

## **Recycled content by value.**

Proportion of the overall value of the materials in a product or building that is derived from recycled content.

RC material mass x material cost = % RC by value

# Calculating recycled content by value

Component	Quantity	Material Value (unit rate)	Total Material Value	Recycled content by mass	Recycled content by value
Bricks	2000	£250/1000	£500	15%	£75
Dense blocks	50	£8/m <sup>2</sup>	£400	50%	£200
Chipboard	10	£70/m <sup>2</sup>	£700	70%	£490
Insulation	20	£10/m <sup>2</sup>	£200	80%	£160
Fill*	4	£10/m <sup>3</sup>	£40	100%*	£40
Other items (% RC unknown)			£2,000	0%	£0
Total (£)			£3,840		£965
<b>Total (%) for project</b>					<b>25.1% (£965/£3,840)</b>

Note \* in this example the fill used in the project is from reused demolition waste, it is therefore considered to be 100% 'recycled' and its cost is taken as being equal to the purchase price of an equivalent product from the open market.

# Identifying opportunities to increase RC

**WRAP maintain data on three benchmarks of recycled content for construction materials.**

- **Standard:** level of recycled material content likely to be used if no request for recycled content is made;
- **Good:** better than standard practice, but also readily available at competitive cost;
- **Best:** highest level of recycled material content currently available in the UK.



## Determining Quick Wins

Component	Material value	Recycled content by mass (%)			Recycled content by value (£)		
		Standard	Good	Best	Standard	Good	Best
Brick	£5000	0	10	30	£0	£500	£1500

**Potential contribution from using good practice bricks is £500.**

### Case study results show:

- the top 10 or so 'Quick Win' product substitutions deliver most of the potential increase from Standard to Good practice for a project overall;
- .....hence design teams can minimise effort in measuring, increasing and reporting recycled content.

A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural scale.

# Why require recycled content?

# Setting requirements delivers tangible improvements

- Substantially increases use of recovered materials;
- Reduces burden on landfill sites;
- Saves resources;
- Reduces carbon emissions.



*Affordable, quantifiable and worthwhile*

# Embedded in public policy

## Scottish Government

- in 2006 Scottish Ministers asked all public bodies to set a minimum 10% requirement for recycled content in all £1m + construction projects they procure or fund.

## A number of public bodies in Scotland have already set RC requirements, including:

- Glasgow City Council (as a policy for all its major construction projects);
- Aberdeen CC (schools project);
- Raploch Urban Regeneration Company;
- Dundee CC (waste infrastructure project);
- South Ayrshire Council (schools project).

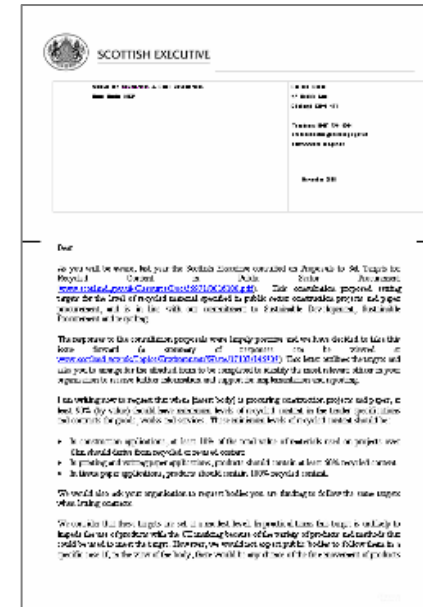
## UK landfill tax (ongoing)

- inert waste - £2.50 per tonne from April 2008
- active waste – doubles to £48 per tonne from 2008 – 2010

# Scottish Government Requirements

*at least 90% (by value) of construction projects should have minimum levels of recycled content as follows:*

- In construction applications, at least 10% of the total value of materials used on projects over £1m should derive from recycled or re-used content



During December, WRAP are organising half-day free workshops in Glasgow, Edinburgh and Perth for relevant personnel to be provided with information on specifying recycle and information on further copies of information and advice. To ensure the most appropriate person is contacted, it would be grateful if you could arrange for the attached form to be completed, identifying the officer in your organisation who will take the lead on specifying recycle across your organisation. This officer will also be provided with full copies of all relevant guidance. If as the organisation you or a colleague in the organisation would like to discuss the targets and specifying recycle in more detail, I would suggest you contact Jen Forbes, WRAP Scotland Liaison Officer, on 0131 244 7933 or [jen.f@wrap.org.uk](mailto:jen.f@wrap.org.uk)

I am aware that you may need time to embed specifying recycle within everyday procurement practice. To allow for this I would ask that you consider specifying recycle as soon as practicable and start measuring progress from the beginning of 2007/08. The guidance will include information on how to report progress and will recognise that there may be a need for flexibility.

I will keep the level of targets and performance of all bodies under review.

ROSS FINNIE



## Recommended form of wording

'...**at least 10% of the total value of materials** used should derive from recycled and reused content in the products and materials selected.

In addition, show that the most significant opportunities to increase the value of materials derived from recycled and reused content have been considered, such as the top ten Quick Wins or equivalent, and **implement good practice where technically and commercially viable.'**



# Who is taking action?



The Region's Development Agency



- Glasgow City Council
- Aberdeen City Council
- Dundee City Council
- Newcastle City Council
- Solihull MBC
- Sheffield City Council
- British Land
- Yorkshire Forward
- Olympic Development Authority
- Welsh Health Estates
- Greater London Authority
- Northern Ireland Procurement Directorate
- Defence Estates
- Lancashire County Council
- Building Schools for the Future (BSF)
- National Grid
- Raploch Urban Regeneration Company
- Skanska
- Scottish Government
- NOMS
- Scottish Water
- Leeds Metropolitan University

...and many more



Designed for *Life* : Building for *Wales*  
Cynllun *Oes* : Adeiladu Ar Gyfer *Cymru*

**NOMS** National Offender Management Service  
Working together to reduce re-offending

# Taking action - Education

## Building Schools for the Future

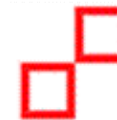
- environmental KPI on recycled content
- WRAP guidance and product information

## Bradford University

- minimum recycled content requirement in refurbishment programme

## Leeds Metropolitan University

- minimum requirement for new buildings



Building schools for the future



MAKING KNOWLEDGE WORK





Material change for  
a better environment

# FAQ'S

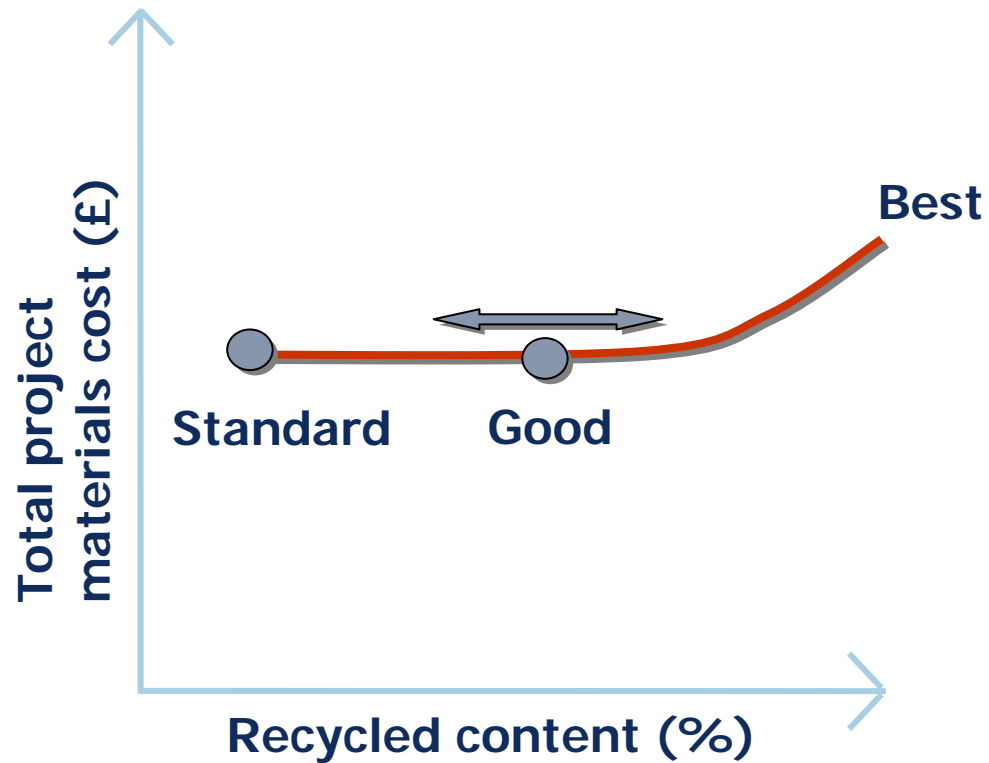


## Common questions...

- will requiring higher recycled content cost more?
- do products have the same quality and performance?
- are products readily available?
- will a requirement impact on other sustainability objectives?
- is a 10% minimum requirement realistic?
- how much effort is required?
- do public procurement rules allow me to require recycled content for my project?

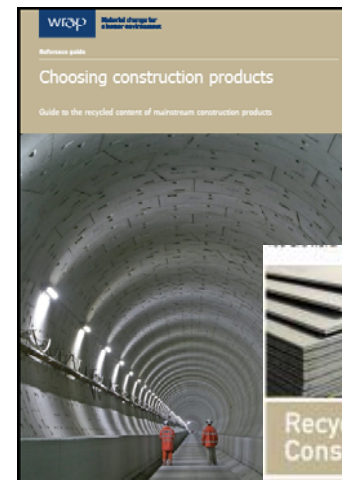


# Will requiring higher recycled content cost more?



# Do products have the same quality and performance?

- mainstream products
- familiar manufacturers
- products already in use
- readily available
- reassuring to trades

A screenshot of the WRAP website's search interface. It shows a search bar with 'Bedding Sand' entered. Below the search bar are fields for 'SUPPLIER NAME' and 'PROJECT TYPE'. The 'PROJECT TYPE' dropdown is open, showing options like 'Subsides', 'Highways', 'Infrastructure', and 'Landscapes'. A 'You have selected' section shows 'None selected'. There are 'SEARCH' and 'CLEAR ALL FILTERS' buttons.

## Examples of mainstream products

Product type	Option with lower recycled content	Option with higher recycled content
Dense block	0%	<b>Hanson Conbloc Up to 70%</b>
Wall insulation	0%	<b>Superglass Superwall Cavity Slab &gt;80%</b>
Concrete roof tile	0%	<b>Lafarge – various, e.g. Grovebury 17%</b>
Ceiling tiles	>10%	<b>Armstrong – various 28-52%</b>
Intermediate floors, e.g. timber	50-70%	<b>Sonae – Sonaefloor 90-95%</b>
Floor coverings – safety	0%	<b>BSW Regupol Everroll rubber flooring 80%</b>

# The bigger environmental picture

- Important to remember specifications are not changing, only the products/brands - the Green Guide aids the basic design and the RC Toolkit aids product choice/procurement within the selected design;
- There is no adverse impact on Green Guide ratings – in general, higher recycled content in the major substitution product categories reduces overall environmental impact;
- Higher recycled content may even enhance the rating of a specification.



## A 10% minimum requirement is readily achievable

Type of project	Baseline/actual practice	Cost neutral good practice
Detached/terraced house	6 – 26%	16 -29%
Commercial office	10* - 22%	12* - 30%
School, hospital	12* - 20%	15* - 27%
Road reconstruction	8 – 16%	27 - 29%
Bridge reconstruction	18 – 23%	33 - 49%
Retail	11 - 32%	21 - 44%

\* Excluding building services

# How much effort is required?

## WRAP support package:

- **exemplar wording** for pre-qualification questionnaires, brief, and contracts;
- on-line recycled content toolkit **for calculating performance and opportunities**;
- product guide **identifying specific products with higher levels of recycled content**;
- case studies **covering all types of construction.**

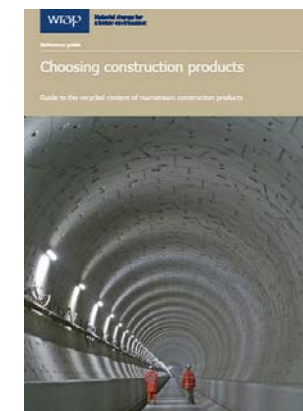
[www.wrap.org.uk/construction](http://www.wrap.org.uk/construction)



WRAP  
Material change for a better environment

Building Product

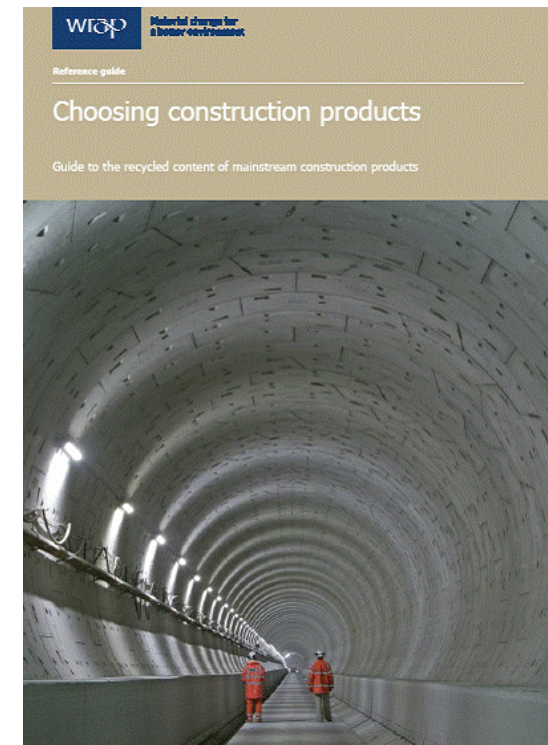
Material	Recycled Content (%)	Product Name
Concrete	100	Concrete
Brick	100	Brick
Block	100	Block
Aggregate	100	Aggregate
Gravel	100	Gravel
Sand	100	Sand
Stone	100	Stone
Clay	100	Clay
Timber	100	Timber
Steel	100	Steel
Aluminum	100	Aluminum
Copper	100	Copper
Plastic	100	Plastic
Glass	100	Glass
Paper	100	Paper
Cardboard	100	Cardboard
Textile	100	Textile
Leather	100	Leather
Rubber	100	Rubber
Latex	100	Latex
Paint	100	Paint
Coatings	100	Coatings
Adhesives	100	Adhesives
Sealants	100	Sealants
Insulation	100	Insulation
Roofing	100	Roofing
Cladding	100	Cladding
Windows	100	Windows
Doors	100	Doors
Floors	100	Floors
Walls	100	Walls
Roofs	100	Roofs
Structural	100	Structural
Non-structural	100	Non-structural
Interior	100	Interior
Exterior	100	Exterior
Architectural	100	Architectural
Industrial	100	Industrial
Commercial	100	Commercial
Residential	100	Residential
Public	100	Public
Private	100	Private
Government	100	Government
Non-profit	100	Non-profit
For-profit	100	For-profit
Small business	100	Small business
Large business	100	Large business
Government	100	Government
Non-profit	100	Non-profit
For-profit	100	For-profit
Small business	100	Small business
Large business	100	Large business





# Product guide

- WRAP reference guide provides a directory of products with higher levels of recycled content.
- Designers and contractors review the practicality of Quick Win options
  - capital cost and availability
  - durability
  - quality / aesthetics
  - “buildability”
  - performance characteristics.





# Public procurement

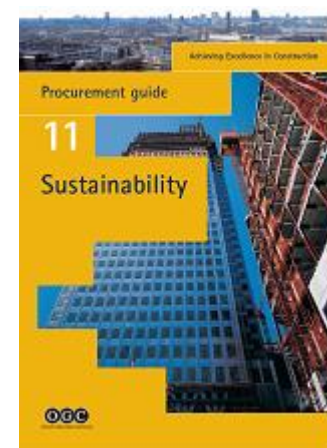
## European Commission (2004)

“As a contracting authority, you have the right.....to demand a minimum percentage of recycled or reused content where possible.”



## Office of Government Commerce (OGC) (2005)

“The (project) brief should include an outcome-based requirement for overall materials efficiency, such as a minimum requirement for recycled content in the project .”



# Key principles

1. Requirement delivered through **procurement**
  - main aim is to use products with more recycled content
2. Requirements are likely to be set at the **project not product level**
  - offers flexibility to the supply chain
  - fits with outcome focus of Design & Build and PFI
3. A **modest** minimum requirement but **with a requirement for good practice**

The background of the slide is a low-angle photograph of several modern skyscrapers. The buildings are constructed with a facade of light-colored, possibly metallic or glass, panels that create a strong sense of verticality and geometric patterns. The sky is a clear, pale blue. The perspective is from the ground looking up, making the buildings appear to converge towards the top of the frame.

# Discussion





Material change for  
a better environment

BREAK







Material change for  
a better environment

---

# Waste Minimisation in Construction



The background of the slide is a photograph of a modern building's facade, characterized by a grid of light-colored panels and dark window frames, viewed from a low angle looking up against a clear blue sky.

---

# Using procurement to drive best practice in waste management

# Agenda

- Introduction
- Why take action?
- General principles
- Setting good practice waste management requirements
- Action at each stage of procurement, design and construction
- Practical support and tools
- Conclusion

# Aims of this presentation

- Communicate reasons for adopting good practice and its practicality
- Explain how to encourage good practice by setting requirements in procurement
- Introduce freely-available tools and resources
- Enable you to take action

# What is waste?

- “Any substance or object the holder discards, intends to discard or is required to discard”
  
- “It will remain a waste until it has been fully recovered and no longer poses a potential threat to the environment or to human health.”

# Key principles of client requirements

1. Requirement delivered through procurement process
2. Set requirements early in the process
  - greatest ability to mandate actions
3. Requirements should be set at the project level
  - offers flexibility to the supply chain
  - responsibility of contractor to determine best way to meet requirements
  - fits with outcome focus of Design & Build and PFI
4. Specify requirement for **good practice** – not just the legal minimum



# Overview of Waste Management process

- Include within contract / tender requirements
- Identify wastes
- Identify opportunities, consider quick wins
- Set targets
- Consider site practices
- Establish measurement and monitoring of waste

A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural scale.

# Why take action?

# The business benefits

- A. Reduce costs of material & disposal
- B. Increase competitive edge
- C. Improve Corporate Social Responsibility performance
- D. Lower CO<sub>2</sub> emissions
- E. Meet planning requirements
- F. Complement other aspects of sustainable design
- G. Respond to and pre-empt legal requirements and taxation



Material change for  
a better environment



**£90**  
Packaging

**£90**  
Inert

**£0**  
Metals

**£258**  
Mixed

**£90**  
Wood



## A. Reduce costs of materials & disposal

Housing development (30 skips /week):

Mixed waste system = £4,970

Segregated waste = £1,935

~60% saving to Simons Construction



## B. Increase competitive edge

### Examples of contractors who are making sustainability part of their market position:

- Wates Group Ltd: "Target Zero" and commitment to a zero waste to landfill policy by 2010
- General Demolition Ltd: Emphasise sustainable waste management in its marketing materials
- Mace Construction and its partnership with a waste recycling company, ensuring recycling of 88% of construction waste





## C. Improve CSR performance

### Adopting sustainable practices enables:

- Achievement against corporate policies to be quantified
- Demonstration of continual improvement within the client's environmental management system
- Sustainability to be adopted as a unique selling point

*"Reducing waste and ensuring we re-use materials during construction are at the forefront of the Olympic Delivery Authority's sustainable development strategy."*

David Higgins, Chief Executive, Olympic Delivery Authority.

## E. Meet planning requirements

**The Planning regime presents an effective driver for sustainable construction practices:**

- ODPM's Planning Policy Statement 1
  - requires Development Plan Policies to seek to use waste as a resource wherever possible
- Planning Officers Society & Local Government Association document 'Planning Policies for Sustainable Building 2006'
  - encourages the reduction of wastes and the efficient use of wastes in construction



## F. Part of sustainable construction

**Policies and frameworks for sustainable construction are raising the bar for waste management:**

- National policy targets
- Standards for the Government Estate
- Model requirements for PFI schools and hospitals
- Code for Sustainable Homes

## G. Pre-empt legal requirements & taxation

**Smart organisations will pre-empt changes in taxation and regulation of waste:**

- Landfill Tax
- Requirements for Site Waste Management Plans
- Government funding, procurement and planning requirements

## G. SWMP Legislation – Scotland

- Proposed Scottish Planning Policy 10: Planning for Waste Management
  - SWMPs as planning conditions for new developments of more than £200,000



# Recap: The business benefits

- A. Reduce costs of material & disposal
- B. Increase competitive edge
- C. Improve CSR performance
- D. Lower CO<sub>2</sub> emissions
- E. Meet planning requirements
- F. Complement other aspects of sustainable design
- G. Respond to and pre-empt legal requirements and taxation



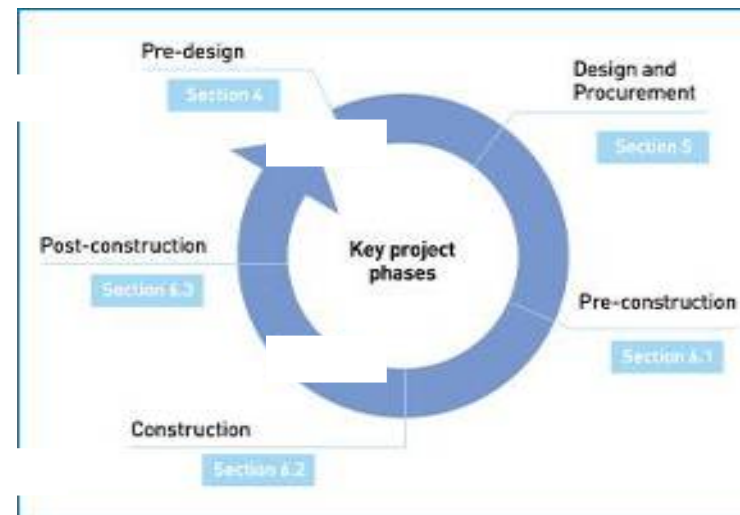
A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural grandeur.

# General principles

# Waste hierarchy



# Key project phases



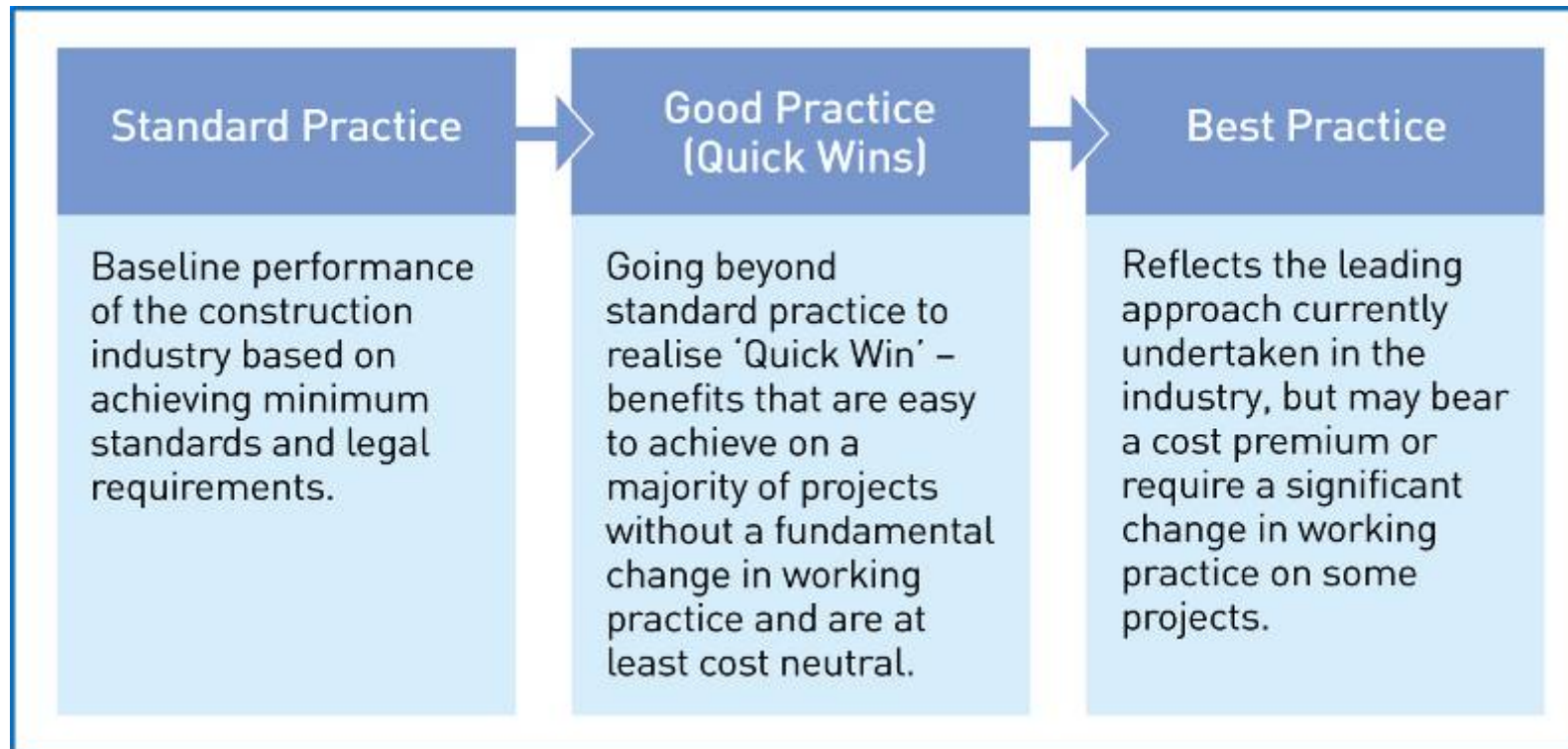
# Construction wastes

## Factors influencing the waste profile:

- Composite designs of buildings
- Changes in design
- Lack of communication between tradesmen
- Over estimation and consumption of resources
- Material damaging from mishandling and careless deliveries and storage
- Vandalism
- Inadequate recording of materials used on site
- Rework
- Packaging



# Waste management levels



## What does this mean to a client?

- Need to clearly state project waste management expectations and requirements
- Good and best practice can realise cost savings without significant expenditure
- Best results from adoption of requirements at earliest stage
- Need to require designers, contractors and Qs to forecast, set targets and measure wastage
- Performance optimised by the review of waste management practices and achievement against benchmarks, throughout the project

## Case study: Greenwich Millennium Village

**Countryside Properties, Taylor Woodrow & English Partnerships**

### Key actions

- Contract clauses for waste minimisation

### Results

- Waste reduction target of 50% from baseline of 50m<sup>3</sup> per dwelling
- Saving of over £150,000 by:
  - incorporating binding terms into contractual agreements
  - workshops for new contractors and monitoring of segregation
  - engaging the supply chain in waste minimisation





A low-angle, upward-looking photograph of a modern building's facade. The building features a grid of windows and architectural lines that create a strong sense of depth and perspective, leading the eye towards the top of the frame. The sky is a clear, light blue.

# Good practice waste management : Setting a client requirement

## Key principles of client requirements

1. Requirement delivered through project and procurement process
2. Set requirements early in the process
  - greatest ability to mandate actions
3. Requirements should be set at the project level
  - offers flexibility to the supply chain
  - responsibility of contractor to determine best way to meet requirements
  - fits with outcome focus of Design & Build and PFI
4. Specify requirement for **good practice** – not just the legal minimum

# Requirement for waste minimisation and management

'...we require a **Site Waste Management Plan (SWMP)** to be developed from the **pre-design** stage and implemented in all construction **site activities** in line with good practice published by WRAP.

The SWMP is required to set **targets for waste reduction and recovery** based on:

- assessment of the likely composition and quantity of waste raisings
- **identification of the most significant cost-effective options for improvement (Quick Wins).**





# Pre-design & client requirements stage

- Agenda set through project requirements:
  - waste management requirements in contracts
  - Site Waste Management Plans (SWMPs)
  - good practice waste management as a minimum
  - design brief, including consideration of options
  - good practice targets
- Allow a 'partnership' approach
  - time and resources for SWMP
- Include within client's own internal policies and objectives



## Policy statement example

'As part of its commitment to sustainable construction, [Organisation name] aims to increase its **efficiency in the use of material resources**.

One targeted outcome is to continuously reduce the quantity of waste arising and increase the recovery of materials for reuse and recycling on all construction projects.

Therefore, in its procurement, [Organisation name] will **set requirements for its projects to incorporate good practice waste minimisation techniques and to plan and implement good practice waste management and recovery in accordance with WRAP guidance**'.



# Who is already doing this?

## Public Sector:

- Greenwich Millennium Village (GMV)
- Oxford City Council
- The Housing Corporation
- Ealing Family Housing Association
- Shepherds Bush Housing Association

## Clients and Developers:

- Bovis Lend Lease
- Laing Homes
- St George South London Ltd
- Eastland Partnership Ltd
- Persimmon

## Contractors

- Skanska Integrated Projects
- Wates
- many more.....



A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural scale.

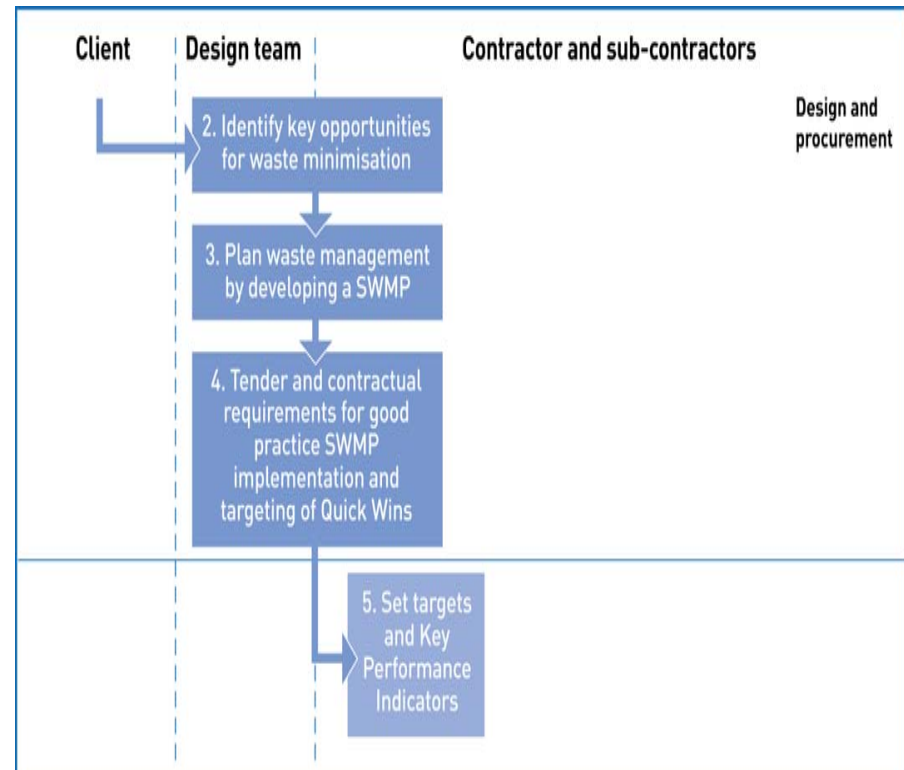
# Design stage

# Roles and responsibilities

- Client is responsible for setting the requirement
  - Designer\* identifies the response and approach
  - Contractor delivers
- \* Designer (may include architect, QS, cost planner, structural engineer) - can be part of the Client team or contractor. In either case, the process is essentially the same.

# Design & works procurement stage

- Waste minimisation
  - design solutions
  - off-site manufacture
  - logistics
  - materials procurement
- Site waste management plans (SWMPs)
- Contractual requirements, model wording



## Opportunity: Design solutions

- Building form
- Design flexibility
- Design complexity
- Specifications
- Include demolition phase



## Opportunity: Off-site manufacture

- Includes:
  - pre-fabrication
  - factory assembly
  - panelised construction
- Controlled manufacturing environment
- Greater potential to manage and control waste



## Opportunity: Logistics

- Logistics plan
- On-site logistics specialist
- 'Just in time' delivery
- Construction consolidation centres
- 4th party logistics
- Integrated ICT system across supply chain



# Case study: Try Construction, Stanhope Gate, London

## Strategic approach to raw materials and waste management

- Just-in-time deliveries
- Procedures to reduce late variations
- Waste minimisation included in a site booklet
- Posters: 'No space for waste'
- Bad practice corrected by contractors



## Results

- 50% reduction in waste bricks and blocks compared to industry norms

## Opportunity: Materials procurement

- Materials ordering
- Materials storage
- Materials handling
- Supply chain manager
- 'Take-back' schemes
- Packaging



The background of the slide is a photograph of a modern building's facade, taken from a low angle looking up. The building features a complex, multi-layered structure with many windows and architectural details, creating a sense of depth and height. The sky is a clear, light blue.

# Developing the SWMP

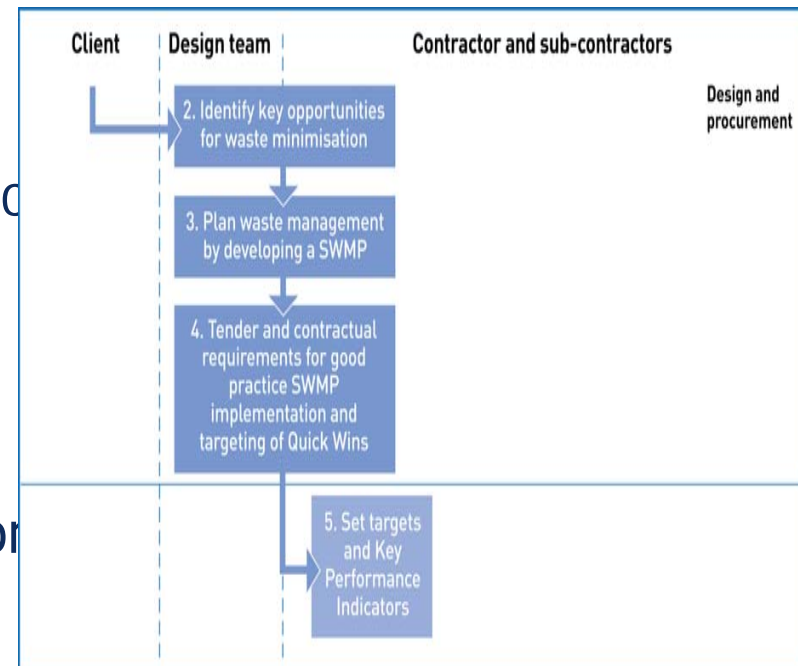


## Avoid poor on-site practice



## Step 3: Plan waste management by developing SWMPs

- Identify wastes
- Identify opportunities, consider quick wins
- Consider site practices
- Establish measurement and monitor waste





# Waste Recovery Quick Wins

## Potential to increase recycling rates by more than 20%

Recovery of Waste Streams (% by tonnes)			
Quick Win materials	Standard practice	Good practice	Best practice
<b>Timber</b>	57%	90%	95%
<b>Metals</b>	95%	100%	100%
<b>Plasterboard</b>	30%	90%	95%
<b>Packaging</b>	60%	85%	95%
<b>Ceramics</b>	60%	85%	95%
<b>Concrete</b>	75%	95%	100%
<b>Inert</b>	75%	95%	100%
<b>Plastics</b>	60%	80%	95%
<b>Furniture</b>	0-15%	25%	50%
<b>Insulation</b>	12	50%	75%
<b>Cement</b>	70%	75%	95%

# Case study: Optimised waste recycling

## Cost saving

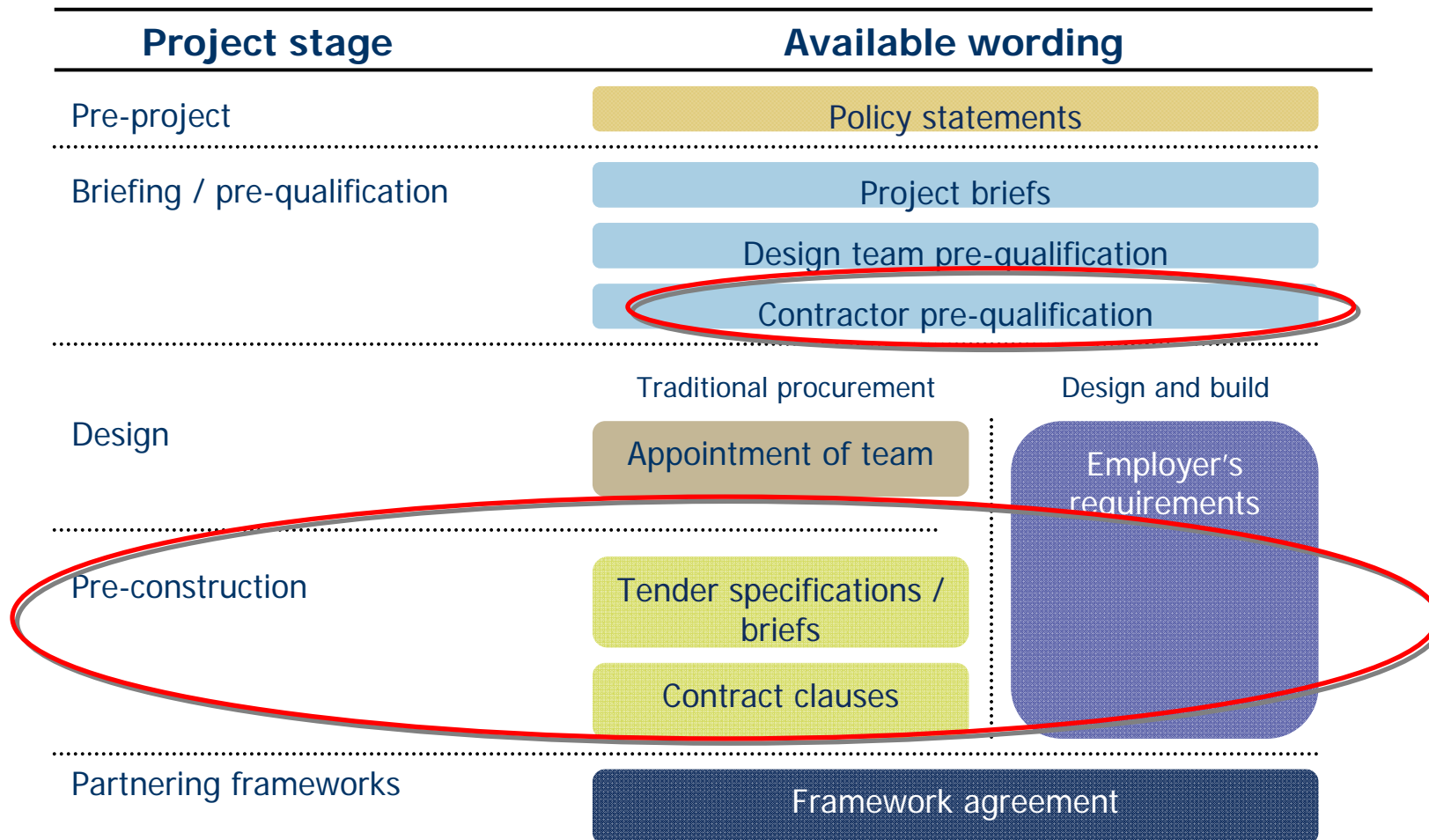
- Bovis Lend Lease (BLL) calculate waste management typically accounts for 0.5% of the value of a construction project
  - £50 million project = £250,000
  - 10% waste reduction = £25,000



## Key behavioural changes included:

- establishing targets and KPIs to benchmark performance
- setting tender and contract requirements for waste segregation
- appointing waste contractors able to achieve segregation levels of 90%
- implementing SWMPs as standard practice to change site behaviour and reduce the quantity of waste to landfill
- incorporating improved waste recovery performance via the EMS

# Step 4: Tender and contractual requirements



## Key principles in the supply chain

- Waste management contractors:
  - contracts tendered on basis of optional prices for segregation
  - report quantities of different waste streams and fate
- Same liability for sub-contractors as main contractors

## Case study: Skanska Integrated Projects

### Selection of contractual terms for Trade Contractors re waste management:

- Charged for cost of waste disposal
- Mixed waste is at a higher rate than segregated waste

### Or:

- Agree a wastage rate
- If higher level than agreed, a penalty charge is paid
- Have to estimate quantities at the start of the project/work package
- Stop notice issued if area is untidy
- Charge made if waste is not cleared up

## Recap: End of design phase

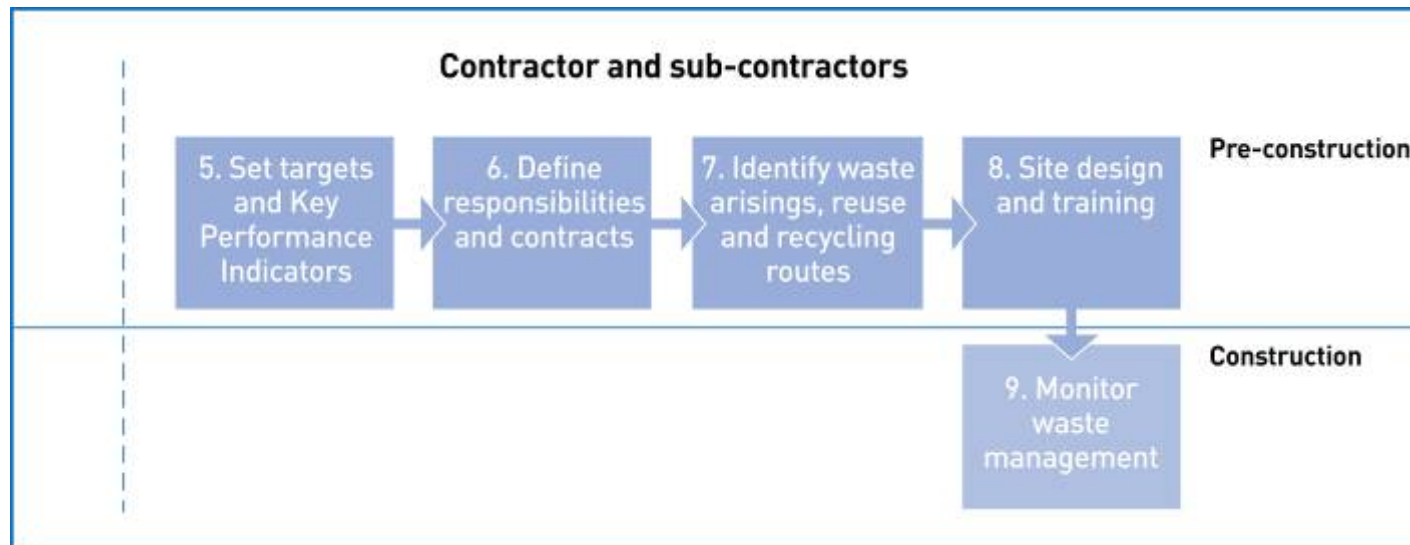
- Majority of effort on waste planning now in place
- Client organisation's key activities:
  - clear policy
  - clear requirements set prior to design stage
  - Measurement and improvement mandated



A low-angle photograph of a modern building's facade, showing a grid of windows and architectural details. The text "Construction stage" is overlaid in white on the lower half of the image.

# Construction stage

## Construction stages: Steps 5 - 8



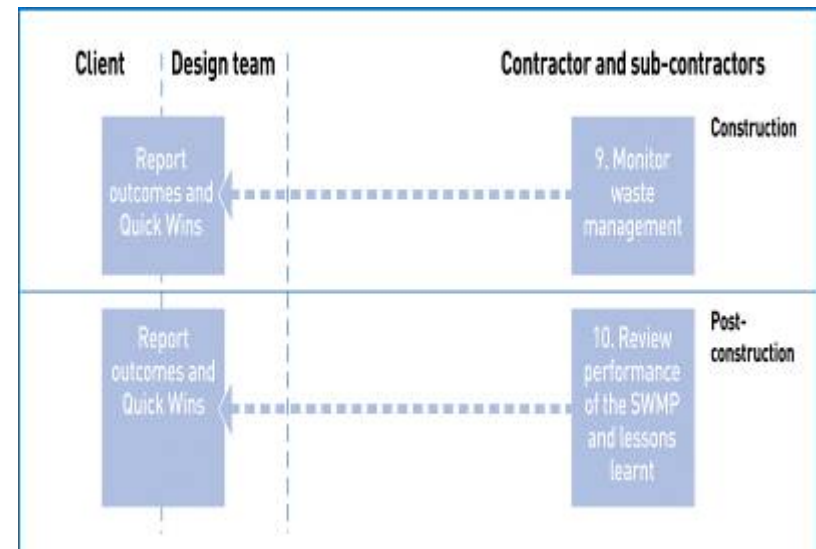
## Construction stages: Steps 9 & 10

### Consider client needs and appropriate data:

- Quantitative (yearly and/ or monthly)
- Apply to all project types
- e.g. x% of projects where the amount of waste recovered is greater than x%

### Project data:

- Provided regularly
- Interpretation and trends
- Identification of wasteful practices



# Information for clients, post-construction

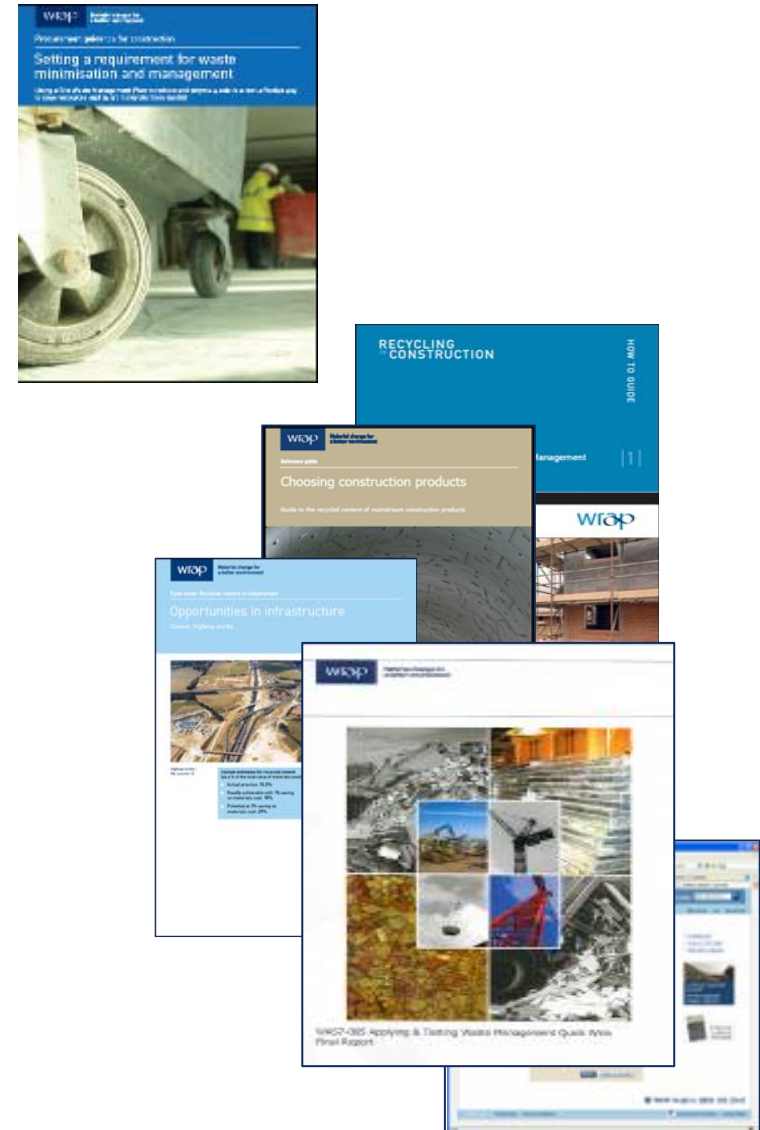
- Final review of project and SWMP
- Identification of lessons learnt
- Feed into company benchmarks
- Fine-tuning of SWMP procedures and practices

A low-angle, upward-looking photograph of a modern building's facade. The building features a complex, geometric design with multiple levels of cantilevered balconies or walkways, creating a series of sharp, converging lines that lead the eye towards the top of the frame. The facade is composed of light-colored panels, possibly metal or stone, with dark window frames. The sky is a clear, pale blue. The overall composition is dynamic and emphasizes architectural detail and height.

# Practical support and tools

# Support available

- **Good Practice Guide:**
  - Exemplar wording for pre-qualification questionnaires, briefs and contracts
- **Publications** on standards and good practice:
  - quick win guides
  - step by step regeneration guide
  - case studies covering all types of construction
- **Training packages** and in-house delivery





# Model wording for procurement

Project stage	Available wording	
Pre-project	Policy statements	
Briefing / pre-qualification	Project briefs	
	Design team pre-qualification	
	Contractor pre-qualification	
Design	Traditional procurement	Design and build
	Appointment of team	
Pre-construction	Tender specifications / briefs	Employer's requirements
	Contract clauses	
	Partnering frameworks	

## Pre-qualification example

Capacity to deliver good practice waste management (waste minimisation and recovery) can be included in pre-qualification processes for various parties. This should then be tested at interview stage.

### **At pre-qualification stage:**

*"Does your company have the skills and experience to implement good practice waste management (waste minimisation and recovery) in accordance with WRAP guidance during the design and/or construction phase?"*

### **At interview stage:**

*"Which good practice waste management processes do you think are applicable to this project and why?"*

*"What knowledge and experience do you have in developing and /or implementing site waste management plans to good practice levels on construction projects?"*

*"What is your experience in setting waste recovery targets, measuring waste streams on-site and implementing review processes?"*

# Project documentation: traditional

## Design brief defines overall project outcomes:

Identifies requirement for good practice waste management (waste minimisation and waste recovery) and use of SWMP

### Appointment of design team:

- Key elements SWMP
- Identify Quick Wins

### Project documentation:

Good practice waste management requirement and suggested Quick Wins included in specification

### Selection of a contractor:

Contractors set out in tender how they will meet the requirements

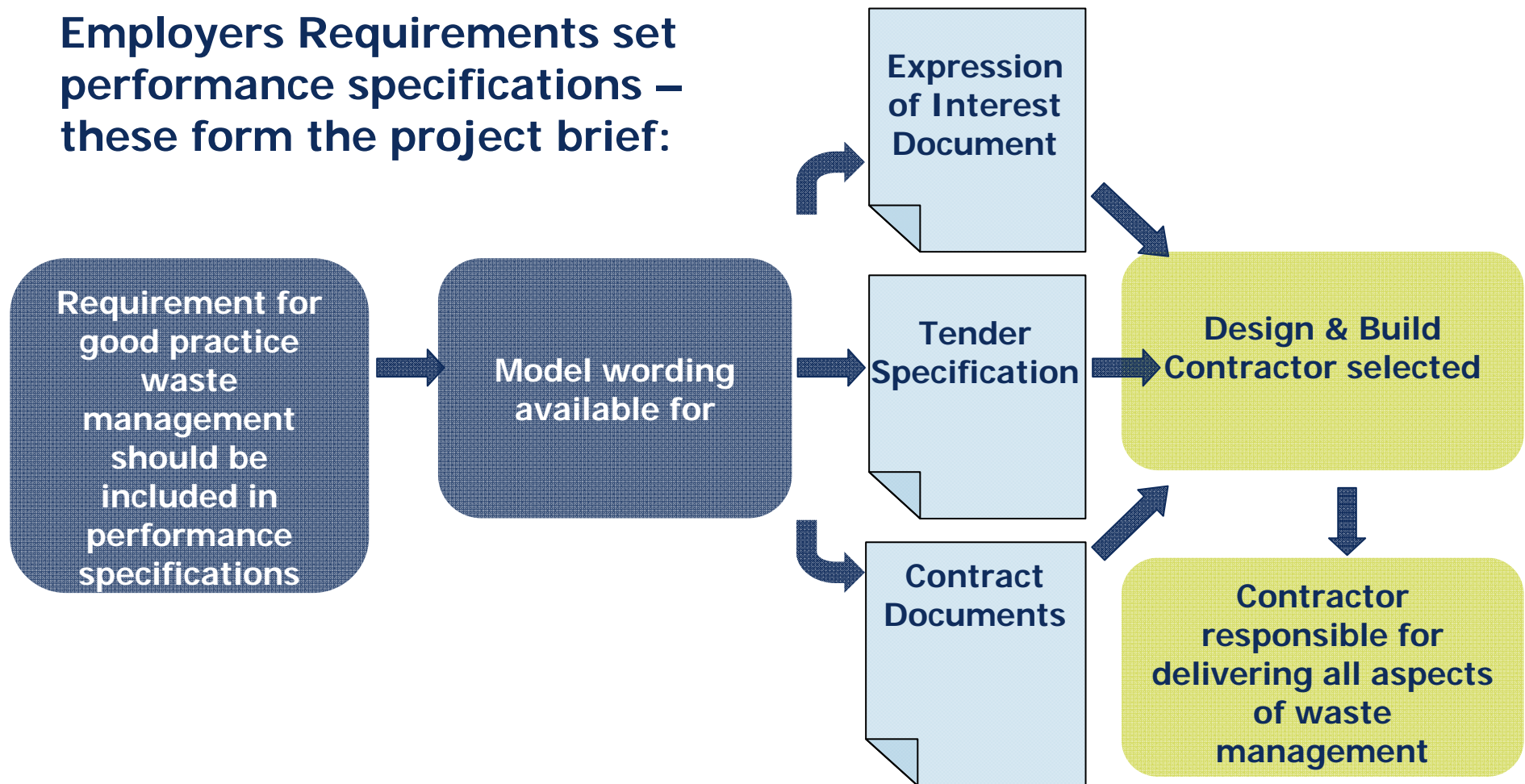
### Contract Clauses:

Selected contractor agrees to meet minimum recovery rates for specific waste streams, develop the SWMP, measure and report waste arising and work with sub-contractors to support these areas.



# Project documentation: design and build

Employers Requirements set performance specifications – these form the project brief:



# Partnering / framework agreements

## Partners to demonstrate continuous improvement

- Framework objectives
  - adopt principles of waste management (and waste minimisation)
  - demonstrate good practice levels of overall waste recovery
  - set targets and implement good practice SWMP
  
- KPI monitoring
  - increase in % recovery rates for specific waste streams above standard waste management practices
  
- Roles and responsibilities
  - Project Architect: identify quick wins, waste management in design, start SWMP
  - Contractors: select & implement quick wins, set target recovery rates, implement SWMP

The background of the slide is a low-angle photograph of several modern skyscrapers. The buildings are constructed with a grid of light-colored panels and dark window frames, creating a strong geometric pattern. The perspective is from the ground looking up, making the buildings appear to converge towards the top of the frame. The sky is a clear, pale blue.

# Conclusions



# Summary

- Good practice waste management can be achieved on all forms of project without a fundamental change in working practice
- **Early** implementation by **client** organisations will **maximise potential benefits**
- Client requirements will affect the whole supply chain
- Good practice SWMP will inform both design and waste management on site
- WRAP support available for:
  - policy and project wording
  - broader support
  - onward training of contractors
- A quantifiable, demonstrable contribution to a sustainability or CSR strategy, corporate brand & image and improved profitability

# Key contacts

**Simon Hall**  
**Mace**  
**Atelier House, 64 Pratt Street**  
**London NW1 0LF**

**07789 741 004**

[shall@mace.co.uk](mailto:shall@mace.co.uk)

# Resources

**WRAP**

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

**Envirowise**

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

**Environment Agency**

[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

**BRE**

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

**CIRIA**

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

**DBERR (Department for Business, Enterprise and Regulatory Reform)**

[www.dti.gov.uk](http://www.dti.gov.uk)

A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural scale.

# Questions



Material change for  
a better environment

---

# WRAP Recycled Content Toolkit



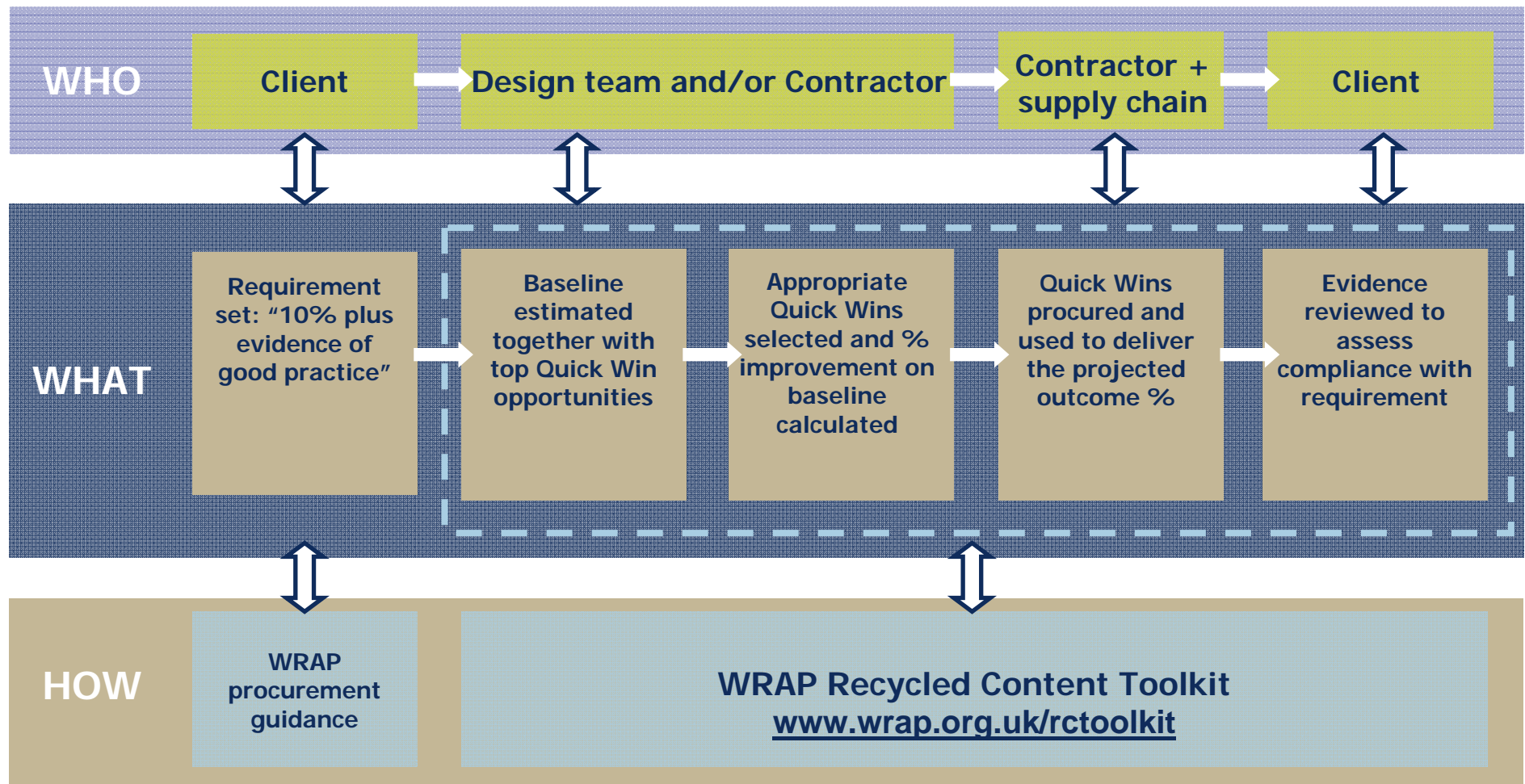
# Toolkit function

## Enable recycled content assessment of construction projects' design specification

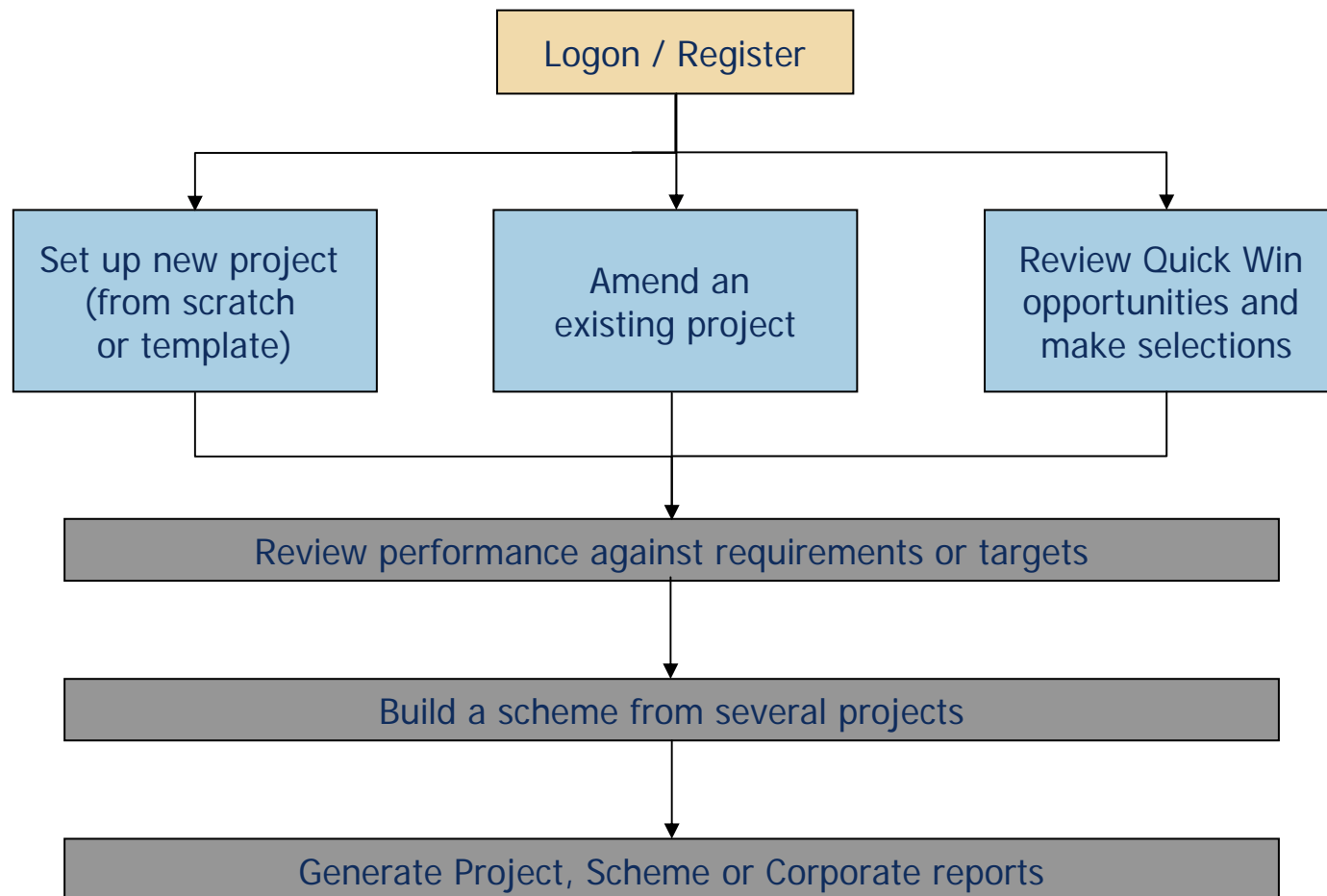
- assess the **baseline performance** of project (s):
  - recycled content of projects at current specification;
- identify **Quick Win** opportunities:
  - opportunities to substitute specified materials with “good” practice products;
- generate **pre-formatted reports** – informing stakeholders of a project's forecast and actual performance.



# Key steps



# The user journey



## Definitions used in the toolkit

**“Component”** An individual building product or material

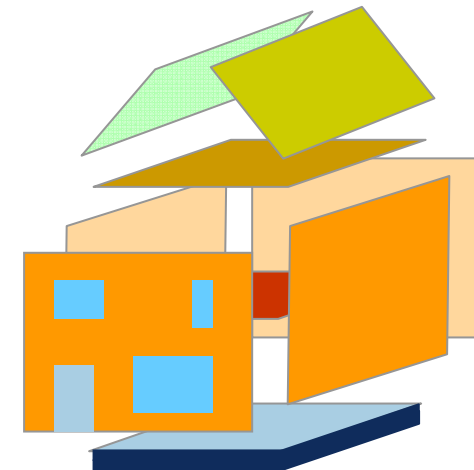
**“Composite”** A mix of components

**“Element”** A major part of a project

**“Project”** Single construction project

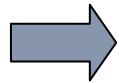
**“Scheme”** Group of buildings and infrastructure in a development

**“Corporate reporting”** Top level reporting for a programme of schemes or buildings

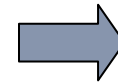


# Idiot's guide to toolkit hierarchy

**Component**



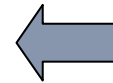
**Composite**



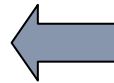
**Element**



**Project**



**Scheme**



**Corporate reporting**



## Common questions...

- what is the scope of this toolkit?
- is the toolkit free to use?
- how does the toolkit enable increased recycled content in a construction project?
- how can I access the toolkit?
- is my project too complex?





Material change for  
a better environment

# WRAP Recycled Content Toolkit – Demonstration



# Register as a New User

WRAP Material change for a better environment

Evaluation Tool for Recycled Content in Construction Projects

### What is WRAP's RC toolkit?

[Click here](#)

### Online Demonstration

An online demonstration is being prepared and will be available very shortly.

## Welcome

Welcome to WRAP's Evaluation Tool for Recycled Content in Construction Projects. The toolkit is free to use for all users. If this is your first visit please complete the brief registration form below, or if you have been invited to become a Guest user for a specific project please enter your email, the Project ID and password.

### Login - Existing Users


Email Address -

Password

[Forgotten Password?](#)

### Register - New Users

Please click the button below to register.



### Guest User Login

Email Address

Building ID  Password

## Release of RC Toolkit Version 2.0

Welcome to the updated version of WRAP's Recycled Content Toolkit (Version 2.0). New facilities and functionality include:

- Enhanced user interface with improved speed of navigation and calculations
- New modules for specific project types, including housing, offices, retail, health, education, external works and infrastructure
- Expanded database with updated specifications and costs that are specific to different project types

# Toolkit Homepage

The screenshot shows a web browser window displaying the homepage of the WRAP Evaluation Tool for Recycled Content in Construction Projects. The browser's address bar shows the URL: <http://www.wrap.org.uk/rc-toolkit/>. The page features a blue header with the WRAP logo and the slogan "Material change for a better environment". The main content area is divided into several sections:

- What is WRAP's RC toolkit?**: A text block explaining the toolkit's purpose in assessing recycled content levels and identifying opportunities for cost-effective material use. A link for "More Information" is provided.
- Welcome Toolkit Trainee**: A central heading for new users.
- What types of construction projects can I assess?**: A list of project types with corresponding icons: Housing, Residential Blocks, Civils / Infrastructure, Health, External Works, Offices, Refurbishment, Retail, and Bespoke Projects, Education.
- Enter the tool by choosing an option below:**: Three options are listed: "Create a new project from scratch", "Edit my saved projects and create new versions or use an example project", and "Create a scheme containing multiple projects". A large blue arrow points from this section towards the right.
- Click here for a glossary of terms used by the tool.**: A link at the bottom of the central section.
- How do I use the toolkit?**: A section with a "PLAY DEMO" button and a list of eight steps:
  - 1. Basic details**: Add basic information on project size and construction type.
  - 2. Set recycled content target**: This can be based on client requirements.
  - 3. Guest users**: Ask team members to contribute information.
  - 4. Select materials**: Select the components that make up the project.
  - 5. Select Quick Wins**: Select from the Quick Win opportunities generated by the tool.
  - 6. Review Quick Wins**: Review impact of Quick Wins on project performance.
  - 7. Confirm Quick Wins**: Record reasons for choosing the selected Quick Wins.
  - 8. Project summary**: Review and report a summary of results.

The footer contains copyright information: © 2006 Wrap | [Privacy policy](#) | [Terms & conditions](#).

# User Homepage

The screenshot shows a web interface for a 'Toolkit Trainee'. On the left is a sidebar with 'User Options' containing links for adding projects, editing details, and downloading data. The main content area is titled 'Welcome Toolkit Trainee' and shows a message that no projects are currently listed. Navigation tabs for 'My Projects', 'My Schemes', 'My Guest Projects', 'Examples', and 'Corporate Reporting' are visible, along with buttons for 'Add New Project' and 'Project Archive'. A footer contains copyright information and links to privacy and terms pages.

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**User Options**

- > [My Projects page](#)
- > [Toolkit Homepage](#)
- > [Logout](#)

To submit feedback on this tool or to report any errors, please click [HERE](#).

**Welcome Toolkit Trainee**

Your existing projects are listed below. Click on one to edit / view its details or [add a new project](#).

**My Projects** | My Schemes | My Guest Projects | Examples | Corporate Reporting

[Add New Project](#) | [Project Archive](#)

**There are no projects to show.**

© 2006 Wrap | [Privacy policy](#) | [Terms & conditions](#)

# Create New Construction Project

User Options

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

User Options











- > [My Projects page](#)
- > [Toolkit Homepage](#)
- > [Logout](#)

## Create New Construction Project

Please choose how you would like to create your new construction project

### Create New Project From Scratch

Which type of project would you like to create?

 <a href="#">Create a Housing Project</a>	 <a href="#">Create Residential Project</a>
 <a href="#">Create Infrastructure Project</a>	 <a href="#">Create Health Project</a>
 <a href="#">Create External Works Project</a>	 <a href="#">Create Office Project</a>
 <a href="#">Create Refurbishment Project</a>	 <a href="#">Create Retail Project</a>
 <a href="#">Create Bespoke Project</a>	 <a href="#">Create Education project</a>

### Use Existing Project As Template ?

From your Projects Page, you can use your own saved projects as templates for new versions. Alternatively, if you wish to use one of your own or another user's saved projects as a template for your new project, please provide the project ID and password of the project you wish to use as your source.

Project ID	Password
<input type="text"/>	<input type="text"/>
Name for my New Project	Set Password for New Project
<input type="text"/>	<input type="text"/>

© 2006 Wrap | [Privacy policy](#) | [Terms & conditions](#)

# Stage 1 - Enter Project Details

User Options

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

Project Wizard

- > **1. Project Details**
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)

## Project Details

Complete the form below to add / edit your project. If you would like to complete this form offline, please click [HERE](#) to download a PDF. [?](#)

■ **Stage 1 of 8 - Project Details** ■

[Cancel](#) [Save](#) [Go to Stage 2 >](#)

### General Details [?](#)

Project name	<input type="text" value="trainee housing test"/>	Add your own project ref (optional)	<input type="text" value="TTH1"/>
Building location	<input type="text" value="Banbury"/>	Project password <a href="#">?</a>	Project Phase <a href="#">?</a>
		<input type="text" value="toolkittest"/>	<input type="text" value="Initial"/>
Projected construction cost (£) <a href="#">?</a>	<input type="text" value="1.00"/>	<b>Created</b>	15 August 2007
		<b>Modified</b>	15 August 2007 13:31:25
		<b>Project ID</b> <a href="#">?</a>	4146

Project Description

# Stage 1 - Simple Quantity Estimator

> [4. Select Materials](#)

> [5. Select Quick Wins](#)

> [6. Review Quick Wins](#)

> [7. Confirm Quick Wins](#)

> [8. Project Summary](#)

> [Audit History](#)

> [Reporting](#)

> [Logout](#)

User Options









> [My Projects page](#)

> [Toolkit Homepage](#)

> [Logout](#)

Use WRAP Simple Quantity Estimator or [Manually Specify House Details](#)

Currently Selected

Bed Spaces	1	2	3	4	5	6	7	8
Type	 Detached	 Semi	 Terraced					
Plan Shape	 Narrow	 Medium	 Wide					
Roof	 Pitch	 Flat						
Floors in Unit	1	2	3	4				
Integrated Garage Spaces	0	1	2	3				

Archive Building Cancel Save Go to Stage 2 >



# Stage 1 - Manually Specify Details

Use WRAP Simple Quantity Estimator or **Manually Specify House Details**

Currently Selected

Bed Spaces	House Type	Plan Shape	
<input type="text" value="3"/>	<input type="text" value="Terrace"/>	<input type="text" value="Medium"/>	
Gross Internal Floor Area (m2)	Ground Floor Area (m2)	Storeys per unit (nr)	Storey Heights (m)
<input type="text" value="65.00"/>	<input type="text" value="32.50"/>	<input type="text" value="2"/>	<input type="text" value="2.40"/>
Garage Spaces (nr)	Garage Area (m2)	Wall Area Ratio (Frontage)	Wall Area Ratio (Side Wall)
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.83"/>	<input type="text" value="0.83"/>
Party Walls (nr)	Party Wall Length (m)	Party Wall Area (m2)	Number of Internal Doors
<input type="text" value="2.00"/>	<input type="text" value="13.68"/>	<input type="text" value="32.83"/>	<input type="text" value="8"/>
Frontage Wall Length (m)	Side Wall Length (m)	Number of Frontages (nr)	Number of Side Walls (nr)
<input type="text" value="4.73"/>	<input type="text" value="6.84"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
External Wall Area Inc. Windows (m2)	External Wall Area Exc. Windows (m2)	Window Area (m2)	Number of Windows (nr)
<input type="text" value="111.09"/>	<input type="text" value="103"/>	<input type="text" value="7.80"/>	<input type="text" value="9.36"/>
Number of Upper Floors (nr)	Upper Floor Area (m2)	Roof Type	Roof Area (m2)
<input type="text" value="1"/>	<input type="text" value="32.50"/>	<input type="text" value="Pitch"/>	<input type="text" value="32.50"/>
Internal Wall Area per Dwelling Inc. Doors (m2)	Area of Internal Doors (m2)	Internal Wall Area per Dwelling Exc. Doors (m2)	Flights of Stairs (nr)
<input type="text" value="65.00"/>	<input type="text" value="12.00"/>	<input type="text" value="53.00"/>	<input type="text" value="1"/>
Gutter / Fascia Area (m2)	Kitchen Area (m2)	Bathroom Area (m2)	Worktop Length (m)
<input type="text" value="11.57"/>	<input type="text" value="14.30"/>	<input type="text" value="3.80"/>	<input type="text" value="8"/>
Wall Units (nr)	Floor Units (nr)	Roof Factor	
<input type="text" value="3"/>	<input type="text" value="0"/>	<input type="text" value="1.00"/>	

- > [5. Select Quick Wins](#)
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)
- > [Audit History](#)
- > [Reporting](#)
- > [Logout](#)

User Options

- > [My Projects page](#)
- > [Toolkit Homepage](#)
- > [Logout](#)

# Stage 2 - Setting Recycled Content

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > **[2. Set Recycled Content Target](#)**
- > [3. Guest Users](#)
- > [4. Select Materials](#)
- > [5. Select Quick Wins](#)
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)

## Set Recycled Target

Please specify the recycled content targets for your project. You can define a minimum requirement for recycled content for your project (default is that recommended by the Sustainable Buildings Task Group) and can also choose to set a higher target level for recycled content if appropriate together with any explanatory notes (e.g. specifying how achieving the target would be recognised in tender evaluation, etc).

**■ Stage 2 of 8 - Set Recycled Content Target ■**

< Back to Stage 2 | Save | Go to Stage 3 >

### Requirement ?

% Minimum requirement	Notes
<input type="text" value="10"/> <input type="button" value="Adopt Standard"/>	<div>At least 10% of the total value of materials used should derive from recycled and reused content in the products and materials selected.</div> <div>In addition, show that the most significant opportunities to increase the value of materials derived from recycled</div>

### Higher Target ?

% Higher Target	Notes
<input type="text"/>	<div></div>

< Back to Stage 2 | Save | Go to Stage 3 >

## Stage 3 - Invite a Guest User

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > **3. Guest Users**
- > [4. Select Materials](#)
- > [5. Select Quick Wins](#)
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)

### Guest Users

**■ Stage 3 of 8 - Guest Users ■**

[< Back to Stage 2](#) [Go to Stage 4 >](#)

Please use this page to invite guest users to have access to the information on this project. Guest users can be given either full or read only access and will be sent an email with details of how to access this project when they are added to the list of Guest Users. Guest user's access rights can be edited or removed at any time.

Authorised Users ?

No guest users currently specified

**Corporate Guest User:** *Not yet specified* - This can be specified in ' [Edit My Personal Details](#) '

Add new guest user

Name	Company	Email Address	Privileges
<input type="text"/>	<input type="text"/>	<input type="text"/>	Full Access ▾

Message to guest user (optional)

[Add to list](#)

[< Back to Stage 2](#) [Go to Stage 4 >](#)

# Stage 4 - Select Materials

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > **4. Select Materials**
- > [5. Select Quick Wins](#)
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)

## Select Materials

■ Stage 4 of 8 - Select Materials ■

[< Back to Stage 3](#) | [Save](#) | [Go to Stage 5 >](#)

Select the material components that make up your project from the options below. By clicking on the name of each material element you will find more detailed specification options.

Current Results ? 🔍 View Components Currently Added to my Project

Current Results for Substructure	%	Current Results for Total Project	%
Default Recycled Content	0.00 %	Default Recycled Content	8.41 %
Good Recycled Content	0.00 %	Good Recycled Content	14.41 %
Best Recycled Content	0.00 %	Best Recycled Content	22.27 %

Recommended Option

I wish to select from the standard list of pre-defined composites

Alternatively

I wish to select from the entire list of available components

[< Back to Stage 3](#) | [Save](#) | [Go to Stage 5 >](#)

Internet

# Stage 4 - Select Materials - Select composite

**Project Wizard**

- > 1. Project Details
- > 2. Set Recycled Content Target
- > 3. Guest Users
- > 4. Select Materials
- > 5. Select Quick Wins
- > 6. Review Quick Wins
- > 7. Confirm Quick Wins
- > 8. Project Summary
- > Audit History
- > Reporting
- > Logout

**User Options**

- > My Projects page
- > Toolkit Homepage
- > Logout

**Recommended Option - Currently Selected**

I wish to select from the standard list of pre-defined composites

+ Add Default Composites
 - Remove Default Composites

[Add My Own Composite](#)

**Alternatively**

I wish to select from the entire list of available components

**Substructure** | Frame | Floors | Roof | Stairs | External Walls | Windows and External Doors | Internal Walls

Internal Doors | IT FF&E | Services | Non-Integrated garages | Balconies | Conservatories | Bathrooms / Toilets

Kitchens & Laundry

Composite	Unit	Default QTY	User QTY	Rate	Materials	Std	Good	Best	Select	Del
<b>Predefined Composites</b>										
<b>Substructure &gt; Housing</b>										
<b>Modify</b> <b>Default Substructure Composite</b>										
<ul style="list-style-type: none"> <li>• a) Foundation &gt; Concrete Strip, Strength C30 or higher, 600 deep (up to and inc. DPC) with reinforcing</li> </ul>	m	23	<input type="text" value="23"/>	160.40	65.71%	24.00%	30.00%	44.00%	<input type="checkbox"/>	
<ul style="list-style-type: none"> <li>• g) Ground Slab &gt; Reinforced in-situ concrete 150mm, C30 or higher</li> </ul>	m2	34	<input type="text" value="34"/>	128.99	66.77%	24.00%	30.00%	44.00%	<input type="checkbox"/>	
<b>Substructure &gt; Housing -</b>										
<b>Modify</b> <b>Substructure Composite Option 1</b>										
<ul style="list-style-type: none"> <li>• a) Foundation &gt; Concrete Strip, Strength C30 or higher, 600 deep (up to and inc. DPC)</li> </ul>	m	23	<input type="text" value="23"/>	160.40	65.71%	24.00%	30.00%	44.00%	<input type="checkbox"/>	

# Stage 4 - Select Materials - Select Individual Component

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > **4. Select Materials**
- > [5. Select Quick Wins](#)
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)
- > [Audit History](#)
- > [Reporting](#)
- > [Logout](#)

**User Options**

- > [My Projects page](#)
- > [Toolkit Homepage](#)
- > [Logout](#)

**Recommended Option**

I wish to select from the standard list of pre-defined composites

**Alternatively - Currently Selected**

I wish to select from the entire list of available components

+ [Add Default Components](#)
- [Remove Default Components](#)

Add My Own Component

Substructure

Frame

Floors

Roof

Stairs

External Walls

Windows and External Doors

Internal Walls

**Internal Doors**

IT FF&E

Services

Non-Integrated garages

Balconies

Conservatories

Bathrooms / Toilets

Kitchens & Laundry

	Component	Unit	Default QTY	User QTY	Rate	Materials	Std	Good	Best	Select	Del
<b>Individual Components</b>											
<a href="#">Modify</a>	flush commercial hardwood inc frame & basic ironmongery	nr	0	<input type="text" value="0"/>	227	64%	0%	0%	0%	<input type="checkbox"/>	
<a href="#">Modify</a>	Hardwood veneer, solid core ply flush door, vision panel, hardwood frame	nr	0	<input type="text" value="0"/>	279	66%	0%	0%	0%	<input type="checkbox"/>	
<a href="#">Modify</a>	Paint finish, solid core ply flush door, hardwood frame	nr	0	<input type="text" value="0"/>	183	55%	0%	0%	0%	<input type="checkbox"/>	
<a href="#">Modify</a>	Paint finish, solid core ply flush door, vision panel, hardwood frame	nr	0	<input type="text" value="0"/>	245	60%	0%	0%	0%	<input type="checkbox"/>	
<a href="#">Modify</a>	panelled domestic softwood inc frame & basic ironmongery	nr	0	<input type="text" value="0"/>	0	0%	0%	0%	0%	<input type="checkbox"/>	
<a href="#">Modify</a>	Panelled domestic softwood, half glazed, inc frame	nr	0	<input type="text" value="0"/>	0	0%	2%	2%	2%	<input type="checkbox"/>	←

- a) Single non-fire resistant**
- b) Single fire resistant
- c) Double non-fire resistant
- d) Double fire resistant
- e) Ironmongery
- f) Security screen



# Stage 4 - Select Materials - Modify Individual

+ Add Default Components
 - Remove Default Components

Content Target

> 3. Guest Users

> 4. Select Materials

> 5. Select Quick Wins

> 6. Review Quick Wins

> 7. Confirm Quick Wins

> 8. Project Summary

Audit History

Reporting

Logout

---

User Options

> My Projects page

> Toolkit Homepage

> Logout

Substructure
Frame
Floors
Roof
Stairs
External Walls
Windows and External Doors
Internal Walls

Internal Doors
ILFEBE
Services
Non-Integrated garages
Balconies
Conservatories
Bathrooms / Toilets

Kitchens & Laundry

	Component	Unit	Default QTY	User QTY	Rate	Materials	Std	Good	Best	Select	Del
<b>Individual Components</b>											
<a href="#">Modify</a>	Plaster - to Blockwork	m2	53	<input type="text" value="53"/>	12	19%	0%	45%	95%	<input type="checkbox"/>	
<a href="#">Modify</a>	Plasterboard - to stud partition 12.5mm	m2	53	<input type="text" value="53"/>	12	22%	36%	84%	98%	<input type="checkbox"/>	
<a href="#">Modify</a>	Plasterboard - to stud partition 9mm	m2	53	<input type="text" value="53"/>	11	24%	36%	84%	98%	<input type="checkbox"/>	
<a href="#">Modify</a>	Single blockwork 100mm thick partition	m2	53	<input type="text" value="53"/>	22	48%	50%	80%	93%	<input type="checkbox"/>	
<a href="#">Modify</a>	Steel Stud double depth for sound proofing	m2	53	<input type="text" value="53"/>	118	35%	36%	84%	98%	<input type="checkbox"/>	
<a href="#">Modify</a>	Steel Stud single depth; height b/n 2.70-3.00m	m2	53	<input type="text" value="53"/>	74	31%	36%	84%	98%	<input type="checkbox"/>	
<a href="#">Modify</a>	Two layer plaster - to stud partition 12.5mm	m2	53	<input type="text" value="53"/>	10	17%	36%	84%	98%	<input checked="" type="checkbox"/>	
<a href="#">Modify</a>	Two layer plaster - to stud partition 9mm	m2	53	<input type="text" value="53"/>	10	17%	36%	84%	98%	<input type="checkbox"/>	
<a href="#">Modify</a>	Window boards, MDF, with rounded fron edge and ends, decoration	m2	53	<input type="text" value="53"/>	8	52%	60%	60%	90%	<input type="checkbox"/>	
<a href="#">Modify</a>	Window boards, Softwood, with rounded fron edge and ends, decoration	m2	53	<input type="text" value="53"/>	7	42%	0%	0%	0%	<input type="checkbox"/>	

Add My Own Component

a) Internal Walls

b) Partitions

c) Acoustic treatment

## Stage 4 - Select Materials - Modify Individual

**■ Stage 4 of 6 - Material Profile**

< Back Save

### Add / Edit Components

Provide the details for the components you wish to add and click Add. When you have finished adding components click Back.

#### Component Details ?

Category 2	Category 3	
Internal Walls	a) Internal Walls	
Component Name	Unit	Qty
Two layer plaster - to stud partition 12.5mn	m2	53
Rate	% Materials	
11	18	
% Standard	% Good	% Best
36	84	98

< Back Save

# Stage 4 - Select Materials - View selected components

trainee housing test

This report shows your project components.

Results Toolkit Data Version 2.0

Category	Element	Component	Unit Rate	Qty	Materials	Standard	Good	Best	Default Component?
Substructure	a) Foundation	Concrete Strip, Strength C30 or higher, 600 deep (up to and inc. DPC) with reinforcing	m	160.40 23	65.71	24.00	30.00	44.00	Yes
Substructure	g) Ground Slab	Reinforced in-situ concrete 150mm, C30 or higher	m2	128.99 34	66.77	24.00	30.00	44.00	Yes
Substructure	h) Fill	Hardcore 6F2	m3	32.22 0	84.48	0	25.00	100.00	Yes
Floors	d) Boarding	Hardboard 12mm	m2	24.20 0	65.71	60.00	60.00	60.00	Yes
Floors	e) Steel Structures	Beam & Block	m2	22.60 0	60.00	4.00	44.00	79.00	Yes
Roof	a) Wood Structure generic	Roof Structure - Pitched - Timber	m2	31.00 39	60.00	0	0	0	Yes
Roof	g) Roof covering	Tiles - Concrete interlocking	m2	19.62 39	56.11	0	5.00	22.00	Yes
Roof	j) Drainage	upvc gutters	m	12.69 8	55.87	0	10.00	10.00	Yes
Roof	l) Loft Boarding	OSB 16 mm	m2	11.20 0	47.32	0	0	0	Yes
Roof	m) Insulation	Glasswool 200mm	m2	4.90 32	70.20	30.00	50.00	80.00	Yes
Stairs	a) Internal stairs (per flight)	Timber stair	nr	880.81 1	78.07	0	0	0	Yes
External Walls	c) Outer skin	Facing bricks £250 / 1000	m2	49.69 103	40.97	0	9.00	35.00	Yes
External Walls	d) Insulation	Glass wool insulation 90mm	m2	8.73 103	79.41	30.00	50.00	80.00	Yes
External Walls	e) Inner skin	Cavity block construction; inner skin dense concrete blocks - 140mm	m2	34.50 103	37.65	0	50.00	93.00	Yes

# Stage 5 - Selecting Quick Wins

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > [4. Select Materials](#)
- > 5. Select Quick Wins**
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)

## Select Quick Wins

This page shows the components that make the greatest contribution to the current recycled content of the project. It also shows those that have the most potential to increase the recycled content of the project at no additional cost (i.e. the largest Quick Wins). You can nominate the maximum number of Quick Win options to display using the drop-down box at the top right. Review the potential Quick Wins and select those that you wish to apply to your project. On moving to the next screen you will be able to see the implications of these selections on the total recycled content of the project.

Top opportunities to increase recycled content by moving to 'good' practice products ? Max Quick Wins to show

Component	Standard Recycled Content (%)	Good Recycled Content (%)	Potential increment in recycled content of project (%)	Select	Target level of recycled content (%) *
Cavity block construction; inner skin dense concrete blocks - 140mm	0	50	03.04	<input checked="" type="checkbox"/>	<input style="width: 50px;" type="text" value="50"/>
Two layer plaster - to stud partition 15mm	36	84	00.94	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="84"/>
Facing bricks £250 / 1000	0	9	00.86	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="9"/>
Reinforced in-situ concrete 150mm, C30 or higher	24	30	00.80	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="30"/>
Concrete Strip, Strength C30 or higher, 600 deep (up to and inc. DPC) with reinforcing	24	30	00.66	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="30"/>
Glass wool insulation 90mm	30	50	00.65	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="50"/>
Fireclay sink	0	9	00.12	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="9"/>
Glasswool 200mm	30	50	00.10	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="50"/>
Tiles - Concrete interlocking	0	5	00.10	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="5"/>
Fireclay WC	0	9	00.08	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="9"/>
Total for <b>selected</b> components -			3.04%		

■ Stage 5 of 8 - Select Quick Wins ■

[< Back to Stage 4](#)
Save
[Go to Stage 6 >](#)

## Stage 5 - Selecting Quick Wins

> [Logout](#)

---

User Options

> [My Projects page](#)

---

> [Toolkit Homepage](#)

---

> [Logout](#)

Ten largest contributors to the baseline recycled content of the project at standard practice

Component	Standard Recycled Content (%) of component	Contribution to the % recycled value of the whole project (%)
Radiator Heating System inc Heat Source Houses	23.00 %	03.46 %
Reinforced in-situ concrete 150mm, C30 or higher	24.00 %	03.19 %
Concrete Strip, Strength C30 or higher, 600 deep (up to and inc. DPC) with reinforcing	24.00 %	02.64 %
Generic light & power - Domestic	12.00 %	01.38 %
Glass wool insulation 90mm	30.00 %	00.97 %
Two layer plaster - to stud partition 15mm	36.00 %	00.71 %
Hot & Cold water service Houses	8.00 %	00.57 %
uPVC double glazed units; hinges; fastenings 1200x1350	7.00 %	00.48 %
Glasswool 200mm	30.00 %	00.15 %
Stainless steel	75.00 %	00.14 %

For information on the recycled content of specific construction products please download the latest version of the [WRAP Product Guide](#)

< Back to Stage 4
Save
Go to Stage 6 >

© 2006 Wrap | [Privacy policy](#) | [Terms & conditions](#)

# Stage 5 - Selecting Quick Wins

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > [4. Select Materials](#)
- > [5. Select Quick Wins](#)**
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)

## Select Quick Wins

This page shows the components that make the greatest contribution to the current recycled content of the project. It also shows those that have the most potential to increase the recycled content of the project at no additional cost (i.e. the largest Quick Wins). You can nominate the maximum number of Quick Win options to display using the drop-down box at the top right. Review the potential Quick Wins and select those that you wish to apply to your project. On moving to the next screen you will be able to see the implications of these selections on the total recycled content of the project.

Top opportunities to increase recycled content by moving to 'good' practice products ? Max Quick Wins to show

Component	Standard Recycled Content (%)	Good Recycled Content (%)	Potential increment in recycled content of project (%)	Select	Target level of recycled content (%) *
Cavity block construction; inner skin dense concrete blocks - 140mm	0	50	03.04	<input checked="" type="checkbox"/>	<input style="width: 50px;" type="text" value="50"/>
Two layer plaster - to stud partition 15mm	36	84	00.94	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="84"/>
Facing bricks £250 / 1000	0	9	00.86	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="9"/>
Reinforced in-situ concrete 150mm, C30 or higher	24	30	00.80	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="30"/>
Concrete Strip, Strength C30 or higher, 600 deep (up to and inc. DPC) with reinforcing	24	30	00.66	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="30"/>
Glass wool insulation 90mm	30	50	00.65	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="50"/>
Fireclay sink	0	9	00.12	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="9"/>
Glasswool 200mm	30	50	00.10	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="50"/>
Tiles - Concrete interlocking	0	5	00.10	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="5"/>
Fireclay WC	0	9	00.08	<input type="checkbox"/>	<input style="width: 50px;" type="text" value="9"/>
Total for <b>selected</b> components -			3.04%		

**■ Stage 5 of 8 - Select Quick Wins ■**

[< Back to Stage 4](#)
Save
[Go to Stage 6 >](#)



## Stage 6 - Reviewing Quick Wins

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > [4. Select Materials](#)
- > [5. Select Quick Wins](#)
- > 6. Review Quick Wins**
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)

### Review Quick Wins ■ Stage 6 of 8 - Review Quick Wins ■

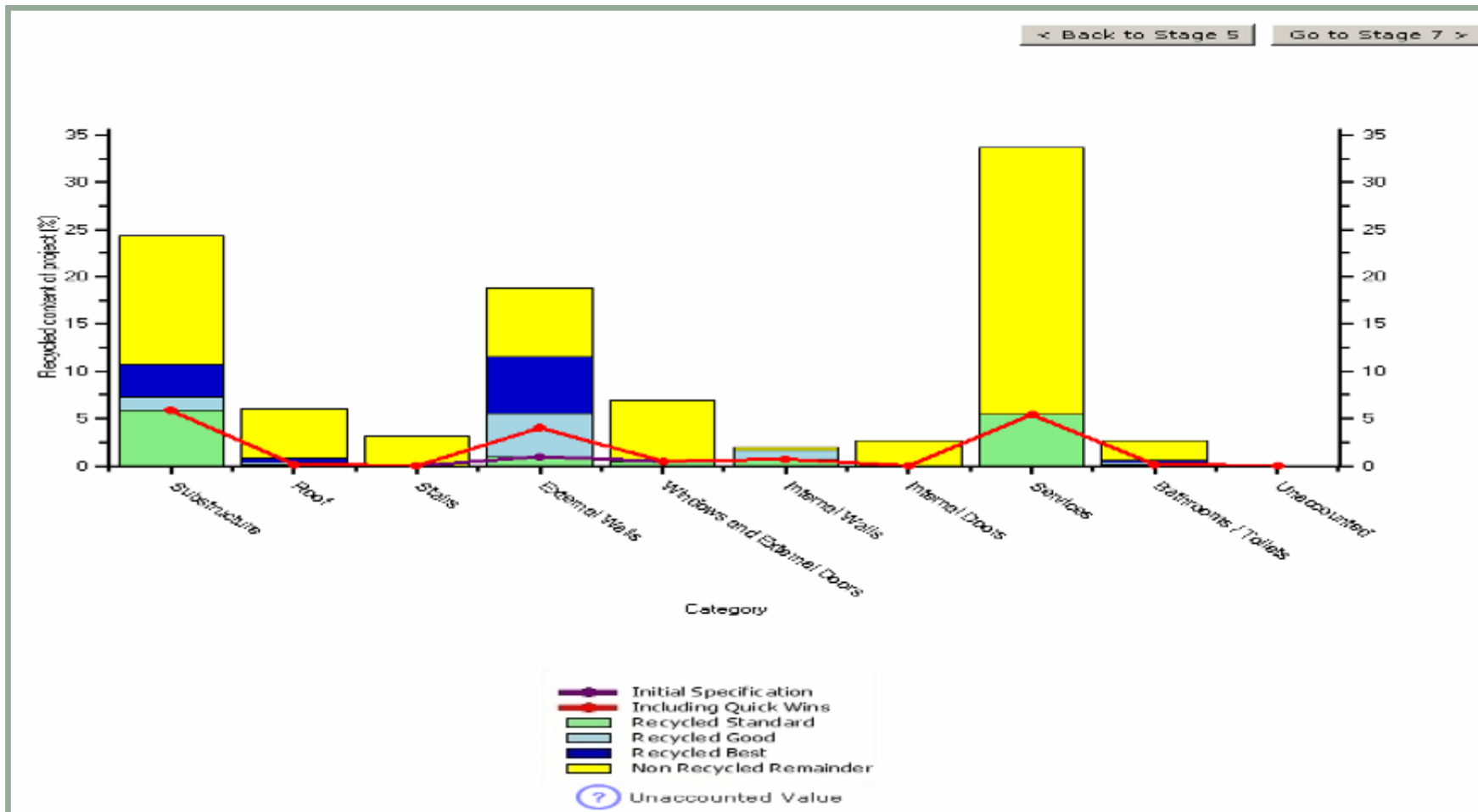
This report shows the impact of your selected quick win substitutions. Either accept these and move on, or click back to change. < Back to Stage 5    Go to Stage 7 >

Recycled Value and Potential ?

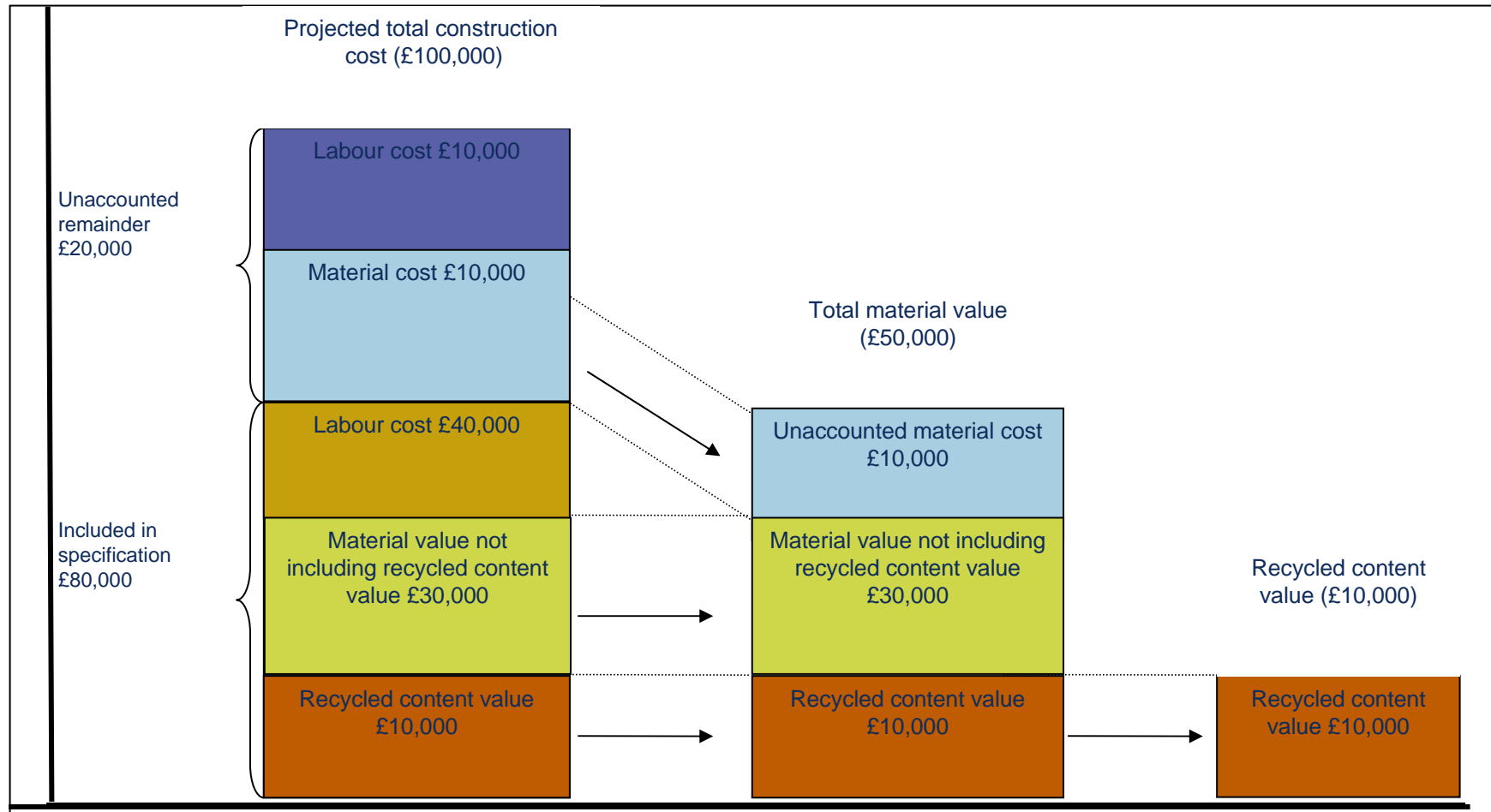
Category	Recycled content by value for Initial specification	Recycled content by value including selected Quick Wins	Additional recycled value from selected Quick Wins	Total potential recycled content value from use of 'good' products	Total potential recycled content value from use of 'best' products
<b>Whole Project</b>	<b>13.69%</b>	<b>16.72%</b>	<b>03.03%</b>	<b>21.05%</b>	<b>31.23%</b>
Substructure	05.83%	05.83%	00.00%	07.29%	10.69%
Roof	00.15%	00.15%	00.00%	00.37%	00.85%
Stairs	00.00%	00.00%	00.00%	00.00%	00.00%
External Walls	00.97%	04.01%	03.04%	05.51%	11.57%
Windows and External Doors	00.48%	00.48%	00.00%	00.48%	00.48%
Internal Walls	00.71%	00.71%	00.00%	01.65%	01.65%
Internal Doors	00.00%	00.00%	00.00%	00.00%	00.00%
Services	05.41%	05.41%	00.00%	05.41%	05.41%
Bathrooms / Toilets	00.14%	00.14%	00.00%	00.34%	00.58%

< Back to Stage 5    Go to Stage 7 >

# Stage 6 - Reviewing Quick Wins



# Stage 6 - Calculation of unaccounted value



# Stage 7 - Confirming Quick Wins

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > [4. Select Materials](#)
- > [5. Select Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)

## Confirm Quick Wins

■ Stage 7 of 8 - Confirm Quick Wins ■

< Back to Stage 6
Save
Go to Stage 8 >

The opportunities to increase the recycled content of your project are listed below separated into those that you have selected (shown in **green**) and those declined. Please submit further information to support each choice.

Substitutions ?

Component	Explanatory Notes
<b>Inner skin &gt; Cavity block construction; inner skin dense concrete blocks - 140mm</b>	Higher recycled content product identified in WRAP product guide. Approved by structural engineer and identified from local supplier. <span style="float: right;">▲▼</span>
Internal Walls > Two layer plaster - to stud partition 15mm	<span style="float: right;">▲▼</span>
Outer skin > Facing bricks £250 / 1000	<span style="float: right;">▲▼</span>
Ground Slab > Reinforced in-situ concrete 150mm, C30 or higher	<span style="float: right;">▲▼</span>
Foundation > Concrete Strip, Strength C30 or higher, 600 deep (up to and inc. DPC) with reinforcing	<span style="float: right;">▲▼</span>
Insulation > Glass wool insulation 90mm	<span style="float: right;">▲▼</span>
Sinks > Fireclay sink	<span style="float: right;">▲▼</span>
Insulation > Glasswool 200mm	<span style="float: right;">▲▼</span>
Roof covering > Tiles - Concrete interlocking	<span style="float: right;">▲▼</span>
Toilets > Fireclay WC	<span style="float: right;">▲▼</span>

# Stage 8 - Project Summary

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > [4. Select Materials](#)
- > [5. Select Quick Wins](#)
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)

■ Stage 8 of 8 - Project Summary ■

< Back to Stage 7
Save & Exit

## Project Summary

Project Details ?

Project Name	Project Reference	Toolkit Data Version
trainee housing test	TTH1	2.0

Project Performance

Achievement	%	Notes
Standard Practice	13.69 %	
Good Practice	21.05 %	
Requirement	10.00 %	At least 10% of the total value of materials used should derive from recycled and reused content in the products and materials selected. In addition, show that the most significant opportunities to increase the value of materials derived from recycled
Higher Target	0.00 %	
Projected Actual	16.72 %	

Selected Quick Wins

Option	Impact on whole project recycled content level (%)	Qualifier
Cavity block construction; inner skin dense concrete blocks - 140mm	3.04 %	Higher recycled content product identified in WRAP product guide. Approved by structural

# Reporting

## User Options

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

## Project Wizard


- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > [4. Select Materials](#)
- > [5. Select Quick Wins](#)
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)


## Reporting

Please select the type of report you wish to view from the list below.

### Headline Report


This report provides high level information on the project the associated recycled content requirement and whether this has been achieved. It also lists the selected Quick Win items with explanation as to why they have been used.


 [Click HERE to view a printer friendly report](#)

 [Click HERE to download PDF report](#)

### Management Report


This report provides full information on the project details (dimensions and specifications) together with information on recycled content performance, selected Quick Wins, Guest Users and Audit data.


 [Click HERE to view a printer friendly report](#)


 [Click HERE to download PDF report](#)

### Project Component Report

This report provides the component dataset for a project together with information on recycled content and rates.

 [Click HERE to view a printer friendly report](#)

 [Click HERE to download PDF report](#)

 [Click HERE to download Excel report](#)



# Audit History

**User Options**

- > [Add New Construction Project](#)
- > [Edit My Personal Details](#)
- > [Download WRAP Toolkit Data](#)
- > [Download My Custom Toolkit Data](#)
- > [Download Project Proforma](#)

**Project Wizard**

- > [1. Project Details](#)
- > [2. Set Recycled Content Target](#)
- > [3. Guest Users](#)
- > [4. Select Materials](#)
- > [5. Select Quick Wins](#)
- > [6. Review Quick Wins](#)
- > [7. Confirm Quick Wins](#)
- > [8. Project Summary](#)

## Audit Data

Please provide some notes which reflect the changes you have made. This will help to build a history of changes for this project.

My Changes [?](#)

Toolkit Trainee - 16 August 2007 11:32:24

Audit History [?](#)

A low-angle, upward-looking photograph of several modern skyscrapers with glass and metal facades, set against a clear blue sky. The perspective creates a sense of height and architectural grandeur.

# Feedback