

Designing out Waste process

Implementing Designing out Waste in construction projects



The best opportunities for improving materials resource efficiency in construction projects occur during the design stage. Implementing these opportunities can provide significant cost savings, reductions in waste produced and disposed to landfill, and carbon reductions.

'Designing out Waste' is a key element of good practice in the preparation of a Site Waste Management Plan (SWMP). This highlights that designers have an important role in reducing waste – it is not just a site action for construction contractors.

This guidance note provides a simple, three-step process for implementing Designing out Waste in construction projects. It can be easily applied to all types of project, whether relating to buildings or civil engineering, demolition, new-build or refurbishment.

The process enables Designing out Waste to be implemented in a structured way on a project, ensuring that:

- design opportunities are not missed;
- design decisions can be made objectively based on quantified benefits; and
- the design solutions are embedded into the project and can be communicated effectively to the project team.

Designing out Waste guides

WRAP has published two key guidance documents on Designing out Waste, which should be read in conjunction with this guidance note.

Designing out Waste: a design team guide for buildings; and

Designing out Waste: a design team guide for civil engineering.

These Designing out Waste guides present:

- the case for action;
- the five principles of Designing out Waste:
 - Design for **Reuse and Recovery**;
 - Design for **Off Site Construction**;
 - Design for **Materials Optimisation**;
 - Design for **Waste Efficient Procurement**;
 - Design for **Deconstruction and Flexibility**.
- applying Designing out Waste through the project stages;
- the design review workshop; and
- example design solutions.

The guides are endorsed by the RIBA and Institution of Civil Engineers respectively.

The three-step process is detailed overleaf with reference to useful tools and sources of further information.

The methods used within each step of the process should be chosen to suit the size and nature of the project. This guidance note suggests some options.

Designing out Waste should be integral to the project approach. The process should be started (**Step 1 Identify**) at the **Outline Design** stage, with **Step 2 Investigate** and **Step 3 Implement** continuing through **Detailed Design** to the **Pre-Construction** stage.

Full guidance on implementation through project stages in building and civil engineering projects is given in the Designing out Waste guides.

Actions

Tools



Review the project to **identify** as many potential opportunities as possible to reduce materials use or the creation of waste in the project, through materials selection and design solutions.

Then rationalise the list of opportunities to **prioritise** those which will provide the biggest reductions and be easiest (and most cost efficient) to implement. This approach ensures that no opportunities are missed, and that only the most significant ones are pursued.

The **Designing out Waste guides** provide a suggested format for a **design review workshop**, which is particularly useful on larger projects. An 'opportunities matrix' is also presented to help prioritise the design opportunities.

The **Designing out Waste Tools for Buildings and Civil Engineering** can support the workshop, or be used alone for smaller projects. These tools help to identify project specific opportunities and provide indicative quantification of the benefits.



Investigate the top design opportunities further to ascertain their viability. This may include aspects such as compliance with standards, buildability, and impact on safety.

It is important to **quantify** the benefits and impact of each design opportunity so that decisions about which solutions to pursue further are made objectively based on evidence. Key metrics to quantify are waste reduction, cost savings, and carbon reduction.

Technical information is available from sources including CIRIA, BRE, BSI, as well as WRAP. **Design detail sheets** provide data on example design solutions which can provide good materials resource efficiency. **AggRegain.org.uk** contains extensive guidance on recycled aggregates, geosystems and hydraulically bound materials.

The **Design Quantification Methodology** details a straightforward approach to quantifying the benefits. Calculation can be supplemented using the **Net Waste Tool**.



Once client approval to proceed with the recommended design solutions has been obtained, embed in the design through the plans, specifications, project reports and procurement process.

Record details of the solutions in a Site Waste Management Plan – either the project SWMP if the client / contractor has started this, or an outline SWMP if they have not.

These actions will help to ensure the design solutions are implemented on site.

The WRAP **SWMP Template** contains sections enabling design decisions and quantification to be recorded.

Procurement guidance is available for all stages of the project procurement process, including model wording to drive good practice in waste reduction, waste recovery and greater use of recovered materials.

All **WRAP guidance** is freely available from the website below.

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Waste & Resources Action Programme

The Old Academy
21 Horse Fair
Banbury, Oxon
OX16 0AH

Tel: 01295 819 900
Fax: 01295 819 911
E-mail: info@wrap.org.uk

Helpline freephone
0808 100 2040

www.wrap.org.uk/designingoutwaste