

Design for Resource Efficiency process

Implementing Design for Resource Efficiency in construction projects



The best opportunities for improving resource efficiency in construction projects occur during the design stage. Implementing these opportunities can provide significant cost as well as carbon, water and waste savings.

Design for Resource Efficiency is a key element of good practice in the [Resource Management Planning](#) process and in the preparation of a [Site Waste Management Plan \(SWMP\)](#).

This guidance note provides a simple, three-step process for implementing Design for Resource Efficiency in construction projects. The process builds upon WRAP's previous work on Designing out Waste. 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 Design Resource Efficiency 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.

Three-step Design for Resource Efficiency process

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.

Design for Resource Efficiency 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.

Designing out Waste guides

WRAP 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;
- 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.

Actions

Tools



Review the project to **identify** as many opportunities as possible to improve resource efficiency through the design and specification. A Design Review Workshop is an effective way to do this.

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.

Our **Design Review Workshop Facilitator's Pack** contains guidance and materials to help you to deliver your own design review workshop to identify resource efficiency 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. Include cost savings and carbon reduction in the key metrics measured.

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.



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 project Resource Management Plan, Site Waste Management Plan or similar.

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

The **Resource Management Planning** process helps you to consider and manage the key resource efficiency components for your project, across its lifecycle.

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.

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

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