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Designing for material efficiency in building projects —

Part 1: Code of practice for Strategic Definition and Preparation and Brief

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Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 32, an inside back cover and a back cover.

Foreword

This document is published by BSI Standards Limited, under license from The British Standards Institution, and came into effect on 31 July 2013. It was prepared by Technical Committee B/209, *General Building Codes*. A list of organizations represented on this committee can be obtained on request to its secretary.

Information about this document

This document gives recommendations for designing for material efficiency that are accepted as good practice by industry leaders and practitioners, and brings together the results of practical experience and acquired knowledge for ease of access and use of the information.

This code of practice sets out the process for the integration of designing for material efficiency into the Strategic Definition and Preparation and Brief stages of the RIBA Plan of Work [N1].

It is the first part in a projected suite of codes of practice that address specific and interrelated issues and processes of material efficiency in building projects in line with the RIBA Plan of Work.

BS 8895, *Designing for material efficiency in building projects*, will eventually comprise the following parts.

- Part 1: *Code of practice for Strategic Definition and Preparation and Brief.*
- Part 2: *Code of practice for Concept and Developed Design.*
- Part 3: *Code of practice for Technical Design*.
- Part 4: *Code of practice for operation, refurbishment and end of life*.

Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

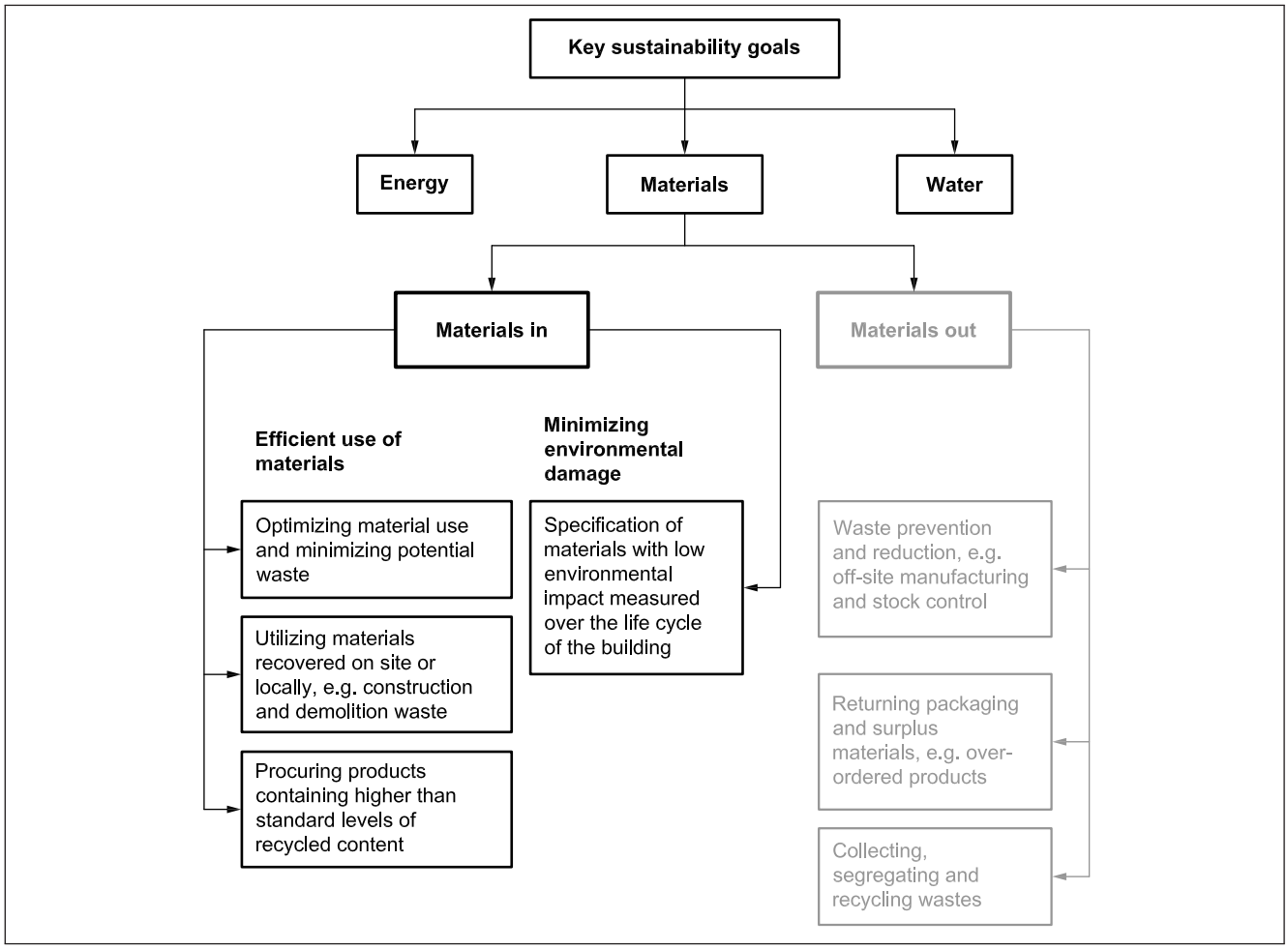
Compliance with a British Standard cannot confer immunity from legal obligations.

0 Introduction and the case for material efficiency

0.1 Material efficiency

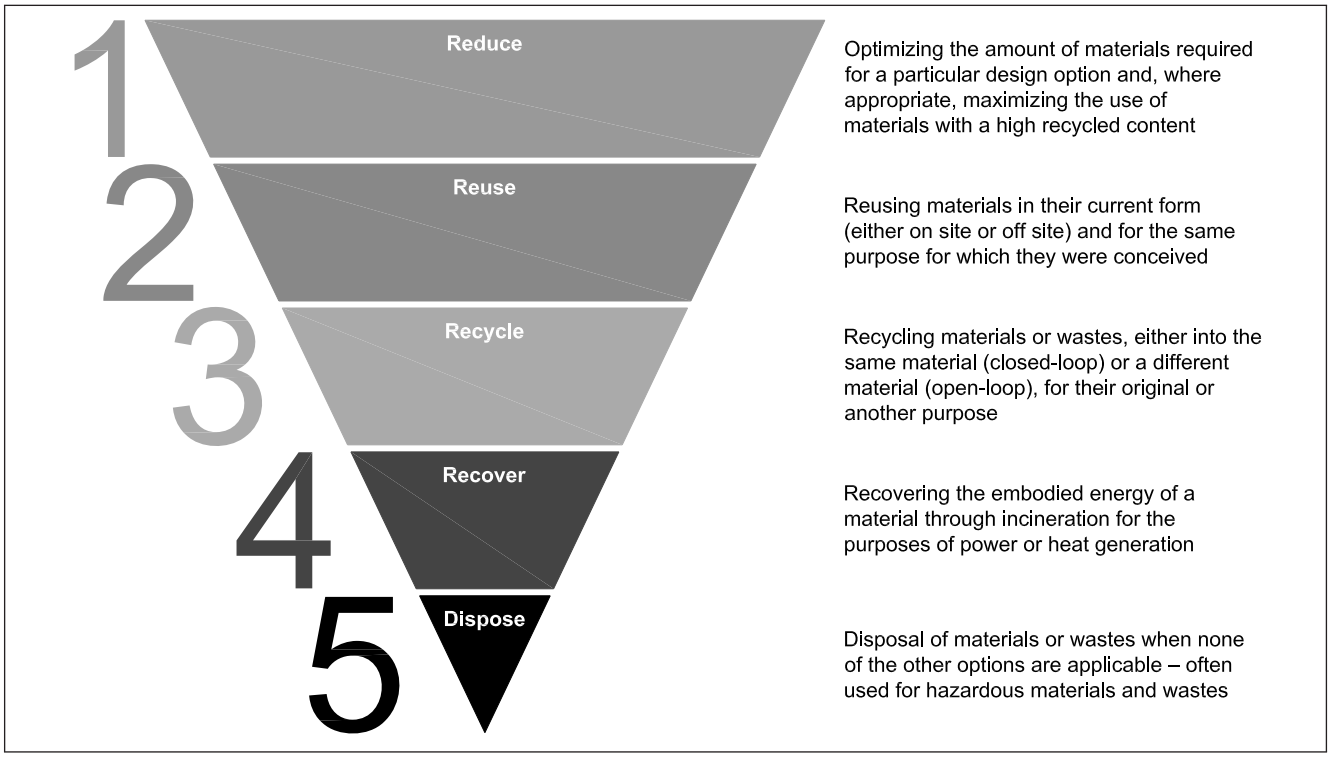
Material efficiency is one of the three key resource efficiency goals of any good practice sustainability strategy, and involves various components intended to ensure the efficient use of materials, waste prevention and reduction, and minimal damage to the environment and depletion of natural resources. Figure 1 sets out the key aspects of material efficiency and, more specifically, how this is broken down in terms of "materials in" during the design process and "materials out" in terms of project delivery. The focus of this code of practice is on the "materials in" aspects, though the design can have a significant influence on the ability to implement "materials out" aspects.

Figure 1 **Material efficiency components relating to material selection during design (materials in) and waste management on site (materials out)**



Material efficiency on a building project involves the implementation of the waste hierarchy (see Figure 2) to reduce the use and waste of materials wherever possible, reuse materials and increase the use of materials with a higher level of recycled content, and recover and recycle any waste that arises, with disposal being the last resort once all other options have been exhausted.

Figure 2 **Material efficiency and the waste hierarchy**



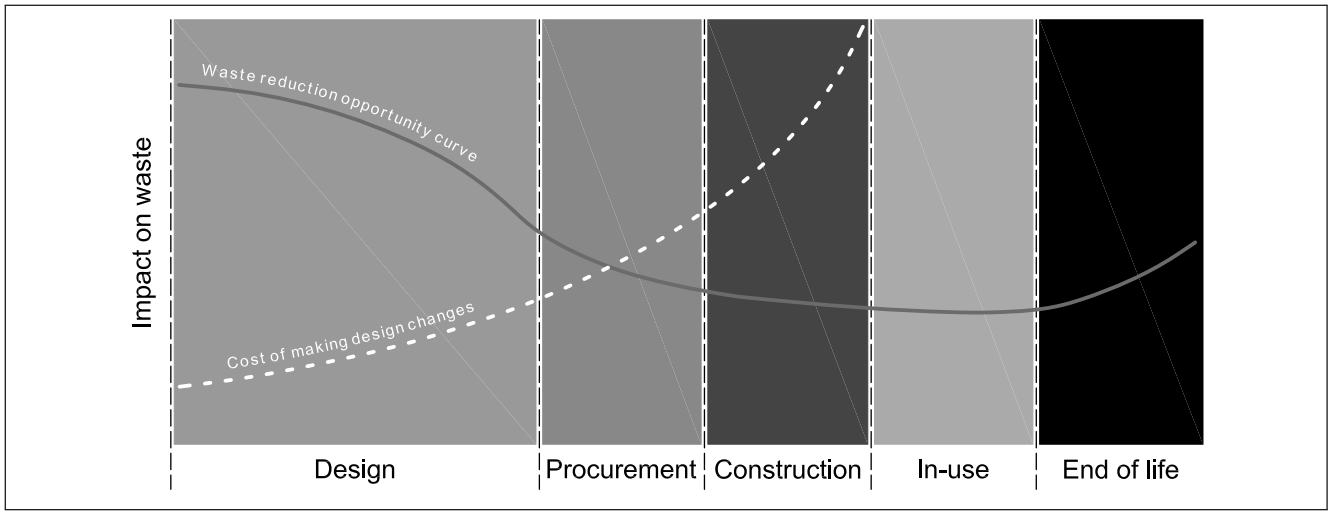
0.2 Implementing material efficiency through design

Opportunities and solutions for material efficiency arise during planning, design, procurement, construction, refurbishment and use, and at end of life. However, the most effective way to implement material efficiency is to comprehensively consider materials and waste during the design and planning stages of a project. This is when maximum impact can be made.

NOTE Figure 3 outlines the opportunity curve for integrating material efficiency and waste reduction against each stage of a project. The majority of opportunities to reduce waste and increase material efficiency exist up-front during the design and planning stages, when the design can be altered to take into account solutions that reduce waste and optimize materials. As the design develops through the preparation and design stages, decisions are taken and the design becomes more fixed, making it more difficult to implement opportunities for waste reduction.

Opportunities also exist when the design is already formulated and construction is under way, particularly under a design and build contract where the contractor has the opportunity to put forward alternative design, procurement and construction methods that can accrue significant reduction in waste during the construction period. However, with other procurement routes the emphasis is more on waste management and recovery rather than reduction.

Figure 3 **Indicative opportunity curve for material efficiency and waste reduction against each stage of a project**



0.3 The case for designing for material efficiency

As illustrated by Figure 3, there is a clear business case for designing for material efficiency at the earliest point possible on a project, but there are further drivers, including:

a) cost savings from greater material efficiency and avoidance of increased waste disposal and landfill costs;

b) reduced resource extraction, processing and consequential carbon dioxide (or equivalent) emissions from transport and manufacture of materials, as well as reduced depletion of landfill capacity (environmental drivers);

c) commitment to sustainable construction and good environmental management (corporate responsibility drivers);

d) meeting requirements for improved performance and achievement of targets, and correlation with parallel environmental rating systems, particularly in relation to the adoption of good waste minimization and management practices (project-specific drivers);

e) increased competitive differentiation that improves project efficiency through a reduction in construction costs and programme, particularly where waste reduction opportunities can help to meet the prospective client's sustainability objectives.

NOTE Planning for waste reduction requires a number of disciplines to contribute and to monitor performance throughout each stage.

0.4 The objectives and intended audience of this standard

BS 8895-1 is an industry code of practice for designing for material efficiency, giving recommendations for the processes and project responsibilities for designers to incorporate into projects. Creating a standardized and qualified approach for designing for material efficiency allows for clients and design teams to integrate the principles of designing out waste (see **4.5**), and communicate these in a formalized and easily referenced manner.

BS 8895-1 is specifically intended for design teams, in assisting the client to integrate the process of designing for material efficiency during the pre-design stages, to set out the strategic direction for material efficiency in a building or refurbishment project. It is also applicable to the broader project team members who can influence material selection and, as a consequence, waste produced throughout a project. As such, the standard emphasizes the need at RIBA Plan of Work [N1] Stage 0, Strategic Definition, and Stage 1, Preparation and Brief, to consider material efficiency throughout all subsequent project stages.

BS 8895-1 is intended to be used when the client, in discussion with any consultants, first appraises and documents their project needs, aims, resources and parameters to produce the initial project brief to be referenced by the client and design team throughout project design development.

It is of particular relevance for the lead designer who, as the driver of the design process, instigates the appraisal of the impact of the building or refurbishment project in terms of construction, demolition and excavation (CD&E) waste, and suggests to the client tailored options to reduce, reuse, recycle and recover energy from waste.

The lead designer requires input from the wider design team, so the standard is intended for all those taking part in the preparation of the initial project brief, for example, clients, consultants, building occupiers, and any others who are authoritative, informed or likely to be affected.

The client, however, as initiator and purchaser of the works, retains the ownership of the project and its general management, including the choice of designer, the preparation of the initial project brief and the evaluation of any response to it.

1 Scope

This part of BS 8895 gives recommendations for the process by which design and project teams seek to maximize material efficiency through design. It outlines what material efficiency in design involves and how the process of designing for material efficiency is implemented through the Strategic Definition and Preparation and Brief stages of a project.

NOTE 1 This includes optimizing material use, increasing materials with a higher level of recycled content, designing out waste, and planning for waste reduction and recycling.

NOTE 2 For an explanation of the need for designing for material efficiency, see the Introduction.

NOTE 3 Annex A demonstrates how other parts of BS 8895 will cover material efficiency at other stages of a project.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 7832, *Performance standards in building – Checklist for briefing – Contents of brief for building design*

[N1]RIBA Plan of Work 2013 (http://www.ribaplanofwork.com/)

[N2]WRAP, *Designing out Waste: A design team guide for buildings*