

## CIRCULAR CONSTRUCTION BRIEF

### Introduction

The Circular Built Environment Playbook for the Irish Construction Sector is an EPA-funded collaborative project between the Irish Green Building Council (IGBC), the Atlantic Technological University (ATU), Technological University Dublin (TU Dublin), and the University of Galway. It aims to support industry stakeholders in the transition towards a decarbonized and circular built environment.

**The Circular Construction Brief sets out the following recommended steps in embedding circularity during the construction phase:**

### Pre-Construction Planning



- Appoint a project-specific Waste Champion from the site team to take responsibility for the implementation and monitoring of resource efficiency and circularity targets.
- Develop a robust Resource and Waste Management Plan (RWMP) at the earliest possible stage, in accordance with the Best Practice Guidelines on the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects (EPA, 2021).
- Establish quantitative targets (KPIs) for waste prevention, reduction, and the total value of reused or recycled content to be used during the construction phase.
- Where appropriate, conduct a pre-demolition or pre-refurbishment audit to identify materials and components that can be reclaimed, reused, or recycled prior to the start of construction works.
- Where feasible, collaborate with the design team early to 'design out waste' i.e., standardisation of dimensions, using Building Information Modelling (BIM) for clash detection and the creation of a building/material digital passport.
- Prepare site inductions to set out project-specific commitments to waste prevention and reuse.

### Procurement and Supply Chain Engagement



- Engage the value chain early to discuss the feasibility and viability of embracing circularity principles i.e., bespoke manufacture to design specifications, take-back schemes, product-as-a-service, use of reclaimed materials, work package specific waste reduction methods etc.
- Include circular and low waste performance-based criteria in the tendering and procurement documents.
- Where appropriate, prioritize materials with high recycled content, those that are salvaged from other projects, and low-waste products i.e., spray applied plaster.
- Where feasible, prioritize responsible and local sourcing of materials i.e., certified bio-based and renewable materials.
- Where feasible, request Environmental Product Declarations (EPDs) and other certifications to evaluate the embodied carbon and ensure materials are non-toxic, durable, and designed for future disassembly.
- Incorporate take-back schemes into supplier contracts for packaging, unused surplus products, and specific off-cuts like plasterboard or insulation.
- Where applicable, maximize offsite construction and pre-fabrication to improve precision, reduce site-based wastage, and facilitate assembly rather than traditional construction.

## Site and Materials Logistics



- Develop a Materials Logistics Plan (MLP) to manage the flow of materials to, from, and on-site considering:
  - ‘Just-in-Time’ (JIT) delivery to reduce on-site storage time and the subsequent risk of damage from weather or site traffic.
  - Dedicated material storage areas that are safe, secure, and weatherproof to prevent spoilage of perishable items i.e., cement and plasterboard.
  - Centralized cutting stations for carpentry or plumbing to facilitate the collection and immediate reuse of offcuts in other parts of the project.
  - Rigorous source segregation by providing clearly labelled skips for specific streams like timber, metals, plasterboard, and hazardous waste.
  - Deliver materials directly to the point of use to reduce accidental damage, breakage and double handling.
- Implement take-back schemes in collaboration with the supply chain.
- Protect finished works with appropriate sheeting and signage to prevent damage from succeeding trades that might lead to rework and material waste.

## On-Site Reuse and Resource Recovery



- Maximise on-site recovery of materials to reuse for their original intended purpose or to their highest value i.e., coordinate between project phases to balance ‘cut and fill’ operations, facilitate material sharing between trades or nearby construction sites.
- Where applicable, use selective demolition techniques to recover high-value components for reuse i.e., architectural features, joinery etc.
- Where feasible and appropriate, use mechanical fasteners (bolts, screws) instead of adhesives and sealants to facilitate the easy removal and reuse of components at the end of the building’s life.
- Explore opportunities to reallocate surplus materials to local community projects or other nearby construction sites in consultation with the relevant local authority and the EPA.

## Training and Monitoring



- Include resource and waste management in all site inductions and conduct regular toolbox talks to reinforce the importance of waste prevention and reduction; and to update site staff on performance throughout the project.
- Provide visual cues and signage across the site to guide operatives and to celebrate project success in preventing and reducing waste.
- Track and evaluate the ‘live’ implementation of the RWMP by tracking performance against the project KPIs, considering:
  - Undertaking regular site waste audits (planned and random) to check for skip contamination and ensure compliance with segregation procedures.
  - Tracking and recording all material movements (inputs and outputs) to highlight waste rates and compare actual arisings against initial forecasts to take corrective action.
  - Encouraging staff suggestions for waste reduction and rewarding site operatives for reuse successes.
  - Material logistics planning performance.
- Where appropriate, use digital tools i.e., SMART-Waste or Construction Waste Indicative Cost (CWIC) Calculator to estimate the true cost of waste, including materials and labour.

## Handover



- Conduct a final site clearance waste audit to identify equipment or materials that can be resold, donated to local charities, or stored for future projects.
- Perform a post-project review to document lessons learned, quantify total financial savings/costs, inform best practices and benchmarks for future tenders.

## Supporting Guidance Documents

[Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects \(EPA, 2021\).](#)

[Guidelines for the waste audits before demolition and renovation works of buildings \(EC, 2018\).](#)

[EU Construction and Demolition Waste Management Protocol \(EC, 2024\).](#)

[Maximizing Reuse of Materials on Site \(Resource Efficient Scotland\).](#)

[Site Waste Reduction Protocol \(Zero Waste Scotland, 2023\).](#)

[Best practice guide to improving waste management on construction sites \(Resource Efficient Scotland\).](#)

### AI Use Statement

Sixty-four international industry guidance documents related to circular economy principles during the construction phase were selected and inputted into Google Notebook-LM by the author for ideation and synthesis purposes, thereby creating a set of text summaries prompted by a range of author queries. All AI-generated outputs were subsequently reviewed, edited and verified by the author for clarity and accuracy. A full list of the original industry guidance follows.

## LIST OF REFERENCES

The Circular Construction Guidance: List of References supports the ‘Circular Construction Brief’ by provided the following list of guidance documents used in its preparation. Where hyperlinks are not provided, refer to <https://www.build360.ie> and search under ‘Construction’.

A blueprint for reducing waste and cutting costs (WRAP UK)

[A cost benefit analysis of the introduction of site waste management plans for the construction and demolition industry \(DEFRA, 2008\)](#)

[A Review of Design and Construction Waste Management Practices on Selected Case Studies – Lessons Learned \(Kelly and Dowd, 2015\)](#)

A Review of International Approaches to Waste Prevention and Minimisation (Construction Resources and Waste Platform, 2007)

[Achieving effective Waste Minimisation \(WRAP UK\)](#)

Achieving Good Practice Waste Minimisation and Management: Guidance for Construction Clients, Design Teams, and Contractors (WRAP UK)

Assessing Construction Waste: Evidence Gaps for Construction Products, Materials, and Waste Data (AMA Research, 2008)

[Assessing the costs and benefits of reducing waste in construction \(WRAP UK\)](#)

[Best Practice Guidance for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects \(EPA, 2021\)](#)

[Best practice guide to improving waste management on construction sites \(Resource Efficient Scotland\)](#)

[Circular Built Environment Playbook \(World GBC, 2023\)](#)

[Circular Economy Checklist for Construction Contractors \(Regional Waste Management Offices\)](#)

[Circular Economy Guidance for Construction Clients \(UKGBC, 2019\)](#)

[Circular Economy How-to Guide: Implementing Light as a Service \(LaaS\) in built assets \(UKGBC, 2020\)](#)

[Circular Economy How-to Guide: Reusing products and materials in built assets \(UKGBC, 2020\)](#)

Construction and Demolition Waste: GPG 57: Part 1 (BRE, 2003)

Construction and Demolition Waste: GPG 57: Part 2 (BRE, 2003)

Construction procurement guidance: Delivering higher recycled content in construction projects (WRAP UK, 2009)

Construction steelwork contractor: Environmental Info Sheet (Envirowise, 2009)

[Code of Practice on Pre-Development Audits \(BRE, 2017\)](#)

[Current Practices and Future Potential in Modern Methods of Construction \(WRAP UK, 2007\)](#)

Delivering good practice Waste Management: Practical guidance for construction design teams and contractors (WRAP UK)

Electricians: Reducing the cost of waste on site (WRAP UK)

[Emission-free Construction Sites: Definitions, boundaries, and terminology – Current status in the Nordic countries \(Nordic Innovation, 2023\)](#)

[Emission-free Construction Sites: Knowledge Gaps and Research Needs \(Nordic Innovation, 2024\)](#)

[Environmental good practice on site \(5th Edition\) \(CIRIA, 2023\)](#)

[EU Construction & Demolition Waste Management Protocol \(including guidelines for pre-demolition and pre-renovation audits of construction works\) \(EC, 2024\)](#)

Fitout contractors: Reducing the cost of waste on site (WRAP UK)

[Fit-out environmental good practice \(CIRIA, 2016\)](#)

Guidance for low-carbon building projects and estates management: Procurement requirements for carbon efficiency (WRAP UK, 2011)

Guidance for small and medium-sized contractors: Reducing your construction waste (WRAP UK)

Labourer: Environmental Info Sheet (Envirowise, 2009)

[Linking demolition and new build – a step-by-step guide: The efficient use of materials in regeneration projects \(WRAP UK\)](#)

[Low Carbon and Resource Efficiency Construction Procurement: Model Procurement wording for public and private sector clients and contractors \(WRAP Cymru\)](#)

[Managing packaging waste on your construction site \(Envirowise, 2006\)](#)

[Maximising reuse of materials on site \(Resource Efficient Scotland\)](#)

[Minimising risk through responsible sourcing: A handbook for the construction industry \(CIRIA, 2017\)](#)

Painters and decorators: Reducing the cost of waste on site (WRAP UK)

Plasterers and dry liners: Reducing the cost of waste on site (WRAP UK)

Plumbers: Reducing the cost of waste on site (WRAP UK)

[Procurement requirements for reducing waste and using resources efficiently: Guidance for building and civil engineering projects \(WRAP UK\)](#)

[Procuring Resource Efficient Construction Projects: Model wording for public and private sector clients and contractors on construction projects \(Resource Efficient Scotland\)](#)

Refurbishment Waste Benchmarking (Construction Resources and Waste Platform)

[Resource Efficient Use of Mixed Wastes: Improving Management of Construction and Demolition Waste \(Deloitte, 2017\)](#)

[Responding to waste minimisation and management requirements: Guidance for construction contractors \(WRAP UK\)](#)

[Re-use of structural elements: Environmentally efficient recovery of building components \(VTT, 2014\)](#)

[Site Waste – it’s criminal: A simple guide to Site Waste Management Plans \(NetRegs UK\)](#)

[Site Waste Management: Guidance and templates for effective site waste management plans \(NHBC Foundation/WRAP UK, 2008\)](#)

[Site Waste Reduction Protocol \(Zero Waste Scotland\)](#)

[Site Waste Reduction Protocol Summary \(Zero Waste Scotland\)](#)

[Study on measuring the application of circular approaches in the construction industry ecosystem \(EISMEA, 2023\)](#)

[Supporting Environmentally Sound Decisions for Construction and Demolition Waste Management: A practical guide to Life Cycle Thinking and Life Cycle Assessment \(JRC, 2011\)](#)

[The Business Case for reducing waste during construction \(WRAP UK\)](#)

[The Business Case for Resource Efficiency: Housebuilders \(WRAP UK\)](#)

[The ‘Circular-Ready’ Built Environment Checklist \(World GBC, 2023\)](#)

[The Management of Waste from National Road Construction Projects: GE-ENV-01101 \(TII, 2017\)](#)

[Using small volume wastes in construction: IP 9/05 \(BRE, 2005\)](#)

[Waste Minimisation in Construction: Materials Logistic Plan Good Practice Guidance \(WRAP UK, 2007\)](#)

[Waste Minimisation in Construction: Site Guide \(CIRIA, 1997\)](#)

[Windows, doors and conservatory suppliers and installers: Environmental Info Sheet \(Envirowise, 2009\)](#)

[Woodworkers, carpenters and joiners: Reducing the cost of waste on site \(WRAP UK\)](#)

[Zero Avoidable Packaging Waste in Construction \(Adams, 2022\)](#)

[Zero Avoidable Waste in Construction \(UK Green Construction Board, 2020\)](#)



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