Circular Economy
How-to Guide:
Reusing products and materials in built assets

APRIL 2020

Lead Partner: Partners: With support from:
Introduction

This guidance document contains a practical How-to Guide which is a follow up to the UKGBC Circular economy guidance for construction clients: How to practically apply circular economy principles at the project brief stage. This How-to Guide will explore Maximise reuse in more detail and set out actions for project teams to take forward during design and construction stages.
This guidance document addresses:

- How to create a product and material inventory to support reuse within an existing project
- How to reuse materials and products from another project
- How to send materials and products offsite for reuse on another project

The aim of this guide is to stimulate growth in the reuse market by encouraging and supporting construction project teams, including construction clients, project managers and design teams. A prioritisation of reuse onsite over offsite should be given where possible.

This How-to Guide takes project teams, working on demolition, deconstruction, refurbishment or fit out projects, through the process, roles and responsibilities for maximising reuse and reclaiming materials. This guide provides an understanding of what information is required, whom to involve and at which point in the programme.

The following principles were identified in the UKGBC guidance for construction clients.

**Circular Economy principles for construction**

1. **Maximise reuse**
   - a. Reuse the existing asset
   - b. Recover materials and products on site or from another site
   - c. Share materials or products for onward reuse

2. **Design for optimisation**
   - a. Longevity
   - b. Flexibility
   - c. Adaptability
   - d. Assembly, disassembly, and recoverability

3. **Use standardisation**

4. **Products as a Service**

5. **Minimise impact and waste**
   - a. Use low impact new materials
   - b. Use recycled content or secondary materials
   - c. Design out waste
   - d. Reduce construction impacts

**Figure 1.** Material flows in the reuse processes outlined in this guide.
This How-to Guide forms part of a Reuse Implementation Pack which has been developed through UKGBC’s Circular Economy Programme. The pack also includes:

- **Circular Economy Innovation Insights: Reuse and Products as a Service** – Highlights solutions (product and service related) for supporting reuse and products as a service
- **The why and what of reuse slide deck** – A set of slides setting out why PaaS is important and explaining the How-to guidance available to support project teams in the process of implementing LaaS in developments.

In the first instance, every opportunity should be taken to retain the existing structure. More information to support this can be found in UKGBC’s Circular economy guidance for construction clients.

"Reclaimed (or reused) products and materials are those that have been taken from the waste stream and reused in their original form with minimal reprocessing. Examples include steel beams and whole bricks."

WRAP (2008)

1.1 MATERIAL AND PRODUCT INVENTORIES AND AUDITS

To stimulate an increase in the amount of material reuse within existing construction projects, an inventory of the materials and products within an entire site or portfolio should be created. This inventory will provide all parties with the information they require to make decisions on the second life of products and materials within the existing asset. For the purposes of maximising reuse, the inventory should be created before any proposals for redevelopment are taken forward. New construction projects should also develop inventories and plans for reuse. Whilst this is not explicitly covered here, key learnings can be taken from the process outlined below and applied to new construction projects.

The earlier this inventory is created the easier it will be to effectively design in the reuse of products and materials. In theory, the inventory can be created at any time as part of a strategic exercise to understand the materials ‘banked’ in the portfolios but should be done well in advance of any refurbishment or demolition activity taking place.

The inventory could be created in multiple ways depending on the asset’s development stage:

• If the asset is still in development, the material inventory could be created as part of the hand-over documentation at completion.

• If information is required for an existing asset, the material inventory will need to be created by studying the as-built information available and supplementing this with onsite investigations.

There are multiple ways of storing the inventory data, including:

• A spreadsheet – limited to primarily capturing product and material quantities.

• Online platforms/libraries – these can be used by clients to store material information.

• Building Information Modelling (BIM) – this is the process of creating and managing digital information about a built asset. However, BIM is more suitable for new construction projects and typically collects wider project data than just inventory data, making it more time consuming to apply in this context.

Where it has already been decided that an asset needs to be redeveloped and an inventory has not yet been created, a pre-redevelopment audit (sometimes called a pre-refurbishment audit) should be commissioned prior to the end of concept design stage (e.g. RIBA stage 2). This will allow the recommendations to be fed into the final concept design. Ideally, options for the refurbishment and the reuse of the existing structure should be prioritised, with demolition and rebuild seen as least preferable. The information contained in the asset’s material and product inventory can feed into this audit, if this exists, but, if not, the auditor will need to quantify the materials and products contained in the asset in accordance with the Code of Practice: Pre-redevelopment Audits.

1.2 ROLES, ACTIONS AND RESPONSIBILITIES

This section outlines a step-by-step process by which the project team can create an inventory of the products and materials within an entire site or portfolio. This can then be used to apply the reuse of materials/products within the existing asset – this could include fit-out, refurbishment, and new build with reuse of materials/products. The client and project teams are mapped against their corresponding responsibilities and actions. See Appendix 1 for the full list of roles and how they have been defined.

The inventory should record the following details of materials/products within the site or asset:

- An estimation of material types/products, quantities and dimensions.
- An assessment of the materials/products suitability for reuse.
- Additional information required to facilitate reuse depending on material type/product such as condition of aesthetic finishes, size and strength for structural members, thermal and fire performance for insulation, fire ratings, acoustics, thermal comfort, sustainability standards, and embodied carbon.
- Photos and/or 3D images outlining the aesthetic quality of the existing material/product.
- For the appraisal of existing steel and iron, the Historic Structural Iron and Steel Sections can be used to inspect quality of steel and set out opportunities for reuse.
- Any information about specific deconstruction or disassembly that might be required.
- Proposals for amount of time required in programme to allow for disassembly and storage.
- Suggestions for storage options including location and requirements i.e. treat as fragile. Where materials/products cannot be reused onsite, solutions for onward reuse should be provided. See the second How-to Guide below for more support in this area. Onsite storage should be prioritised over offsite.

This information is not always easy to acquire, but the site/facilities management team may be able to help, and a data storage system may already be in place.
### PROJECT STAGE: STRATEGIC DEFINITION (E.G. RIBA STAGE 0)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
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</table>
| Client Delivery Team | • Set out strategic vision and project commitment around reuse, linking to resource optimisation, embodied carbon savings and cost saving. See UKGBC’s Circular economy guidance for construction clients: How to practically apply circular economy principles at the project brief stage for more information and support around reusing the asset as a whole, and and disassembly for reuse as a secondary option.  
• Start the process of commissioning a pre-refurbishment/pre-demolition audit if a product and material inventory has not been prepared for the development.  
• Ensure programme planning allows for materials to be removed, stored and retrieved for reuse. Timing will be dictated by the recommendations from the audit report that is commissioned and should be reviewed again at concept design stage after meeting with the demolition or refurbishment contractor.  
• Plan reuse activities in design reviews, ideally with an independent group of sustainability experts.  
• Establish a predesign tender service agreement with the design team to get their input in setting the brief for reuse. This would engage discipline experts from the design team to define targets for reuse of the existing asset based on the scheme. The service could include a site visit and sharing of the inventory data where the audit data is not available yet. The output from the design team should include targets for reuse, as well as comparison between reusing the entire asset versus using just parts or materials.  
• Agree budget allocation between savings upfront relating to reuse of products and materials which may, in operation, require maintenance, refurbishment or replacement and therefore additional contingency during operational stages. In many cases capex costs can be saved by reusing material from the existing site. However, it might be the case that a contingency budget is put aside for refurbishing or upgrading reused products/services during operation. Involve the Facilities Manager in these discussions.  
• Share the reuse information with the Quantity Surveyor (QS) and identify cost saving opportunities for the project i.e. cost benefit of material reuse. This should be factored into the overall cost analysis by the QS. The information could also demonstrate energy savings and/or carbon ‘available’ in the form of embodied carbon invested at time of original construction. |

### PROJECT STAGE: PREPARATION AND BRIEF (E.G. RIBA STAGE 1)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
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</table>
| Client Delivery Team – Procurement | • Ensure the asset inventory or audit data (if available) is included in the tender pack for the project team. If security issues arise around the sharing of this data, the client may want to consider stating in the tender pack that the inventory data exists, the design proposals should include a clear indication of how reuse will be considered and that the inventory details will be shared with the winning design team.  
• Ensure the procurement scorecard for reviewing submissions takes into account those organisations who have the best track record of reuse and identify the best opportunities for reuse within the new project as well as designing to allow for disassembly.  
• Engage demolition contractors and explore establishing an early pre-demolition tender agreement. Suggest they review the inventory data or audit data (if available). |

### PROJECT STAGE: CONCEPT DESIGN (E.G. RIBA STAGE 2)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
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</table>
| Design Team        | • Review material inventory data (or audit data) and project brief with reuse targets. Identify potential options for reuse within new scheme. Identify where further investigation or information is required. Incorporate reclaimed items within design.  
• Factor in opportunities for ensuring that the reuse of products and materials allow for further disassembly in future. This should also feature in the performance specifications or structural engineer’s scope. |
| Client Delivery – Procurement | • Ensure the asset audit data is included in the tender pack for the project team if not completed at Preparation and Brief. |
**PROJECT STAGE: CONCEPT DESIGN (E.G. RIBA STAGE 2) (CONTINUED)**

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
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</table>
| **Client Delivery Team**                         | • Explore, with legal teams, contract arrangements to address risk i.e. warranty and liability for reuse products and materials. Suggested approach is that the responsibility of the product should sit with the client and responsibility of installation should sit with the contractor even where products are taken off site. This will be a commercial negotiation between the client and the contractor.  
• Engage the facilities management team in the decisions to incorporate reuse into the new design so they are aware of proposals to reuse elements they may be in control of maintaining and servicing.  
• As part of the design review process there should be every effort made to ensure reuse is incorporated and reuse targets are met. Challenge the design team on whether there are further opportunities for reuse.  
• Where an asset is owned by a client and the future tenant is known, a contract should be created between the asset owner and the tenant to retain material within the asset. Where this is not possible look to reuse material and products. This process could be established through a green lease agreement.  
• For a building where the end client/tenant is known, Virtual Reality can be used to conceptualise new designs for Cat B* fit out space. This will help ensure there is less change of materials and products due to dissatisfaction with design.  

* Category B (Cat B) fit out is a fit out conducted in a space where only the external walls and basic flooring, ceiling, M&E services, shared toilets, and lifts have already been installed. |

| **Client Delivery Team, Project Manager, Demolition/Refurbishment Contractor (if possible), Inventory Auditor** | A meeting should take place to review realistic reuse opportunities within the concept design:  
1. Feasibility of reusable products and materials  
2. Cost impacts  
3. Impact on programme  
4. Health and safety implications  
Develop logistics plan for bringing equipment and people on and offsite to allow for reuse |

**PROJECT STAGE: DEVELOPED DESIGN (E.G. RIBA STAGE 3)**

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<tr>
<th>Role</th>
<th>Responsibility and actions</th>
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</table>
| **Design Team**                                  | • Progress research into specific products and materials to be reclaimed to gain confidence in quantities that realistically can be recovered, their condition, appearance and other qualities relevant to their reuse. This could include fire testing, emission testing and testing for the presence of hazardous substances. In some cases, it will not be necessary to test materials for reuse. See the [Salvo Website](https://www.salvo.org.uk) for more guidance and UKGBC’s [Circular economy guidance for construction clients](https://www.ukgbc.org.uk/circular-economy) Appendix 4 for information relating to construction products.  
• Incorporate reuse products and materials into design proposals and include in scheme to be submitted for planning (if applicable).  
• Identify if any further investigation of reuse products and materials are needed.  
• Identify if any samples or mock-ups are required to test the process of reclamation and reuse, and check appearance, robustness etc. of proposed detail ahead of the tender. |

| **Client Delivery Team**                         | • In the design review meeting assess whether reuse is being incorporated and if the strategic vision for reuse is on course to be met. Challenge the design team on whether there are further opportunities for reuse.  
• If recoverable products cannot be reused in the new asset, the relevant inventory information should be made available to others for onward reuse; see section 3 for how to send materials and products away for reuse offsite. |
### PROJECT STAGE: TECHNICAL DESIGN (E.G. RIBA STAGE 4)

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<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
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| **Client Delivery – Procurement** | - Include aspiration to maximise reuse including KPIs as per recommendations from the design team, and details of reclaimed products and materials to be used within the contract and demolition/refurbishment contractor tender documentation.  
- When reviewing responses ensure a time allowance has been made for reuse where necessary.  
- A requirement should be made to the demolition/refurbishment contractor to review the audit and inventory data and provide comments. The products and materials that are to be carefully disassembled and stored for reuse within the development should be specified.  
- The contract with the demolition/refurbishment contractor should require a team is employed that is able to disassemble the identified products and materials for reuse. Their programme must account for reuse. This could be built into the mid-bid interview. |
| **Design Team** | - Under the Construction Design and Management Regulations, the principal designer should include information related to the proposed deconstruction and allowances for reclaimed materials in the Pre-Construction Information for tenderers as well as addressing health and safety risks.*  
- Include in the tender documents:  
  - any elements that are to be carefully disassembled and stored for reuse within the development or for onward reuse elsewhere.  
  - any requirements for preparation, processing or testing of recovered elements to make them ready for reuse.  
  - detail of the proposed element reuse; note where allowances need to be made for size variations in recovered materials.  
  - specify information for samples or mock-ups of reuse elements that are required for client approval prior to construction. |

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### PROJECT STAGE: CONSTRUCTION (E.G. RIBA STAGE 5)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
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</table>
| **Demolition/Refurbishment Contractor** | - Recover products and materials for reuse as identified in the contract documents. Ensure all elements are intact, not damaged and stored in a secure place.  
- Provide toolbox talks on reuse. These could consist of a set of photographs of the items to be recovered for reuse, along with location drawings. Toolbox talks should be specific to each project and material. For example, glass not to be contaminated by dust or if any material should be removed such as nails. These are usually included in the Method Statement briefings specific to each type of work.  
- For elements that are not being recovered from reuse on the site or elsewhere, see the CIWM What is Waste Guide to establish if they are waste or hazardous waste.  
- Develop Demolition Refurbishment Information Data Sheets (DRIDS). This is a useful way of identifying onward reuse and recycling opportunities for materials during demolition. |
| **Contractor** | - Carry out any mock-ups or samples required in contract documents and gain client approval.  
- Prepare, process and test recovered elements as specified in the contract documents to make them ready for reuse.  
- Carry out reuse as specified in the contract documents and in line with approved samples.  
- Flag any potential issues early to the project manager so they can be resolved.  
- Keep accurate waste records. |
2. How to reuse materials and products from another project

PROJECT STAGE: HANDOVER AND CLOSE OUT (E.G. RIBA STAGE 6)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Team, Main Contractor, Project Manager</td>
<td>• Proposed deconstruction methodology should be included in the Operation &amp; Maintenance manual along with final construction information indicating all elements in new asset. This will provide the basis for the material and product inventory. If BIM were used, the model should be included in handover.</td>
</tr>
<tr>
<td>Client Delivery Team</td>
<td>• Meet with whole project team to discuss lessons learned and share which elements were reused based on the original inventory info. Share these learnings with industry.</td>
</tr>
</tbody>
</table>
| Asset Manager                 | • A clause can be added to the tenancy agreement whereby the tenant must notify the Facilities Estate Manager of any changes that will be made to the building during the lease. This process enables any unwanted materials to be sent for onward reuse and new materials to be added to the inventory.  
  • Where the building is owned by a landlord and the future tenant is known, a contract should be created between the asset owner and the future tenant to retain materials within the building. Where this is not possible, attempts should be made to reuse material and products. This process could be established through a green lease agreement.  
  • Virtual Reality can be used to conceptualise new designs for future Cat B fit out. This will help ensure there is less change of materials and products due to dissatisfaction with new designs. |

PROJECT STAGE: IN USE (E.G. RIBA STAGE 7)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Estate Manager/Inventory Auditor/Client Delivery Team</td>
<td>• Regularly maintain the inventory and update the data management tool (spreadsheet, online library, BIM). This should be updated with reuse from maintenance and the space plan such as furniture.</td>
</tr>
</tbody>
</table>

Figure 3. Material flows in the reuse processes outlined in this guide.

2.1 ROLES, ACTIONS AND RESPONSIBILITIES

This section outlines a step by step process by which construction teams can bring reuse onto site. Construction teams are mapped against their corresponding responsibilities and actions. See Appendix 1 for the full list of roles and how they have been defined.
### PROJECT STAGE: STRATEGIC DEFINITION THROUGH TO TECHNICAL DESIGN (E.G. RIBA STAGE 0 – 4)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
</tr>
</thead>
</table>
| Client Delivery Team    | • Set out the strategic vision and project commitment around reuse, linking to embodied carbon savings and resource optimisation. See UKGBC’s Circular economy guidance for construction clients: How to practically apply circular economy principles at the project brief stage for more information and support around bringing reclaimed materials and products onto site.  
• Decide whether the function and use for the reclaimed material is for structural, functional or aesthetic purpose as this will significantly impact material selection i.e. the look and feel of the project may mean some reclaimed materials will not work within the scope such as doors and fittings/fixtures but reclaimed material may be suitable for hidden structural elements such as steel beams. |
| Client and Design Team  | • Identify which parts of the design have the potential to incorporate reclaimed products and materials.  
• Develop a plan for the reuse of materials and products based on the types and quantities of reusable products and materials available. Where materials are not yet available plans can be made for when they are. Information on reuse can be acquired from the organisations in the UKGBC Innovation Insights: Reuse and Products as a Service.  
• If possible, ensure that during the 6-month period before demolition/deconstruction/refurbishment any structural (or other) testing occurs to prove the fitness for purpose of the materials. This could include fire testing, emission testing and testing for the presence of hazardous substances.  
• Initial design plans and sketches should be developed and reiterated as required to include reclaimed materials.  
• Create a reuse material contingency plan in the event of materials no longer being available or meeting required specifications. This can be a subset of the reuse plan.  
• To increase reuse on the project the Contractor should not be subject to penalties for respective design changes as a result of reuse materials becoming available at a later stage. For this the Client could add a clause to the contract between the Contractor and the Client.  
• Agree a conceptual design plan and issue instructions to the Asset Owner of the donor site for the specifications of what needs to be removed and how. In this the following should be specified: agree the amount that will be paid by the client of the receiving project, establishing acceptable thresholds for the condition of materials supplied this way, agreeing how much cleaning and preparation the supplying party will do, and agreeing timescales.  
• Design around known available products and materials or ensure flexibility is left in both the design and subsequent specification. |

### PROJECT STAGE: CONSTRUCTION (E.G. RIBA STAGE 5)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor</td>
<td>• Once the materials and products are cleaned and prepped for reuse by the demolition/refurbishment contractor they need to be transported and, in some cases, stored (on or offsite) before the installation takes place.</td>
</tr>
</tbody>
</table>
3. How to send materials and products offsite for reuse on another project

3.1 ROLES, ACTIONS AND RESPONSIBILITIES

This section outlines a step by step process by which clients and construction teams can send products and materials for reuse offsite. Construction teams are mapped against their corresponding responsibilities and actions. See Appendix 1 for the full list of roles and how they have been defined.

![Diagram of material flows in the reuse processes outlined in this guide.](image)

**PROJECT STAGE: STRATEGIC DEFINITION THROUGH TO TECHNICAL DESIGN (E.G. RIBA STAGE 0 – 4)**

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
</tr>
</thead>
</table>
| Client Delivery   | • Set out strategic vision and project commitment around sending material off site for reuse, linking to embodied carbon savings and resource optimisation, where materials cannot be used within the existing site. See UKGBC’s Circular economy guidance for construction clients: How to practically apply circular economy principles at the project brief stage for more information and support around sending reclaimed materials and products for onwards reuse.  
• Start the process of commissioning a pre-refurbishment/pre-demolition audit if one has not been carried out for the development. See section 1.1 for more information around developing inventories and audits.  
• Ensure programme planning allows for materials to be removed, stored and retrieved for reuse. Timing will be dictated by the recommendations from the audit report that has been commissioned and should be reviewed again at Stage 2.  
• Make products available for testing by the receiver of materials to prove the fitness for purpose of the materials. This could include fire testing, emission testing and testing for the presence of hazardous substances.  
• Contact organisations that can support onward reuse and share audit/inventory data with them and if necessary, with end user. See the UKGBC Innovation Insights: Reuse and Products as a Service document for these services.  
• Explore, with legal teams, contract arrangements to address risk i.e. warranty and liability for reuse of products and materials. |
| Team              |                                                                                                                                                           |

**PROJECT STAGE: CONSTRUCTION (E.G. RIBA STAGE 5)**

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility and actions</th>
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</thead>
</table>
| Contractor | • Once the materials and products are cleaned and prepped for reuse by the demolition/refurbishment contractor they need to be transported and, in some cases, stored (on or offsite) before they are passed onto the project and installation takes place in the new location.  
• If materials cannot be reused, like for like, on commercial projects, explore opportunities for sending them to local community projects or back to product suppliers for down cycling into the same product i.e. carpet back into carpet or furniture back into furniture. See the UKGBC Innovation Insights: Reuse and Products as a Service document for these services. |
**APPENDIX 1: CONSTRUCTION TEAMS DEFINED**

Table 1. Construction teams defined.

<table>
<thead>
<tr>
<th>Construction Team</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Client Delivery Team</td>
<td>The internal team of the tenant/developer/landlord/asset owner (i.e., the client) of the development.</td>
</tr>
<tr>
<td>Client Delivery Team – Procurement</td>
<td>Includes the team responsible for procuring goods and services for the client.</td>
</tr>
<tr>
<td>Client Project Team / Manager</td>
<td>The project management team employed by the client to oversee the development.</td>
</tr>
<tr>
<td>Contractors</td>
<td>The contractor employed to oversee and carry out construction works, whether refurbishment or new build.</td>
</tr>
<tr>
<td>Demolition Contractor</td>
<td>The demolition contractor employed to deconstruct the elements that will be reused.</td>
</tr>
<tr>
<td>Design Team</td>
<td>The architects and engineers employed to develop the design.</td>
</tr>
<tr>
<td>Facilities Estate Manager</td>
<td>The team that operates and maintains the building while occupied.</td>
</tr>
<tr>
<td>Inventory Auditor</td>
<td>The organisation employed to conduct an inventory of the site/asset/portfolio to understand the materials that are existing and ‘banked’ and that can be reused.</td>
</tr>
</tbody>
</table>

**APPENDIX 2: FURTHER READING**

- **Building with Reclaimed Components and Materials: A Design Handbook for Reuse and Recycling** by William Addis
- **Circular economy guidance for construction clients: How to practically apply circular economy principles at the project brief stage** by UKGBC
- **Design for a Circular Economy** by the Greater London Authority
- **From Waste Management to Component Management in the Construction Industry** by Rose C. and Stegemann J.
- **Maximising Re-use of Materials On-site** by Resource Efficient Scotland
- **Practical solutions for sustainable construction: Reclaimed Buildings product guide** by WRAP
- **Proceedings of the Institution of Civil Engineers – Engineering Sustainability** by Rose C. and Stegemann J.
- **Resource Salvation: The Architecture of Reuse** by Mark Gorgolewski
- **Systems for Reuse, Repurposing and Upcycling of Existing Building Components** by Rose C.
- **The Draft London Plan** by the Greater London Authority
- **The Re-Use Atlas: A Designer’s Guide Towards the Circular Economy** by Baker-Brown D.

**Contributors**

This guidance document is an output from the UKGBC Circular Economy programme, which began in April 2018. The Crown Estate is a Programme Partner and year two Programme Sponsors were Cleveland Steel and Tubes, ISG, HS2 and TFT.

The guidance has been produced through a combination of desktop research, meetings, interviews, a peer review group and individual feedback.

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**Supporters**
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- **British Property Federation**
- **Ellen MacArthur Foundation**
- **Supply Chain Sustainability School**

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We are delighted to have a number of Programme Supporters, including trade associations, professional institutions and non-profit organisations, that are collaborating with us to accelerate the move towards a circular built environment.
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