BUSINESS IN THE COMMUNITY

The Prince's Responsible Business Network

BRIEFING

Circular Fit-out Lab

Background

Key materials used by the construction sector contribute around 15% of global carbon emissions. Furthermore, the construction sector is responsible for about 60% of the UK's waste production[i]. Office and retail space fit-outs involve frequently removing and installing interior materials like floor and wall coverings, partitions, doors, furniture, equipment and sometimes mechanical and electric services (M&E) services. These components are replaced roughly every three to ten years, perpetuating a cycle of resource use and waste[ii].

Business in the Community (BITC) has partnered with the University of Exeter to run the Circular Fit-out Lab, enabling companies that are commissioning fit-out projects for offices and retail units to work together, share solutions, and accelerate change in their organisations. The Lab followed an action-learning process identifying common barriers faced when incorporating circular economy into fit-out projects, as well as actions that can be taken to overcome them. This project has been delivered through the following stages:

1. **Literature review of organisational barriers to circular economy in construction / fit-out**
2. **Interviews (ongoing throughout project)**
3. **Workshop 1: Mapping barriers and identifying power structures**
4. **Workshop 2: Deep dive into definitions of circular economy, and engaging design teams**
5. **Workshop 3: Deep dive into internal reuse systems**
6. **Workshop 4: Identifying key actions for internal actors and other key stakeholders.**

This document sets out insights gained through the series in the form of:

1. An **Inventory of Actions** that internal changemakers can take to overcome key barriers to incorporating circular economy in fit-out projects.
2. A **Statement of Demand** outlining actions that other stakeholder groups can take to enable systemic change in the sector.

Acknowledgements

Project funder

CE-HUB
UKRI National Interdisciplinary Circular Economy Research

Co-funding industry partner

JLL

Research partner

Dr Ryan Nolan, University of Exeter Business School

Circular Fit-out Lab participating organisations

Burger King UK

Derwent London

Informa

JLL

Seasalt Cornwall

The Midcounties Cooperative

Additional contributors

Collecteco

Crown Worldwide Group

Object Space Place

Partridges

Ryder Architecture

Photographs from Workshop 1 of the Circular Fit-out Lab in which participants mapped system barriers, identifying the roles of key internal and external stakeholders.

What circular economy in non-domestic fit-outs looks like

The table below, based on UKGBC's Circular Economy Guidance for Construction Clients[iii], sets out a hierarchy of actions based on circular economy principles for clients of construction projects.

Principle	Actions
Design out	• Design out the need for the component or material (e.g. passive design negating the need for cooling or ventilation; inherent finishes avoiding the need for paint, etc.)
Reclaimed, remanufactured components	• Use reclaimed materials over new • Identify components that can be reclaimed from your other buildings now and in the future • Use remanufactured components over new
Product selection	• Use products with labels such as Cradle to Cradle (C2C) and Natureplus • Select products that can be remanufactured or reused at end of first life • Use materials with recycled content • Select products that are designed for disassembly • Select materials that can be reused at end of first life • Select materials that can be recycled or composted at end-of-life • Consider leasing short-lived components

Based on: UKGBC Circular Economy Guidance for Construction Clients, 'a hierarchy of actions'.

The most appropriate options for a given project will change depending on the type of component or product required and which circular solutions are available on the market. This is typically dependent on the component lifespan. Examples of options available for different component types, based on their typical lifespan, are identified below:

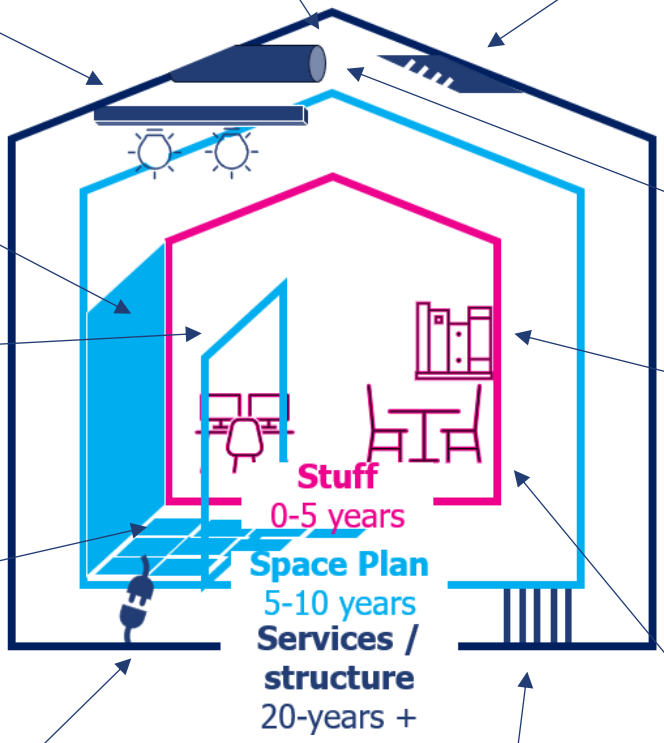
Exposed services, rather than suspended ceilings, as a way of designing out materials. Acoustic spray made from recycled natural materials as sound insulation.

Use existing fittings, install minimum lighting for light level required, investigate lighting-as-a-service options.

Passive design can negate the need for air conditioning systems. Otherwise, second-life systems can be sourced and installed.

Low carbon / low VOC paint / reused finishings.

Fabric ductwork can contain 18x less embodied CO2 than stainless steel.



Flexible partitions – designed for dismantling and reconfiguration.

Modular components designed to be rapidly disassembled and moved, e.g. shelving.

Flooring based on use-case, e.g. inherent finishes (bare concrete or floorboards which are already in place), dry lay tiles, made from reclaimed / carbon negative materials.

Remanufactured furniture and refurbished ICT equipment.

Prioritise ease-of-access and repairability of services.

Reclaimed raised modular flooring.

Inventory of Actions

Circular options for fit-out components, where they are technically available, are often underutilised in projects. This is frequently due to organisational challenges faced by project commissioners. We have conducted research on these organisational barriers and the results will be published soon.

At the top of the chain, organisations commissioning fit-outs control the flow of money through the system. Although internal change can be challenging, it's generally easier to influence change within your own organisation, rather than in external entities like suppliers.

This inventory outlines internal organisational barriers that project commissioners may encounter, based on insights from the Circular Fit-out Lab. It also offers a set of actions that internal changemakers can take to address these challenges.

The barriers are categorised into three stages: 'strategy', 'space selection', and 'implementation'. Intervening at the earliest possible stage is most beneficial.

For those new to incorporating circular economy principles in fit-out projects, the first action listed under each barrier is recommended as a good starting point.

Strategy

Barrier 1: Lack of clear understanding, definition or objectives on circular economy within the organisation.

Getting the organisation to have an agreed definition of circular economy, and a common ambition can help to get circular economy on the agenda of decision-makers.

Actions

First step: Engage with internal departments to find ways to bring people together. For example, run workshops exploring how circular economy approaches can deliver against the organisation's wider sustainability goals. This can help to secure top-down buy-in.

Understand and demonstrate the business case for different departments in your organisation e.g. reuse might lead to reduced cost, reputation, innovation, reduced Capex and reduced operating costs.

Create a definition of circular economy which is 'real' for people, defining what it will mean for people in the organisation in practical terms and in relation to their role.

Learnings from Lab participants

The **University of Exeter** is in the process of transitioning from a generic Waste Strategy to a Circular Economy and Sustainable Resources strategy guided by a bespoke set of circular economy principles, expected to help guide action and meet targets. Early learnings are the importance of having specific principles which make circular economy something that people can easily understand in relation to their roles.

Derwent London established a circular economy working group for all internal stakeholders to champion circular economy within their department. Additionally, they developed a flowchart for material pathways to ensure all stakeholders understand the proper processes. This included developing a database of materials that are in storage and can be used across the portfolio when it comes to upgrading or fit-outs.

Space

Barrier 2: Circular economy not being considered within space selection

Deciding which building to move into is highly consequential to the level of strip-out and new components required and therefore the fit-out's environmental impact.

Actions

First step: Give a sustainability 'sales pitch' to colleagues responsible for space selection. Explain the benefits of having circular economy in the decision-making process. Bring in experts if you do not have this knowledge yourself.

Understand the typical behaviours of your company, such as how long they occupy buildings and the relative importance of brand identity in fit-outs. This will determine what sort of space to look for and avoid having to strip out what's already there.

Engage designers early to explore working with the existing layout of the new space – request access as early as possible to identify components that can be retained.

If elements do need to be stripped out, work with a partner[1] to reuse unwanted materials and/or equipment.

Learnings from Lab participants

JLL carry out Technical Due Diligence of all the buildings under consideration for JLL's office locations. This includes evaluating suitability against JLL's sustainability targets for their workplaces. Only buildings which can actively support JLL's sustainability requirements, such as being energy efficient and low carbon, having certain circular economy certifications, Health & Wellbeing and Diversity and Inclusion (D&I), are taken forward for consideration.

[1] E.g. Crown Workspace, Collecteco, RAW Workshop, Globechain, Loop Cycle, Excess Materials Exchange

Barrier 3: Design brief and design team don't prioritise circular economy

Internal design teams have a fundamental role in delivering circular economy in projects. Engaging them may be challenging if they are not used to considering circular economy.

Actions

First step: Engage early with designers in the fit-out process, evaluating their level of knowledge of circular options, and specify this as a priority in the design brief.

Create circular economy guides for designers. These can be ever-evolving documents and range from very prescriptive to useful hints to get the designers started.

Use Environmental Product Declarations to see how embodied carbon compares between different options e.g. ceramic tiles have much higher embodied carbon than most other finishes.

Work with social enterprises and circular economy experts to build a project team who may be able to help designers who are newer to circular economy thinking.

Ask the designers to explain the principles behind a circular economy design to the contractor early in the process.

Learnings from Lab participants

Internal designers have a key role in engaging with contractors to make sure that the design comes to fruition as intended. If designers can explain the intention of a circular economy approach to contractors, the contractor will likely be able to suggest sensible and simpler ways to achieve it. For example, different approaches to design for disassembly, which come from the knowledge of how to put things together and how to strip things out.

Implementation

Barrier 4: Project plans do not accommodate circular approaches

Some aspects of circular economy are still new to the fit-out sector and require deviation from the normal approach. It is therefore important that this is built into project plans.

Actions

First step: Make sure that the right people are involved and build a sense of ownership amongst individuals in the team for circular features in projects.

Ensure that there is clear two-way communication between higher-ups and colleagues, identifying the benefits and trade-offs of deviating from the standard fit-out project plan. For example, the need for additional time and flexibility.

Ensure agreed circular practices are included in specifications and drawings, so that the contractor can price and programme in a change to procurement or dismantling of a fit-out.

Identify where material from strip-outs should go and ensure this is written into project specifications.

Learnings from Lab participants

Derwent London has expanded their requirement around circular economy in their latest Responsible Development Brief, covering:

- A pre-redevelopment audit
- Allowing time and cost for material retention, refurb, and re-use
- Setting project-specific targets for recycled and re-used content
- Early identification of supply chain partners for reuse and design for manufacture and assembly.

From their experience as fit-out designers, **Object Space Place**, have recommended to "accept that a circular economy approach will take more time. This can be in finding the right site, developing a site-specific approach or researching and selecting new products. If we wait until detailed design, it will be too late to include true circular economy approaches."

Barrier 5: Dealing with insurance and health and safety concerns

Participants had to deal with colleague concerns about insurance and health and safety when incorporating used components into fit-out projects.

Actions

First step: Reconsider the need for an item or service and design out unnecessary components. This can reduce or remove insurance and health and safety concerns as barriers.

When sourcing used equipment, use specialist reuse organisations who can facilitate the sourcing of reused options to meet your needs.

When evaluating the suitability of reused equipment, expand your network to include experts in this type of equipment who can give assurance about quality. Different types of fit-outs and lease lengths may mean different warranty lengths may be accepted.

Learnings from Lab participants

Collecteco recently facilitated the donation of over 100 air conditioning units from a London office strip-out to a local NHS Trust. This demonstrates recognition by previously risk-averse organisations of the cost and carbon benefit of sourcing good quality, modern reused kit. The NHS especially has a wealth of knowledge of M&E systems and finding the right people to harness this knowledge meant that the Trust could source affordable kit, which resulted in them being able to use a building that was previously unusable on very hot days.

Another participant in the Lab recently piloted an internal reuse project. This was paused as it was identified that having colleagues using personal vehicles to transport goods could invalidate insurance. Yet, the pilot proved the concept so the organisations will look to relaunch this project with appropriate resourcing for commercial transportation and to manage the associated circular website.

Barrier 6: Engaging and enabling colleagues

Encouraging colleagues involved in the fit-out process, as well as those across the broader organisation, to recognise the benefits of circular economy approaches can help build support and increase the number of changemakers. However, this opportunity sometimes doesn't come to fruition as colleagues are focused on their core roles and view circular economy initiatives as an additional complication.

Actions

First step: Quantify the benefits relevant to the colleagues you are engaging, such as cost-saving measures (designing out unnecessary components, or reusing components), carbon-saving potential, and reductions in lead times (reused equipment may have shorter lead times than new equipment).

Engage colleagues on issues that are directly relevant to them, as sharing all the details with everyone could cause information overload.

Organise visits to circular suppliers and inspirational circular fit-out / building projects to show colleagues what is possible.

Advocate for colleagues to have the freedom to make decisions and try new things.

Learnings from Lab participants

Seasalt Cornwall communicates sustainability messages, such as lifecycle carbon savings from a new 'light' design concept, in ways appropriate to different internal audiences, through a fit-out assessment report, and external audiences, through in-store signage.

Another participating organisation trialled a wood recycling scheme, this was able to get up and running quickly because of an organisational culture which allowed an individual person to have decision-making ability, and experimentation being accepted.

Statement of Demand

While internal actions can help to overcome many of the barriers set out in the Inventory of Actions, for circular economy to become mainstream in the fit-out sector it is important that other stakeholder groups with influence also take action to create systemic change.

This Statement of Demand sets out actions that organisations involved in the Circular Fit-out Lab felt could be taken by other key stakeholder groups in the non-domestic built environment sector. We would encourage organisations within these groups to consider whether they can take these actions and to reach out to BITC for further information and support. We will also consider whether there is a future project through which we can support our members in these groups to implement specific actions.

The action listed first under each stakeholder group is considered to be a good first step for those who have not previously considered circular economy in their offer.

This is not a comprehensive list of stakeholders and there will be others outside of the direct fit-out value chain that can also take actions to overcome barriers to circular economy in fit-outs. This could include national and local government, university research institutes, and industry organisations.

Landlords and agents

Landlords are a crucial stakeholder group as their decisions can greatly enable or hinder the possibilities of their tenant organisations to introduce circularity in their fit-outs.

Actions

First step: Do a walk-around with key stakeholders to identify what can be kept as part of an existing fit-out and as part of dilapidations discussions, rather than requiring an outgoing tenant to return to Category A spec as default.

Where an existing fit-out does have to be stripped out, take a minimal approach to reinstatement, such as shell and core, rather than a full Category A reinstatement.

Use Artificial Intelligence (AI) and augmented reality technologies to help prospective tenants visualise what the space could look like, rather than 'white boxing' units.

Provide any included services, such as lighting, in a form that is easily adaptable and of such sufficient quality that retention is preferred by incoming tenants.

Share information on leases and real tenancy lengths to improve industry knowledge and help designers understand what the design life should be.

Rationale

Landlords often 'white box' commercial premises after a tenant moves out. The intention is that incoming tenants can add finishing touches, however in reality many future tenants will immediately strip out a lot of these white box components e.g. flooring, ceilings, and partition walls, to shape the office / retail unit into their own.

This approach is also true when a developer is creating a new building or undertaking refurbishment of an existing building as part of improving performance. In these situations, providing space as shell and core can reduce unnecessary strip-out.

Insight: JLL

JLL project management was engaged to help a client determine if they should refurbish their three floors within an existing building or relocate. Due to the age of the existing building's services and the condition of the building facade, the decision was made to relocate.

A building was found where the existing tenant was looking to exit their lease early. The existing tenant's office accommodation was reviewed with the client and found to meet their business needs. The negotiations resulted in the client agreeing to take the existing tenant's floor as seen and this included the bespoke reception, all as-built rooms, all fixtures and finishes and the existing furniture. The client then undertook minimal work, focussing on supplementing ventilation, replacing damaged carpet and some re-branding.

This is an example of how it does not have to be an empty space that is leased and how materials can be kept in use for as long as possible. This was also the second time that this office fit-out had been kept in use as originally designed. Good quality, well-considered office design can remain in use for many lease cycles.

Insight: Seasalt Cornwall

When preparing to move into their new Auckland store, Seasalt Cornwall requested that the landlord provide early access to the new space, enabling Seasalt Cornwall to identify components installed by the previous tenant that could be kept in place. This is a good example of being given the opportunity to review the existing fit-out and deciding which elements to retain/reuse. This often doesn't happen when the landlord provides the units as clean white boxes usually removing the previous tenant's fit-out.

Designers / architects

While some organisations commissioning fit-outs might use in-house design teams, many use external designers and architects.

Actions

First step: Be aware of developments in circular economy options and share knowledge with clients and industry groups.

Accept that implementing circular economy will be a learning process. Avoid an all-or-nothing approach and debrief after projects to identify improvements.

Challenge the client brief by suggesting options to improve circularity outcomes.

Look for opportunities to design-out components e.g. adapt the design to incorporate features of the interior which are already in place in the unit.

Understand the 'design life' and 'service life' of the fit-out to ensure that they align.

Allow clients to use contract types, such as NEC[2], that enable more flexibility.

Rationale

For clients commissioning projects, who are often not experts in construction or sustainability, it can be difficult to know what circular options are available. Designers and architects have a very important and influential role when speaking to clients about their fit-out design and can use this position to influence sustainability outcomes through introducing circular solutions as part of design decisions.

[2] NEC contracts are a suite of flexible and collaborative construction contracts designed to promote clear communication, risk management, and efficient project delivery, allowing greater flexibility to adapt to changing project needs and conditions. Why is NEC needed? | Why Choose NEC | NEC Contracts

Insight: JLL

JLL worked with design and build company, Tetris, to identify circular strategies for their Leeds office relocation. Whole-life thinking is embedded to design out unnecessary material use, minimise waste, and maximise reuse of assets from previous offices and JLL's estate. Examples include:

- Maximising exposed services applied with acoustic soffit spray made from recycled natural materials, limiting the use of suspended ceilings.
- Durat worktops made from 100% recyclable post-industrial plastic waste.
- Reception desk uses Buxkin columns made from offcuts from the Italian shoe industry.
- Carpets created using speciality yarns, made with biopolymers, bio-based and recycled fibres, with a negative carbon impact of -1.1 kg CO_2 eq./m^2 (Cradle to Gate) per tile.

This is the first JLL UK fit-out on track to exceed 50% reduction in embodied carbon against its baseline.

Insight: Object Space Place

Apricity Restaurant and their landlord worked with designers, Object Space Place, who:

- Identified items already in place which could be retained or reused, making a feature of the existing wood flooring and the patinaed original wall finishes.
- Reused waste from strip-out, e.g. WC is clad in timber from the demolished stairs.
- Specified natural materials and materials with high recycled content / high recyclability such as Foresso and cork bark.
- Explained the approach to the main contractor, whose staff came up with suggestions for reducing and reusing waste.

The fit-out saved 41% embodied carbon over a typical fit-out of this type. The Landlord captured the results with a Matterport digital twin, enabling communication of the circular approach beyond the fit-out's life.

Building contractors

As the people undertaking the fit-out itself, building contractors can make or break the circularity of the project.

Actions

First step: Be aware of developments in circular economy options and share the knowledge with clients and industry groups.

Be willing to go on a journey with the client. Enter the contract with a partnership mindset and be willing to try new things and learn together.

Use strip-out methods that maximise reuse options, e.g. separate components, don't throw everything in the skip.

Factor in appropriate programme cost and time for any circular dismantling or alternative procurement specified in the contract.

Rationale

It is possible that neither the contractor nor the client will have a lot of experience with implementing circular economy in a very intentional way. However, if they are properly briefed, contractors can use their experience of installing fixtures and fittings to suggest practical ways in which circular principles can be applied to the project and technical barriers which the designer / architect will need to consider around the practicalities of strip-out in a way that enables reuse.

Insight: Seasalt Cornwall

Seasalt Cornwall find that when they are launching a new circular / sustainability design concept in one of their stores, it is important to engage early with the main contractor and their specialist fitters to ensure the success of the project. It is imperative that the contractor understands the approach and supports the new concept, ensuring it is fitted correctly and well-maintained to extend its life.

Component manufacturers and suppliers

Where new components need to be installed, these should be designed and supplied in a way that keeps with circular economy principles.

Actions	Rationale
First step: Be aware of developments in circular economy options and share the knowledge with clients and industry groups. Make spare parts available, even after products are withdrawn from the market, at a reasonable cost. Offer take-back schemes of products / materials at the end of life, to reduce raw material requirements, and encourage second purchases. Work with your suppliers to enable this. Get Environmental Product Declarations for your products to show the impact of circular options. Be transparent about data used.	There is increasing demand for components and products that are designed in-keeping with circular principles, however it is still an emerging market. It is important that product and component manufacturers are bold and embrace this opportunity. Manufacturers and suppliers can support internal changemakers in their client organisations to get the buy-in they need by showcasing their products as a tangible example of the benefit of a circular approach. Being a first mover will prepare manufacturers for the future as this section of the market grows.

Insight: Crown Worldwide Group

To support their office relocations service, Crown Workspace created a new circular business model, reselling, donating and remanufacturing office furniture to give it a second life. This enables customers to save carbon as well as money. Crown have invested in building this circular service and there is expected to be a growing demand for remanufactured furniture, so by innovating in this way Crown is preparing for the future.

[i] Government Commercial Function. (2022). Promoting net-zero carbon and sustainability in construction. GOV.UK. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1102389/20220901-Carbon-Net-Zero-Guidance-Note.pdf

[ii] Casas-Arredondo, 2021

[iii] UKGBC, Circular Economy Guidance for Construction Clients, 2019. Available at: https://ukgbc.org/resources/circular-economy-guidance-for-construction-clients-how-to-practically-apply-circular-economy-principles-at-the-project-brief-stage/