

# Constructing the Circle

A roundtable discussion exploring how we consolidate circular economy principles into our projects as standard.

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It is fundamental that we reuse materials in the construction industry if we are to achieve the drastic reduction in carbon emissions so desperately needed.

The circular economy is defined as “a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products for as long as possible.”

Yet the gap between the aspiration to reuse materials and the practical reality is often significant. Teams may come up against barriers such as cost, allocation of risk, storage, availability of materials and the inflexibility of planners to accept last-minute changes, even when these are intended to make projects more sustainable.

We recently brought together a group of experienced professionals within the construction industry to discuss how we can translate aspiration into effective action.

### Make it an intrinsic part of team culture from day one

The way we set up our projects can be crucial to overcoming barriers and collectively finding better ways of doing things.

**Ruth Oates, Project Director at Buro Four**, said, “as project managers, we want to help empower our clients to create projects that really make a difference in the construction industry”.

Ruth referenced her experience working on the development of the Museum of London for more than six years, saying “this is a project that’s very dear to my heart. We’re employing circular economy principles on that project, but it’s limited. I am interested in exploring why. Why is it limited? What can we all do in the roles that we do to help break down some of the barriers that are preventing the circular economy becoming commonplace? To make the practice feel ‘every day’, turn it into something we do without thinking.”

**Olivia Hack, Sir Robert McAlpine**, added, “culture is a huge thing – you’ve got to get the right people on site. Because if you haven’t, you’re fighting a losing battle.”

**Eva MacNamara, Expedition Engineering**, said, “I think it’s really interesting to see how slowly the industry has taken up what has been, in theory, a great idea for a very long time.”

**Claire Dale-Lace, Stanton Williams**, expanded on this observation, stating, “we need a solid policy framework and better infrastructure to establish a truly collaborative culture among actors within the construction industry.

“This would ensure circularity is embedded within design and construction at every level, from a brief development through to design and specification and delivery on site.”

The desire to make a difference was underscored by **Emma Dagnes, Alexandra Palace**, who outlined the scale of the current development plans for the Grade II listed site, as well as the intrinsic sustainability goals within those plans.

She said, “we have just launched our new vision for the next 10 years, which is a sustainable home for all that we do, underpinned by ten goals, one of which is to bring back our derelict spaces. This will involve a £60-£100m investment over the next 10 years. And we want to start on the right foot in terms of sustainability and take it from policy all the way through to project delivery.”

For that, Emma will be depending not just on the intentions of Alexandra Palace, but also the support of building professionals who are helping to carry the project out.

Reflecting on the journey to deliver 17,000 new homes amid the development of the North Greenwich Peninsula, **Ruth Soria, Knight Dragon**, touched on the carbon neutral assessment of the project, saying, “it’s early days for us, we are drawing up all kinds of documents with our consultants at the moment.”

### Introducing our experts:

**Chair: Ruth Oates**  
Buro Four

**Martina Concordia**  
Buro Four

**Hugo Dring**  
Buro Four

**Theresa Mohammed**  
Watson Farley & Williams

**Emma Dagnes**  
Alexandra Palace

**Alice Hardy**  
Global Generation

**Aude-Line Duliere**  
Architectural Association

**Eva MacNamara**  
Expedition Engineering

**Ruth Soria**  
Knight Dragon

**Julian Bates**  
Keltbray

**Olivia Hack**  
Sir Robert McAlpine

**Claire Dale-Lace**  
Stanton Williams

**“Culture is a huge thing. you’ve got to get the right people on site”**

**“We need to find a way of deconstructing for reuse”**

### Appreciate that reusing materials is a journey

In the UK, we are early on in our journey to reusing as much of our existing materials as possible.

**Martina Concordia, Buro Four**, said that in an ideal world, buildings should be designed so that they could be used for other projects. “We need to move from the current building environment to a new structure where we do not just maintain, refurbish and repurpose the building. We need to find a way of deconstructing for reuse and a remanufacturing reprocess: Recycle and compost and keep going.”

**Julian Bates, Keltbray**, added that while everybody wants to recycle materials, there are significant barriers. At present, styles of buildings change every few years, meaning that materials from one generation will not be suitable for the next.

He said “often we can only generate around 10% of recyclable material. And it’s generally not coming from that project. It’s coming from a stockpile of steel. So it’s going to take time for this to work through the system. I think you start with a grassroots basis of design, but the challenge is that everything that we do is slightly different. There’s never one common type of product. And that’s when we see one of our barriers, and we’re on a journey at the moment with some of this stuff. We’ve got lots of our big clients sign up to this goal to repurpose a percentage on a job and it’s not practical, but it will be practical in two or three years’ time once there is a stockpile of material there that we can use.”

**“Imagine if architects were designing to an inventory of materials that they already knew about”**

### Understanding how we store and source materials

Stockpiling material can itself be an issue. **Ruth Oates** said, “there is this practical point about having enough room in London, which is incredibly dense. We’re short on space, so having somewhere where we can store all of these materials is a bit of a barrier that needs to be solved.”

**Julian Bates** added, “even when you do store it, it can be impractical because you are waiting ages for the right project to use the stored material in. Storage becomes a little bit impractical sometimes, because you’ll end up with a huge area of ready made office components, but you’re just waiting for the right office to come around.”

Architect **Aude-Line Duliere**, who teaches at the **Architectural Association**, agreed. She said, “you have this discrepancy between roundtable discussions on ambitions and the lack of support available - the network of CCC (Construction Consolidation Centres) in London is not very developed compared to other cities in Europe. I think that makes the life of contractor quite difficult.”

**Martina Concordia, Buro Four**, suggested that material passports should be more widely adopted to facilitate reuse of materials, “a QR code on the material opens up to a certificate with all the manufacturing details, so when you want to eventually demolish the building or just take out the material, you can actually reuse it somewhere else and you will know everything about it”.

**Alice Hardy, Global Generation**, also explained, “the GLA have set up the circular economy platform, it’s essentially like eBay, but for reclaimed materials and things. I was trying to use it, but there’s not enough on there yet.”

**Aude-Line Duliere** noted that in Belgium, who are estimated to be five years ahead of the UK in terms of their material reuse, material inventories are completely embedded into their project process. “Initially it was done at client demand. Whenever there is a competition in Belgium, they will ask for a material inventory and that’s part of the protocol. Imagine if the architects were designing to an inventory of materials that they already knew about.”

### Allowing for flexibility of design to accommodate available materials

Being flexible with the design and specification of building materials is a great way to bolster sustainability.

**Alice Hardy, Global Generation**, told the roundtable of one building where all the windows used were from a housing project where the supplier had

made them the wrong size. **Alice** said, “this happens a lot where someone will do a big order for a housing project. All of the windows will be the wrong size and then you’re left with three lorries worth of windows. So we just designed the windows to be the size of those windows available.

“That was partly thanks to the flexibility of the architect, but then they’re different from the planning application so we will have to go for a material amendment. We’re not worried about it, because the facade has only changed by millimetres - the aesthetic of the facade hasn’t changed at all. We can do that because we’re our own client, and we’re willing to take that risk on.”

**Eva MacNamara** agreed, “one of the key enablers would be to go through Stage Two and Stage Three design and maybe towards the end of Stage Four you fix the section sizes, it might even be during construction. We can’t design out the option for a circular economy and we need to work with planners and approvers to understand how we can make this flexible approach work.”

Eva continued, “to futureproof our new build buildings for our future circular economy, we need to think about how the facade can be separated from the structure, think about how things stick together and optimise the design so it is not irreversible.”

**Martina Concordia** added, “the structural engineer should be able to design by tolerance, so they have a working zone in which a beam can basically be changed in size, depending on the availability of the materials which will be confirmed closer to the construction stage. So instead of agreeing on a fixed design, the design team actually works around various options that will be consolidated later in the design stages, by maintaining the initial concept of the designer, but allowing for bigger flexibility.”

Pointing to the need for greater longevity in the built environment, **Claire Dale-Lace** said, “current guidelines suggest an average design life of 50 or 60 years for buildings and infrastructure. We need to aim for extended lifespans and design structures that are ‘long life’ and ‘loose fit’ so that they can easily adapt to changing needs over time. We need to design from the outset for a ‘take-

make-reuse' rather than a 'take-make-throw-away' model."

### Working with planners to build in flexibility until later stages

One challenge which can make the circular economy harder to implement is inflexibility in planning, particularly where materials or approaches need to change late in order to be as sustainable as possible.

**Eva MacNamara** said of planners, "if [planning authorities] are really on board with regenerative principles, circular design, then what we should be doing is giving options to developers to change at a later point. It would be planners agreeing that there should be some flexibility. And then two years down the line we know the best options, so the decision can be made. We haven't designed the opportunity for circular economy and I think that this is fundamental.

"We cannot have the same business-as-usual approach to design, to planning or approvals, we have to be able to say to the planners and approvers that 'we've got to flip this now'.

So, for example, we might say that the facade might look a bit different from the planning submission, the building height might potentially change a little bit if we're using different sizes. And if these bodies have really signed up to the climate emergency, they should be doing this stuff, it's not rocket science. It is really hard to look at ourselves to say: 'We've got to change the way we design'".

**Claire Dale-Lace** backed this, highlighting the important role of planning in "[forcing] the industry's hand to embrace circular economy principles."

### Sharing cost and risk

Many of the solutions to implement circular economy principles involve a great deal of uncertainty until very late in the programme.

Turning the roundtable's attention to this dilemma, **Ruth Oates** asked whether the participants would be comfortable working under such uncertain timescales.

**Ruth Soria** stated, "I think the earlier that you set your intentions for sustainability and the circular economy, the earlier you can do your cost plan based on this, and add in contingency for unforeseen things. At Stage Zero we can consider these principles which can inform Stage One Concept Design."

**Emma Dagnes** agreed, "you definitely need a sustainability contingency as a client. Cost can often be a sticking point in the implementation of sustainable principles."

**Eva MacNamara** said, "the cost consultant asks 'what do we do with clients?' So, we're working through it to be honest, it's live at the moment. And we end up asking the hard questions of the client, such as 'do you really care enough about this to put some contingency in for it? If you do, can you be reasonable about what that contingency is?' I think it's not just about the cost of the materials, you need to think about your design team needing to do redesign."

Another barrier to reusing materials is the risk associated with materials not having the right certifications or warranties.

**Martina Concordia** noted that upon bringing an opportunity to reuse materials to a client, the first question was "what about my insurance? What about the warranties?"

She noted the need to educate clients so they understand that there are processes to certify and test used materials - after which, certificates are provided for insurance and warranty purposes. The point is that this can be done and it has been done already.

**Theresa Mohammed, Watson Farley & Williams** agreed, "it's about making sure people are educated so they can allocate risk accordingly. The client and the contractor need to come together and agree ways of testing and certification and share the risk of the problem. Once we build up our databases of certified materials then people will be more inclined to take the opportunity".

**Hugo Dring, Buro Four**, said, "it's that golden thread of collaboration. If the risk is shared people are more likely to engage with it on a practical level".

**"Many of the solutions to implement circular economy principles involve a great deal of uncertainty until very late in the programme."**

### Actions we will take forward following this Roundtable:

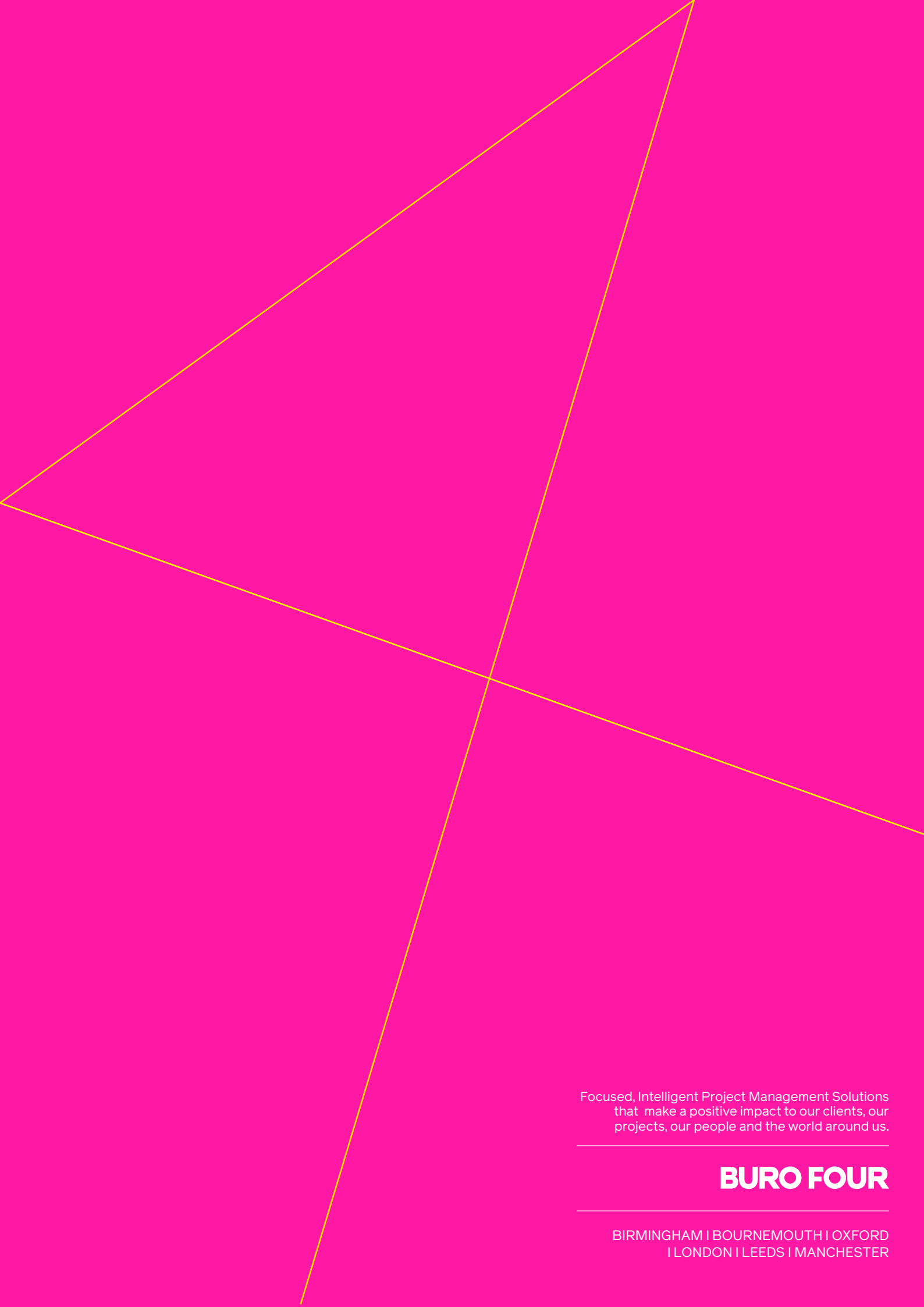
- Project-focused discussion & site visit to see attendees' model projects
- Roundtable on a specific material, e.g. steel
- Training on how to protect sustainability from a legal perspective, e.g. amending the contract to allow sustainability to be implemented
- Embedding circular economy opportunities into our Plans of Work

### Have your say

What do you think? Is there a specific point we raised you want to talk more about? Get involved and chat to us on LinkedIn, spark a discussion on Instagram, or contact our team. We'd love to hear from you.



Ruth Oates  
Commercial Offices &  
Net Zero Carbon Lead  
roates@burofour.com  
+44 (0) 7776 494486



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