CONSTRUCTION CLIENTS

connacht-ulster **waste region**

eastern - midlands **waste region**

southern **waste region**

epa LAPN
Local Authority Prevention Network

Introduction

This series of Circular Economy 'beginners' checklists has been developed by Resource Futures Ltd at the request of the Southern Waste Region using EPA grant funding and with peer review input from the Build360 Group in GMIT led by Dr. Mark Kelly. The aim of the checklists is to raise awareness of the Circular Economy with key actors within the construction sector who all have a role to play in making the sector more circular and provide some early considerations to contemplate.

What is circular construction?

The construction sector is responsible for half of all extracted materials. In 2017, an estimated 4.7Mt of Construction and Demolition (C&D) waste was collected by authorised waste collectors. This represented approximately 31% of Ireland's total waste production making it the largest waste producing sector in the country.

Whilst most of this waste is diverted from landfill into other recovery options, it is recognised that a large proportion of this waste could have been prevented altogether and recovered into higher value products if Circular Economy thinking were embedded at all stages.

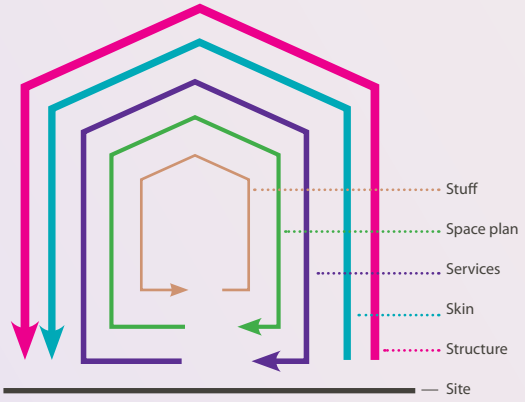
The Circular Economy can be summarised into 3 key principles:

1. designing out waste and pollution;
2. keeping products and materials in use; and
3. regenerating natural systems.

Circular Construction seeks to eliminate waste production at all stages of the build process, from procurement and design through construction and into operation and then eventual end of life destinations. Circular Construction also seeks to reduce the demand for virgin materials by keeping products and materials in use for as long as possible and using recovered materials.

One technique to help envisage how to do this is to think of your project in layers and within each layer there are different opportunities:

- The site should be reused continuously.
- The structure should last as long as possible.
- The skin and services should be accessible and replaceable.
- The space plan should be flexible and adaptable.
- The stuff should be durable and reusable.



Source: AECOM - Building in layers

What should I do?

To fully embrace Circular Construction projects, we need to establish process improvements, redesign products and services and explore new business models. Construction clients are usually the instigators of a project's sustainability agenda and therefore are critical if circular economy opportunities are to be fully explored by the project team. Design teams and construction companies are increasingly being asked for more sustainable buildings by forward looking clients.

Shifting to a circular economy business model, whether that be changing your own operating model as a client or encouraging those in your project supply chain to adopt more circular practices, essentially involves taking a longer-term, whole life cycle approach to your projects.

To help construction clients know where to start, here are our recommended first steps to embed circular thinking within your projects:

1. Set the scene

Regardless of the level of your technical knowledge of Circular Construction, the best results are achieved when the client is enthused and dedicated to minimising the impact of the project. So, keep these key goals in your mind when you are setting your client brief and consider how you can empower the design team to achieve them.

Consider preparing a Circular Statement for each development, which will be statement of intent in relation to the following:

- Prioritise retention and adaptation over demolition and new build.
- Build with the minimum amount of materials required;
- Utilise the highest amount of recycled or reused material as possible;
- Use materials which are durable, repairable and recyclable / reusable in the future;
- Ensure where new materials are being specified, they should have little or no adverse effect on either the environment or on human health throughout its lifecycle;
- Prevent waste from being created in the first place and recycle, recover, or reuse the waste that is produced and divert waste from landfill;
- Manage assets sustainability at their highest value and utility for as long as possible; and
- Ensure adaptability and deconstuctability are part of the design for future users.

2. Embedded it contractually and set the bar

Establishing targets and reporting structures to help achieve the client vision needs to be mandated through the procurement process in a relevant and proportionate manner. To do this, clients should embed the requirements into project-specific briefs/statements, and in the design team and contractor tendering process i.e. Pre-Qualification Questionnaire (PQQ) and Invitation to Tender (ITT) and the main construction contract (general conditions).

Planned actions, metrics and targeted outcomes should be communicated between the client and contractor and passed down through the supply chain (including design and consultancy teams, sub-contractors, waste management contractors and material suppliers) and across all project phases – from option identification and preliminary/outline design through to project completion and whole-life management.

Taking this approach gives a legal standing to the targets and will create binding key performance indicators that gives the client recourse should these targets not be met. A robust monitoring and reporting process will be needed to follow progress and achievements against the targets and reported at key stages within the project.

3. Be open to solutions

Design teams and contractors can achieve great things if they are tasked to do so. Many design and contractor teams are often constrained by the client brief and the need to deliver for the upfront capital cost and are rarely incentivised to present more holistic solutions.

The key to circularity and carbon reduction is taking a wider, long-term view. The lifetime positive and negative impacts of a project on society and the environment from its construction, use, maintenance and repairs, decommissioning and disposal need to be recognised and accounted for.

Many circular economy servitisation business models offer an alternative to the traditional supply, fit and walk away model. They offer a realignment of the supplier's business drivers which incentivises them to deliver an efficient and lean system which:

- Optimises proactive maintenance;
- Maximises equipment economic life;
- Avoids unplanned downtime and minimise fines for non-compliance with the performance specification;
- Monitors and records service life data to:
  - > assist in reactive and planned maintenance;
  - > recover maximum value at end of life, realising the value of reuse, remanufacture and recycling parts and/or whole systems.
- Minimises waste through supplier closed remanufacturing processes. This leads to materials/products being designed for remanufacturing and upgrades and improvements of components and systems being offered.

4. Share the outcomes

To successful embed circular economy principles throughout the construction industry and ensure our built environment is fit for future, we need to collaborate and align objectives right across policy levels, supply chains and stakeholders for the whole life of projects. We need to pool our expertise and experience and share our resources to ensure opportunities are not missed to deliver best practice.

This includes sharing our learnings, our successes, our failures and advertising our achievements, all so that the next project does not repeat the errors and that building users are aware of the circularity which has been designed and built in.

Capturing these messages for both the now and the future is critical because legacy information such as future adaptability, repairability, deconstruction and recovery needs to be communicated many years into the future to ensure that opportunities are not lost.

Why should I seek to make my projects more circular?

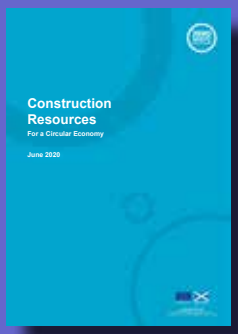
Circular construction can enhance resilience, reduce risk, and lower financial and environmental costs, whilst at the same time improving the quality and value of the project and offering wider potential socio-economic benefits. Circular construction approaches help to:

- minimise costs and time through avoidable construction waste and future costs associated with refurbishment works and waste disposal;
- ensure safer working environment for those on site;
- fulfil overall corporate waste reduction, CSR, or environmental targets; and
- optimise the future value of the building.

Key resources

The following recommended resources will help you to continue your circular journey and embed the above mentioned tips within your projects:

- Irish Green Building Council (IGBC)
  Towards a circular economy in construction: Assessing low carbon, healthy, responsible products for the construction sector
- UK Green Building Council (UKGBC)
  Circular economy guidance for construction clients: How to practically apply circular economy principles at the project brief stage
  Circular Economy Implementation Packs for Products as a Service and Reuse
- Zero Waste Scotland
  Construction Resources For a Circular Economy
  Procuring resource efficient construction projects
- ARUP
  Circular Economy in the Built Environment



Support available

Should you wish to learn more or have a pilot or demonstration project which you would like support with to explore circular construction approaches then please get in touch with:

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