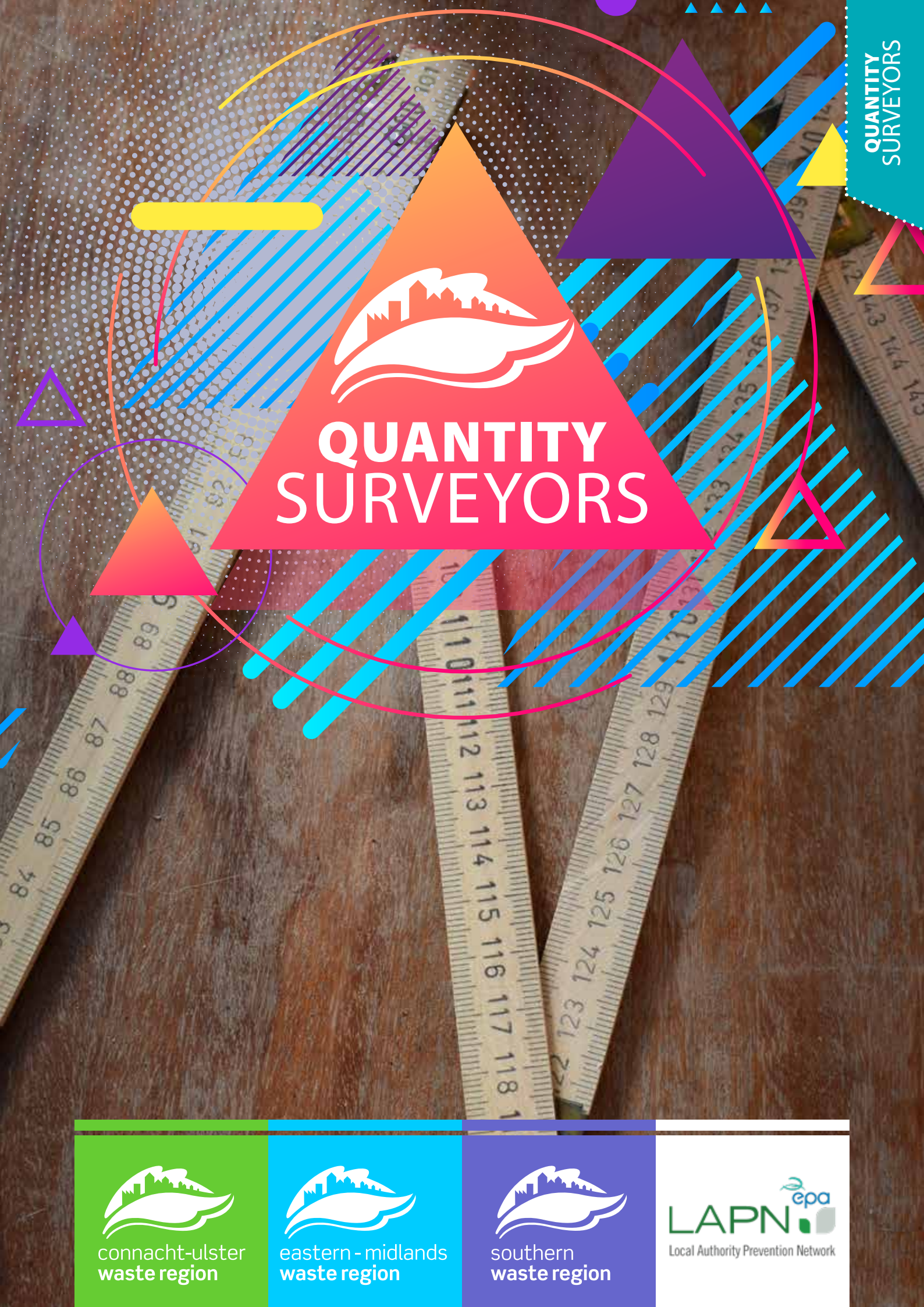


connacht-ulster
waste region

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?

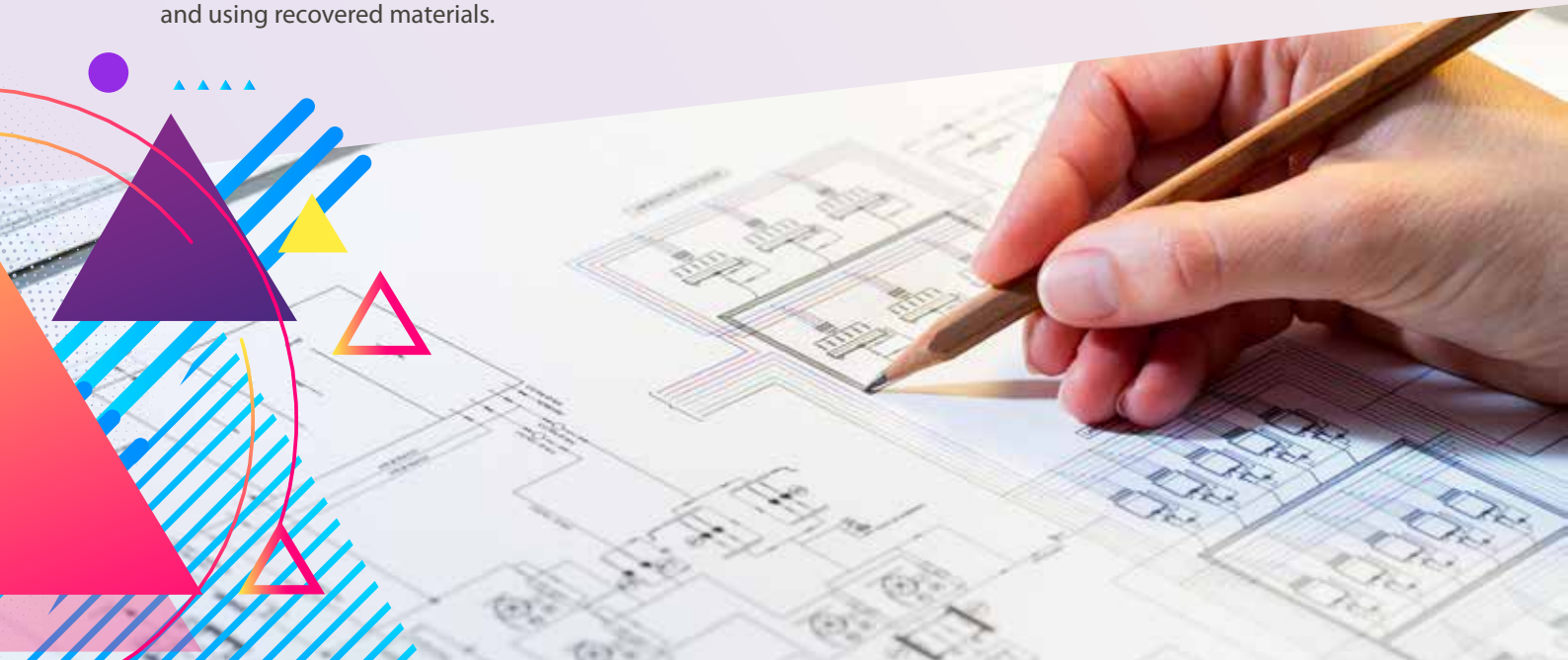
The construction sector is responsible for half of all extracted materials. In 2017, an estimated 4.7Mt of Construction and Demolition (C&D) waste was collected by authorised waste collectors. This represented approximately 31% of Ireland's total waste production making it the largest waste producing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



What should I do?

The role of the Quantity Surveyor in construction includes:

- influencing key decisions relating to time, cost and quality;
- managing finances and contracts; and
- managing the design, procurement and construction process.

The Quantity Surveyor role can assist construction clients to adopt new circular business models through delivering more flexible, adaptable, and deconstructable buildings and procuring services instead of products that offer new revenue streams and greater residual value.

Making an investment case is vital to the adoption of circular economy principles, helping the built environment sector tackle its environmental footprint and create better places for people to live and work. Research from Arup, in collaboration with the Ellen MacArthur Foundation, found that if real estate businesses adopt models based on circular economy principles, the sector can achieve significant financial returns whiste reducing its resource footprint and contributing to decarbonisation.

The Quantity Surveyor role can help clients to reimagine the ownership of an asset vs the performance of an asset. Imagine paying for a service rather than a product where the ownership of the materials and products remains with the developer or producer e.g. Philips Pay-per-Lux lighting solution.

It will be in the producer's interest to facilitate take-back and disassembly to maintain and maximise the value and utility of the product or material.

To help Quantity Surveyors know how you can bring your commercial knowledge to projects in order to embed circular thinking within projects, here are our recommended first steps:

1. Support the exploration of alternative circular business models

Above all, buildings must be affordable and constructed at an economic cost which people are prepared to pay. Sustainable development is vital but must be balanced against longer-term economic issues.

These are the challenges faced by the Quantity Surveyor today in constructing our common future. Therefore, highlighting the economic benefits of alternative circular models on the project's lifecycle and operational expenditure costs is a crucial part of the Quantity Surveyors role.

Supporting the use of circular business models can also include incorporating alternative models of procurement which can reduce initial capital expenses and transfer these costs into the operations over a longer period through supply, maintain and replace contracts.

2. Analyse the life cycle of products

The Quantity Surveyor is integral to the property life-cycle and can influence other sectors of the property industry. However, all sectors of the industry need to be committed to the concept of sustainable development if it is to be implemented successfully. A key element in this process is matching the procurement of materials to the objectives of stakeholders such as building occupiers who are concerned about the sustainability of the components that make up their property.

The Quantity Surveyor is very influential at all stages of the property cycle throughout the property supply chain and supported by stakeholders, should be able to identify the cost of more durable alternatives, and the return of investment of it. Having this analysis, it is possible to enlarge the life of the product chosen in the design, not focusing this choice purely on its initial capital costs.

The lifetime positive and negative impacts of a building on society and the environment from its construction, use, maintenance and repairs, decommissioning and disposal need to be recognised and accounted for.

3. Increase product recycled content and reusability

In this model, opportunities are taken by tackling waste materials by either reusing materials before they become wastes or create higher value uses through upcycling into new products or closing the loop by re-incorporating the waste into the original product and therefore increasing the recycled content.

These approaches can help to reduce primary material demand, avoid expensive, inefficient waste disposal and can often provide localised community benefits in many cases. Examples of this include:

- Implementing takeback schemes to return excess materials for resale as a typical mixed waste skip can contain up to 13% of unused materials which are perfectly reusable according to previous studies[1];
- Working with waste management companies to secure supplies of materials which can be turned into new products – as demonstrated by Kenoteq Bricks[2] made from construction and demolition waste; and
- Providing reusable packaging instead of single use such as reusable pallets instead of the wooden ones, reusable tarpaulins instead of shrink wrap and metal stillages for glazing deliveries instead of wooden ones. These measures will still ensure products arrive safe and intact but reduce packaging material costs for the manufacturer and disposal costs for the customer.

3. Help to develop robust tender allowances for waste based on forecasts

In order to ensure a project has a focus on waste prevention from the outset and drive better performance there is a need to establish a robust, transparent financial forecast in relations to the volume of waste predicted in the waste forecast.

This initial forecast should be developed at the design stage and designing out waste activities should be undertaken to minimise the forecast. The Quantity Surveyors role is to help to estimate the waste quantities using the BoQ documentation and refine this forecast by asking the different sub-contractors who supply materials and labour to site to give estimates of the waste that they will produce.

Comparisons of actual waste produced vs forecast waste should be collated to help inform future forecast and to determine best practice levels which should be strived for. In reality the true cost of wasted materials is on average 10 times that of the waste disposal costs.

[1]Case study for Wrap by AMEC 2008
[2]https://kenoteq.com/

4. Use of recycled materials

Quantity Surveyors can encourage the construction industry to use more recycled materials from buildings which are being demolished, such as steel beams and crushing old brick and concrete for use in new concrete. In many cases this can save money as well as reducing environmental costs.

Furthermore, considering products and materials which were once waste materials and have now been converted into new products or products which have now been remanufactured are both examples of circular construction. Waste in one industry or one project could be a supply source in other industries or project. This helps to reduce cost of disposal, supply, CO^2 emission, and to optimise the lifespan of products.

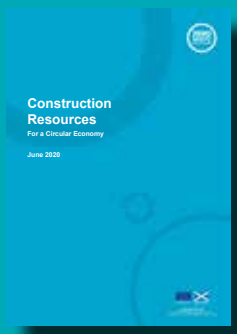
Why should I seek to make my projects more circular?

Demonstrating your ability to support the construction sector evaluate circular opportunities and bring ideas to the table will be necessary skill for future projects and could be a work winning differentiator.

Another business case for sustainability is that it will help boost your brand's reputation among customers, suppliers, potential employees and insurers, who may want to be sure that you take your environmental responsibilities seriously, as well as boosting morale of existing staff. Corporate Social Responsibility not only helps boost your company's image, but has been proven to boost media coverage and employee engagement.

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
  Design out waste in construction Guide
  Maximising re-use in construction
  Create a SWMP
  Improving waste management on construction sites
- 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:

Southern Region Waste Management Office,
Lissanalta House,
Dooradoyle Road,
Limerick
Phone: 061 556596
E-mail: info@srwmo.ie
@preventwaste