Closing the Loop:

Developing a Circular Construction Hub in Scotland

Workshop Report

November 2025

Circular Cities & Regions Initiative

CIRCOFIN

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ZERO WASTE SCOTLAND

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Executive summary

Introduction

The *Closing the Loop* workshop, held on the 6th of November 2025, as part of the International Retrofit Conference at BE-St Fest '25, brought together 42 stakeholders from various organisations across Scotland and the UK to explore opportunities and challenges in developing a Circular Construction Hub (CCH) for Scotland.

The session was facilitated by Zero Waste Scotland as part of the Horizon EU-funded CirCoFin Project, which aims to accelerate circular transformation in construction by creating a financially viable construction material and/or product reuse hub model, that is investor-ready and replicable.

Key insights from workshop discussions

Materials and reuse potential

- High potential materials include excess materials from construction sites, rare and specialist materials of high value, as well as modular products which can be easily deconstructed, recovered and reused. Example materials discussed include bricks and rubble, windows, roof tiles, glass partitions and raised access flooring.
- Opportunities include emerging technology (e.g., robotics for material recovery), insurer engagement, and early material inventories during planning.
- Enablers include policy levers (VAT incentives, taxes on virgin materials), public funding, and embodied carbon reporting.

Location and hub model

- A hub-and-spoke model with central hub and satellite depots for rural areas was identified as a preferred approach. Factors affecting location include the type of market served; proximity to construction/demolition activity, logistics infrastructure, and integration with certification/refurbishment services.

- Accessibility is essential for SMEs and contractors. While the Central Belt was proposed as a pilot location due to its population density, the choice of site should primarily reflect the target audience for the CCH to ensure ease of access. Regulatory levers, such as planning requirements and procurement policies will play a critical role in driving consistent demand.

Stakeholder ecosystem

- Missing stakeholders in the current Zero Waste Scotland draft CCH value chain include premium tenants who value Environmental, Social and Governance commitments. Inclusion of these stakeholders may improve economic viability of the CCH model.
- Key actors identified included insurers, local authorities, landowners, existing reuse organisations, contractors, deconstruction firms, and trade associations.
- Barriers identified included the price of secondary materials, low margins for the construction sector and access to materials at the right time. Perceived risks involved and insurers.
- Support needs identified for a CCH design include standardised demolition audits, consistency of language and metrics, early material disclosure 'as built' inventories.
- Enablers include procurement levers, planning levers, policy measures (VAT incentives, embodied carbon reporting, tax on virgin materials), public funding, technology innovation for material recovery and design including modular design principles.

Designing a successful hub model

- Core features include specialist expertise (audits, material assessment, design advice), advocacy and education, a digital platform for material exchange, and a secure physical hub.
- Scotland's CCH could play a role beyond storage, acting as a connector and advocate, through auditing materials, educating designers, and promoting circularity.
- A co-operative governance model (similar to Belgium's Rotor DC) was favoured for inclusivity and accountability.

- Feedback highlights included suggestions that the scope of Scotland's CCH be expanded to include accreditation, education, and responsible disassembly; and to facilitate supply chain co-ordination.

Enablers and barriers

- Certification challenges, current systems (e.g., BBA - British Board of Agrément) are outdated and costly for innovative products. Alternative assurance mechanisms are needed.
- Insurance risks, procurement complexity, and inconsistent demolition audits.
- Innovation opportunities: support manufacturers in evidencing reuse potential and developing next-generation products designed for deconstruction.
- Stakeholder influence: local authorities and trade associations can accelerate adoption through procurement and sector-wide messaging.
- Skills and awareness: the CCH should lead on CPD (Continuing Professional Development), training, and awareness raising.
- A hub-and-spoke model with digital platforms could enhance scalability.

Conclusion

The workshop confirmed strong stakeholder interest in a Circular Construction Hub (CCH) for Scotland and identified clear opportunities to advance circular practices. Despite barriers such as insurance risk, certification challenges, and procurement complexity, policy incentives, technology, and collaborative governance could enable progress.

A hub-and-spoke CCH model supported by digital platforms and specialist expertise was preferred by stakeholders for accessibility and scalability. Stakeholders noted that success will rely on co-ordinated stakeholder action, early material disclosure, and advocacy to embed circularity in planning and procurement, positioning the CCH as a connector, educator, and catalyst for systemic change.

Contents

1 Introduction

This report summarises the discussions and outcomes from the *Closing the Loop: Developing a Circular Construction Hub in Scotland* workshop, held on 6th November 2025 as part of the BE-ST International Retrofit Conference at Paisley Town Hall. The workshop, facilitated by the CirCoFin Project team from Zero Waste Scotland, brought together 42 built environment industry stakeholders to explore opportunities and challenges in establishing a Circular Construction Hub (CCH) model for Scotland.

The project, funded by Horizon EU under Grant Agreement Number: 10118052, aims to accelerate the circular transformation of the construction sector by supporting cities and regions to create infrastructure and financial mechanisms for material reuse. CirCoFin includes showcase projects in Munich, Copenhagen, Lisbon and Scotland. Scotland's showcase focuses on developing a 'bankable model' for a CCH tailored to national and regional needs. A CCH could take the form of a physical location, a digital platform, or a hybrid model to enable the exchange of construction materials for reuse.

The workshop featured breakout discussion groups which addressed the following key topics: reusable materials, hub location, stakeholder ecosystems, governance models, and potential CCH enablers and barriers. Insights gathered will inform the next phase of the CirCoFin project and the development of a practical, scalable hub model for Scotland.

Chair: Linda Branter: Consultant, Built Environment

Zero Waste Scotland Breakout Discussion Facilitators: Lorraine Woods: Manager, Built Environment - Nick Ribbons: Partner, Built Environment Alex Reeves: Partner, Built Environment - Ameena Camps: Research Analyst

Emma Church: BE-ST consultant, Hanna Lundstrom: BE-ST Consultant

2 Workshop overview

The workshop aimed to explore opportunities and challenges in establishing a CCH model for Scotland. Participants were invited to contribute ideas and insights to help shape the next phases of the project. The event began with a welcome address from Linda Branter, followed by a presentation from Nick Ribbons, who provided a high-level overview of the project and its initial findings to set the context for discussion.

Attendees were then divided into six breakout groups, each focusing on a specific theme. The groups engaged in deep-dive discussions guided by the topic facilitators and addressed key questions relevant to their theme. At the closing session, each group presented a summary of their discussions and highlighted their key points.

Group 1: Reusable construction materials and products. Facilitator: Alex Reeves, Partner - Built Environment, Zero Waste Scotland

Group 2: Identification of suitable location(s). Facilitator: Nick Ribbons, Partner – Construction, Zero Waste Scotland

Group 3: The Scottish circular construction stakeholder ecosystem. Facilitator: Ameena Camps, Research Analyst, Zero Waste Scotland

Group 4: Designing a successful circular construction hub model. Facilitator: Hanna Lundstrom, Impact Manager, Built Environment – Smarter Transformation (BE-ST)

Group 5: Potential enablers and barriers to the development of a circular construction hub in Scotland. Facilitator: Lorraine Wood, Manager – Built Environment, Zero Waste Scotland

Group 6: Potential enablers and barriers to the development of a circular construction hub in Scotland. Facilitator: Emma Church, Impact Manager, Built Environment – Smarter Transformation (BE-ST)

3 Thematic discussion groups

Each breakout session began with an introduction from the designated facilitator, who outlined the theme and objectives for discussion. Participants then engaged in focused conversations around a set of key questions designed to explore opportunities, challenges, and practical considerations related to the topic. The sessions concluded with each group summarising their discussions into a set of key points, which were shared during the closing feedback session.

3.1 Group 1: Reusable construction materials and products

Facilitator: Alex Reeves, Partner - Built Environment, Zero Waste Scotland

3.1.1 Topic introduction

A secure and balanced supply and demand for reused construction materials is essential for the success of a Circular Construction Hub. This session explored which materials and products are most suitable for reuse and examined the opportunities and barriers within the Scottish construction sector. The discussion addressed both supply and demand factors for reused construction materials. Supply can originate from excess materials during manufacturing and construction, as well as from maintenance, refurbishment, and demolition activities. Demand, on the other hand, comes from integrating reused materials into new product manufacturing (including manufacturer take-back schemes), refurbishment projects, new construction, and the DIY/self-builder market.

Initial research from the CirCoFin project has identified the following key material categories suitable for reuse: building services (mechanical, electrical, plumbing), structural systems (steel, concrete, timber), furniture and fittings, modular products, non-modular products, and separate materials such as general demolition waste and raw materials. Each category has its own value chain, stakeholders, and specific challenges.

Key barriers and opportunities influencing reuse include the ease of deconstruction, risk of contamination (e.g., asbestos), certification and compliance requirements, cost competitiveness compared to new materials, and the balance between supply and demand.

3.1.2 Key discussion questions

- Which categories of materials and products are most suitable for reuse?
- What are the current opportunities and barriers to reusing these materials in Scotland?
- How can a Circular Construction Hub incentivise material reuse?

3.1.3 Discussion outcomes

Material categories suitable for reuse

Stakeholders identified several material types with strong potential for reuse. These included unused building materials which could not be economically returned to manufacturers by contractors, as well as rare materials such as heritage stone. Equipment such as lighting was also identified. Materials used in internal fit out projects, including modular products, finishes and lighting, were all identified as having high reuse potential due to simplified deconstruction and recovery processes, and there are some examples of this already taking place. Stakeholders noted that there was a lack of infrastructure to support the reuse of higher value materials such as steel.

Opportunities and barriers to material reuse

The discussion revealed significant barriers, including perceived risk from clients and contractors, and the challenges for designers in obtaining product warranties and performance verification. A lack of communication between organisations involved in reuse, and the lack of a centralised database of reuse specialists and materials, were also identified as barriers. Those who were directly involved in embodied carbon assessments also highlighted difficulty in accurately accounting for reused products in carbon assessment, as there is no standard method of comparison with new materials.

Opportunities include leveraging of existing planning processes to require early material inventories, developing regional supply networks, and implementing digital tools such as product passports. The opportunity to create digital platforms and improve access to specialist reuse services was also seen as important, as well as easier access to product testing and re-certification services.

Incentives for material reuse

Stakeholders emphasised the need for strong incentives across the value chain to make reuse equitable and reduce business risk. Financial and business support for start-up reuse businesses, and for regional building economies were highlighted as particularly important.

Strengthening embodied carbon regulations was noted as a possible incentive, as was a potential reward scheme for clients using reused materials. Providing solutions to existing challenges, such as material storage and dealing with excess materials was also identified.

3.1.4 Feedback session: key points

Scotland currently lacks the network and infrastructure required to support widespread material reuse, in contrast to more developed systems in regions such as London and the South/East. The establishment of a Circular Construction Hub could help address this gap by providing centralised resources and co-ordination.

Additionally, performance risk remains a significant concern for specifiers, who often face the burden of indemnifying reused products without adequate testing or verification. Improved access to performance testing and certification is essential to build confidence in reused materials.

Finally, there is a need for both incentives and regulatory measures to drive adoption, balancing rewards for clients with requirements such as embodied carbon regulations. To ensure consistency and credibility, a standardised methodology for calculating environmental and economic benefits must be developed.

3.2 Group 2: Identification of suitable location(s) for a Circular Construction Hub(s)

Facilitator: Nick Ribbons, Partner – Construction, Zero Waste Scotland

3.2.1 Topic introduction

This session focused on identifying the key factors and considerations for selecting suitable locations for Circular Construction Hubs in Scotland. While consortium members in the CirCoFin project Munich, Copenhagen, and Lisbon, have already designated regions within

the cities for their hubs, Scotland has yet to determine its location. Zero Waste Scotland has undertaken a multi-criteria analysis ('MCA') to come up with an initial shortlist of sites, which will be further evolved to ensure fairness, transparency, and robustness in site selection.

The discussion acknowledged that numerous factors would influence location selection, including who would use the CCH (market served), activities undertaken (such as refurbishment, repair, etc), material availability, accessibility, market demand, and stakeholder engagement. However, the relative importance of these factors may vary across different stakeholder groups, requiring a balanced and inclusive process.

3.2.2 Key discussion questions

- What factors make a location suitable for a circular construction hub?
- What would make you use a CCH?
- How can location impact stakeholder engagement and logistics?

3.2.3 Discussion outcomes

Factors influencing location suitability

Accessibility was identified as the most critical factor when considering suitable locations for a Circular Construction Hub (CCH). The hub must be easily reachable for key users such as small-scale contractors, SMEs, and homebuilders, who are likely to be early adopters in the absence of strict client requirements.

Participants noted that the location strategy would depend on the operational model. The preferred approach was a hub-and-spoke model, featuring a central hub supported by smaller satellite depots. This would allow rural actors to deliver unused or secondary materials locally, which could then be redistributed through the main hub and vice versa.

The group also debated whether hubs should prioritise storage capacity or proximity to consumers, weighing space and accessibility against population density. For a pilot project, the Central Belt was considered the most practical starting point due to its high population concentration.

Other factors included proximity to areas of high construction and demolition activity, which could supply materials for redistribution. However, participants noted the lack of publicly accessible data on these hotspots. Connectivity to refurbishment and certification services was

also highlighted as important, influencing whether these activities should be integrated into the hub or managed through partnerships.

Finally, material type may influence location decisions. Structural materials such as concrete and steel may require hubs near urban centres, while smaller, varied materials could be managed in more flexible locations.

Drivers for hub utilisation

Architects emphasised that contractual requirements to specify reused materials in designs would be a key driver for using a CCH. They suggested that if contractors sourced materials and architects incorporated them into designs, this would create strong demand for hubs.

Local authorities were also identified as influential actors. Requiring planners to check hubs for material availability before approving projects could significantly increase utilisation. Beyond sourcing, hubs could provide a destination for surplus materials, reducing reliance on landfill and low-value recycling. This approach could foster long-term relationships between hubs, local authorities, and supply chain partners.

Impact of location on engagement and logistics

Location will affect stakeholder engagement and logistics differently depending on whether hubs are urban or rural. Urban hubs may face challenges in canvassing diverse stakeholder opinions but benefit from proximity to large populations and businesses. Rural hubs, while offering localised engagement, could encounter logistical challenges, particularly for transporting bulky materials. Balancing these considerations will be essential for an effective hub network.

3.2.4 Feedback session: key points

The feedback session highlighted several important considerations for selecting locations for Circular Construction Hubs in Scotland.

- Accessibility, the type of hub model, and population density were the most frequently discussed factors influencing location decisions. Stakeholders noted that these elements would significantly shape the hub's ability to serve diverse users and achieve impact.
- Another recurring theme was the role of requirements in driving hub usage. Participants emphasised that adoption would depend on whether clients mandate the use of reused materials or if local planning policies include such requirements. These

regulatory and contractual levers were seen as critical to ensuring consistent demand for hub services.

Finally, the discussion underscored that stakeholder engagement strategies will vary depending on whether hubs are in rural or urban areas. Location context will influence not only accessibility but also the types of partnerships and outreach needed to make the hub successful.

3.3 Group 3: The Scottish circular construction stakeholder ecosystem.

Facilitator: Ameena Camps, Research Analyst, Zero Waste Scotland

3.3.1 Topic introduction

Zero Waste Scotland has been developing a draft value chain for a Circular Construction Hub. In this discussion this model was reviewed to identify any missing actors and determine which stakeholders should be prioritised for the development and operation of the hub. The group also explored how best to support these stakeholders to ensure the successful implementation of one or more hubs across Scotland.

To guide the conversation, the draft value chain currently in progress was shared, which helped frame thinking and highlight areas for improvement.

3.3.2 Key discussion questions

- Have we missed any key stakeholders across the draft Circular Construction Hub(s) value chain?
- Who are the key stakeholders in Scotland's circular construction ecosystem? What is the difference in roles between public and private stakeholders?
- How can we best support stakeholders' needs to make a Circular Construction Hub(s) a reality in Scotland?

3.3.3 Discussion outcomes

Missing stakeholders in the draft value chain

The discussion identified several stakeholders currently absent from the draft value chain for Circular Construction Hubs. Premium tenants were highlighted as a critical group, particularly within the commercial sector. These tenants often prioritise environmental, social, and governance (ESG) metrics when selecting properties, and the inclusion of secondary materials could be an attractive feature. Their willingness to pay a premium for sustainable buildings may help overcome economic viability challenges. While this observation primarily applies to business tenants, similar considerations could extend to certain household rental markets.

In addition, user/operators such as data centres were noted as potential stakeholders. These organisations could invest in circular construction initiatives as part of their efforts to offset or reduce greenhouse gas emissions, aligning with their sustainability objectives and corporate commitments.

Key stakeholders in Scotland's circular construction ecosystem

The discussion explored the roles of public and private stakeholders within Scotland's circular construction ecosystem and identified several critical actors. Insurers were highlighted as a priority barrier to overcome. Even when secondary materials meet structural performance standards and carry appropriate certifications, insurers may still refuse coverage. Examples were shared, such as secondary steel with a CE mark being denied insurance. This creates significant industry concerns and adds cost premiums when insurance is granted due to perceived risk. Workshop participants suggested engaging with organisations such as Lloyd's of London and Lignum Risk Partners to address these challenges.

Participants also emphasised the importance of connecting with relevant projects and networks, including the EU ReCreate Project (active in Finland) and TRACE, as well as learning from initiatives in the City of London. Companies such as Marks Barfield Architects and Saint-Gobain were noted for their case studies and expertise in glass recycling from construction projects.

Other key stakeholders identified include major asset owners such as the Crown Estate, landowners, local authorities like Enfield Council, and platforms such as Material X Change. There was consensus that, given the higher cost of secondary materials and the financial challenges of a Circular Construction Hub model, public funding will play a dominant role in

early implementation, with some private investment possible once systemic barriers are addressed.

Finally, operational stakeholders such as deconstruction companies and major contractors like Mace were highlighted as essential contributors to the success of the hub.

Supporting stakeholders to make circular construction hubs a reality

The discussion highlighted several key levers and challenges in supporting stakeholders to deliver a successful Circular Construction Hub in Scotland. Procurement emerged as a critical driver, but participants noted that adding sustainability requirements can increase complexity, potentially exclude smaller contractors and create tension between environmental goals and equitable access.

Stakeholders emphasised the financial constraints within the construction sector, where average profit margins are around 5%. Any increase in costs, such as those associated with incorporating secondary materials, could significantly impact project viability. To address this, consistency in demolition audits was suggested, including standardised language, metrics, and assessments of structural and architectural conditions.

Planning processes were also identified as a key lever, with calls for early disclosure of material inventories during planning stages and maintaining accurate "as-built" records. Setting targets based on the waste hierarchy was seen as an important driver for change, though participants cautioned against rigid requirements (such as fixed percentages of secondary materials) that could create barriers if supply is limited. Ensuring timely access to materials while avoiding hoarding, which can inflate prices, was considered essential for hub success.

Other barriers discussed included cultural factors, such as the "ego of storytelling," where individuals retain materials for personal projects rather than releasing them for immediate reuse elsewhere. Policy measures such as embodied carbon reporting, a tax on virgin materials, and VAT incentives for reused materials were proposed as potential drivers, though these would require legislative change.

Technology and innovation were highlighted as critical enablers. Robotics and advanced techniques for material extraction during demolition could reduce labour costs and improve economic viability, as manual removal is time-intensive and requires specialised skills. Participants also discussed material types most suitable for reuse, with brick and rubble seen

as the most likely candidates, alongside windows, roof tiles, and higher-value items such as glass partitions and raised access flooring. Finally, design innovation, particularly modular design principles, was identified as a long-term strategy to facilitate easier material recovery and reuse.

3.3.4 Feedback session: key points

The feedback session emphasised three critical considerations for advancing the Circular Construction Hub model:

- Premium tenants were identified as a missing stakeholder in the current value chain. Their willingness to pay more for properties that align with Environmental, Social, and Governance (ESG) requirements could significantly improve the economic viability of the hub.
- Participants stressed the need for incentives across the entire value chain to make the reuse of construction materials equitable and reduce business risk for all parties involved.

  Insurers were highlighted as a key stakeholder group. Addressing their concerns and alleviating perceived risks will be essential, as insurance-related hurdles remain one of the most significant barriers to implementing circular construction practices.

3.4 Group 4: Designing a successful circular construction hub model.

Facilitator: Hanna Lundstrom, Impact Manager, Built Environment – Smarter Transformation (BE-ST)

3.4.1 Topic introduction

This session focused on defining the essential components and structure of an effective Circular Construction Hub (CCH) model for Scotland. The discussion explored both physical and digital elements of the hub, recognising that success will depend on integrating these seamlessly to support material exchange, stakeholder collaboration, and knowledge sharing.

Participants considered different ownership and delivery models, including public, private, and hybrid approaches, and examined how these could influence governance, funding, and operational efficiency. The group also reviewed insights and ideas emerging from project work to date, aiming to identify practical solutions and innovative approaches that can make the hub model scalable and economically viable.

The goal of this session was to outline the foundational principles for a hub that not only facilitates material reuse but also drives systemic change across the construction sector, supporting Scotland's transition to a circular economy.

3.4.2 Key discussion questions

- What are the essential features of a successful hub model?
- How can the hub support innovation and collaboration?
- What governance structures would be most effective?

3.4.3 Discussion outcomes

Essential features of a successful hub model

According to stakeholders who participated in discussions it was suggested a successful Circular Construction Hub (CCH) would incorporate the following core elements:

Specialist expertise

The employment of staff with relevant knowledge and skills in circular construction. Key roles were noted to include:

- Demolition and Audit Specialists to identify and recover high-value materials for reuse.
- Material Assessors to determine suitability and market demand for reclaimed materials.
- Design Advisors to guide the integration of reused materials at the design stage of projects.
- Stakeholder Engagement Leads to match material suppliers with customer demand and foster collaboration across the supply chain.

Advocacy and education

Active promotion of circular construction principles and provision of educational resources to embed these practices within the industry was identified as key.

Digital platform integration

Participants proposed an accessible digital platform to streamline material exchange. This could allow materials to remain at their original location rather than being transported to a physical hub, reducing logistical complexity and costs. Such a system would also improve transport efficiency and minimise environmental impact.

Physical hub considerations

While participants noted a physical hub may still be required, its design must address challenges such as security, storage integrity, and operational costs. It was suggested the hub would serve as a secure, well-managed facility that complements the digital platform.

A circular construction hub's role in driving innovation and collaboration

Supporting innovation and collaboration requires the hub to go beyond being a physical repository for materials. By embedding education, training within its operations, and advocating for policy frameworks that enable circularity, the hub can help align design practices with circular construction principles. This alignment will also address supply chain lead times, which could otherwise act as a barrier if not managed effectively.

It was suggested the hub could also serve as a connector across the supply chain, facilitating co-ordination between demand and supply for reused materials. Its role should encompass advocacy, education, and strategic engagement, not solely material handling. By doing so, the hub may foster a collaborative ecosystem that drives innovation and accelerates the adoption of circular practices.

Governance structures

The participants perceived that the most effective governance model for the Circular Construction Hub would be a co-operative structure, similar to the Rotor DC model in Belgium. This approach was seen as the best way to balance inclusivity and accountability while maintaining a strong focus on circularity principles.

Concerns were raised about alternative models:

- Public ownership was perceived as potentially slow-moving, with decision-making processes that could hinder timely action.

- Private ownership, on the other hand, was considered likely to prioritise profit over the quality and integrity of materials for reuse.

A co-operative model was therefore viewed as offering the optimal balance, ensuring stakeholder engagement, shared responsibility, and alignment with the hub's mission to promote sustainable construction practices. It is important to note that time available to discuss governance models was limited, and public-private partnerships were not discussed.

3.4.4 Feedback session: key points

The group discussion outlined three key priorities to define the approach to advancing a circular construction model:

- The hub's role should extend beyond serving as a material hub to include auditing and accrediting reusable materials, educating designers on integrating reuse principles, and ensuring responsible handling during disassembly. This broader scope would also involve advocating for the integration of circular economy practices across the construction sector.
- Facilitation within the supply chain is essential to guarantee that materials are managed responsibly and reintegrated into new projects, reducing waste and creating value throughout the lifecycle.
- Adopting a co-operative model, similar to Rotor DC, could offer a practical solution to overcome perceived limitations of purely public or private frameworks, fostering collaboration, transparency, and shared ownership.

3.5 Group 5: Potential enablers and barriers to the development of a circular construction hub in Scotland.

Facilitator: Lorraine Wood, Manager – Built Environment, Zero Waste Scotland

3.5.1 Topic introduction

Work undertaken on the CirCoFin project so far has highlighted several potential enablers

and barriers to the adoption of reused construction materials in Scotland. During this session, participants shared their experiences and perspectives on re-using construction materials within their respective roles and areas of the construction industry.

3.5.1 Key discussion questions

- What has been your experience with reused materials in your sector and role?
- What barriers or challenges have you encountered, or what factors discouraged you from using them?
- What do you believe would help enable the adoption of reused materials in future construction projects?

3.5.2 Discussion outcomes

Group perspectives on reused materials

The discussion brought together seven participants from diverse roles within the construction sector, including contractors, architects, an engineer, and a local authority representative specialising in retrofit. This mix provided a broad view of current practices and attitudes toward material reuse.

Current experience and awareness

Across the group, practical experience with reused materials was limited, yet awareness of the concept was relatively high. Contractors reported occasional efforts to divert materials from waste streams, such as donating to local initiatives like *Good Green Futures Stirling*. However, these actions were described as small-scale and inconsistent across projects. Both contractors highlighted systemic challenges, logistical, financial, and time-related, that often prevent reuse from becoming standard practice.

Architects demonstrated strong conceptual engagement with circular principles. While two had never specified reused materials, one reported active involvement in specifying reclaimed bricks and exploring *Design for Deconstruction*. This suggests that while design professionals recognise the potential, adoption remains sporadic and dependent on project-specific conditions.

The local authority representative echoed this trend, citing reclaimed brick use in retrofit projects, whereas the engineer had no direct experience, indicating gaps in technical integration and supply chain readiness.

Emerging themes

Positive attitude, limited practice: All participants expressed willingness to consider reuse, but practical implementation is constrained by systemic barriers.

Knowledge vs. action gap: Awareness among architects and public sector actors is growing, yet translating this into consistent specification remains a challenge.

Infrastructure and logistics: Contractors emphasised the absence of streamlined processes for material recovery and redistribution, pointing to a need for better co-ordination and economic incentives.

Overall insight

The discussion underscored an early-stage market for reused materials in Scotland's construction sector. While attitudes are favourable, adoption is hindered by operational, financial, and supply chain limitations. Addressing these barriers through policy, infrastructure, and industry collaboration will be critical to scaling circular practices.

Barriers and challenges to reusing construction materials

This group included participants from both sides of the construction process: those who specify materials and those who manage site excess, allowing the discussion to explore barriers from multiple perspectives.

From a materials specification standpoint, participants highlighted concerns around risk, related to quantity, availability, and lead-in times.

Quality and consistency were also noted as challenges. Testing and certification requirements, along with warranties and insurance, were seen as significant hurdles.

Building regulations added further complexity, while logistical issues and cost considerations (with new materials often being cheaper) were recurring themes.

Finally, the lack of a well-established market for reused materials at scale was identified as a major barrier.

On the excess materials side, participants pointed to legislative constraints, such as site waste regulations and contamination concerns under SEPA guidelines.

Storage and transport were practical challenges, compounded by issues of scale and time pressure on projects.

Insurance requirements and perceived risk further discouraged efforts to reuse materials.

Overall, the discussion revealed that while there is interest in reuse, systemic and practical barriers, ranging from regulatory compliance to market limitations, continue to inhibit widespread adoption.

Enablers for the adoption of reused materials in construction projects

The group explored potential enablers from both perspectives, those specifying materials and those managing excess materials on-site.

Materials specification

From a materials specification viewpoint, participants emphasised the importance of certification and fire testing to ensure compliance and safety.

Cost neutrality or cost savings were seen as critical, alongside early engagement between clients, contractors, and project teams.

A reliable supply chain and improved access to materials, both digital and physical, were highlighted as priorities, with suggestions for regional hubs and comprehensive digital inventories that categorise and fully specify available materials.

Participants also proposed a simple, modern digital platform, similar to consumer apps like Vinted or Deliveroo, to streamline transactions.

Sustainability goals and KPI tracking were identified as additional drivers for adoption.

Excess materials

From the excess materials perspective, a "common sense" approach to regulations, supported by clear policy frameworks, was considered essential.

Cost neutrality was again noted as a key factor, with contractors indicating that a small premium might be acceptable for Tier 1 firms if it provided a sustainable solution for waste.

Practical enablers included co-ordinated collection through managed services, physical locations for material drop-off, and investment in infrastructure and job creation to support the system.

Overall, the discussion highlighted that a combination of regulatory clarity, cost competitiveness, digital innovation, and collaborative engagement across the supply chain

would be necessary to enable widespread adoption of reused materials in construction projects.

3.5.3 Feedback session: key points

- **Reframe the concept of "waste"**
  The industry needs to move away from viewing construction materials as "waste." Instead, these materials should be recognised for their value and potential for reuse, reducing the volume currently sent to landfill.
- **Address both ends of the construction process**
  Challenges, and solutions, differ between those specifying materials and those managing site excess. A holistic approach that considers both perspectives is essential.
- **Implement a connected set of measures**
  No single intervention will resolve the current barriers. A co-ordinated suite of actions, as outlined in the previous sections, will be required to significantly increase the reuse of construction materials.

3.6 Group 6: Potential enablers and barriers to the development of a circular construction hub in Scotland

Facilitator: Emma Church, Impact Manager, Built Environment – Smarter Transformation (BE-ST)

3.6.4 Topic introduction

Work to date on Circular Construction Hubs (CCHs) in Scotland has identified a range of factors that can act as either enablers or barriers to their successful implementation. Among these, two areas have emerged as particularly influential: policy and regulatory frameworks and engagement and awareness.

The session examined these in detail, considering how existing policies and regulations, as well as levels of stakeholder and community engagement, may present challenges to the development and operation of CCHs. The group explored potential actions that could

transform these challenges into opportunities, to strengthen and enable the environment for CCHs.

Understanding the roles and responsibilities of key actors is essential for designing effective strategies that support the growth and sustainability of a Circular Construction Hub(s) across Scotland.

3.6.5 Key discussion questions

- How do current policies and regulatory frameworks present challenges to the establishment and growth of a Circular Construction Hub?
- Which key stakeholders have the capacity to influence these areas? whether through policy development, regulatory adjustments, or initiatives aimed at improving awareness and participation.

3.6.6 Discussion outcomes

Certification – Risk and warranty

Certification emerged as a primary challenge for the development of a Circular Construction Hub (CCH). Fire safety was highlighted as a critical concern, particularly regarding the reuse of materials and products within the construction sector.

Steel was cited as an example where an established recertification process exists. It was suggested that policy and regulatory measures could be leveraged to encourage similar processes for other construction materials and products. A key factor in the success of steel recertification was the presence of a critical mass of stakeholders who supported and accepted its use. The CCH could play an important convening role in bringing stakeholders together to develop and adopt comparable frameworks for other materials.

Closely linked to certification is the issue of warranties and the associated risks of material reuse. Clients require confidence in warranties, and risk management remains a significant barrier. A case study of large-scale reuse projects in London was referenced as an example of successful implementation, suggesting that these projects have effectively navigated challenges related to risk, certification, and market acceptance. It was proposed that a Scottish CCH could learn from or collaborate with these initiatives to understand best practices. However, it was noted that the London model primarily connects large scale projects, whereas Scotland may require a more distributed network involving numerous smaller users.

Other examples of materials where established reuse flows already exist include aluminium windows, gypsum, and wood in Glasgow. This raises an important question: how might the introduction of a CCH impact these existing businesses, and could there be unintended consequences? Understanding these dynamics will be essential to ensure that the hub complements rather than disrupts current circular practices.

The concept of material passports was also raised as a potential solution to track material flows through construction and reuse, providing transparency and assurance across the supply chain. Questions remain regarding who would oversee such a system and how its effectiveness could be monitored, particularly during the demolition and material removal phases.

Certification – Impact, innovation, and future products

A key concern raised by manufacturers, specifically those producing sustainable or natural insulation, was that current regulatory and certification processes are outdated and fail to reflect modern manufacturing practices. For example, specifiers and clients often require British Board of Agrément ('BBA') certification, which is highly rigid and does not accommodate the non-homogeneous nature of natural insulation products, where the composition may vary between batches. Under the current system, certification would need to be obtained for each batch at significant cost, rendering this approach financially unsustainable. This highlights that existing certification frameworks were designed for traditional, uniform products (e.g., carbon-based insulation) and are not fit for purpose in the context of a circular economy.

Architects and designers noted that, in the absence of formal certification for products with proven benefits, informal validation, such as word of mouth, is often taken as a substitution for assurance. This raises an important question: could a Circular Construction Hub (CCH) provide a structured mechanism for product assurance that sits between informal endorsement and full certification? Such a role could help bridge the gap and accelerate adoption of innovative materials.

Manufacturers also emphasised the need for support in demonstrating and promoting the reusability of products such as insulation or membranes. A potential function of the CCH could be to assist manufacturers in evidencing reuse potential and developing case studies, even if the hub does not directly handle materials. Additionally, there is a clear opportunity for the CCH to facilitate design and development of next-generation products that are intentionally created for deconstruction and reuse. This could be supported through policy interventions,

funding mechanisms, and possibly tax incentives, in collaboration with academic institutions and innovation facilities such as NMIS.

Forward-thinking approaches were discussed, including toolkits for repurposing and end-of-life strategies, underpinned by whole-life carbon considerations. These initiatives would help embed circularity principles into product design from the outset, ensuring that future products are aligned with sustainability goals.

Stakeholders – Influencers and leaders

Local authorities were identified as critical stakeholders with the ability to drive change through policy, regulation, and procurement practices. An example cited was the Falkirk Reuse Hub, where public sector tenders include requirements for either donating to or sourcing from the reuse hub as part of the bidding process. This raises an important question: is this approach considered part of the 'community benefit' within procurement policy? If so, it demonstrates how local procurement strategies can be leveraged to facilitate circular practices at an internal or regional scale.

Trade associations and professional bodies were also highlighted as influential actors. Organisations such as the Federation of Master Builders have significant reach and credibility within the construction sector. If these bodies lead or at least endorse the messaging around circularity, it is likely to resonate more strongly with industry stakeholders and accelerate adoption.

Other general points raised

Availability of products

A major discussion point concerned the availability of desired products at the time they are needed. This led to a "chicken-and-egg" debate: at what stage should engagement with the hub occur? pre-design, post-design, or should design be based on available materials? If materials are secured early, they may need to be stored for extended periods, raising questions about accountability for maintaining product integrity and quality. This also has implications for the location and design of the hub, which would need to be secure, and easily accessible.

Scale and supply

Participants emphasised the need for a facility of sufficient scale and material throughput to provide a meaningful and reliable supply.

Location considerations

Proximity to EV or hydrogen fuel infrastructure was suggested to support heavy goods vehicle (HGV) movements and regular material transport. One proposed location was the Dundee Michelin Technology Park.

Physical hub as an exemplar

The physical CCH should serve as a demonstration of circularity in practice, showcasing best-in-class design and operations.

Community integration

Additional uses, such as a community education cinema, workshop space, or café could increase visibility and embed circular economy principles into everyday conversations and activities.

Material focus

Discussion included whether the CCH should initially focus on specific material streams (e.g., timber, MEP components) and then expand over time to include others.

Learning from past failures

Recent closures of Scotland-based operations in this space (e.g., Edinburgh Move and a wood recycling facility) were noted. The CCH should investigate the reasons behind these failures to avoid repeating them.

Skills and awareness

The need for skills development and awareness raising was highlighted, including Continual Professional Development (CPD) opportunities on the "why" and "how" of circularity in construction. This could be a key role for the CCH.

Long-term strategy

Circularity in construction requires long-term, joined-up thinking. The CCH could play a significant role in this if there are assurances regarding the longevity of its infrastructure and investment in management.

Hub-and-spoke model

A hub-and-spoke approach was suggested, combining a central facility and online platform with local distribution points to improve accessibility. This would require strong co-ordination to ensure effectiveness.

3.6.7 Feedback session: key points

- **Certification and assurance challenges**
  Current certification systems (e.g., BBA British Board of Agrément) are outdated and financially unsustainable for innovative or non-homogeneous products. There is a need for alternative assurance mechanisms, potentially facilitated by the CCH, that bridge the gap between informal validation and full certification, while also supporting manufacturers in evidencing reuse potential.

- **Stakeholder influence and leadership**
  Local authorities and procurement policies can play a pivotal role in driving circular practices. Trade associations and industry bodies, such as the Federation of Master Builders, are essential for amplifying circularity messaging and ensuring sector-wide adoption.

- **Operational and design considerations for the hub**
  Key issues include product availability, storage integrity, and hub design (the hub should be secure, accessible and scalable). Location should consider logistics and proximity to green transport infrastructure. The hub should function as an exemplar of circularity and potentially integrate community-facing functions to increase visibility and engagement.

- **Skills, awareness, and long-term strategy**
  Circularity requires sustained, co-ordinated effort. The CCH could lead on skills development, CPD (Continual Professional Development) and awareness raising, while ensuring long-term viability through robust governance and investment. A hub-and-spoke model, supported by digital platforms, could improve accessibility and scalability.

4 Conclusions and next steps

The workshop highlighted strong stakeholder interest and clear opportunities for advancing circular construction in Scotland through a dedicated Circular Construction Hub (CCH). While significant barriers remain, such as insurance risk, certification challenges, and procurement complexity, the discussions underscored the potential for policy levers, technology, and collaborative governance models to overcome these obstacles.

A hub-and-spoke CCH model supported by digital platforms and specialist expertise was preferred by stakeholders for accessibility and scalability. Stakeholders noted that success will rely on co-ordinated stakeholder action, early material disclosure, and advocacy, to embed circularity in planning and procurement, positioning the CCH as a connector, educator, and catalyst for systemic change.

This draft workshop report will be circulated to all participants of the "Closing the Loop: Developing a Circular Construction Hub in Scotland" workshop, for review and feedback. All comments and suggestions received will be carefully considered and incorporated, where appropriate, into the definitive version of the report. The aim is to ensure that the final document reflects the collective insights and perspectives shared during the workshop.

The final workshop report will help inform the next phases of the CirCoFin project and will be submitted to the EU consortium as part of our ongoing collaboration.

In addition, all workshop participants will be kept informed of the project's progress and invited to take part in further engagement activities throughout its duration. This ongoing involvement will help maintain momentum and ensure that stakeholder perspectives continue to shape the development of the Circular Construction Hub through co-creation.

5 Appendices

5.1 Appendix 1 Workshop agenda

Closing the loop: Developing a Circular Construction Hub in Scotland

The International Retrofit Conference, Paisley Town Hall, 6th November 2025, 3pm to 4pm, Jacquard Suite

Join Zero Waste Scotland at this year's International Retrofit Conference to learn more about the Circular Construction Finance (CirCoFin) project and participate in discussions to help shape the development of a circular construction hub model in Scotland.

What is this workshop about?

CirCoFin is a Horizon EU funded co-creation project that aims to accelerate the circular transformation of the construction sector by helping cities and regions across Europe to create infrastructure and financial mechanisms to support the reuse of building materials, with showcase projects in Munich, Copenhagen, Lisbon and Scotland. Zero Waste Scotland are responsible for the Scottish 'showcase' aiming to develop a 'bankable' model for a Circular Construction Hub which is tailored to the specific national and regional context of Scotland.

A Circular Construction Hub is a physical location, digital platform, or a combination of both, designed to facilitate the exchange of construction materials—either free of charge or for a fee—for reuse in their original intended purpose.

You can find out more about the project through the CirCoFin website and introductory video.

This workshop will feature breakout discussion sessions focused on key themes relevant to the early stages of the CirCoFin project. These sessions aim to explore both the opportunities and challenges associated with developing a Circular Construction Hub model in Scotland and will help shape the direction of the next phases of the project.

Why join us?

This workshop presents a valuable opportunity to help shape the development of a Circular Construction Hub model in Scotland.

During the session, you will gain insights into the CircoFin project, hear about initial findings, and explore ways to get involved in the journey ahead. You'll also have the chance to meet the Zero Waste Scotland team working on the project, alongside fellow professionals with an interest in circular construction materials.

The outputs from the session will be compiled into a workshop report, which will be shared with all participants for feedback prior to finalisation. The final report will help inform the next phases of the project and will be submitted to the EU consortium as part of our ongoing collaboration.

We look forward to your input and engagement.

Agenda

Chair – Linda Branter, Consultant, Built Environment, Zero Waste Scotland

3pm – 3.10pm: Introduction to CirCoFin and the workshop 'Closing the loop: Developing a Circular Construction Hub in Scotland' - Nick Ribbons, Partner – Construction, Zero Waste Scotland

3.10pm – 3.50pm: Breakout Session: Developing a Circular Construction Hub model in Scotland – Your insights.

Group 1: Reusable construction materials and products. Facilitator: Alex Reeves, Partner - Built Environment, Zero Waste Scotland

Group 2: Identification of suitable location(s). Facilitator: Nick Ribbons, Partner – Construction, Zero Waste Scotland

Group 3: The Scottish circular construction stakeholder ecosystem. Facilitator: Ameena Camps, Research Analyst, Zero Waste Scotland

Group 4: Designing a successful circular construction hub model. Facilitator: Hanna Lundstrom, Impact Manager, Built Environment – Smarter Transformation (BE-ST)

Group 5: Potential enablers and barriers to the development of a circular construction hub in Scotland. Facilitator: Lorraine Wood, Manager – Built Environment, Zero Waste Scotland

Group 6: Potential enablers and barriers to the development of a circular construction hub in Scotland. Facilitator: Emma Church, Impact Manager, Built Environment – Smarter Transformation (BE-ST)

3.50pm – 4pm – Group feedback and wrap-up

5.2 Appendix 2 Attendees

The workshop was attended by 42 participants, representing a diverse range of sectors as outlined below.

- 1 construction company
- 2 universities
- Historic Environment Scotland
- 3 design companies
- 4 engineering companies / consultants
- 13 architect consultants
- 5 Councils


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