Circular Economy

& the Construction Sector

CITY OF GLASGOW COLLEGE

GCU Glasgow Caledonian University

ZERO WASTE SCOTLAND

Workshop 3 – Innovation and the Circular Economy

This Workshop is part of a group of three short workshops which highlight three areas of innovation in the construction sector that offers the additional benefit of making the sector more circular. The three areas are:

- Modular Design and Build
- Building Information Management
- **Refurbishment and Building Layers**

Innovation and the Circular Economy

The construction sector is conservative, where innovation has been slow over the past 20 years. Contrast developments in the manufacturing sector.

Task: Before starting this workshop think why has the sector been slow to innovate and develop new ways of working

Building Layers
An opportunity for refurbishment

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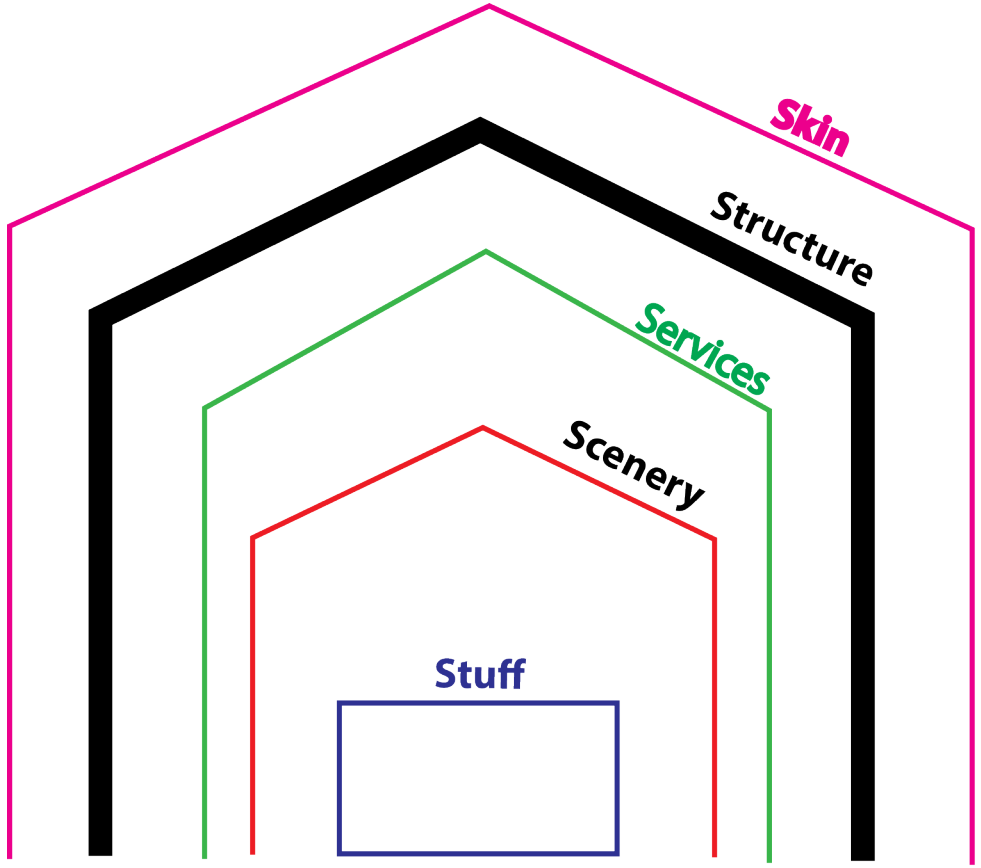
- 50% of construction work – repair and refurbishment (BCIS)
- An important part of the sector with refurbishment an important consideration before demolition or new build.
- ICE Demolition Protocol – suggests that consideration should be given to reuse/refurbishment.
- One study suggests that 80% of the buildings that will exist in 2050, are already built.

Refurbishment

- Can involve minor or cosmetic renovations, but also major repairs, extensions, adaptations through the repurposing of buildings.
- By refurbishing a building – saves on the generation of waste and use of new materials
- Maintains the value of the materials within the economic cycle – a circular economy principle

Building Layers

- A useful concept is the idea of building layers
- Buildings consist of individual layers, each with their own expected lifespan.



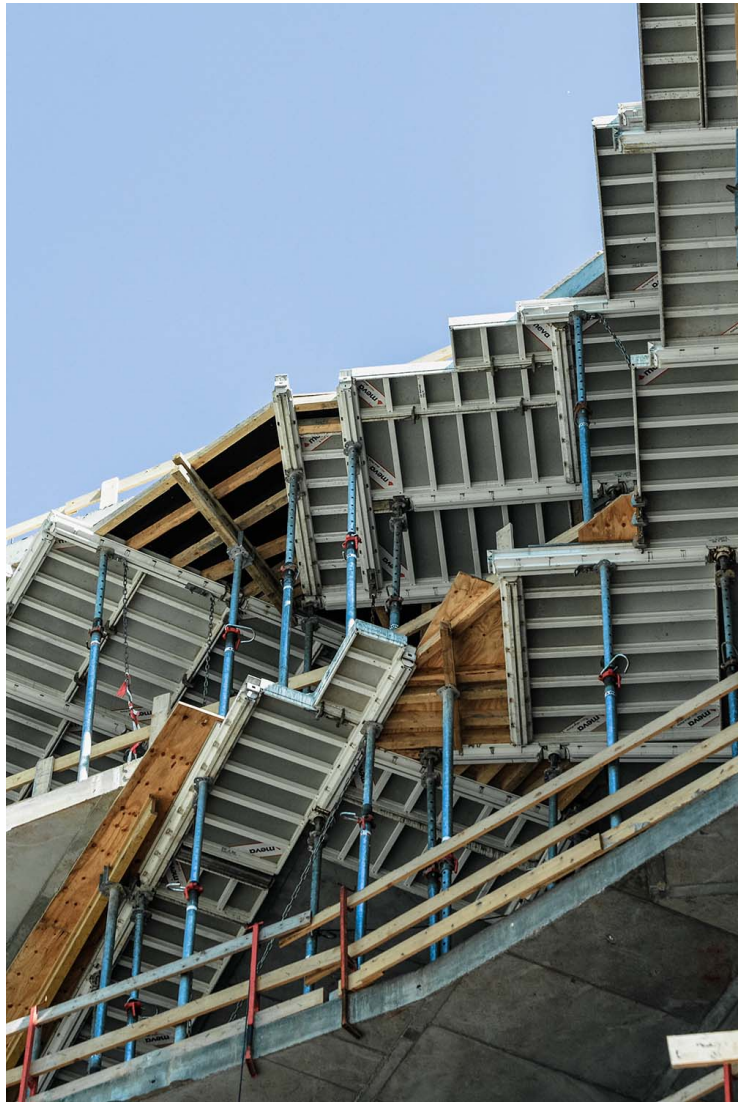
Adapted from How Buildings Learn (Brand, 1994)

Who should consider Building Layers approach?

An Exercise – who should give consideration to refurbishment?

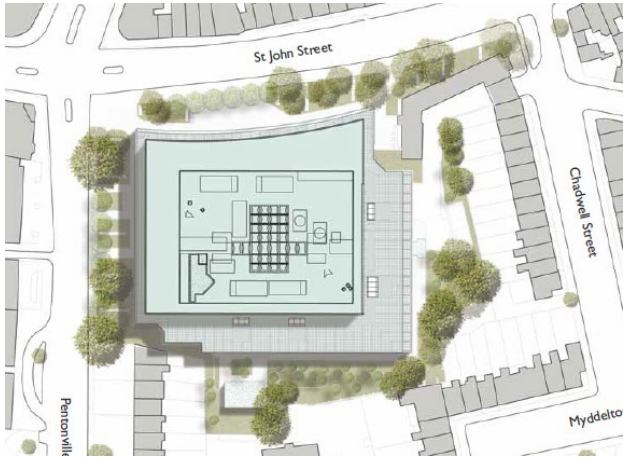
- Clients, developers, leaseholders can consider refurbishment of some of the building layers as an option.

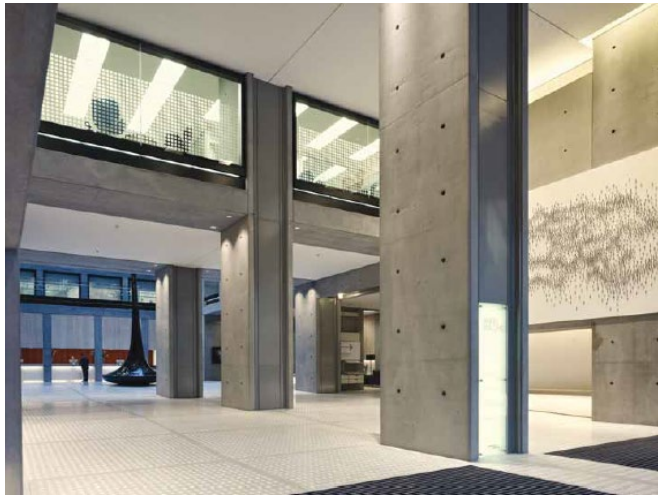
- Designers/engineers can consider the structural design of a building from the perspective of extending a building's life beyond the proposed design use



Case Study – Angel Building - London

- A concrete 1970's structure
- Refurbished and completed in 2010
- Retained concrete frame – reduced build – time, high thermal mass in concrete used to regulate air temperatures
- Avoided 39,500 tonnes of waste concrete and 7,500 of CO_2
- BREEAM Excellent





Information Pack on Build Life Cycle is here

Conclusion

- Workshop describes the opportunity for refurbishment and taking the building layer approach, likely to have an impact in the future evolution of the construction sector.

- Refurbishment has an important role to play in the realisation of a circular construction sector, designing out waste, and building better buildings of high quality and importantly – built to last.